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Front cover photo: Mount Apo, Philippines. Habitat of the Philippine endemic species *Draco (Draco) virens* sp. nov.

Photo: Grayson O'Connor.

Twenty one new species and eleven new subspecies of Asian Flying Dragon Lizard (Squamata: Sauria: Agamidae: Draconinae: *Draco*).

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ABSTRACT

The iconic Agamid genus *Draco* Linnaeus, 1758, better known as the Flying Dragons have been well-known to herpetologists for centuries.

More accurately described as gliding lizards, because of their habit of gliding from trees, these winged dragons are found from southern India in the west to eastern Indonesia in the east.

Most of approximately 40 currently recognized species were formally named over 100 years ago (1900 or earlier), with just three species formally named from year 1999 onwards or just 9 between 1908 and 2022. This is in spite of there clearly being other obviously unnamed forms awaiting scientific recognition as valid species (see for example the results of studies by Inger 1983, Musters 1983, Lazell 1992, McGuire and Alcalá 2000, or McGuire and Heang 2001).

Rather than allowing these species to expire due to ongoing deforestation and other forms of pressure, combined with potential indifference from the scientific community, the general population declines being caused by the human population explosion in Asia, this paper formally names in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999), 20 new species and 11 new subspecies.

These include the following:

1/ Two taxa previously associated with *Draco* (*Pterosaurus*) *dussumieri* Duméril and Bibron, 1837 from south India.

2/ Six species from islands east of Java, Indonesia, associated with *D. (Draco) volans* Linnaeus, 1758.

3/ Twelve species and three subspecies in the *D. (Draco) spilopterus* Wiegmann, 1834 *sensu lato* complex from the Philippines.

4/ Two species and a new subspecies associated with Philippine endemic *D. (Philippinedraco) bimaculatus*.

5/ Four subspecies within the *D. (Rhacodracon) fimbriatus* Kuhl, 1820 species complex, one from west Sumatra and three from Borneo.

6/ Two subspecies in the *D. (Somniadraco) blanfordii* Boulenger, 1885 complex from west Myanmar (Burma) and east Myanmar including nearby north-west Thailand.

Keywords: Taxonomy; nomenclature; skinks; Asia; India; Indonesia; Philippines; Myanmar; Thailand; *Draco*; *Pterosaurus*; *Somniadraco*; *dussumieri*; *spilopterus*; *volans*; *timoriensis*; *blanfordii*; *fimbriatus*; *boschmai*; *novillii*; *ornatus*; *quadrasi*; *cyanopterus*; *guentheri*; *bimaculatus*; *lineatus*; new species; *labatur*; *baliensis*; *lombokensis*; *evadendi*; *latebras*; *viridicapite*; *sumbaensis*; *hoserae*; *wellsi*; *wellingtoni*; *hawkeswoodi*; *woolfi*; *spadix*; *romblonensis*; *magnaauris*; *oculiscaeruleis*; *virens*; *viridifacium*; *bruneialvum*; *toscano*; *graysoni*; new subspecies; *occultation*; *polilloensis*; *boholensis*; *exquisita*; *brunneis*; *dilatadorsisquamae*; *asperacapt*; *longacrista*; *coriafacile*; *cuspsifemen*; *incredibilis*.

INTRODUCTION

The iconic Agamid genus *Draco* Linnaeus, 1758, better known as the Flying Dragons have been well-known to herpetologists for centuries.

More accurately described as gliding lizards, because of their habit of gliding from trees, these winged dragons are found from southern India in the west to eastern Indonesia in the east.

Most of the 40 or more recognized species were formally named over 100 years ago (1900 or earlier), with just three species formally named from year 2000 onwards.

Hoser (2014) provided a logical new taxonomy for the Asian Draconinae, dividing the genus *Draco sensu lato* into nine subgenera of which five were formally named for the first time.

While in the past two decades, many dozens of new species of lizards have been formally identified and named from the south-east Asian region, species within the genus *Draco sensu lato* appear to have been largely neglected by taxonomists.

Only three species have been named as new since 1999 and only nine since 1908.

These are:

Draco indochinensis Smith, 1928

Draco boschmai Hennig, 1936

Draco rhytisma Musters, 1983

Draco biaro Lazell, 1987

Draco caerulhians Lazell, 1992

Draco jareckii Lazell, 1992

Draco palawanensis McHuire and Alcalá, 2000

Draco iskandari McGuire, Brown, Mumpini, Ryanto and Andayani, 2007

Draco supriatnai McGuire, Brown, Mumpini, Ryanto and Andayani, 2007

The preceding lack of formal descriptions of new species within *Draco sensu lato* is in spite of there clearly being other obviously unnamed forms awaiting scientific recognition as valid species.

This paper is not a formal review of the entire genus *Draco sensu lato*, but rather formally names obvious species that were identified while engaged in studies of other reptile taxa, as in species complexes affected by the same biogeographical barriers and/or flagged as distinct in recent revisions of the genus (e.g. Inger 1983, Musters 1983, Lazell 1992, McGuire and Alcalá 2000, McGuire and Heang 2001).

Rather than allowing these as yet unnamed species to expire due to ongoing deforestation and other forms of pressure, combined with potential indifference from the scientific community, the general population declines being caused by the human population explosion in Asia, this paper formally names in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) as amended online (ICZN 2012), twenty one new species and eleven new subspecies.

MATERIALS AND METHODS

Studies by myself had been performed on other species groups in India, Indonesia and southern Asia, north to southern China, resulting in species or subspecies being identified across biogeographical barriers and flagging numerous other potentially unidentified species.

Examples included, but are not limited to, the following:

1/ Hoser (2021a) divided the species *Vijayachelys silvatica* (Henderson, 1912) from the Western Ghats, southern India,

until then monotypic for the genus *Vijayachelys* Praschag, Schmidt, Fritzsich, Müller, Gemel and Fritz, 2006 across a biogeographical barrier known as the Palghat gap (AKA Palakkad gap). The northern population was conservatively identified as a divergent subspecies now known as *Vijayachelys silvatica whittoni* Hoser, 2021.

The same paper found a number new species of land and river dwelling species of "turtle" from south east Asia, including the Philippines and Indonesia, these taxa separated from similar species by biogeographical barriers of known antiquity, correlating with river basins and mountain barriers.

Hoser (2019c) identified numerous previously unnamed small lizard species from Eastern Indonesia.

Hoser (2021b) in a major book-sized monograph and among other species, formally named *Kullandergekko* (*Terrenusgekko*) *richardwellsi* Hoser, 2021 and *Kullandergekko* (*Terrenusgekko*) *trevorhawkeswoodi* Hoser, 2021 both previously within *Cyrtodactylus* Gray, 1827 *sensu lato* and both from Ataúro Island, District Dili, Democratic Republic of Timor-Leste along with 16 other species from nearby parts of southern and south-east Asia, with the same paper flagging dozens of other unnamed species in the Indonesian region and nearby south-east Asia (most of these ostensibly being in the process of being formally named by other herpetologists who had published their intention to do so).

Hoser (2022a) identified a previously unrecognized species in the *Odatria timorensis* (Gray, 1831) species complex from Sawu Island in the Lesser Sundas.

Hoser (2022c) divided the species *Euanedwardsserpens subradiatus* (Schlegel, 1837), until then recognized as one species into six, five formally named for the first time.

They were distributed in the Lesser Sunda Islands of Indonesia, including Lombok, Sumbawa, Sumba, Komodo, Rinca, Flores, Alor, Roti, Semau, Timor (including Timor-Leste) and Wetar.

Hoser (2022c) formally named the species *Naja reduci* sp. nov. from the Lesser Sundas, Indonesia, formerly treated as an eastern population of *N. sputatrix* Boie, 1827 with a type locality of Java.

All of Hoser (2018, 2022d, 2022e and 2022f) formally named species of snakes in southern Asia, including on both sides of the Indian Subcontinent and south-east Asia, across known biogeographic barriers.

In terms of the preceding, morphologically divergent forms of *Draco sensu lato* from the Ghats in southern India, southern Asia, including the Philippines, as well as the Sunda and other Islands in Indonesia were scrutinized with a view to identifying any obviously unnamed species.

All relevant literature and previous scientific descriptions were read to identify previously unnamed forms, otherwise not generally recognized forms and any potential synonyms.

Specimens, dead, preserved, living and in photos were inspected from all areas the relevant species of *Draco* were known to occur within southern India, the lesser Sunda islands as well as Java and Bali and other islands in the archipelago.

Relevant species and specimens from the Philippines were also inspected as was material from southern and south-east Asia.

All was also matched with previous genetic studies of relevant species and/or other species known to be constrained by the same biogeographical features, such as sea inundation and/or areas of clearly unsuitable habitat that may form an impenetrable barrier.

These features were also scrutinized in terms of their formations and/or changes in the past including during ice-age maxima and with respect of climate changes in the past 5 MYA.

Literature relevant to the putative species or species complexes where these relevant species occurred, these being those where there appeared to be unnamed species within their complexes, these potentially including *Draco* (*Pterosaurius*) *dussumieri* Duméril and Bibron, 1837, *D. (Draco) volans* Linnaeus, 1758, *D. (Draco) timoriensis* Kuhl, 1820, *D. (Draco) boschmai* Hennig, 1936, *D. (Draco) spilopterus* Wiegmann, 1834, *D. (Draco) reticulatus* Günther, 1864, *D. (Draco) cornutus* Günther, 1864, *D. (Draco) ornatus* Gray, 1845, *D. (Draco) cyanopterus* Peters, 1867, *D. (Draco) palawanensis* McGuire and Alcalá, 2000, *D. (Draco) quadrasi* Boettger, 1893, *D. (Draco) guentheri* Boulenger, 1885, *D. (Philippinedraco) bimaculatus* Günther, 1864, *D. (Draco) sumatranus* Schlegel, 1844, *D. (Rhacodracon) fimbriatus* Kuhl, 1820, *D. (Somniadraco) blanfordii* Boulenger, 1885, *D. (Somniadraco) taeniopterus* Günther, 1861 and *D. (Somniadraco) novilli* Alcock, 1895 that was read and deemed relevant to the taxonomic and nomenclatural conclusions herein included Alcalá (1986), Alcock (1895), Ananjeva *et al.* (2011), Andersson (1900), Ahsan (1992), Auffenberg (1980), Auliya (2006), Baker (2016), Bartlett (1895), Barts and Wilms (2003), Beolens *et al.* (2011), Bhupathy and Sathishkumar (2013), Binaday *et al.* (2017), Blanford (1878), Bobrov (1995), Bobrov and Semenov (2008), Boettger (1893), Boistel *et al.* (2011), Bong Heang (1987), Boulenger (1885a, 1885b, 1887a, 1887b, 1890, 1893, 1900, 1908), Brown *et al.* (1996, 2000, 2012, 2013), Chanard *et al.* (1999, 2015), Cox *et al.* (1998), Daan and Hillenius (1996), Das (2004), De Rooij (1915), Douglas (1927), Duméril and Bibron (1837), Eydoux and Gervais (1837), Ferner *et al.* (2000), Ganesh and Arumugam (2016), Ganesh *et al.* (2020), Gaulke (2001, 2011), Gemel *et al.* (2019), Gojo-Cruz and Afuang (2018), Gojo-Cruz *et al.* (2016, 2018), Goldberg and Grismer (2015, 2016), Grandison (1972), Gray (1845), Grismer (2011a, 2011b), Grismer and Quah (2019), Grismer *et al.* (2002, 2008), Günther (1861a, 1861b, 1864), Mägdefrau (1991), Mägdefrau and Mägdefrau (1994), Malkmus *et al.* (2002), Manthey (1983, 2008), Manthey and Grossmann (1997), Manthey and Schuster (1999), McGuire and Alcalá (2000), McGuire and Dudley (2011), McGuire and Heang (2001), McGuire *et al.* (2007, 2018), Megantara *et al.* (2022), Mertens (1930), Milto and Lukin (2020), Mocquard (1890), Mori and Hikida (1993, 1994), Murthy (1990, 2010), Musters (1983), Nampochai *et al.* (2021), Ngilangil (2016), Nguyen *et al.* (2009), Pachmann (2008), Palot (2015), Pardeshi and Naik (2017), Patel and Vyas (2019), Pauwels *et al.* (2000), Peters (1867), Purkayastha (2013), Pyron *et al.* (2013), Reilly *et al.* (2022), Ride *et al.* (1999), Sanguila *et al.* (2016), Schlegel (1837), Shaw and Nodder (1790), Shine (1998), Siler *et al.* (2012), Sind and Thomas (2017), Smedley (1931), Smith (1993), Smith (1928, 1935, 1937), Srichairat *et al.* (2017), Stejneger (1908), Stoliczka (1870, 1873), Stuart *et al.* (2006), Supsup *et al.* (2016, 2020), Taylor (1922, 1963), Teo and Rajathurai (1997), Teynie *et al.* (2010), Toledo-Bruno *et al.* (2017), Venugopal (2010), Wang *et al.* (2020, 2022), Wiegmann (1834), Zug and Mulcahy (2019) and sources cited therein.

RESULTS

In terms of putative *Draco* (*Pterosaurius*) *dussumieri* Duméril and Bibron, 1837 from southern India it was self evident that there were two distinctive forms, worthy of species level recognition.

They were divided across the Palghat Gap (AKA Palakkad Gap), in line with other species pairs in the region.

There was no available synonym names, save for the original name *Draco dussumieri* Duméril and Bibron, 1837, meaning that one or other species was unnamed.

The original colour description by Duméril and Bibron (1837) matched the northern form and so the southern species is formally named for the first time as *Draco* (*Pterosaurius*) *labatur* sp. nov.

Specimens from the Eastern Ghats, while morphologically similar to those from the northern part of the Western Ghats, were sufficiently divergent as to warrant being formally named as a new subspecies, this being *Draco* (*Pterosaurius*) *dussumieri occultatio* sp. nov.

In terms of specimens from the Sunda Islands, commonly treated as *D. volans* Linnaeus, 1758, with a type locality of Java (or sometimes one or other of *D. timoriensis* Kuhl, 1820 for the Timor population and *D. boschmai* Hennig, 1936 for the Flores population), it was immediately apparent that on each major island or island group (including islets) from Java and east to at least as far as Timor and Wetar, that the *Draco* populations were different to one another.

As already stated, available names for populations were *D. timoriensis* Kuhl, 1820 for the Timor population and *D. boschmai* Hennig, 1936 for the Flores population.

Each major island or island cluster population could easily be divided across the usual biogeographical barriers, these being the deep sea divisions, as in areas remaining inundated during ice-age maxima. Exceptional to this were the populations on two major islands.

The morphologically divergent populations on west and east Sumbawa were each separated by a relatively dry lowland area of apparently unsuitable habitat and likely to have remained so during cool periods between the most recent interglacials at which time the world was generally drier than it is at present, meaning the same barriers to gene flow probably remained.

This area may have also been inundated with sea water prior to geologically recent uplifting.

A similar situation exists on Flores, where the populations from the central and eastern parts of the island are not like those from the far western parts the island. While Flores was almost certainly more than one island in the geological past, having been uplifted in relatively recent times, it appears that the two relevant populations have in fact expanded in most recent times and appear to meet near the western end of the island.

The western form is found on Flores generally north and west of Bajawa only, Latitude -8.7923 S., Longitude 120.9606 E. As this lies well and truly west of the type locality for *D. boschmai*, being Maumere in north, central Flores, it is the western form that has been until now unnamed.

Immediately before the publication of this paper (and while this paper was being peer reviewed), Reilly *et al.* (2022) published a molecular phylogeny of the Lesser Sundas *Draco*, which was broadly in line with the findings already independently made as outlined above.

The assertion by Reilly *et al.* (2022) of 9-11 deeply divergent lineages was not agreed by myself, based on morphological examination and so only six new species are named in the

region (added to the other three), including one previously being treated as putative *D. volans* from Bali, and five previously being treated as putative *D. boschmai*, although the Sumba Island population really wasn't sufficiently well-known to have been convincingly treated as anything!

While putative *D. timoriensis* Kuhl, 1820 was found on numerous islands including Timor, nearby Roti, Pantar, Alor and Wetar, none of these populations seemed to be particularly divergent from one another and so that putative species was not split, even though an argument could be raised that forms on some islands were evolving apart and as separate species.

All relevant known Lesser Sunda Island populations were scrutinized and so I do not think I have missed any obvious species-level divisions.

The Eastern Ghats population of putative *D. dussumieri*, has no doubt recently being forcibly isolated from nominate *D. dussumieri* by a human population explosion in India. In the absence of DNA and a major biogeographical barrier this taxon is formally named as a subspecies rather than full species.

It may well be the case that the Eastern Ghats population of putative *D. dussumieri* herein named as a subspecies, could in fact be a full species, (in line with other eastern and western Ghats species pairs) but this designation has not been made by me, due to the absence of molecular data giving a date of separation of the relevant populations.

The newly named Lesser Sundas taxa are herein formally named as follows:

Draco (Draco) baliensis sp. nov. from Bali, *D. (Draco) lombokensis* sp. nov. from Lombok, *D. (Draco) evandendi* sp. nov. from West Sumbawa, *D. (Draco) latebras* sp. nov. from East Sumbawa, *D. viridicapite* sp. nov. from western Flores (and including specimens from nearby Komodo and Rinca) and *D. (Draco) sumbaensis* sp. nov. from Sumba.

These are in addition to *D. volans*, herein confined to Java, *D. boschmai* herein confined to most of Flores and Lembata and *D. timoriensis* from Timor, nearby Roti, Pantar, Alor and Wetar.

Until now *Draco (Draco) baliensis* sp. nov. has been treated as an eastern population of *D. volans*, while all of *D. (Draco) lombokensis* sp. nov. from Lombok, *D. (Draco) evandendi* sp. nov. from West Sumbawa, *D. (Draco) latebras* sp. nov. from East Sumbawa, *D. viridicapite* sp. nov. from western Flores (and including specimens from nearby Komodo and Rinca) and *D. (Draco) sumbaensis* sp. nov. from Sumba, have also been treated variously as *D. volans*, *D. timoriensis* or *D. boschmai* although as already mentioned, the Sumba island population wasn't really formally identified as anything save for one or other of the preceding (*D. volans*, *D. timoriensis* or *D. boschmai*) in various species lists prepared by people with little if any knowledge of the species.

Putative *D. (Draco) spilopterus* Wiegmann, 1834 *sensu lato* complex from various island groups were found to be divergent morphologically from one another in line with the results of Inger (1983), Musters (1983), Lazell (1992), McGuire and Alcalá (2000) and McGuire and Heang (2001), which in turn are mainly in line with the historical deep sea barriers in the archipelago. These are those that remained under open sea water during ice-age maxima.

Twelve species in this complex are formally named as new species, due to the absence of available synonym names, as well as three divergent subspecies, most of which have been flagged as distinct species or subspecies in the earlier cited studies, but not formally named.

Two from the Babuyan Islands north of Luzon, were supposedly being formally named in 2011 as stated by Oliveras *et al.* (2011), but as of 2022 there was no indication of this act of naming these undescribed species happening.

As noted elsewhere (e.g. Hoser 2022b), it is important that these divergent species be formally named before they risk becoming extinct. It is not proper for a herpetologist to seek to monopolize a species for decades on the possibility they may one day name that given species.

An identified species should be named before the monopolizing person dies and obviously before the species potentially becomes extinct.

Therefore I have no hesitation in naming the relevant Babuyan Islands taxa in this paper.

Two species related to the divergent Philippine taxon *Draco (Philippinedraco) bimaculatus* Günther, 1864 are also formally named for the first time. These populations are also separated by deep sea barriers. They are *D. toscanoi* sp. nov. from Ponson Island and *D. graysoni* sp. nov. from Jolo Island. Another population, from Bohol Island is formally named as a morphologically divergent subspecies.

Four highly divergent populations from within the *D. (Rhacodracon) fimbriatus* Kuhl, 1820 species complex, one from south-west Sumatra, one from north Borneo, one from central Borneo and another from south-east Borneo are sufficiently divergent to warrant taxonomic recognition and so they are conservatively named herein as subspecies.

Notwithstanding the fluctuating taxonomy within the species complex, following from the taxonomy of McGuire *et al.* (2018) as well as Grismer and Quah (2019), which in relevant parts is broadly agreed with here, the relevant subspecies are *Draco fimbriatus dilatadorsisquamae* subsp. nov. from west Sumatra, *Draco punctatus asperacapus* subsp. nov. from Sabah, north Borneo, *D. punctatus longacrista* subsp. nov. from Upper Mahakkam, central Borneo and *D. punctatus coriafacile* subsp. nov. from South-east Borneo. The same applies to a divergent population in the *D. (Somniadraco) blanfordii* Boulenger, 1885 complex from west Myanmar (Burma). Usually treated as a southern population of *D. (Somniadraco) novilli* Alcock, 1895, this population was sufficiently divergent and potentially isolated from northern ones and so has been also formally named as a new subspecies.

On the east side of Burma and nearby Thailand, north and east of the Khwai Noi River, *Draco* specimens variously identified as *D. blanfordii* and *D. taeniopterus* Günther, 1861, were sufficiently divergent as to be treated as a separate taxon. In many respects they are intermediate in form between the two species, but most like *D. taeniopterus* in both colour and the general lack of any obvious tail crest (noting the females do have slightly enlarged scales on the tip of the dewlap as seen in *D. blanfordii* and not *D. taeniopterus*), and so is conservatively named herein as a new subspecies *D. taeniopterus incredibilis* subsp. nov..

While this paper increases the number of species and subspecies within *Draco sensu lato* by about 50% it is my current belief that the actual species diversity in the genus is still quite likely to be under estimated.

INFORMATION RELEVANT TO THE FORMAL DESCRIPTIONS THAT FOLLOW

There is no conflict of interest in terms of this paper or the conclusions arrived at herein.

Several people including anonymous peer reviewers who revised the manuscript prior to publication are also thanked as are relevant staff at museums who made specimens and

records available in line with international obligations. In terms of the following formal descriptions, spellings should not be altered in any way for any purpose unless expressly and exclusively called for by the rules governing Zoological Nomenclature as administered by the International Commission of Zoological Nomenclature (ICZN).

This includes if gender assignment of suffixes seems incorrect, Latinisation is wrong, apparent spelling mistakes and so on.

Some of the apparent errors may also be intentional to avoid risk of creating homonyms.

In the unlikely event two or more newly named taxa are deemed to be the same by a first reviser, then the name to be used and retained is that which first appears in this paper by way of page priority and as listed in the abstract keywords.

Some material in descriptions for taxa may be repeated for other taxa in this paper and this is necessary to ensure each fully complies with the provisions of the *International Code of Zoological Nomenclature* (fourth edition) (Ride *et al.* 1999) as amended online since.

Material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 30 June 2022 (including if also viewed prior), unless otherwise stated and was accurate in terms of the content cited herein as of that date.

Any online citations within this paper, including copied emails and the like, are not as a rule cited in the references part of this paper and have the same most recent viewing date as just given.

Unless otherwise stated explicitly, colour and other descriptions apply to living adult male specimens of generally good health, as seen by day and not under any form of stress by means such as excessive cool, heat, dehydration, excessive ageing, abnormal skin or reaction to chemical or other input.

In the case of the following descriptions, I stress that all are based on adult MALE specimens unless otherwise explicitly stated. Females in *Draco* species are generally larger and less intense in colouration than the males, but in some species are quite different in general colouration and/or markings, including sometimes the patagia (wing membrane).

When necessary references to females is made.

Unless otherwise stated, reference to the patagia (including colouration) refers to it in the fully outstretched state and as it appears in this state.

While numerous texts and references were consulted prior to publication of this paper, the criteria used to separate the relevant genera, subgenera, species or subspecies has already been spelt out and/or is done so within each formal description and does not rely on material within publications not explicitly cited herein.

CONSERVATION STATUS OF THE RELEVANT TAXA

Using accepted criteria of assessment, all of the relevant species are of immediate conservation concern and should be listed as "Vulnerable". However on a larger time frame (hundreds of years), the comments in Hoser (1989, 1991, 1993 and 1996) apply, as do the comments in Hoser (2007, 2009, 2012a, 2012b, 2013, 2015a-f, 2019a, 2019b and 2020a).

Because these species are often cryptic and sometimes hard to find, declines may happen and not be noticed for some years after the fact.

By way of example in terms of the Philippines taxa formally

named, I make the following relevant comments.

According to the website at:

<https://www.macrotrends.net/countries/PHL/philippines/population>

the Philippines had about 77,958,223 people in year 2000.

This stands at about 115,559,009 people in year 2022, being an increase of over 38 million people in that period.

To pretend that this massive increase in number of people in a land area of just 300,000 square km is having no impact on populations of lizards such as *Draco* species is patently ridiculous.

By comparison, Victoria, Australia, land area of 227,444 square km (being slightly less than the Philippines) has some 7 million people versus about 16 times that number occupying a similar land area in the Philippines.

And yes, Victoria's environment is also heavily degraded with many species of wild animal in potentially terminal decline!

The situation in other parts of Asia where *Draco* occurs is similar and potentially dire.

Hence recognition of and management of, these newly named species is a matter of great urgency if this biodiversity is to be conserved.

See also under the heading "*Risks posed by taxonomic vandalism*" near the end of this paper.

DRACO (PTEROSAURUS) LABATUR SP. NOV.

LSIDurn:lsid:zoobank.org:act:5E85EE70-D5BC-450F-BB22-3F811D952724

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R26597, collected from Nagercoil, Tamil Nadu, India, Latitude 8.166667 N., Longitude 77.433333 E.

This government-owned facility allows access to its holdings.

Diagnosis: Until now *Draco (Pterosaurus) dussumieri* Duméril and Bibron, 1837 has been treated as a single species occupying a range including all of the Western and Eastern Ghats in southern India.

Type *Draco (Pterosaurus) dussumieri* Duméril and Bibron, 1837 is herein confined to the western Ghats, north of the Palghat Gap (AKA Palakkad Gap), being north of Pollachi and Palghat in India.

In the Eastern Ghats, inland from Chennai (AKA Madras), including in the hills around Chittoor, the subspecies *Draco (Pterosaurus) dussumieri occultatio sp. nov.* occurs.

South of the Palghat Gap (AKA Palakkad Gap), in the southern Western Ghats being south of Pollachi and Palghat in India the morphologically similar species *Draco (Pterosaurus) labatur sp. nov.* occurs.

D. labatur sp. nov. is separated from *D. dussumieri* (both subspecies) by having brownish circles on the back that are strongly contrasting with the surrounding skin, as well as having a thick etching and in the centre a small spot of whitish colour, versus a thin etching outline for the same spots, not strongly contrasting with the surrounding skin and no small spot of whitish in the centre.

The dorsal patagia (wing membrane) pattern (fully outstretched) is also quite different in each species.

In *D. labatur sp. nov.* the middle areas are mainly purple with jagged grey edges or intrusions from either side, these lacking any spots or other internal markings or colour, with both centre and outer edges being marbled dark and light grey, although there are some smaller sections of purple entering the outer or inner edges.

By contrast in *D. dussumieri* the dorsal patagia pattern (when fully outstretched) is light to medium brown or orange at the

inner sides with large areas of contrasting purplish-black on the distal parts, in the middle of which are some large dots of the colour of the background (as per the original description of Duméril and Bibron, 1837). On the inner edge is a quite obvious series of 9-13 dark brown spots between the front and back limbs. These same spots are either absent or barely distinct in *D. labatur sp. nov.* Under the throat, dark markings are bold and distinct, versus not so in *D. labatur sp. nov.*

D. labatur sp. nov. has a greenish belly (adult males), versus greyish green in *D. dussumieri*.

D. dussumieri occultatio sp. nov. is separated from nominate *D. dussumieri dussumieri* by having smaller and more numerous spots on the outer parts of the patagia and scattered small, rather than a lesser number of scattered large, dark blotches under the chin.

The two preceding species, being the entirety of the subgenus *Pterosaurus* Fitzinger, 1843 are separated from all other *Draco* Linnaeus, 1758 *sensu lato* species by the following suite of characters: Nostril pierced vertically, directed upwards; tympanum naked and as large as the eye-opening; the adpressed hind limb does not reach beyond the axil; grey brown above; a series of more or less distinct dark circles on the back; wing membranes above purplish black, usually enclosing round light spots, or alternatively large areas of mainly purple with jagged grey edges or intrusions from either side, these lacking any spots or other internal markings or colour, with both centre and outer edges being marbled dark and light grey, although there are some smaller sections of purple entering the outer or inner edges. There is a series of dark spots on the inner edge of the wing membrane. Below, the throat has irregular dark spots of irregular shape.

The subgenus *Pterosaurus* is further defined and diagnosed as follows: Head small; snout constricted, as long as the diameter of the orbit; nostril directed upwards, perfectly vertical; tympanum naked, as large as the eye-opening. Upper head scales unequal, keeled; a spinose conical scale at the posterior corner of the orbit; nine to twelve upper labials, the last twice or thrice as large as the preceding. The male's gular appendage much longer than the head; male with a slight nuchal fold; dorsal scales scarcely larger than ventrals, unequal, smooth, or very slightly keeled; on each side of the back a series of small tubercular prominences, each being composed of several small scales. The fore-limb stretched forwards extends beyond the tip of the snout; the adpressed hind limb reaches the axil or not quite so far.

The species within the genus *Draco* Linnaeus, 1758 (*sensu lato*) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

Draco (Pterosaurus) labatur sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/600904>

and

<https://www.inaturalist.org/observations/116649895>

and

<https://www.inaturalist.org/observations/9212330>

and

<https://www.inaturalist.org/observations/38252664>

D. dussumieri dussumieri in life is depicted online at:

<https://www.inaturalist.org/observations/88427694>

and

<https://www.inaturalist.org/observations/128267369>

and

<https://www.inaturalist.org/observations/63151813>

Distribution: *Draco (Pterosaurus) labatur sp. nov.* occurs south of the Palghat Gap (AKA Palakkad Gap), in the southern Western Ghats being south of Pollachi and Palghat in India.

Etymology: The new species name *D. labatur sp. nov.* comes from the Latin word "labatur" which means to glide, in reflection of the mode of locomotion the species is famous for.

DRACO (PTEROSAURUS) DUSSUMIERI OCCULTATIO SP. NOV.

LSIDurn:lsid:zoobank.org:act:5E85EE70-D5BC-450F-BB22-3F811D952724

Holotype: A preserved male specimen (larger of 2) at the Natural History Museum, London, United Kingdom, specimen number 1846.11.22.24-25 collected from near Madras, India. This facility allows access to its holdings.

Paratypes: A preserved male specimen in poor condition at the Natural History Museum, London, United Kingdom, specimen number 1849.7.27.79-83 collected from near Madras, India.

Diagnosis: Until now *Draco (Pterosaurus) dussumieri* Duméril and Bibron, 1837 has been treated as a single species occupying a range including all of the Western and Eastern Ghats in southern India.

Type *Draco (Pterosaurus) dussumieri* Duméril and Bibron, 1837 is herein confined to the western Ghats, north of the Palghat Gap (AKA Palakkad Gap), being north of Pollachi and Palghat in India.

In the Eastern Ghats, inland from Chennai (AKA Madras), including in the hills around Chittoor, the subspecies *Draco (Pterosaurus) dussumieri occultatio sp. nov.* occurs.

South of the Palghat Gap (AKA Palakkad Gap), in the southern Western Ghats being south of Pollachi and Palghat in India the morphologically similar species *Draco (Pterosaurus) labatur sp. nov.* occurs.

D. labatur sp. nov. is separated from *D. dussumieri* (both subspecies) by having brownish circles on the back that are strongly contrasting with the surrounding skin, as well as having a thick etching and in the centre a small spot of whitish colour, versus a thin etching outline for the same spots, not strongly contrasting with the surrounding skin and no small spot of whitish in the centre.

The dorsal patagia (wing membrane) pattern (fully outstretched) is also quite different in each species.

In *D. labatur sp. nov.* the middle areas are mainly purple with jagged grey edges or intrusions from either side, these lacking any spots or other internal markings or colour, with both centre and outer edges being marbled dark and light grey, although there are some smaller sections of purple entering the outer or inner edges.

By contrast in *D. dussumieri* the dorsal patagia pattern (when fully outstretched) is light to medium brown or orange at the inner sides with large areas of contrasting purplish-black on the distal parts, in the middle of which are some large dots of the colour of the background (as per the original description of Duméril and Bibron, 1837). On the inner edge is a quite obvious series of 9-13 dark brown spots between the front and back limbs. These same spots are either absent or barely distinct in *D. labatur sp. nov.* Under the throat, dark markings are bold and distinct, versus not so in *D. labatur sp.*

nov.

D. labatur sp. nov. has a greenish belly (adult males), versus greyish green in *D. dussumieri*.

D. dussumieri occultatio sp. nov. is separated from nominate *D. dussumieri dussumieri* by having smaller and more numerous spots on the outer parts of the patagia and scattered small, rather than a lesser number of scattered large dark blotches under the chin.

In males the patagia is bright orange in *D. dussumieri occultatio* sp. nov. versus not so in *D. dussumieri dussumieri* (healthy non-aged adults).

The two preceding species, being the entirety of the subgenus *Pterosaurus* Fitzinger, 1843 are separated from all other *Draco* Linnaeus, 1758 *sensu lato* species by the following suite of characters: Nostril pierced vertically, directed upwards; tympanum naked and as large as the eye-opening; the adpressed hind limb does not reach beyond the axil; grey brown above; a series of more or less distinct dark circles on the back; wing membranes above purplish black, usually enclosing round light spots, or alternatively large areas of mainly purple with jagged grey edges or intrusions from either side, these lacking any spots or other internal markings or colour, with both centre and outer edges being marbled dark and light grey, although there are some smaller sections of purple entering the outer or inner edges. There is a series of dark spots on the inner edge of the wing membrane. Below, the throat has irregular dark spots of irregular shape.

The subgenus *Pterosaurus* is further defined and diagnosed as follows: Head small; snout constricted, as long as the diameter of the orbit; nostril directed upwards, perfectly vertical; tympanum naked, as large as the eye-opening. Upper head scales unequal, keeled; a spinose conical scale at the posterior corner of the orbit; nine to twelve upper labials, the last twice or thrice as large as the preceding. The male's gular appendage much longer than the head; male with a slight nuchal fold; dorsal scales scarcely larger than ventrals, unequal, smooth, or very slightly keeled; on each side of the back a series of small tubercular prominences, each being composed of several small scales. The fore-limb stretched forwards extends beyond the tip of the snout; the adpressed hind limb reaches the axil or not quite so far.

The species within the genus *Draco* Linnaeus, 1758 (*sensu lato*) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

Draco (Pterosaurus) labatur sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/600904>

and

<https://www.inaturalist.org/observations/116649895>

and

<https://www.inaturalist.org/observations/9212330>

and

<https://www.inaturalist.org/observations/38252664>

D. dussumieri dussumieri in life is depicted online at:

<https://www.inaturalist.org/observations/88427694>

and

<https://www.inaturalist.org/observations/128267369>

and

<https://www.inaturalist.org/observations/63151813>

Distribution: *Draco (Pterosaurus) dussumieri occultatio* sp. nov. occurs in the Eastern Ghats, inland from Chennai (AKA Madras), including in the hills around Chittoor.

Etiymology: The new species name *D. occultatio* sp. nov. comes from the Latin word "*occultatio*" which means hidden, in reflection of the fact specimens remain hidden in the wild as well as that this taxon has been largely hidden from science as well.

DRACO (DRACO) BALIENSIS SP. NOV.

LSIDurn:lsid:zoobank.org:act:5D92FDEF-8E3A-4298-A6ED-A65D9FAB89C8

Holotype: A preserved female specimen at the Museum of Vertebrate Zoology, University of California, Berkeley, California, USA, specimen number MVZ:Herp:274372 collected from Bangli House, Desa Payuk, Kecamatan Tembuku, Kabupate, Bangli, Bali, Indonesia, Latitude -8.438097 S., Longitude 115.401722 E.

This facility allows access to its holdings.

Paratype: A preserved specimen at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA, specimen number MCZ Herp R-27004 collected from Bali, Indonesia, Latitude -8.3 S., Longitude 115 E.

Diagnosis: Until now *Draco (Draco) baliensis* sp. nov. confined to the island of Bali Indonesia, but so far not known from the western side of that island, has been treated as an insular population of the better-known species *D. (Draco) volans* Linnaeus, 1758, herein restricted to Java.

D. baliensis sp. nov. is readily separated from *D. volans* by having a dorsal patagia (wing membrane) pattern (when fully outstretched) that is yellow-brown (rarely with a slight orange tinge) in the inner areas with black on the outer zone and edges, with the lighter infusions, being yellow-brown in colour not forming any obvious spots or circles, versus strongly orangeish to vivid orange in the inner area, with black on the outer zone and edges, with the lighter infusions being orange, lightening to yellowish on the outer edges and with at least some of these breaking up to form at least some well defined circles in the mid to outer membrane, generally beyond the half way point.

In *D. baliensis* sp. nov. the upper surface of the front leg is not heavily banded dark or with dark occupying most of the surface, versus the reverse in *D. volans*.

Both *D. volans* and *D. baliensis* sp. nov. are separated from all other species of *Draco sensu lato* by the following suite of characters: Nostril lateral, directed outwards; the adpressed hind limb reaches at the most slightly beyond the elbow of the adpressed fore limb; naked tympanum is smaller than the eye-opening; patagia usually black-spotted below. No large spine on the supraciliary, instead there only being a small subconical tubercle at the posterior corner of the orbit.

Both *D. volans* and *D. baliensis* sp. nov. are separated from all of *D. (Draco) boschmai* Henning, 1936 herein confined to most of Flores and Lembata, *D. (Draco) timoriensis* Kuhl, 1820 from Timor, nearby Roti, Pantar, Alor and Wetar, *D. (Draco) lombokensis* sp. nov. from Lombok, *D. (Draco) evandendi* sp. nov. from West Sumbawa, *D. (Draco) latebras* sp. nov. from East Sumbawa, *D. (Draco) viridicapite* sp. nov. from western Flores (and including specimens from nearby Komodo and Rinca) and *D. (Draco) sumbaensis* sp. nov. from Sumba by having a naked tympanum that is noticeably smaller than the eye-opening, versus one that is the same size as the eye opening.

D. (Draco) timoriensis Kuhl, 1820 is separated from the other

preceding species by having a series of strongly enlarged keeled scales along each side of the vertebral line, separated by a row of small smooth scales, as depicted online in the image at: <https://www.inaturalist.org/observations/99173421>.

The same feature is present in *D. sumbaensis sp. nov.* but not as pronounced.

The species within the genus *Draco* Linnaeus, 1758 (*sensu lato*) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

D. baliensis sp. nov. is depicted in life online at:

<https://www.flickr.com/photos/22553111>

and

<https://www.flickr.com/photos/126002448@N02/15121180678/>

and

<https://www.flickr.com/photos/12639178@N07/31148433115/>

and

<https://www.flickr.com/photos/beninfreo/15514937862/>

and

<https://www.inaturalist.org/observations/10256284>

and

<https://www.inaturalist.org/observations/107733120>

Draco volans from Java is depicted in life online at:

<https://www.inaturalist.org/observations/110447953>

and

<https://www.inaturalist.org/observations/65627620>

and

<https://www.inaturalist.org/observations/7034214>

Distribution: *Draco (Draco) baliensis sp. nov.* is confined to the island of Bali, Indonesia, but so far is not known from the western side of that island. *D. volans* is found on the nearby island of Java to the west.

Etymology: *D. baliensis sp. nov.* is named in reflection of the island it occurs on.

DRACO (DRACO) LOMBOKENSIS SP. NOV.

LSIDurn:lsid:zoobank.org:act:2EE88E9E-852F-4F9F-95A8-C0AEA1752A4A

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number WAM REPT R99790 collected from Suranadi, Lombok Island, West Nusa Tenggara, Indonesia, Latitude -8.558333 S., Longitude 116.233333 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number WAM REPT R112457 collected from Suranadi, Lombok Island, West Nusa Tenggara, Indonesia, Latitude -8.558333 S., Longitude 116.233333 E.

Diagnosis: Until now *Draco (Draco) lombokensis sp. nov.* confined to the island of Lombok, Indonesia, has been treated as a population of either *D. volans* Linnaeus, 1758, type locality of Java, Indonesia or more recently as a population of *D. (Draco) boschmai* Henning, 1936, type locality of Maumere, central, northern Flores, Indonesia, (herein confined to the island of Flores, east of Bajawa and the nearby island of Lombok to the east) the species it is otherwise most closely related to.

Adult male *Draco (Draco) lombokensis sp. nov.* are readily separated from all adult males of *D. boschmai*, *D. (Draco)*

latebras sp. nov. from East Sumbawa and *D. (Draco) sumbaensis sp. nov.* from Sumba (all also previously treated as being *D. boschmai*) by having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane), versus aqua green in *D. boschmai* and whitish to light yellowish grey in *D. latebras sp. nov.* and *D. sumbaensis sp. nov.*.

The closely related *D. (Draco) evandendi sp. nov.* from west Sumbawa, also with a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane), is separated from *D. lombokensis sp. nov.* by having mainly a dark blackish grey on the outer edges of the dorsal surface of the patagia versus virtually jet black in *D. lombokensis sp. nov.*.

The closely related *D. (Draco) viridicapite sp. nov.* from western Flores (and including specimens from nearby Komodo and Rinca), likewise having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane) is separated from *D. lombokensis sp. nov.* by having light markings on the flanks of the dorsum being more prominent than the darker ones, versus reverse in *D. lombokensis sp. nov.*.

D. lombokensis sp. nov. is further separated from all the preceding named species by the fact that the dark markings under the jaw are lines that join to form a reticulatum, this not seen in the other species.

The closely related species, *D. volans* and *D. baliensis sp. nov.* are separated from all of *D. (Draco) boschmai* Henning, 1936 herein confined to most of Flores and Lombok, *D. (Draco) timoriensis* Kuhl, 1820 from Timor, nearby Roti, Pantar, Alor and Wetar, *D. (Draco) lombokensis sp. nov.* from Lombok, *D. (Draco) evandendi sp. nov.* from West Sumbawa, *D. (Draco) latebras sp. nov.* from East Sumbawa, *D. (Draco) viridicapite sp. nov.* from western Flores and small islands to the west and *D. (Draco) sumbaensis sp. nov.* from Sumba by having a naked tympanum that is noticeably smaller than the eye-opening, versus one that is the same size as the eye opening.

The species, *D. (Draco) timoriensis* Kuhl, 1820 is separated from the other preceding species by having a series of strongly enlarged keeled scales along each side of the vertebral line, separated by a row of small smooth scales, as depicted online in the image at: <https://www.inaturalist.org/observations/99173421>.

The same feature is present in *D. sumbaensis sp. nov.* but not as pronounced.

D. timoriensis Kuhl, 1820 is also separated from all the preceding species by having deep yellow blotches, spots, markings or marbling on most of the dorsal surface of the fully extended patagia (inner and outer areas) and is a generally yellowish-brown lizard, the colouration being distinctively different from the other Lesser Sunda species. Under the throat are numerous large well defined and evenly spaced black dots.

D. (Draco) evandendi sp. nov. from West Sumbawa is separated from the preceding species by the unique combination of having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane) and by having mainly a dark blackish grey on the outer edges of the dorsal surface of the patagia (versus virtually jet black in *D. lombokensis sp. nov.*).

The six species, *D. boschmai*, *D. lombokensis sp. nov.*, *D. evandendi sp. nov.*, *D. latebras sp. nov.*, *D. viridicapite sp. nov.* and *D. sumbaensis sp. nov.*, all until now treated as populations of *D. boschmai* are separated from one another by the following unique combinations of characters:

D. lombokensis sp. nov. has dark markings under the jaw that are lines that join to form a reticulation, this not seen in the other species. It also has a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia. The back of the head and upper surfaces of the neck have obvious scattered blackish spots, also appearing as prominent labial barring in most younger specimens (not seen in *D. viridicapite* sp. nov.).

D. boschmai has a light aqua green wash through the upper surface of the body and proximal dorsal patagia. The outer parts of the dorsal patagia is generally a medium greyish in colour, with about four semi-distinct whitish lines radiating out from the body as well as scrubbing of white over the intervening grey surfaces, these not being of any particular shape. In common with *D. timoriensis* the dark spots under the jaw join to form short broken lines, but not a *reticulatum*.

D. evandendi sp. nov. has a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia. This species has a dark blackish grey (not black) on the outer edges of the dorsal surface of the patagia (the outer half), light scrubbing over these areas and about five semi-distinct whitish lines radiating out from the body.

D. latebras sp. nov. has a medium grey to greyish brown upper surface of the patagia (without any green or yellow wash) on the outer half, without any distinct or semi-distinct lines radiating from the body; scrubbing are white or yellow and small in size and numerous on the upper surface of the patagia (versus large and less numerous in both *D. boschmai* and *D. timorensis*).

D. viridicapite sp. nov. has a lime green wash on the dorsal parts of the body, especially on the head and anterior upper body, as well as on the innermost parts of the dorsal patagia (wing membrane). In contrast with *D. lombokensis* sp. nov. and *D. boschmai* in particular, the light markings on the flanks of the dorsum are more prominent than the darker ones, versus the reverse in *D. lombokensis* sp. nov. and *D. boschmai*. In this species there is considerable yellow-white on the back of the head and upper surfaces of the neck.

D. sumbaensis sp. nov. has the dorsal surface of the fully extended patagia being mainly black in colour on the outer half, but faded somewhat as opposed to jet black, with minimal light scrubbing or marks over it, save for 4-5 well defined light lines radiating outwards from the body. The body itself is heavily infused light grey, with the darker brownish bands on the body also being particularly well defined as compared to the adjacent light greyish to greyish brown scales. Under the jaw is minimal black spotting or dark markings and what is present is at best usually only a few tiny black spots.

All the preceding species are separated from all other species of *Draco* Linnaeus, 1758 *sensu lato* by the following suite of characters: Nostril lateral, directed outwards; the adpressed hind limb reaches at the most slightly beyond the elbow of the adpressed fore limb; naked tympanum is smaller than the eye-opening or the same size; patagia usually black-spotted below. No large spine on the supraciliary, instead there only being a small subconical tubercle at the posterior corner of the orbit.

The species within the genus *Draco* Linnaeus, 1758 (*sensu lato*) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

D. lombokensis sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/65712877>
and

<https://www.inaturalist.org/observations/4937474>
and

<https://www.inaturalist.org/observations/106419516>

D. boschmai in life is depicted online at:
<https://www.inaturalist.org/observations/64282490>
and

<https://www.inaturalist.org/observations/20980350>

D. viridicapite sp. nov. in life is depicted online at:
<https://www.inaturalist.org/observations/65020785>
and

<https://www.inaturalist.org/observations/17663547>

D. sumbaensis sp. nov. in life is depicted online at:
<https://www.inaturalist.org/observations/51852580>
and

<https://www.inaturalist.org/observations/17663339>
and

<https://www.inaturalist.org/observations/102168973>

D. timoriensis in life is depicted online at:
<https://www.inaturalist.org/observations/124078423>
and

<https://www.inaturalist.org/observations/4586095>
and

<https://www.inaturalist.org/observations/4586134>

Distribution: *Draco lombokensis* sp. nov. is confined to the island of Lombok, Indonesia.

Etymology: *D. lombokensis* sp. nov. is named in reflection of the island it occurs on.

DRACO (DRACO) EVANDEDI SP. NOV.

LSIDurn:lsid:zoobank.org:act:A102771D-444A-4032-A8C9-610A6682D6AC

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number WAM REPT R98623 collected from Desa Batu Dulang, Sumbawa Island, West Nusa Tenggara, Indonesia, Latitude -8.583333 S., Longitude 117.288889 E.

This government-owned facility allows access to its holdings.

Diagnosis: Until now *Draco (Draco) evandedi* sp. nov. confined to the western part of the island of Sumbawa, Indonesia, west of Bangkulua has been treated as a population of either *D. volans* Linnaeus, 1758, type locality of Java, Indonesia or more recently as a population of *D. (Draco) boschmai* Henning, 1936, type locality of Maumere, central, northern Flores, Indonesia, (herein confined to the island of Flores, east of Bajawa and the nearby island of Lembata to the east) the species it is otherwise most closely related to.

Adult male *Draco (Draco) evandedi* sp. nov. are readily separated from all adult males of *D. boschmai*, *D. (Draco) latebras* sp. nov. from East Sumbawa and *D. (Draco) sumbaensis* sp. nov. from Sumba (all also previously treated as being *D. boschmai*) by having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane), versus aqua green in *D. boschmai* and whitish to light yellowish grey in *D. latebras* sp. nov. and *D. sumbaensis* sp. nov..

The closely related *D. (Draco) lombokensis* sp. nov. also with a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane), is separated from *D. evandedi* sp. nov. by having virtually jet black on the outer edges of the dorsal surface of the patagia, versus

mainly a dark blackish grey on the outer edges of the dorsal surface of the patagia in *D. evandendi* sp. nov.

D. lombokensis sp. nov. is further separated from all the preceding named species by the fact that the dark markings under the jaw are lines that join to form a reticulatum, this not seen in the other preceding named species.

The closely related *D. (Draco) viridicapite* sp. nov. from western Flores (and including specimens from nearby Komodo and Rinca), also having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane) is separated from *D. lombokensis* sp. nov. by having light markings on the flanks of the dorsum being more prominent than the darker ones, versus reverse in *D. lombokensis* sp. nov.

The closely related species, *D. volans* and *D. baliensis* sp. nov. are separated from all of *D. (Draco) boschmai* Henning, 1936 herein confined to most of Flores, except the far west and the island of Lembata, *D. (Draco) timoriensis* Kuhl, 1820 from Timor, nearby Roti, Pantar, Alor and Wetar, *D. (Draco) lombokensis* sp. nov. from Lombok, *D. (Draco) evandendi* sp. nov. from West Sumbawa, *D. (Draco) latebras* sp. nov. from East Sumbawa, *D. (Draco) viridicapite* sp. nov. from western Flores (and including specimens from nearby Komodo and Rinca) and *D. (Draco) sumbaensis* sp. nov. from Sumba by having a naked tympanum that is noticeably smaller than the eye-opening, versus one that is the same size as the eye opening.

The species, *D. (Draco) timoriensis* Kuhl, 1820 is separated from the other preceding species by having a series of strongly enlarged keeled scales along each side of the vertebral line, separated by a row of small smooth scales, as depicted online in the image at: <https://www.inaturalist.org/observations/99173421>.

The same feature is present in *D. sumbaensis* sp. nov. but not as pronounced.

D. timoriensis Kuhl, 1820 is also separated from all the preceding species by having deep yellow blotches, spots, markings or marbling on most of the dorsal surface of the fully extended patagia (inner and outer areas) and is a generally yellowish-brown lizard, the colouration being distinctively different from the other Lesser Sunda species. Under the throat are numerous large well defined and evenly spaced black dots.

D. evandendi sp. nov. from West Sumbawa is separated from the preceding species by the unique combination of having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane) and by having mainly a dark blackish grey on the outer edges of the dorsal surface of the patagia (versus virtually jet black in *D. lombokensis* sp. nov.).

The six species, *D. boschmai*, *D. lombokensis* sp. nov., *D. evandendi* sp. nov., *D. latebras* sp. nov., *D. viridicapite* sp. nov. and *D. sumbaensis* sp. nov., all until now treated as populations of *D. boschmai* are separated from one another by the following unique combinations of characters:

D. lombokensis sp. nov. has dark markings under the jaw that are lines that join to form a reticulation, this not seen in the other species. It also has a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia. The back of the head and upper surfaces of the neck have obvious scattered blackish spots, also appearing as prominent labial barring in most younger specimens (not seen in *D. viridicapite* sp. nov.).

D. boschmai has a light aqua green wash through the upper surface of the body and proximal dorsal patagia. The outer

parts of the dorsal patagia is generally a medium greyish in colour, with about four semi-distinct whitish lines radiating out from the body as well as scrubbing of white over the intervening grey surfaces, these not being of any particular shape. In common with *D. timoriensis* the dark spots under the jaw join to form short broken lines, but not a *reticulatum*.

D. evandendi sp. nov. has a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia. This species has a dark blackish grey (not black) on the outer edges of the dorsal surface of the patagia (the outer half), light scrubbing over these areas and about five semi-distinct whitish lines radiating out from the body.

D. latebras sp. nov. has a medium grey to greyish brown upper surface of the patagia (without any green or yellow wash) on the outer half, without any distinct or semi-distinct lines radiating from the body; scrubbing are white or yellow and small in size and numerous on the upper surface of the patagia (versus large and less numerous in both *D. boschmai* and *D. timorensis*).

D. viridicapite sp. nov. has a lime green wash on the dorsal parts of the body, especially on the head and anterior upper body, as well as on the innermost parts of the dorsal patagia (wing membrane). In contrast with *D. lombokensis* sp. nov. and *D. boschmai* in particular, the light markings on the flanks of the dorsum are more prominent than the darker ones, versus the reverse in *D. lombokensis* sp. nov. and *D. boschmai*. In this species there is considerable yellow-white on the back of the head and upper surfaces of the neck.

D. sumbaensis sp. nov. has the dorsal surface of the fully extended patagia being mainly black in colour on the outer half, but faded somewhat as opposed to jet black, with minimal light scrubbing or marks over it, save for 4-5 well defined light lines radiating outwards from the body. The body itself is heavily infused light grey, with the darker brownish bands on the body also being particularly well defined as compared to the adjacent light greyish to greyish brown scales. Under the jaw is minimal black spotting or dark markings and what is present is at best usually only a few tiny black spots.

All the preceding species are separated from all other species of *Draco* Linnaeus, 1758 *sensu lato* by the following suite of characters: Nostril lateral, directed outwards; the adpressed hind limb reaches at the most slightly beyond the elbow of the adpressed fore limb; naked tympanum is smaller than the eye-opening or the same size; patagia usually black-spotted below. No large spine on the supraciliary, instead there only being a small subconical tubercle at the posterior corner of the orbit.

The species within the genus *Draco* Linnaeus, 1758 (*sensu lato*) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

D. lombokensis sp. nov. in life is depicted online at: <https://www.inaturalist.org/observations/65712877>

and

<https://www.inaturalist.org/observations/4937474>

and

<https://www.inaturalist.org/observations/106419516>

D. boschmai in life is depicted online at:

<https://www.inaturalist.org/observations/64282490>

and

<https://www.inaturalist.org/observations/20980350>

D. viridicapite sp. nov. in life is depicted online at: <https://www.inaturalist.org/observations/65020785> and

<https://www.inaturalist.org/observations/17663547>
D. sumbaensis sp. nov. in life is depicted online at: <https://www.inaturalist.org/observations/51852580> and

<https://www.inaturalist.org/observations/17663339> and

<https://www.inaturalist.org/observations/102168973>

D. timoriensis in life is depicted online at: <https://www.inaturalist.org/observations/124078423> and

<https://www.inaturalist.org/observations/4586095> and

<https://www.inaturalist.org/observations/4586134>

Distribution: *Draco evandedi* sp. nov. is confined to the western part of the island of Sumbawa, Indonesia, west of Bangkulua, being an Indonesian endemic.

Etymology: *D. evandedi* sp. nov. is named in reflection of the Latin word "evadedi" which means evade or evading, as the lizard itself does physically by gliding and also in that until now it has generally escaped attention from taxonomists.

DRACO (DRACO) LATEBRAS SP. NOV.

LSIDDurn:lsid:zoobank.org:act:4423C056-8A5E-4654-8AA1-B6F4487F19CD

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number WAM REPT R98608 collected from Desa Daha, Sumbawa Island, West Nusa Tenggara, Indonesia, Latitude -8.75 S., Longitude 118.433333 E.

This government-owned facility allows access to its holdings.

Diagnosis: Until now *Draco (Draco) latebras* sp. nov. confined to the eastern part of the island of Sumbawa, Indonesia, east of Maci Beach has been treated as a population of either *D. volans* Linnaeus, 1758, type locality of Java, Indonesia or more recently as a population of *D. (Draco) boschmai* Henning, 1936, type locality of Maumere, central, northern Flores, Indonesia, (herein confined to the island of Flores, east of Bajawa and the nearby island of Lembata to the east) the species it is otherwise most closely related to.

Adult male *Draco (Draco) latebras* sp. nov. are readily separated from all adult males of *D. boschmai*, *D. (Draco) evandedi* sp. nov. from West Sumbawa, west of Bangkulua, *D. (Draco) viridicapite* sp. nov. from western Flores (and including specimens from nearby Komodo and Rinca) and *D. (Draco) sumbaensis* sp. nov. from Sumba (all also previously treated as being *D. boschmai*) by having a medium grey to greyish brown upper surface of the patagia (without any green or yellow wash) on the outer half, without any distinct or semi-distinct lines radiating from the body; scrubbing are white or yellow and small in size and numerous on the upper surface of the patagia (versus large and less numerous in both *D. boschmai* and *D. timorensis*).

Adult male *D. (Draco) evandedi* sp. nov. are separated from the geographically proximal *D. (Draco) latebras* sp. nov. by having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane), versus aqua green in *D. boschmai* and whitish to light yellowish grey in *D. latebras* sp. nov. and *D. sumbaensis* sp. nov..

The closely related *D. (Draco) lombokensis* sp. nov. also with a lime green wash on the dorsal parts of the body and inner

parts of the dorsal patagia (wing membrane), is separated from *D. evandedi* sp. nov. by having virtually jet black on the outer edges of the dorsal surface of the patagia, versus mainly a dark blackish grey on the outer edges of the dorsal surface of the patagia in *D. evandedi* sp. nov..

D. lombokensis sp. nov. is further separated from all the preceding named species by the fact that the dark markings under the jaw are lines that join to form a reticulatum, this not seen in the other preceding named species.

The closely related *D. (Draco) viridicapite* sp. nov. from western Flores (and including specimens from nearby Komodo and Rinca), also having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane) is separated from *D. lombokensis* sp. nov. by having light markings on the flanks of the dorsum being more prominent than the darker ones, versus reverse in *D. lombokensis* sp. nov..

The closely related species, *D. volans* and *D. baliensis* sp. nov. are separated from all of *D. (Draco) boschmai* Henning, 1936 herein confined to most of Flores and Lembata, *D. (Draco) timoriensis* Kuhl, 1820 from Timor, nearby Roti, Pantar, Alor and Wetar, *D. (Draco) lombokensis* sp. nov. from Lombok, *D. (Draco) evandedi* sp. nov. from West Sumbawa, *D. (Draco) latebras* sp. nov. from East Sumbawa, *D. (Draco) viridicapite* sp. nov. from western Flores (and including specimens from nearby Komodo and Rinca), and *D. (Draco) sumbaensis* sp. nov. from Sumba by having a naked tympanum that is noticeably smaller than the eye-opening, versus one that is the same size as the eye opening.

The species, *D. (Draco) timoriensis* Kuhl, 1820 is separated from the other preceding species by having a series of strongly enlarged keeled scales along each side of the vertebral line, separated by a row of small smooth scales, as depicted online in the image at: <https://www.inaturalist.org/observations/99173421>.

The same feature is present in *D. sumbaensis* sp. nov. but not as pronounced.

D. timoriensis Kuhl, 1820 is also separated from all the preceding species by having deep yellow blotches, spots, markings or marbling on most of the dorsal surface of the fully extended patagia (inner and outer areas) and is a generally yellowish-brown lizard, the colouration being distinctively different from the other Lesser Sunda species. Under the throat are numerous large well defined and evenly spaced black dots.

D. evandedi sp. nov. from West Sumbawa is separated from the preceding species by the unique combination of having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane) and by having mainly a dark blackish grey on the outer edges of the dorsal surface of the patagia (versus virtually jet black in *D. lombokensis* sp. nov.) as well as light scrubbing over these areas and about five semi-distinct whitish lines radiating out from the body.

The six species, *D. boschmai*, *D. lombokensis* sp. nov., *D. evandedi* sp. nov., *D. latebras* sp. nov., *D. viridicapite* sp. nov. and *D. sumbaensis* sp. nov., all until now treated as populations of *D. boschmai* are separated from one another by the following unique combinations of characters:

D. lombokensis sp. nov. has dark markings under the jaw that are lines that join to form a reticulation, this not seen in the other species. It also has a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia. The back of the head and upper surfaces of the neck have obvious scattered blackish spots, also appearing as prominent labial barring in most younger specimens (not

seen in *D. viridicapite sp. nov.*).

D. boschmai has a light aqua green wash through the upper surface of the body and proximal dorsal patagia. The outer parts of the dorsal patagia is generally a medium greyish in colour, with about four semi-distinct whitish lines radiating out from the body as well as scrubbing of white over the intervening grey surfaces, these not being of any particular shape. In common with *D. timoriensis* the dark spots under the jaw join to form short broken lines, but not a *reticulatum*.

D. evandendi sp. nov. has a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia. This species has a dark blackish grey (not black) on the outer edges of the dorsal surface of the patagia (the outer half), light scrubbing over these areas and about five semi-distinct whitish lines radiating out from the body.

D. latebras sp. nov. has a medium grey to greyish brown upper surface of the patagia (without any green or yellow wash) on the outer half, without any distinct or semi-distinct lines radiating from the body; scrubbing are white or yellow and small in size and numerous on the upper surface of the patagia (versus large and less numerous in both *D. boschmai* and *D. timorensis*).

D. viridicapite sp. nov. has a lime green wash on the dorsal parts of the body, especially on the head and anterior upper body, as well as on the innermost parts of the dorsal patagia (wing membrane). In contrast with *D. lombokensis sp. nov.* and *D. boschmai* in particular, the light markings on the flanks of the dorsum are more prominent than the darker ones, versus the reverse in *D. lombokensis sp. nov.* and *D. boschmai*. In this species there is considerable yellow-white on the back of the head and upper surfaces of the neck.

D. sumbaensis sp. nov. has the dorsal surface of the fully extended patagia being mainly black in colour on the outer half, but faded somewhat as opposed to jet black, with minimal light scrubbing or marks over it, save for 4-5 well defined light lines radiating outwards from the body. The body itself is heavily infused light grey, with the darker brownish bands on the body also being particularly well defined as compared to the adjacent light greyish to greyish brown scales. Under the jaw is minimal black spotting or dark markings and what is present is at best usually only a few tiny black spots.

All the preceding species are separated from all other species of *Draco* Linnaeus, 1758 *sensu lato* by the following suite of characters: Nostril lateral, directed outwards; the adpressed hind limb reaches at the most slightly beyond the elbow of the adpressed fore limb; naked tympanum is smaller than the eye-opening or the same size; patagia usually black-spotted below. No large spine on the supraciliary, instead there only being a small subconical tubercle at the posterior corner of the orbit.

The species within the genus *Draco* Linnaeus, 1758 (*sensu lato*) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

D. lombokensis sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/65712877>

and

<https://www.inaturalist.org/observations/4937474>

and

<https://www.inaturalist.org/observations/106419516>

D. boschmai in life is depicted online at:

<https://www.inaturalist.org/observations/64282490>
and

<https://www.inaturalist.org/observations/20980350>

D. viridicapite sp. nov. in life is depicted online at:
<https://www.inaturalist.org/observations/65020785>

and

<https://www.inaturalist.org/observations/17663547>

D. sumbaensis sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/51852580>

and

<https://www.inaturalist.org/observations/17663339>

and

<https://www.inaturalist.org/observations/102168973>

D. timoriensis in life is depicted online at:

<https://www.inaturalist.org/observations/124078423>

and

<https://www.inaturalist.org/observations/4586095>

and

<https://www.inaturalist.org/observations/4586134>

Distribution: *Draco latebras sp. nov.* is confined to the eastern part of the island of Sumbawa, Indonesia, east of Maci Beach, being an Indonesian endemic.

Etymology: *D. latebras sp. nov.* is named in reflection of the Latin word "latebras" which means hide or hiding, as the lizard itself does physically by way of camouflage and also in that until now it has generally hidden from attention by taxonomists.

DRACO (DRACO) VIRIDICAPITE SP. NOV.

LSIDurn:lsid:zoobank.org:act:7FB28765-97B9-49D1-B5F7-B09C6FB80482

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number WAM R104629 collected from Longko, Flores Island, East Nusa Tenggara, Indonesia, Latitude -8.583333 S., Longitude 120.5 E.

This government-owned facility allows access to its holdings.

Diagnosis: Until now *Draco (Draco) viridicapite sp. nov.* confined to the western end of the island of Flores, in an area north and west of Bajawa, as well as on nearby Komodo and Rinca islands to the immediate west, has been treated as a population of either *D. volans* Linnaeus, 1758, type locality of Java, Indonesia or more recently as a population of *D. (Draco) boschmai* Henning, 1936, type locality of Maumere, central, northern Flores, Indonesia, (herein confined to the island of Flores, east of Bajawa and the nearby island of Lembata to the east) the species it is otherwise most closely related to.

Adult male *D. viridicapite sp. nov.* have a strong lime green wash on the dorsal parts of the body, especially on the head and anterior upper body, as well as on the innermost parts of the dorsal patagia (wing membrane), this being faded significantly in Komodo Island specimens, which are generally much lighter and more brownish in general colouration. In contrast with *D. lombokensis sp. nov.* and *D. boschmai* in particular, the light markings on the flanks of the dorsum are more prominent than the darker ones (all populations), versus the reverse in *D. lombokensis sp. nov.* and *D. boschmai*. In this species (*D. viridicapite sp. nov.*) there is considerable yellow-white on the back of the head and upper surfaces of the neck.

Adult male *Draco (Draco) latebras sp. nov.*, confined to the geographically proximal eastern part of the island of Sumbawa, Indonesia, being found generally east of

Maci Beach) are readily separated from all adult males of *D. boschmai*, *D. (Draco) evandedi sp. nov.* from West Sumbawa, west of Bangkulua, *D. (Draco) viridicapite sp. nov.* from western Flores (and including specimens from nearby Komodo and Rinca) and *D. (Draco) sumbaensis sp. nov.* from Sumba (all also previously treated as being *D. boschmai*) by having a medium grey to greyish brown upper surface of the patagia (without any green or yellow wash) on the outer half, without any distinct or semi-distinct lines radiating from the body; scrubblings are white or yellow and small in size and numerous on the upper surface of the patagia (versus large and less numerous in both *D. boschmai* and *D. timorensis*).

Adult male *D. (Draco) evandedi sp. nov.* are separated from the geographically proximal *D. (Draco) latebras sp. nov.* by having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane), versus aqua green in *D. boschmai* and whitish to light yellowish grey in *D. latebras sp. nov.* and *D. sumbaensis sp. nov.*

The closely related *D. (Draco) lombokensis sp. nov.* also with a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane), is separated from *D. evandedi sp. nov.* by having virtually jet black on the outer edges of the dorsal surface of the patagia, versus mainly a dark blackish grey on the outer edges of the dorsal surface of the patagia in *D. evandedi sp. nov.*

D. lombokensis sp. nov. is further separated from all the preceding named species by the fact that the dark markings under the jaw are lines that join to form a reticulatum, this not seen in the other preceding named species.

The closely related *D. (Draco) viridicapite sp. nov.* from western Flores (and including specimens from nearby Komodo and Rinca), also having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane) is separated from *D. lombokensis sp. nov.* by having light markings on the flanks of the dorsum being more prominent than the darker ones, versus reverse in *D. lombokensis sp. nov.*

The closely related species, *D. volans* and *D. baliensis sp. nov.* are separated from all of *D. (Draco) boschmai* Henning, 1936 herein confined to most of Flores and Lembata, *D. (Draco) timoriensis* Kuhl, 1820 from Timor, nearby Roti, Pantar, Alor and Wetar, *D. (Draco) lombokensis sp. nov.* from Lombok, *D. (Draco) evandedi sp. nov.* from West Sumbawa, *D. (Draco) latebras sp. nov.* from East Sumbawa, *D. (Draco) viridicapite sp. nov.* from western Flores (and including specimens from nearby Komodo and Rinca), and *D. (Draco) sumbaensis sp. nov.* from Sumba by having a naked tympanum that is noticeably smaller than the eye-opening, versus one that is the same size as the eye opening.

The species, *D. (Draco) timoriensis* Kuhl, 1820 is separated from the other preceding species by having a series of strongly enlarged keeled scales along each side of the vertebral line, separated by a row of small smooth scales, as depicted online in the image at: <https://www.inaturalist.org/observations/99173421>.

The same feature is present in *D. sumbaensis sp. nov.* but not as pronounced.

D. timoriensis Kuhl, 1820 is also separated from all the preceding species by having deep yellow blotches, spots, markings or marbling on most of the dorsal surface of the fully extended patagia (inner and outer areas) and is a generally yellowish-brown lizard, the colouration being distinctively different from the other Lesser Sunda species. Under the throat are numerous large well defined and evenly spaced black dots.

D. evandedi sp. nov. from West Sumbawa is separated from the preceding species by the unique combination of having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane) and by having mainly a dark blackish grey on the outer edges of the dorsal surface of the patagia (versus virtually jet black in *D. lombokensis sp. nov.*) as well as light scrubblings over these areas and about five semi-distinct whitish lines radiating out from the body.

The six species, *D. boschmai*, *D. lombokensis sp. nov.*, *D. evandedi sp. nov.*, *D. latebras sp. nov.*, *D. viridicapite sp. nov.* and *D. sumbaensis sp. nov.*, all until now treated as populations of *D. boschmai* are separated from one another by the following unique combinations of characters:

D. lombokensis sp. nov. has dark markings under the jaw that are lines that join to form a reticulatum, this not seen in the other species. It also has a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia. The back of the head and upper surfaces of the neck have obvious scattered blackish spots, also appearing as prominent labial barring in most younger specimens (not seen in *D. viridicapite sp. nov.*).

D. boschmai has a light aqua green wash through the upper surface of the body and proximal dorsal patagia. The outer parts of the dorsal patagia is generally a medium greyish in colour, with about four semi-distinct whitish lines radiating out from the body as well as scrubbing of white over the intervening grey surfaces, these not being of any particular shape. In common with *D. timoriensis* the dark spots under the jaw join to form short broken lines, but not a *reticulatum*.

D. evandedi sp. nov. has a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia. This species has a dark blackish grey (not black) on the outer edges of the dorsal surface of the patagia (the outer half), light scrubblings over these areas and about five semi-distinct whitish lines radiating out from the body.

D. latebras sp. nov. has a medium grey to greyish brown upper surface of the patagia (without any green or yellow wash) on the outer half, without any distinct or semi-distinct lines radiating from the body; scrubblings are white or yellow and small in size and numerous on the upper surface of the patagia (versus large and less numerous in both *D. boschmai* and *D. timorensis*).

D. viridicapite sp. nov. has a lime green wash on the dorsal parts of the body, especially on the head and anterior upper body, as well as on the innermost parts of the dorsal patagia (wing membrane). In contrast with *D. lombokensis sp. nov.* and *D. boschmai* in particular, the light markings on the flanks of the dorsum are more prominent than the darker ones, versus the reverse in *D. lombokensis sp. nov.* and *D. boschmai*. In this species there is considerable yellow-white on the back of the head and upper surfaces of the neck.

D. sumbaensis sp. nov. has the dorsal surface of the fully extended patagia being mainly black in colour on the outer half, but faded somewhat as opposed to jet black, with minimal light scrubblings or marks over it, save for 4-5 well defined light lines radiating outwards from the body. The body itself is heavily infused light grey, with the darker brownish bands on the body also being particularly well defined as compared to the adjacent light greyish to greyish brown scales. Under the jaw is minimal black spotting or dark markings and what is present is at best usually only a few tiny black spots.

All the preceding species are separated from all other species of *Draco* Linnaeus, 1758 *sensu lato* by the following suite of characters: Nostril lateral, directed outwards; the

addressed hind limb reaches at the most slightly beyond the elbow of the addressed fore limb; naked tympanum is smaller than the eye-opening or the same size; patagia usually black-spotted below. No large spine on the supraciliary, instead there only being a small subconical tubercle at the posterior corner of the orbit.

The species within the genus *Draco* Linnaeus, 1758 (*sensu lato*) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

D. lombokensis sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/65712877>

and

<https://www.inaturalist.org/observations/4937474>

and

<https://www.inaturalist.org/observations/106419516>

D. boschmai in life is depicted online at:

<https://www.inaturalist.org/observations/64282490>

and

<https://www.inaturalist.org/observations/20980350>

D. viridicapite sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/65020785>

and

<https://www.inaturalist.org/observations/17663547>

D. sumbaensis sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/51852580>

and

<https://www.inaturalist.org/observations/17663339>

and

<https://www.inaturalist.org/observations/102168973>

D. timoriensis in life is depicted online at:

<https://www.inaturalist.org/observations/124078423>

and

<https://www.inaturalist.org/observations/4586095>

and

<https://www.inaturalist.org/observations/4586134>

Distribution: *Draco viridicapite* sp. nov. is confined to the western end of the island of Flores, in an area north and west of Bajawa, as well as on nearby Komodo and Rinca islands to the immediate west, being an Indonesian endemic.

Etymology: *D. viridicapite* sp. nov. is named in reflection of the Latin words "viridi capite" which means green head, being an apt description of many specimens of this species, in particular young adults.

DRACO (DRACO) SUMBAENSIS SP. NOV.

LSIDurn:lsid:zoobank.org:act:16FFEE2E-8626-4F99-AA91-F449D807364B

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number WAM R101734 collected from Waeelonda, Sumba Island, East Nusa Tenggara, Indonesia, Latitude -9.433333 S., Longitude 119.35 E.

This government-owned facility allows access to its holdings.

Paratypes: Thirteen preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen numbers WAM R101714, R101733, R101735, R101736, R101737, R101738, R101739, R101740, R101741, R101742, R101743, R101744 and R101853 all collected from Waeelonda, Sumba Island, East Nusa

Tenggara, Indonesia, Latitude -9.433333 S., Longitude 119.35 E.

Diagnosis: Until now *Draco (Draco) sumbaensis* sp. nov. confined to Sumba Island, Indonesia, has been treated as a population of either *D. volans* Linnaeus, 1758, type locality of Java, Indonesia or more recently either as a population of *D. (Draco) timoriensis* Kuhl, 1820, type locality of Timor or *D. (Draco) boschmai* Henning, 1936, type locality of Maumere, central, northern Flores, Indonesia, (herein confined to the island of Flores, east of Bajawa and the nearby island of Lembata to the east) the species it is otherwise most closely related to.

Adult male *Draco (Draco) sumbaensis* sp. nov. are readily separated from all adult males of *D. boschmai*, *D. (Draco) evandedi* sp. nov. from West Sumbawa, west of Bangkulua, *D. (Draco) latebras* sp. nov. from East Sumbawa, east of Maci Beach, *D. (Draco) viridicapite* sp. nov. from western Flores (and including specimens from nearby Komodo and Rinca) (all also previously treated as being *D. boschmai*) and *D. (Draco) timoriensis* from Timor, nearby Roti, Pantar, Alor and Wetar by having the dorsal surface of the fully extended patagia being mainly black in colour on the outer half, but faded somewhat as opposed to jet black, with minimal light scrubblings or marks over it, save for 4-5 well defined light lines radiating outwards from the body. The body itself is heavily infused light grey, with the darker brownish bands on the body also being particularly well defined as compared to the adjacent light greyish to greyish brown scales. Under the jaw is minimal black spotting or dark markings and what is present is at best usually only a few tiny black spots.

Adult male *Draco (Draco) latebras* sp. nov. are readily separated from all adult males of *D. boschmai*, *D. (Draco) evandedi* sp. nov. from West Sumbawa, west of Bangkulua and *D. (Draco) sumbaensis* sp. nov. from Sumba (all also previously treated as being *D. boschmai*) by having a medium grey to greyish brown upper surface of the patagia (without any green or yellow wash) on the outer half, without any distinct or semi-distinct lines radiating from the body; scrubblings are white or yellow and small in size and numerous on the upper surface of the patagia (versus large and less numerous in both *D. boschmai* and *D. timorensis*).

Adult male *D. (Draco) evandedi* sp. nov. are separated from the geographically proximal *D. (Draco) latebras* sp. nov. by having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane), versus aqua green in *D. boschmai* and whitish to light yellowish grey in *D. latebras* sp. nov. and *D. sumbaensis* sp. nov..

The closely related *D. (Draco) lombokensis* sp. nov. also with a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane), is separated from *D. evandedi* sp. nov. (and for that matter *D. sumbaensis* sp. nov.) by having virtually jet black on the outer edges of the dorsal surface of the patagia, versus mainly a dark blackish grey on the outer edges of the dorsal surface of the patagia in *D. evandedi* sp. nov..

The closely related *D. (Draco) viridicapite* sp. nov. from western Flores (and including specimens from nearby Komodo and Rinca), also having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane) is separated from *D. lombokensis* sp. nov. by having light markings on the flanks of the dorsum being more prominent than the darker ones, versus reverse in *D. lombokensis* sp. nov..

D. lombokensis sp. nov. is further separated from all the preceding named species by the fact that the dark markings under the jaw are lines that join to form a reticulatum, this not

seen in the other preceding named species.

The closely related species, *D. volans* and *D. baliensis* sp. nov. are separated from all of *D. (Draco) boschmai* Henning, 1936 herein confined to most of Flores and Lembata to the east, *D. (Draco) timoriensis* Kuhl, 1820 from Timor, nearby Roti, Pantar, Alor and Wetar, *D. (Draco) lombokensis* sp. nov. from Lombok, *D. (Draco) evandendi* sp. nov. from West Sumbawa, *D. (Draco) latebras* sp. nov. from East Sumbawa, *D. (Draco) viridicapite* sp. nov. from western Flores (and including specimens from nearby Komodo and Rinca) and *D. (Draco) sumbaensis* sp. nov. from Sumba by having a naked tympanum that is noticeably smaller than the eye-opening, versus one that is the same size as the eye opening.

The species, *D. (Draco) timoriensis* Kuhl, 1820 is separated from the other preceding species by having a series of strongly enlarged keeled scales along each side of the vertebral line, separated by a row of small smooth scales, as depicted online in the image at: <https://www.inaturalist.org/observations/99173421>.

The same feature is present in *D. sumbaensis* sp. nov. but not as pronounced.

D. timoriensis Kuhl, 1820 is also separated from all the preceding species by having deep yellow blotches, spots, markings or marbling on most of the dorsal surface of the fully extended patagia (inner and outer areas) and is a generally yellowish-brown lizard, the colouration being distinctively different from the other Lesser Sunda species. Under the throat are numerous large well defined and evenly spaced black dots.

D. (Draco) evandendi sp. nov. from West Sumbawa is separated from the preceding species by the unique combination of having a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia (wing membrane) and by having mainly a dark blackish grey on the outer edges of the dorsal surface of the patagia (versus virtually jet black in *D. lombokensis* sp. nov.) as well as light scubbings over these areas and about five semi-distinct whitish lines radiating out from the body.

The six species, *D. boschmai*, *D. lombokensis* sp. nov., *D. evandendi* sp. nov., *D. latebras* sp. nov., *D. viridicapite* sp. nov. and *D. sumbaensis* sp. nov., all until now treated as populations of *D. boschmai* are separated from one another by the following unique combinations of characters:

D. lombokensis sp. nov. has dark markings under the jaw that are lines that join to form a reticulation, this not seen in the other species. It also has a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia. The back of the head and upper surfaces of the neck have obvious scattered blackish spots, also appearing as prominent labial barring in most younger specimens (not seen in *D. viridicapite* sp. nov.).

D. boschmai has a light aqua green wash through the upper surface of the body and proximal dorsal patagia. The outer parts of the dorsal patagia is generally a medium greyish in colour, with about four semi-distinct whitish lines radiating out from the body as well as scubbing of white over the intervening grey surfaces, these not being of any particular shape. In common with *D. timoriensis* the dark spots under the jaw join to form short broken lines, but not a *reticulatum*.

D. evandendi sp. nov. has a lime green wash on the dorsal parts of the body and inner parts of the dorsal patagia. This species has a dark blackish grey (not black) on the outer edges of the dorsal surface of the patagia (the outer half), light scubbings over these areas and about five semi-distinct whitish lines radiating out from the body.

D. latebras sp. nov. has a medium grey to greyish brown upper surface of the patagia (without any green or yellow wash) on the outer half, without any distinct or semi-distinct lines radiating from the body; scubbings are white or yellow and small in size and numerous on the upper surface of the patagia (versus large and less numerous in both *D. boschmai* and *D. timorensis*).

D. viridicapite sp. nov. has a lime green wash on the dorsal parts of the body, especially on the head and anterior upper body, as well as on the innermost parts of the dorsal patagia (wing membrane). In contrast with *D. lombokensis* sp. nov. and *D. boschmai* in particular, the light markings on the flanks of the dorsum are more prominent than the darker ones, versus the reverse in *D. lombokensis* sp. nov. and *D. boschmai*. In this species there is considerable yellow-white on the back of the head and upper surfaces of the neck.

D. sumbaensis sp. nov. has the dorsal surface of the fully extended patagia being mainly black in colour on the outer half, but faded somewhat as opposed to jet black, with minimal light scubbings or marks over it, save for 4-5 well defined light lines radiating outwards from the body. The body itself is heavily infused light grey, with the darker brownish bands on the body also being particularly well defined as compared to the adjacent light greyish to greyish brown scales. Under the jaw is minimal black spotting or dark markings and what is present is at best usually only a few tiny black spots.

All the preceding species are separated from all other species of *Draco* Linnaeus, 1758 *sensu lato* by the following suite of characters: Nostril lateral, directed outwards; the adpressed hind limb reaches at the most slightly beyond the elbow of the adpressed fore limb; naked tympanum is smaller than the eye-opening or the same size; patagia usually black-spotted below. No large spine on the supraciliary, instead there only being a small subconical tubercle at the posterior corner of the orbit.

The species within the genus *Draco* Linnaeus, 1758 (*sensu lato*) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

D. lombokensis sp. nov. in life is depicted online at: <https://www.inaturalist.org/observations/65712877>

and

<https://www.inaturalist.org/observations/4937474>

and

<https://www.inaturalist.org/observations/106419516>

D. boschmai in life is depicted online at:

<https://www.inaturalist.org/observations/64282490>

and

<https://www.inaturalist.org/observations/20980350>

D. viridicapite sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/65020785>

and

<https://www.inaturalist.org/observations/17663547>

D. sumbaensis sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/51852580>

and

<https://www.inaturalist.org/observations/17663339>

and

<https://www.inaturalist.org/observations/102168973>

D. timoriensis in life is depicted online at:
<https://www.inaturalist.org/observations/124078423>
 and
<https://www.inaturalist.org/observations/4586095>
 and
<https://www.inaturalist.org/observations/4586134>

Distribution: *Draco sumbaensis* sp. nov. is confined to the island of Sumba, Indonesia.

Etymology: *D. sumbaensis* sp. nov. is named in reflection of the island it occurs on.

DRACO (DRACO) HOSERAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:14EB8C31-04F6-4D31-AB70-FFB6B210B2A3

Holotype: A preserved adult female specimen at the National Museum of Natural History, Smithsonian Institution, Washington, DC, USA, specimen number USNM 318329, collected from Naga City, 4 km north and 18 km east of Mount Isarong, Camarines Sur Province, Luzon Island, The Philippines at 475 m elevation.

This facility allows access to its holdings.

Paratypes: 12 preserved specimens at the Texas Natural History Collections at the University of Texas at Austin, Texas, USA, specimen numbers TNHC 55097, 55100, 55102, 55103, 55104, 55105, 55106, 57754, 57755, 57756, 62791, 62792, all collected in Sorsogon Province, Luzon Island, The Philippines.

Diagnosis: Until now, the Philippines endemic species *Draco* (*Draco*) *hoserae* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco) wellsi* sp. nov. from Negros and Panay Islands, *D. (Draco) wellingtoni* sp. nov. from Siquijor Island, *D. (Draco) hawkeswoodi* sp. nov. from Cebu Island and *D. (Draco) wolffi* sp. nov. from Tablas Island have all been treated as populations of putative *D. (Draco) spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa, although a number of earlier authors have suggested that one or more of the preceding named species were in fact separate species.

The six morphologically similar species can be separated from one another as follows:

D. spilopterus has a dorsum in adult males that has four semi-distinct darker cross bands on the dorsum of the body between the fore and hind limbs, that extend across the top and down onto the flanks and having a dorsal patagia (wing membrane) pattern that is mainly yellow, with numerous small semi-distinctly edged dark brown spots, with dark blackish smudging on the outer edge that does not have any well defined lines running through it. The lower surface of the patagia is similar to the upper, with the spotting still reasonably well defined and only a tiny amount of black smudging on the outer edge. The dewlap is dark green with a strong yellow at the distal part. Upper surfaces of the limbs are heavily banded dark, these being moderately thick and well-defined, the lighter interspaces being a middle-green colour. Scales around the eye have a yellowish tinge.

D. hoserae sp. nov. is similar in most respects to *D. spilopterus* as just described, but is readily separated from that species by having darker cross bands reduced to spots along the mid dorsal line or adjacent and not extending onto the flanks as is the case in *D. spilopterus*. Banding on the upper limbs is reduced to become incomplete, reduced in intensity or alternatively in the form of spots and triangles. Scales around the eye have a yellowish tinge.

D. wellsi sp. nov. is readily separated from the two preceding

species by having spotting on the upper surface of the patagia reduced in terms of the size of the spots, these are now small to tiny, reduced in density so there are less on the patagia and their intensity is reduced so that they are only semi-distinct. The outer edge of the patagia has a lot of dark smudging, through which are three to four, light yellowish-brown wavy lines that pierce it.

The lower surface of the patagia (ventral side) has a generally greyish-yellow-brown colour with spotting so reduced in intensity that it is barely discernable from the similar background colour. While the dorsum is of similar pattern to *D. spilopterus* as in bands extending onto the flanks, these too are blurred in outline, on an otherwise greenish-yellow body. Upper surfaces of the limbs are either unbanded or the bands on the anterior limbs are faint and barely noticeable. The dewlap is lime green near the jawline, becoming whitish, rather than yellow at the distal parts. Scales around the eye have a yellowish tinge.

D. wellingtoni sp. nov. is readily separated from the three preceding species by having an upper surface of the patagia that has a coral-like pattern caused by the dark spotting being surrounded by semi-defined whitish outlines. This pattern is continuous from the body to the outer edge of the patagia and there is no obvious black smudging on the edges. The ventral surface of the patagia is generally yellowish-green but with a series of about 6-10 irregularly shaped spots on the far outer edge. Scales around the eye have an orangeish tinge.

Banding on the upper surface of the limbs is semi-distinct. The dewlap is greenish brown near the jaw and becomes light green to white at the distal parts.

D. hawkeswoodi sp. nov. is readily separated from the four preceding species by its generally chocolate brown body colour, with obvious white markings running down the back, including a dark brown iris. Females are similar in form but greyish. The dewlap in the male is peppered greyish brown near the jaw and becoming white at the distal parts. Most of the upper surfaces of the limbs are dark brown with two to three irregularly shaped narrow lighter brown bands that are only semi-distinct. Scales around the eye have a brown tinge and form a well defined ring with much darker brown scales outside of this ring. In females there is no such well-defined ring around the eye.

D. wolffi sp. nov. is readily separated from the five preceding species in that the upper surface of the patagia is similar in colour to that of the type form (type subspecies) of *D. spilopterus* but differs from this (and all other species and subspecies) in that the darker spots are of irregular shape, rather than generally circular or oval, and some of these join to give spots of an even more irregular shape.

The dark of the outer edges is configured in the three patches in which there are light triangular intrusions from the inner side, which either do not reach the outer edge, where it remains dark, or barely does so, this arrangement being in contrast to (and analogous to) the lines running through this section of the patagia in some of the other species. The dorsum of the body is generally brownish in colour as opposed to strongly green or yellow in other species including in type *D. spilopterus*.

The ventral surface of the patagia is mainly a dull green colour, with barely distinct spots of similar colour to the rest. The sides of the venter of the body at the anterior end are moderately peppered grey.

The upper surface of the patagia on the female is mainly dark brown all over, with a semi-circular arrangement of mainly merged orange dots forming about five radiated

lines (anterior to posterior), each running across the body, on which they actually disappear. This dark brown tends to blackish on the outer edges.

The ventral surface of the patagia is mainly a dull green colour, with apparently randomly arranged dark aqua smudges near the outer edge, over which are wavy dull yellow lines radiating from the body outwards, these lines in the main being continuous and formed from tightly spaced and merged dots of somewhat irregular shape.

The sides of the venter of the body at the anterior end are moderately peppered grey.

In both sexes the banding on the body is moderately distinct and alternates light tan and medium to dark brown, the outer edges of the darker banding being triangular in shape, the points facing outwards, at both anterior and posterior edges as one runs down the median line. Banding on the upper surfaces of the legs is semi-distinct as the contrast between darker and lighter is not great.

Around the eye, there is a close ring that is reddish brown and well defined, followed by a larger blackish ring, also well defined beyond which are dark, light and reddish brown markings on nearby parts of the head.

In both sexes, the iris is a dark grey colour.

The subspecies *D. spilopterus polilloensis subsp. nov.* is separated from the nominate subspecies by *D. spilopterus spilopterus subsp. nov.* by having a reddish tinge to the body and poorly defined markings, if any on the upper surfaces of the limbs. The dewlap is mainly yellow all over, rather than mainly green at the parts near the jaw and is also white at the most distal point.

The morphologically similar and closely related species *D. quadrasii* Boettger, 1893 from the island of Sibuyon, *D. spadix sp. nov.* from Mindoro Island, and *D. romblonensis sp. nov.* from Romblon Island are separated from the preceding six species by 1/ Having a dorsal surface of the patagia that is either yellow to orange all over or with markings so faded as to not be noticeable; 2/ There is a region on the outer edge of the patagia that is black with wave-like markings running across the lateral fringe; 3/ Underneath the patagia is mainly yellow, except for the greyish outer edges; 4/ Markings on the head are strongly contrasting; 5/ The tympanum is also scaled over in these three species, versus not so in the previously grouped species; 6/ A strongly yellow dewlap in the lower or distal parts.

D. spadix sp. nov. is separated from *D. quadrasii* by having a dewlap that is yellow all over, versus pink and then green anteriorly in *D. quadrasii*, as well as having prominent white markings on the upper surfaces of the forelimbs.

There is a dark brown border around the eye instead of a yellow one.

D. romblonensis sp. nov. is separated from the two preceding species by the following characters:

Most of the dorsal surface of the patagia is a dull brown in colour overlain with numerous moderate-sized orange-yellow spots poorly defined and looking more like smudges, giving the general appearance of a light orange-brown colour with ill-defined markings. The outer part is blackish, through which about three thick beige lines of fairly even width run though to the outer edge. Ventrally the patagi is dull dark brown and with numerous evenly scattered elongate yellow dashes (elongate spots) of small size, arranged in about 17-22 lines.

The dorsum is light brown to beige, the darker bands on the body being expanded so that the lighter interspaces are in the form of fairly thin lines only, versus being of similar size to the darker ones in most other species.

The iris is bright orange and around the eye is a poorly defined thin ring of dark chocolate brown, beyond which the nearby parts of the head are beige in colour with extensive dark brown peppering, at times merging to form darker areas or blotches.

Venter is whitish and with significant dark purplish brown peppering, being most prominent both anteriorly and near the flanks.

The dewlap is light yellow all over.

All the preceding species are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the following unique suite of characters (in adult males):

Lacrimal bone absent; nostrils oriented laterally on snout; patagia not bright red, but is bright yellow, with or without scattered brown spots; six or more ribs supporting patagium; dorsal patagium with or without melanic marginal patch but lacking distinct white spots (as seen in *D. (Draco) ornatus* (Gray, 1845) outlined below); dewlap large, triangular, mainly yellow or white in color; dewlap and ventral surfaces of throat lappets are not tangerine orange; there is no melanic postrectal ocellus enclosing a white tubercle; there is no enlarged, thornlike supraciliary scale; tympanum may or may not be scaled over.

In terms of adult females, they are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the same as for the males (described above) except that if present, the small dewlap is unmarked or speckled, not black and the dorsal surface of the patagia is black or dark brown with pale cream striations or pale cream marbling (both the preceding definitions modified from McGuire and Alcalá 2000).

The morphologically similar species *D. (Draco) ornatus* (Gray, 1845) is readily separated from all the preceding species by having well defined white spots on the side of the head, especially around the eye, similar well defined spots arranged in bands across the upper surface of body at the anterior edge of the darker cross bands, which are on average slightly narrower than the lighter interspaces, as well as about six smallish randomly arranged white spots on the darker blackish outer edge of the patagia (dorsal side).

The upper surface of the patagia is mainly an orange red colour in the nominate form found in most of the range for the species, or a dull yellow colour in *D. ornatus boholensis subsp. nov.*, heavily infused with well defined black spots, as well as with or without significant black smudging on the posterior half to two thirds.

Ventrally the defining feature of the patagia is on the outer edge, where pigment is blackish, within which are about six well-defined white spots. In nominate *D. ornatus ornatus* the ventral surface of the patagia closer to the body is yellowish brown anteriorly and orange posteriorly, heavily marked with darker brownish flecks, versus similar in *D. ornatus boholensis subsp. nov.* but without the heavy darker brownish flecks, instead having a more immaculate colouration and appearance.

The dewlap is reddish-brown anteriorly, and then mainly green and heavily spotted dark brown or black. Only the lower tip is yellowish in colour. Banding on limbs is well defined due to the good contrast between dark and light interspaces.

Iris is grey and there is a well-defined marone (purplish-red) ring around the eye.

The tympanum is scaled over.

The type form of *Draco spilopterus* from central Philippines

is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Luzon island*" and in life online at: <https://www.flickr.com/photos/paulbourdin/4611421064/> and <https://www.flickr.com/photos/40928097@N07/40502700783/> and <https://www.inaturalist.org/observations/32740260> and <https://www.inaturalist.org/observations/32624603> and <https://www.inaturalist.org/observations/32087765> *D. hoserae sp. nov.* from the Bicol Peninsula region in Southern Luzon is depicted in life online at: <https://www.inaturalist.org/observations/125620521> and <https://www.inaturalist.org/observations/104557480> *D. wellsi sp. nov.* from Panay and Negros Islands is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Panay island*" and in life online at: <https://www.inaturalist.org/observations/21099756> and <https://www.inaturalist.org/observations/57761> and also (dead) at: https://www.reddit.com/r/herpetology/comments/fbt5om/too_bad_i_wasnt_able_to_see_it_alive_ive_only/ *D. wellingtoni sp. nov.* from Siquijor Island is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Siquijor island*". *D. hawkswoodi sp. nov.* (both sexes) are depicted in life in Supsup *et al.* (2016) in Figs 18 and 19 and one of these images is online at: https://www.researchgate.net/figure/Draco-spilopterus-male-from-Mt-Lantoy-Photo-by-Puna-N_fig11_308632387 That paper uses incorrect nomenclature for the Reticulated Python *Brogghammerus reticulatus* Schneider, 1801. The illegally coined genus name "*Malayopython*" is an unavailable junior synonym of the ICZN name *Brogghammerus* Hoser, 2014. The later name "*Malayopython*" also wasn't published by Reynolds *et al.* (2013a, 2013b, 2014) correctly according to Article 8 of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) (The Code), because the original online paper was published in three different versions on different websites and the The Code requires all relevant copies of the publication to be "identical". For full details refer to Hoser (2015d) pp. 10-13. *D. wolffi sp. nov.* in life is depicted in Siler *et al.* (2012) on page 451 (Fig. 14, A, B, C) and page 452 (Fig. 15). *D. quadrasii* Boettger, 1893 from the island of Sibuyon is depicted in life in Siler *et al.* (2012) on pages 450 (bottom right) and 451 (Fig. 13 C and D) and online at: <https://www.inaturalist.org/observations/53942104> and <https://www.inaturalist.org/observations/50414374> *D. spadix sp. nov.* is depicted online at: <https://reptile-database.reptarium.cz/species?genus=Draco&species=quadrasii> *D. romblonensis sp. nov.* is depicted in life in Siler *et al.* (2012) on page 451 (Fig 13 A and B). *D. (Draco) ornatus* (Gray, 1845) of the type form in life is published online at: https://www.researchgate.net/figure/Draco-ornatus-has-been-recorded-only-from-Dinagat-Island-and-Agusan-del-Norte-Province_fig28_309224699

The colouration of the Bohol Island subspecies *D. ornatus boholensis subsp. nov.* is depicted in McGuire and Alcalá (2000) on page 92 as "*Draco ornatus*".

Distribution: *Draco (Draco) hoserae sp. nov.* is found in the southern parts of Luzon Island, south and east of the flat areas around Gumaoa. *D. (Draco) spilopterus* (Wiegmann, 1834), is herein confined to Luzon Island north and west of the flat areas around Gumaoa, being an area *Draco* of either preceding species do not appear to be found.

Etymology: *Draco (Draco) hoserae sp. nov.* is named in honour of my mother, Katrina Joan Hoser of Lane Cove, NSW, Australia in recognition of her services to herpetology over many decades.

DRACO (DRACO) WELLSI SP. NOV.

LSIDurn:lsid:zoobank.org:act:2E5977E8-55CA-4A6A-AF5D-6C0FF4FE8F67

Holotype: A preserved specimen at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen number CAS SUR 17968 collected from 1-1.5 km west of Valencia, on the north side of the Maite River, at an elevation of about 800-900 feet in the Negros Oriental Province, Negros Island, Philippines.

This facility allows access to its holdings.

Paratypes: 1/ Nine preserved specimens at the California Academy of Sciences, San Francisco, California, USA, Herpetology Collection, specimen numbers 17962, 17963, 17967, 17969, 17970, 17971, 92865, 92868, 92873 all collected from Negros Island, Philippines. 2/ 27 preserved specimens at the Smithsonian Institution, National Museum of Natural History, Washington DC, USA, specimen numbers USNM 78158, 209380, 209381, 228314, 228315, 228316, 228317, 229588, 305936-54 all collected from Negros Island, Philippines.

Diagnosis: Until now, the Philippines endemic species *Draco (Draco) wellsi sp. nov.* from Negros and Panay Islands, *D. (Draco) hoserae sp. nov.* from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco) wellingtoni sp. nov.* from Siquijor Island, *D. (Draco) hawkswoodi sp. nov.* from Cebu Island and *D. (Draco) wolffi sp. nov.* from Tablas Island have all been treated as populations of putative *D. (Draco) spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa, although a number of earlier authors have suggested that one or more of the preceding named species were in fact separate species.

The six morphologically similar species can be separated from one another as follows:

D. spilopterus has a dorsum in adult males that has four semi-distinct darker cross bands on the dorsum of the body between the fore and hind limbs, that extend across the top and down onto the flanks and having a dorsal patagia (wing membrane) pattern that is mainly yellow, with numerous small semi-distinctly edged dark brown spots, with dark blackish smudging on the outer edge that does not have any well defined lines running through it. The lower surface of the patagia is similar to the upper, with the spotting still reasonably well defined and only a tiny amount of black smudging on the outer edge. The dewlap is dark green with a strong yellow at the distal part. Upper surfaces of the limbs are heavily banded dark, these being moderately thick and well-defined, the lighter interspaces being a middle-green colour. Scales around the eye have a yellowish tinge.

D. hoserae sp. nov. is similar in most respects to *D. spilopterus* as just described, but is readily separated from that species by having darker cross bands reduced to spots

along the mid dorsal line or adjacent and not extending onto the flanks as is the case in *D. spilopterus*. Banding on the upper limbs is reduced to become incomplete, reduced in intensity or alternatively in the form of spots and triangles. Scales around the eye have a yellowish tinge.

D. wellsii sp. nov. is readily separated from the two preceding species by having spotting on the upper surface of the patagia reduced in terms of the size of the spots, these are now small to tiny, reduced in density so there are less on the patagia and their intensity is reduced so that they are only semi-distinct. The outer edge of the patagia has a lot of dark smudging, through which are three to four, light yellowish-brown wavy lines that pierce it.

The lower surface of the patagia (ventral side) has a generally greyish-yellow-brown colour with spotting so reduced in intensity that it is barely discernable from the similar background colour. While the dorsum is of similar pattern to *D. spilopterus* as in bands extending onto the flanks, these too are blurred in outline, on an otherwise greenish-yellow body. Upper surfaces of the limbs are either unbanded or the bands on the anterior limbs are faint and barely noticeable. The dewlap is lime green near the jawline, becoming whitish, rather than yellow at the distal parts. Scales around the eye have a yellowish tinge.

D. wellingtoni sp. nov. is readily separated from the three preceding species by having an upper surface of the patagia that has a coral-like pattern caused by the dark spotting being surrounded by semi-defined whitish outlines. This pattern is continuous from the body to the outer edge of the patagia and there is no obvious black smudging on the edges. The ventral surface of the patagia is generally yellowish-green but with a series of about 6-10 irregularly shaped spots on the far outer edge. Scales around the eye have an orangeish tinge.

Banding on the upper surface of the limbs is semi-distinct. The dewlap is greenish brown near the jaw and becomes light green to white at the distal parts.

D. hawkeswoodi sp. nov. is readily separated from the four preceding species by its generally chocolate brown body colour, with obvious white markings running down the back, including a dark brown iris. Females are similar in form but greyish. The dewlap in the male is peppered greyish brown near the jaw and becoming white at the distal parts. Most of the upper surfaces of the limbs are dark brown with two to three irregularly shaped narrow lighter brown bands that are only semi-distinct. Scales around the eye have a brown tinge and form a well defined ring with much darker brown scales outside of this ring. In females there is no such well-defined ring around the eye.

D. woolfi sp. nov. is readily separated from the five preceding species in that the upper surface of the patagia is similar in colour to that of the type form (type subspecies) of *D. spilopterus* but differs from this (and all other species and subspecies) in that the darker spots are of irregular shape, rather than generally circular or oval, and some of these join to give spots of an even more irregular shape.

The dark of the outer edges is configured in the three patches in which there are light triangular intrusions from the inner side, which either do not reach the outer edge, where it remains dark, or barely does so, this arrangement being in contrast to (and analogous to) the lines running through this section of the patagia in some of the other species. The dorsum of the body is generally brownish in colour as opposed to strongly green or yellow in other species including in type *D. spilopterus*.

The ventral surface of the patagia is mainly a dull green

colour, with barely distinct spots of similar colour to the rest. The sides of the venter of the body at the anterior end are moderately peppered grey.

The upper surface of the patagia on the female is mainly dark brown all over, with a semi-circular arrangement of mainly merged orange dots forming about five radiated lines (anterior to posterior), each running across the body, on which they actually disappear. This dark brown tends to blackish on the outer edges.

The ventral surface of the patagia is mainly a dull green colour, with apparently randomly arranged dark aqua smudges near the outer edge, over which are wavy dull yellow lines radiating from the body outwards, these lines in the main being continuous and formed from tightly spaced and merged dots of somewhat irregular shape.

The sides of the venter of the body at the anterior end are moderately peppered grey.

In both sexes the banding on the body is moderately distinct and alternates light tan and medium to dark brown, the outer edges of the darker banding being triangular in shape, the points facing outwards, at both anterior and posterior edges as one runs down the median line. Banding on the upper surfaces of the legs is semi-distinct as the contrast between darker and lighter is not great.

Around the eye, there is a close ring that is reddish brown and well defined, followed by a larger blackish ring, also well defined beyond which are dark, light and reddish brown markings on nearby parts of the head.

In both sexes, the iris is a dark grey colour.

The subspecies *D. spilopterus polilloensis* subsp. nov. is separated from the nominate subspecies by *D. spilopterus spilopterus* subsp. nov. by having a reddish tinge to the body and poorly defined markings, if any on the upper surfaces of the limbs. The dewlap is mainly yellow all over, rather than mainly green at the parts near the jaw and is also white at the most distal point.

The morphologically similar and closely related species *D. quadrasii* Boettger, 1893 from the island of Sibuyon, *D. spadix* sp. nov. from Mindoro Island, and *D. romblonensis* sp. nov. from Romblon Island are separated from the preceding six species by 1/ Having a dorsal surface of the patagia that is either yellow to orange all over or with markings so faded as to not be noticeable; 2/ There is a region on the outer edge of the patagia that is black with wave-like markings running across the lateral fringe; 3/ Underneath the patagia is mainly yellow, except for the greyish outer edges; 4/ Markings on the head are strongly contrasting; 5/ The tympanum is also scaled over in these three species, versus not so in the previously grouped species; 6/ A strongly yellow dewlap in the lower or distal parts.

D. spadix sp. nov. is separated from *D. quadrasii* by having a dewlap that is yellow all over, versus pink and then green anteriorly in *D. quadrasii*, as well as having prominent white markings on the upper surfaces of the forelimbs.

There is a dark brown border around the eye instead of a yellow one.

D. romblonensis sp. nov. is separated from the two preceding species by the following characters:

Most of the dorsal surface of the patagia is a dull brown in colour overlain with numerous moderate-sized orange-yellow spots poorly defined and looking more like smudges, giving the general appearance of a light orange-brown colour with ill-defined markings. The outer part is blackish, through which about three thick beige lines of fairly even width run though to the outer edge. Ventrally the patagi is dull dark green

and with numerous evenly scattered elongate yellow dashes (elongate spots) of small size, arranged in about 17-22 lines. The dorsum is light brown to beige, the darker bands on the body being expanded so that the lighter interspaces are in the form of fairly thin lines only, versus being of similar size to the darker ones in most other species.

The iris is bright orange and around the eye is a poorly defined thin ring of dark chocolate brown, beyond which the nearby parts of the head are beige in colour with extensive dark brown peppering, at times merging to form darker areas or blotches.

Venter is whitish and with significant dark purplish brown peppering, being most prominent both anteriorly and near the flanks.

The dewlap is light yellow all over.

All the preceding species are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the following unique suite of characters (in adult males):

Lacrimal bone absent; nostrils oriented laterally on snout; patagia not bright red, but is bright yellow, with or without scattered brown spots; six or more ribs supporting patagium; dorsal patagium with or without melanic marginal patch but lacking distinct white spots (as seen in *D. (Draco) ornatus* (Gray, 1845) outlined below); dewlap large, triangular, mainly yellow or white in color; dewlap and ventral surfaces of throat lappets are not tangerine orange; there is no melanic postrectal ocellus enclosing a white tubercle; there is no enlarged, thornlike supraciliary scale; tympanum may or may not be scaled over.

In terms of adult females, they are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the same as for the males (described above) except that if present, the small dewlap is unmarked or speckled, not black and the dorsal surface of the patagia is black or dark brown with pale cream striations or pale cream marbling (both the preceding definitions modified from McGuire and Alcalá 2000).

The morphologically similar species *D. (Draco) ornatus* (Gray, 1845) is readily separated from all the preceding species by having well defined white spots on the side of the head, especially around the eye, similar well defined spots arranged in bands across the upper surface of body at the anterior edge of the darker cross bands, which are on average slightly narrower than the lighter interspaces, as well as about six smallish randomly arranged white spots on the darker blackish outer edge of the patagia (dorsal side).

The upper surface of the patagia is mainly an orange red colour in the nominate form found in most of the range for the species, or a dull yellow colour in *D. ornatus boholensis* subsp. nov., heavily infused with well defined black spots, as well as with or without significant black smudging on the posterior half to two thirds.

Ventrally the defining feature of the patagia is on the outer edge, where pigment is blackish, within which are about six well-defined white spots. In nominate *D. ornatus ornatus* the ventral surface of the patagia closer to the body is yellowish brown anteriorly and orange posteriorly, heavily marked with darker brownish flecks, versus similar in *D. ornatus boholensis* subsp. nov. but without the heavy darker brownish flecks, instead having a more immaculate colouration and appearance.

The dewlap is reddish-brown anteriorly, and then mainly green and heavily spotted dark brown or black. Only the lower tip is yellowish in colour. Banding on limbs is well

defined due to the good contrast between dark and light interspaces.

Iris is grey and there is a well-defined marone (purplish-red) ring around the eye.

The tympanum is scaled over.

The type form of *Draco spilopterus* from central Philippines is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Luzon island*" and in life online at:

<https://www.flickr.com/photos/paulbourdin/4611421064/> and

<https://www.flickr.com/photos/40928097@N07/40502700783/> and

<https://www.inaturalist.org/observations/32740260> and

<https://www.inaturalist.org/observations/32624603> and

<https://www.inaturalist.org/observations/32087765>

D. hoseerae sp. nov. from the Bicol Peninsula region in Southern Luzon is depicted in life online at:

<https://www.inaturalist.org/observations/125620521> and

<https://www.inaturalist.org/observations/104557480>

D. wellsii sp. nov. from Panay and Negros Islands is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Panay island*" and in life online at:

<https://www.inaturalist.org/observations/21099756> and

and

<https://www.inaturalist.org/observations/57761>

and also (dead) at:

https://www.reddit.com/r/herpetology/comments/fbt50m/too_bad_i_wasnt_able_to_see_it_alive_live_only/

D. wellingtoni sp. nov. from Siquijor Island is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Siquijor island*".

D. hawkeswoodi sp. nov. (both sexes) are depicted in life in Supsup *et al.* (2016) in Figs 18 and 19 and one of these images is online at:

https://www.researchgate.net/figure/Draco-spilopterus-male-from-Mt-Lantoy-Photo-by-Puna-N_fig11_308632387

D. wolffi sp. nov. in life is depicted in Siler *et al.* (2012) on page 451 (Fig. 14, A, B, C) and page 452 (Fig. 15).

D. quadrasii Boettger, 1893 from the island of Sibuyon is depicted in life in Siler *et al.* (2012) on pages 450 (bottom right) and 451 (Fig. 13 C and D) and online at:

<https://www.inaturalist.org/observations/53942104>

and

<https://www.inaturalist.org/observations/50414374>

D. spadix sp. nov. is depicted online at:

<https://reptile-database.reptarium.cz/species?genus=Draco&species=quadrasii>

D. romblonensis sp. nov. is depicted in life in Siler *et al.* (2012) on page 451 (Fig 13 A and B).

D. (Draco) ornatus (Gray, 1845) of the type form in life is published online at:

https://www.researchgate.net/figure/Draco-ornatus-has-been-recorded-only-from-Dinagat-Island-and-Agusan-del-Norte-Province_fig28_309224699

The colouration of the Bohol Island subspecies *D. ornatus boholensis* subsp. nov. is depicted in McGuire and Alcalá (2000) on page 92 as "*Draco ornatus*".

Distribution: The Philippines endemic species *Draco (Draco) wellsii* sp. nov. occurs on Negros and Panay Islands, central Philippines..

Etymology: *D. wellsi* sp. nov. is named in honour of Richard Wells of Drake, NSW, Australia in recognition of his many services to herpetology in Australia, spanning many decades including as a past president of the Australian Herpetological Society, based in Sydney, New South Wales, Australia.

DRACO (DRACO) WELLINGTONI SP. NOV.

LSIDurn:lsid:zoobank.org:act:A281FAB4-1AA6-4F78-9FC8-B97C818E0263

Holotype: A preserved specimen at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen number CAS SUR 26333 collected from Po-o Barrio, Municipality of Lazi, Siquijor Province, Siquijor Island, The Philippines, Latitude 9.165833 N., Longitude 123.607777 E.

This facility allows access to its holdings.

Paratypes: 1/ Three preserved specimens at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen numbers CAS SUR 26334, 26335 and 26336 all collected from Po-o Barrio, Municipality of Lazi, Siquijor Province, Siquijor Island, Philippines, Latitude 9.165833 N., Longitude 123.607777 E., 2/ Thirty preserved specimens at the Texas Natural History Collections, The University of Texas at Austin, Texas, USA, specimen numbers 58468-70, 58513-15, 58516-38, 58854 all collected from Siquijor Island, The Philippines.

Diagnosis: Until now, the Philippines endemic species *Draco* (*Draco*) *wellingtoni* sp. nov. from Siquijor Island, *D. (Draco)* *wellsi* sp. nov. from Negros and Panay Islands, *D. (Draco)* *hoserae* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco)* *hawkeswoodi* sp. nov. from Cebu Island and *D. (Draco)* *woolfi* sp. nov. from Tablas Island have all been treated as populations of putative *D. (Draco)* *spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa, although a number of earlier authors have suggested that one or more of the preceding named species were in fact separate species.

The six morphologically similar species can be separated from one another as follows:

D. spilopterus has a dorsum in adult males that has four semi-distinct darker cross bands on the dorsum of the body between the fore and hind limbs, that extend across the top and down onto the flanks and having a dorsal patagia (wing membrane) pattern that is mainly yellow, with numerous small semi-distinctly edged dark brown spots, with dark blackish smudging on the outer edge that does not have any well defined lines running through it. The lower surface of the patagia is similar to the upper, with the spotting still reasonably well defined and only a tiny amount of black smudging on the outer edge. The dewlap is dark green with a strong yellow at the distal part. Upper surfaces of the limbs are heavily banded dark, these being moderately thick and well-defined, the lighter interspaces being a middle-green colour. Scales around the eye have a yellowish tinge.

D. hoserae sp. nov. is similar in most respects to *D. spilopterus* as just described, but is readily separated from that species by having darker cross bands reduced to spots along the mid dorsal line or adjacent and not extending onto the flanks as is the case in *D. spilopterus*. Banding on the upper limbs is reduced to become incomplete, reduced in intensity or alternatively in the form of spots and triangles. Scales around the eye have a yellowish tinge.

D. wellsi sp. nov. is readily separated from the two preceding species by having spotting on the upper surface of the patagia reduced in terms of the size of the spots, these are

now small to tiny, reduced in density so there are less on the patagia and their intensity is reduced so that they are only semi-distinct. The outer edge of the patagia has a lot of dark smudging, through which are three to four, light yellowish-brown wavy lines that pierce it.

The lower surface of the patagia (ventral side) has a generally greyish-yellow-brown colour with spotting so reduced in intensity that it is barely discernable from the similar background colour. While the dorsum is of similar pattern to *D. spilopterus* as in bands extending onto the flanks, these too are blurred in outline, on an otherwise greenish-yellow body. Upper surfaces of the limbs are either unbanded or the bands on the anterior limbs are faint and barely noticeable. The dewlap is lime green near the jawline, becoming whitish, rather than yellow at the distal parts. Scales around the eye have a yellowish tinge.

D. wellingtoni sp. nov. is readily separated from the three preceding species by having an upper surface of the patagia that has a coral-like pattern caused by the dark spotting being surrounded by semi-defined whitish outlines. This pattern is continuous from the body to the outer edge of the patagia and there is no obvious black smudging on the edges. The ventral surface of the patagia is generally yellowish-green but with a series of about 6-10 irregularly shaped spots on the far outer edge. Scales around the eye have an orangeish tinge.

Banding on the upper surface of the limbs is semi-distinct. The dewlap is greenish brown near the jaw and becomes light green to white at the distal parts.

D. hawkeswoodi sp. nov. is readily separated from the four preceding species by its generally chocolate brown body colour, with obvious white markings running down the back, including a dark brown iris. Females are similar in form but greyish. The dewlap in the male is peppered greyish brown near the jaw and becoming white at the distal parts. Most of the upper surfaces of the limbs are dark brown with two to three irregularly shaped narrow lighter brown bands that are only semi-distinct. Scales around the eye have a brown tinge and form a well defined ring with much darker brown scales outside of this ring. In females there is no such well-defined ring around the eye.

D. woolfi sp. nov. is readily separated from the five preceding species in that the upper surface of the patagia is similar in colour to that of the type form (type subspecies) of *D. spilopterus* but differs from this (and all other species and subspecies) in that the darker spots are of irregular shape, rather than generally circular or oval, and some of these join to give spots of an even more irregular shape.

The dark of the outer edges is configured in the three patches in which there are light triangular intrusions from the inner side, which either do not reach the outer edge, where it remains dark, or barely does so, this arrangement being in contrast to (and analogous to) the lines running through this section of the patagia in some of the other species. The dorsum of the body is generally brownish in colour as opposed to strongly green or yellow in other species including in type *D. spilopterus*.

The ventral surface of the patagia is mainly a dull green colour, with barely distinct spots of similar colour to the rest. The sides of the venter of the body at the anterior end are moderately peppered grey.

The upper surface of the patagia on the female is mainly dark brown all over, with a semi-circular arrangement of mainly merged orange dots forming about five radiated lines (anterior to posterior), each running across the body, on which they actually disappear. This dark brown tends to

blackish on the outer edges.

The ventral surface of the patagia is mainly a dull green colour, with apparently randomly arranged dark aqua smudges near the outer edge, over which are wavy dull yellow lines radiating from the body outwards, these lines in the main being continuous and formed from tightly spaced and merged dots of somewhat irregular shape.

The sides of the venter of the body at the anterior end are moderately peppered grey.

In both sexes the banding on the body is moderately distinct and alternates light tan and medium to dark brown, the outer edges of the darker banding being triangular in shape, the points facing outwards, at both anterior and posterior edges as one runs down the median line. Banding on the upper surfaces of the legs is semi-distinct as the contrast between darker and lighter is not great.

Around the eye, there is a close ring that is reddish brown and well defined, followed by a larger blackish ring, also well defined beyond which are dark, light and reddish brown markings on nearby parts of the head.

In both sexes, the iris is a dark grey colour.

The subspecies *D. spilopterus polilloensis* subsp. nov. is separated from the nominate subspecies by *D. spilopterus spilopterus* subsp. nov. by having a reddish tinge to the body and poorly defined markings, if any on the upper surfaces of the limbs. The dewlap is mainly yellow all over, rather than mainly green at the parts near the jaw and is also white at the most distal point.

The morphologically similar and closely related species *D. quadrasii* Boettger, 1893 from the island of Sibuyon, *D. spadix* sp. nov. from Mindoro Island, and *D. romblonensis* sp. nov. from Romblon Island are separated from the preceding six species by 1/ Having a dorsal surface of the patagia that is either yellow to orange all over or with markings so faded as to not be noticeable; 2/ There is a region on the outer edge of the patagia that is black with wave-like markings running across the lateral fringe; 3/ Underneath the patagia is mainly yellow, except for the greyish outer edges; 4/ Markings on the head are strongly contrasting; 5/ The tympanum is also scaled over in these three species, versus not so in the previously grouped species; 6/ A strongly yellow dewlap in the lower or distal parts.

D. spadix sp. nov. is separated from *D. quadrasii* by having a dewlap that is yellow all over, versus pink and then green anteriorly in *D. quadrasii*, as well as having prominent white markings on the upper surfaces of the forelimbs.

There is a dark brown border around the eye instead of a yellow one.

D. romblonensis sp. nov. is separated from the two preceding species by the following characters:

Most of the dorsal surface of the patagia is a dull brown in colour overlain with numerous moderate-sized orange-yellow spots poorly defined and looking more like smudges, giving the general appearance of a light orange-brown colour with ill-defined markings. The outer part is blackish, through which about three thick beige lines of fairly even width run though to the outer edge. Ventrally the patagi is dull dark green and with numerous evenly scattered elongate yellow dashes (elongate spots) of small size, arranged in about 17-22 lines.

The dorsum is light brown to beige, the darker bands on the body being expanded so that the lighter interspaces are in the form of fairly thin lines only, versus being of similar size to the darker ones in most other species.

The iris is bright orange and around the eye is a poorly defined thin ring of dark chocolate brown, beyond which the nearby

parts of the head are beige in colour with extensive dark brown peppering, at times merging to form darker areas or blotches.

Venter is whitish and with significant dark purplish brown peppering, being most prominent both anteriorly and near the flanks.

The dewlap is light yellow all over.

All the preceding species are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the following unique suite of characters (in adult males):

Lacrimal bone absent; nostrils oriented laterally on snout; patagia not bright red, but is bright yellow, with or without scattered brown spots; six or more ribs supporting patagium; dorsal patagium with or without melanic marginal patch but lacking distinct white spots (as seen in *D. (Draco) ornatus* (Gray, 1845) outlined below); dewlap large, triangular, mainly yellow or white in color; dewlap and ventral surfaces of throat lappets are not tangerine orange; there is no melanic postriatal ocellus enclosing a white tubercle; there is no enlarged, thornlike supraciliary scale; tympanum may or may not be scaled over.

In terms of adult females, they are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the same as for the males (described above) except that if present, the small dewlap is unmarked or speckled, not black and the dorsal surface of the patagia is black or dark brown with pale cream striations or pale cream marbling (both the preceding definitions modified from McGuire and Alcalá 2000).

The morphologically similar species *D. (Draco) ornatus* (Gray, 1845) is readily separated from all the preceding species by having well defined white spots on the side of the head, especially around the eye, similar well defined spots arranged in bands across the upper surface of body at the anterior edge of the darker cross bands, which are on average slightly narrower than the lighter interspaces, as well as about six smallish randomly arranged white spots on the darker blackish outer edge of the patagia (dorsal side).

The upper surface of the patagia is mainly an orange red colour in the nominate form found in most of the range for the species, or a dull yellow colour in *D. ornatus boholensis* subsp. nov., heavily infused with well defined black spots, as well as with or without significant black smudging on the posterior half to two thirds.

Ventrally the defining feature of the patagia is on the outer edge, where pigment is blackish, within which are about six well-defined white spots. In nominate *D. ornatus ornatus* the ventral surface of the patagia closer to the body is yellowish brown anteriorly and orange posteriorly, heavily marked with darker brownish flecks, versus similar in *D. ornatus boholensis* subsp. nov. but without the heavy darker brownish flecks, instead having a more immaculate colouration and appearance.

The dewlap is reddish-brown anteriorly, and then mainly green and heavily spotted dark brown or black. Only the lower tip is yellowish in colour. Banding on limbs is well defined due to the good contrast between dark and light interspaces.

Iris is grey and there is a well-defined marone (purplish-red) ring around the eye.

The tympanum is scaled over.

The type form of *Draco spilopterus* from central Philippines is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Luzon island*" and in life online at:

<https://www.flickr.com/photos/paulbourdin/4611421064/>
and
<https://www.flickr.com/photos/40928097@N07/40502700783/>
and
<https://www.inaturalist.org/observations/32740260>
and
<https://www.inaturalist.org/observations/32624603>
and
<https://www.inaturalist.org/observations/32087765>
D. hoserae sp. nov. from the Bicol Peninsula region in Southern Luzon is depicted in life online at:
<https://www.inaturalist.org/observations/125620521>
and
<https://www.inaturalist.org/observations/104557480>
D. wellsii sp. nov. from Panay and Negros Islands is depicted in McGuire and Alcala (2000) on page 117 as "*Draco spilopterus* / Panay island" and in life online at:
<https://www.inaturalist.org/observations/21099756>
and
<https://www.inaturalist.org/observations/57761>
and also (dead) at:
https://www.reddit.com/r/herpetology/comments/fbt5om/too_bad_i_wasnt_able_to_see_it_alive_ive_only/
D. wellingtoni sp. nov. from Siquijor Island is depicted in McGuire and Alcala (2000) on page 117 as "*Draco spilopterus* / Siquijor island".
D. hawkeswoodi sp. nov. (both sexes) are depicted in life in Supsup *et al.* (2016) in Figs 18 and 19 and one of these images is online at:
https://www.researchgate.net/figure/Draco-spilopterus-male-from-Mt-Lantoy-Photo-by-Puna-N_fig11_308632387
D. wolffi sp. nov. in life is depicted in Siler *et al.* (2012) on page 451 (Fig. 14, A, B, C) and page 452 (Fig. 15).
D. quadrasii Boettger, 1893 from the island of Sibuyon is depicted in life in Siler *et al.* (2012) on pages 450 (bottom right) and 451 (Fig. 13 C and D) and online at:
<https://www.inaturalist.org/observations/53942104>
and
<https://www.inaturalist.org/observations/50414374>
D. spadix sp. nov. is depicted online at:
<https://reptile-database.reptarium.cz/species?genus=Draco&species=quadrasii>
D. romblonensis sp. nov. is depicted in life in Siler *et al.* (2012) on page 451 (Fig 13 A and B).
D. (Draco) ornatus (Gray, 1845) of the type form in life is published online at:
https://www.researchgate.net/figure/Draco-ornatus-has-been-recorded-only-from-Dinagat-Island-and-Agusan-del-Norte-Province_fig28_309224699
The colouration of the Bohol Island subspecies *D. ornatus boholensis* subsp. nov. is depicted in McGuire and Alcala (2000) on page 92 as "*Draco ornatus*".
Distribution: The Philippines endemic species *Draco (Draco) wellingtoni* sp. nov. occurs on Siquijor Island and is endemic to the relatively small, 343.5 square km island.
Etymology: *D. wellingtoni* sp. nov. is named in honour of Cliff Ross Wellington of Ramornie, NSW, Australia in recognition of his many services to herpetology in Australia, spanning many decades including his strong stance against taxonomic vandalism and its negative impacts on wildlife conservation, both globally and locally within Australia. He has also written numerous recovery plans for governments for numerous threatened or endangered species.

DRACO (DRACO) HAWKESWOODI SP. NOV.

LSIDurn:lsid:zoobank.org:act:EA957D99-1157-451C-954F-73F3A8C1976D

Holotype: A preserved specimen at the Field Museum of Natural History, Chicago, Illinois, USA, Amphibian and Reptile Collection, Specimen number FMNH 96566 collected from Cebu Island, Philippines.

This facility allows access to its holdings.

Paratypes: 1/ Eight preserved specimens at the Field Museum of Natural History, Chicago, Illinois, USA, Amphibian and Reptile Collection, Specimen numbers FMNH 96282, 96283, 96284, 96285, 96286, 96567, 96568 and 96569 all collected from Cebu Island, Philippines., 2/ Fourteen preserved specimens at the Texas Natural History Collections, The University of Texas at Austin, Texas, USA, specimen numbers TNHC 58462, 58496-58504, 59491-59494 all collected from Cebu Island, Philippines.

Diagnosis: Until now, the Philippines endemic species *Draco (Draco) wolffi* sp. nov. from Tablas Island, *D. (Draco) wellsii* sp. nov. from Negros and Panay Islands, *D. (Draco) hoserae* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco) wellingtoni* sp. nov. from Siquijor Island and *D. (Draco) hawkeswoodi* sp. nov. from Cebu Island have all been treated as populations of putative *D. (Draco) spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa, although a number of earlier authors have suggested that one or more of the preceding named species were in fact separate species.

The six morphologically similar species can be separated from one another as follows:

D. spilopterus has a dorsum in adult males that has four semi-distinct darker cross bands on the dorsum of the body between the fore and hind limbs, that extend across the top and down onto the flanks and having a dorsal patagia (wing membrane) pattern that is mainly yellow, with numerous small semi-distinctly edged dark brown spots, with dark blackish smudging on the outer edge that does not have any well defined lines running through it.

The lower surface of the patagia is similar to the upper, with the spotting still reasonably well defined and only a tiny amount of black smudging on the outer edge. The dewlap is dark green with a strong yellow at the distal part. Upper surfaces of the limbs are heavily banded dark, these being moderately thick and well-defined, the lighter interspaces being a middle-green colour. Scales around the eye have a yellowish tinge.

D. hoserae sp. nov. is similar in most respects to *D. spilopterus* as just described, but is readily separated from that species by having darker cross bands reduced to spots along the mid dorsal line or adjacent and not extending onto the flanks as is the case in *D. spilopterus*. Banding on the upper limbs is reduced to become incomplete, reduced in intensity or alternatively in the form of spots and triangles. Scales around the eye have a yellowish tinge.

D. wellsii sp. nov. is readily separated from the two preceding species by having spotting on the upper surface of the patagia reduced in terms of the size of the spots, these are now small to tiny, reduced in density so there are less on the patagia and their intensity is reduced so that they are only semi-distinct. The outer edge of the patagia has a lot of dark smudging, through which are three to four, light yellowish-brown wavy lines that pierce it.

The lower surface of the patagia (ventral side) has a generally greyish-yellow-brown colour with spotting so reduced

in intensity that it is barely discernable from the similar background colour. While the dorsum is of similar pattern to *D. spilopterus* as in bands extending onto the flanks, these too are blurred in outline, on an otherwise greenish-yellow body. Upper surfaces of the limbs are either unbanded or the bands on the anterior limbs are faint and barely noticeable. The dewlap is lime green near the jawline, becoming whitish, rather than yellow at the distal parts. Scales around the eye have a yellowish tinge.

D. wellingtoni sp. nov. is readily separated from the three preceding species by having an upper surface of the patagia that has a coral-like pattern caused by the dark spotting being surrounded by semi-defined whitish outlines. This pattern is continuous from the body to the outer edge of the patagia and there is no obvious black smudging on the edges. The ventral surface of the patagia is generally yellowish-green but with a series of about 6-10 irregularly shaped spots on the far outer edge. Scales around the eye have an orangeish tinge.

Banding on the upper surface of the limbs is semi-distinct. The dewlap is greenish brown near the jaw and becomes light green to white at the distal parts.

D. hawkeswoodi sp. nov. is readily separated from the four preceding species by its generally chocolate brown body colour, with obvious white markings running down the back, including a dark brown iris. Females are similar in form but greyish. The dewlap in the male is peppered greyish brown near the jaw and becoming white at the distal parts. Most of the upper surfaces of the limbs are dark brown with two to three irregularly shaped narrow lighter brown bands that are only semi-distinct. Scales around the eye have a brown tinge and form a well defined ring with much darker brown scales outside of this ring. In females there is no such well-defined ring around the eye.

D. woolfi sp. nov. is readily separated from the five preceding species in that the upper surface of the patagia is similar in colour to that of the type form (type subspecies) of *D. spilopterus* but differs from this (and all other species and subspecies) in that the darker spots are of irregular shape, rather than generally circular or oval, and some of these join to give spots of an even more irregular shape.

The dark of the outer edges is configured in the three patches in which there are light triangular intrusions from the inner side, which either do not reach the outer edge, where it remains dark, or barely does so, this arrangement being in contrast to (and analogous to) the lines running through this section of the patagia in some of the other species. The dorsum of the body is generally brownish in colour as opposed to strongly green or yellow in other species including in type *D. spilopterus*.

The ventral surface of the patagia is mainly a dull green colour, with barely distinct spots of similar colour to the rest.

The sides of the venter of the body at the anterior end are moderately peppered grey.

The upper surface of the patagia on the female is mainly dark brown all over, with a semi-circular arrangement of mainly merged orange dots forming about five radiated lines (anterior to posterior), each running across the body, on which they actually disappear. This dark brown tends to blackish on the outer edges.

The ventral surface of the patagia is mainly a dull green colour, with apparently randomly arranged dark aqua smudges near the outer edge, over which are wavy dull yellow lines radiating from the body outwards, these lines in the main being continuous and formed from tightly spaced and merged dots of somewhat irregular shape.

The sides of the venter of the body at the anterior end are moderately peppered grey.

In both sexes the banding on the body is moderately distinct and alternates light tan and medium to dark brown, the outer edges of the darker banding being triangular in shape, the points facing outwards, at both anterior and posterior edges as one runs down the median line. Banding on the upper surfaces of the legs is semi-distinct as the contrast between darker and lighter is not great.

Around the eye, there is a close ring that is reddish brown and well defined, followed by a larger blackish ring, also well defined beyond which are dark, light and reddish brown markings on nearby parts of the head.

In both sexes, the iris is a dark grey colour.

The subspecies *D. spilopterus polilloensis* subsp. nov. is separated from the nominate subspecies by *D. spilopterus spilopterus* subsp. nov. by having a reddish tinge to the body and poorly defined markings, if any on the upper surfaces of the limbs. The dewlap is mainly yellow all over, rather than mainly green at the parts near the jaw and is also white at the most distal point.

The morphologically similar and closely related species *D. quadrasii* Boettger, 1893 from the island of Sibuyon, *D. spadix* sp. nov. from Mindoro Island, and *D. romblonensis* sp. nov. from Romblon Island are separated from the preceding six species by 1/ Having a dorsal surface of the patagia that is either yellow to orange all over or with markings so faded as to not be noticeable; 2/ There is a region on the outer edge of the patagia that is black with wave-like markings running across the lateral fringe; 3/ Underneath the patagia is mainly yellow, except for the greyish outer edges; 4/ Markings on the head are strongly contrasting; 5/ The tympanum is also scaled over in these three species, versus not so in the previously grouped species; 6/ A strongly yellow dewlap in the lower or distal parts.

D. spadix sp. nov. is separated from *D. quadrasii* by having a dewlap that is yellow all over, versus pink and then green anteriorly in *D. quadrasii*, as well as having prominent white markings on the upper surfaces of the forelimbs.

There is a dark brown border around the eye instead of a yellow one.

D. romblonensis sp. nov. is separated from the two preceding species by the following characters:

Most of the dorsal surface of the patagia is a dull brown in colour overlain with numerous moderate-sized orange-yellow spots poorly defined and looking more like smudges, giving the general appearance of a light orange-brown colour with ill-defined markings. The outer part is blackish, through which about three thick beige lines of fairly even width run though to the outer edge. Ventrally the patagi is dull dark brown and with numerous evenly scattered elongate yellow dashes (elongate spots) of small size, arranged in about 17-22 lines. The dorsum is light brown to beige, the darker bands on the body being expanded so that the lighter interspaces are in the form of fairly thin lines only, versus being of similar size to the darker ones in most other species.

The iris is bright orange and around the eye is a poorly defined thin ring of dark chocolate brown, beyond which the nearby parts of the head are beige in colour with extensive dark brown peppering, at times merging to form darker areas or blotches.

Venter is whitish and with significant dark purplish brown peppering, being most prominent both anteriorly and near the flanks.

The dewlap is light yellow all over.

All the preceding species are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the following unique suite of characters (in adult males):

Lacrimal bone absent; nostrils oriented laterally on snout; patagia not bright red, but is bright yellow, with or without scattered brown spots; six or more ribs supporting patagium; dorsal patagium with or without melanic marginal patch but lacking distinct white spots (as seen in *D. (Draco) ornatus* (Gray, 1845) outlined below); dewlap large, triangular, mainly yellow or white in color; dewlap and ventral surfaces of throat lappets are not tangerine orange; there is no melanic postrictal ocellus enclosing a white tubercle; there is no enlarged, thornlike supraciliary scale; tympanum may or may not be scaled over.

In terms of adult females, they are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the same as for the males (described above) except that if present, the small dewlap is unmarked or speckled, not black and the dorsal surface of the patagia is black or dark brown with pale cream striations or pale cream marbling (both the preceding definitions modified from McGuire and Alcalá 2000).

The morphologically similar species *D. (Draco) ornatus* (Gray, 1845) is readily separated from all the preceding species by having well defined white spots on the side of the head, especially around the eye, similar well defined spots arranged in bands across the upper surface of body at the anterior edge of the darker cross bands, which are on average slightly narrower than the lighter interspaces, as well as about six smallish randomly arranged white spots on the darker blackish outer edge of the patagia (dorsal side).

The upper surface of the patagia is mainly an orange red colour in the nominate form found in most of the range for the species, or a dull yellow colour in *D. ornatus boholensis* subsp. nov., heavily infused with well defined black spots, as well as with or without significant black smudging on the posterior half to two thirds.

Ventrally the defining feature of the patagia is on the outer edge, where pigment is blackish, within which are about six well-defined white spots. In nominate *D. ornatus ornatus* the ventral surface of the patagia closer to the body is yellowish brown anteriorly and orange posteriorly, heavily marked with darker brownish flecks, versus similar in *D. ornatus boholensis* subsp. nov. but without the heavy darker brownish flecks, instead having a more immaculate colouration and appearance.

The dewlap is reddish-brown anteriorly, and then mainly green and heavily spotted dark brown or black. Only the lower tip is yellowish in colour. Banding on limbs is well defined due to the good contrast between dark and light interspaces.

Iris is grey and there is a well-defined marone (purplish-red) ring around the eye.

The tympanum is scaled over.

The type form of *Draco spilopterus* from central Philippines is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Luzon island*" and in life online at: <https://www.flickr.com/photos/paulbourdin/4611421064/> and <https://www.flickr.com/photos/40928097@N07/40502700783/> and <https://www.inaturalist.org/observations/32740260> and <https://www.inaturalist.org/observations/32624603>

and

<https://www.inaturalist.org/observations/32087765>
D. hoserae sp. nov. from the Bicol Peninsula region in Southern Luzon is depicted in life online at: <https://www.inaturalist.org/observations/125620521> and <https://www.inaturalist.org/observations/104557480>
D. wellsii sp. nov. from Panay and Negros Islands is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Panay island*" and in life online at: <https://www.inaturalist.org/observations/21099756> and <https://www.inaturalist.org/observations/57761> and also (dead) at: https://www.reddit.com/r/herpetology/comments/fbt5om/too_bad_i_wasnt_able_to_see_it_alive_ive_only/
D. wellingtoni sp. nov. from Siquijor Island is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Siquijor island*".

D. hawkeswoodi sp. nov. (both sexes) are depicted in life in Supsup *et al.* (2016) in Figs 18 and 19 and one of these images is online at: https://www.researchgate.net/figure/Draco-spilopterus-male-from-Mt-Lantoy-Photo-by-Puna-N_fig11_308632387

D. wolffi sp. nov. in life is depicted in Siler *et al.* (2012) on page 451 (Fig. 14, A, B, C) and page 452 (Fig. 15).

D. quadrasii Boettger, 1893 from the island of Sibuyon is depicted in life in Siler *et al.* (2012) on pages 450 (bottom right) and 451 (Fig. 13 C and D) and online at: <https://www.inaturalist.org/observations/53942104> and <https://www.inaturalist.org/observations/50414374>

D. spadix sp. nov. is depicted online at: <https://reptile-database.reptarium.cz/species?genus=Draco&species=quadrasii>

D. romblonensis sp. nov. is depicted in life in Siler *et al.* (2012) on page 451 (Fig 13 A and B).

D. (Draco) ornatus (Gray, 1845) of the type form in life is published online at:

https://www.researchgate.net/figure/Draco-ornatus-has-been-recorded-only-from-Dinagat-Island-and-Agusan-del-Norte-Province_fig28_309224699

The colouration of the Bohol Island subspecies *D. ornatus boholensis* subsp. nov. is depicted in McGuire and Alcalá (2000) on page 92 as "*Draco ornatus*".

Distribution: The Philippines endemic species *Draco (Draco) hawkeswoodi* sp. nov. is apparently confined to Cebu Island, which has a land area of 4,468 square km.

Etymology: *D. hawkeswoodi* sp. nov. is named in honour of zoologist Dr. Trevor Hawkeswood of Northmead, (Sydney), New South Wales, Australia, publisher of the highly acclaimed Scientific Journal *Calodema* in recognition of his many contributions to zoology over some decades.

DRACO (DRACO) WOOLFI SP. NOV.

LSIDurn:lsid:zoobank.org:act:4821FF2B-D4DA-4549-B6F1-02DE3619798B

Holotype: A preserved specimen at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen number CAS HERP 139188 collected from Tablas Island, San Agustin Municipality, Romblon Province, Philippines, Latitude 12.583330 N., Longitude 122.100000 E.

This facility allows access to its holdings.

Paratypes: All specimens collected from Tablas Island, San Agustin Municipality, Romblon Province, Philippines. 1/ A preserved specimen at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen number CAS HERP 185499, 2/ Two preserved specimens at the Smithsonian Institution, National Museum of Natural History, Washington DC, USA, specimen numbers USNM 496889 and 496890, 3/ Twenty one preserved specimens at the University of Kansas, Biodiversity Institute. KUBI Herpetology Collection, Kansas, USA, specimen numbers KU KUH 305113 - KU KUH 305133.

Diagnosis: Until now, the Philippines endemic species *Draco* (*Draco*) *hawkeswoodi* sp. nov. from Cebu Island, *D. (Draco)* *wellsi* sp. nov. from Negros and Panay Islands, *D. (Draco)* *hoserae* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco)* *wellingtoni* sp. nov. from Siquijor Island and *D. (Draco)* *woolffi* sp. nov. from Tablas Island have all been treated as populations of putative *D. (Draco)* *spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa, although a number of earlier authors have suggested that one or more of the preceding named species were in fact separate species.

The six morphologically similar species can be separated from one another as follows:

D. spilopterus has a dorsum in adult males that has four semi-distinct darker cross bands on the dorsum of the body between the fore and hind limbs, that extend across the top and down onto the flanks and having a dorsal patagia (wing membrane) pattern that is mainly yellow, with numerous small semi-distinctly edged dark brown spots, with dark blackish smudging on the outer edge that does not have any well defined lines running through it. The lower surface of the patagia is similar to the upper, with the spotting still reasonably well defined and only a tiny amount of black smudging on the outer edge. The dewlap is dark green with a strong yellow at the distal part. Upper surfaces of the limbs are heavily banded dark, these being moderately thick and well-defined, the lighter interspaces being a middle-green colour. Scales around the eye have a yellowish tinge.

D. hoserae sp. nov. is similar in most respects to *D. spilopterus* as just described, but is readily separated from that species by having darker cross bands reduced to spots along the mid dorsal line or adjacent and not extending onto the flanks as is the case in *D. spilopterus*. Banding on the upper limbs is reduced to become incomplete, reduced in intensity or alternatively in the form of spots and triangles. Scales around the eye have a yellowish tinge.

D. wellsi sp. nov. is readily separated from the two preceding species by having spotting on the upper surface of the patagia reduced in terms of the size of the spots, these are now small to tiny, reduced in density so there are less on the patagia and their intensity is reduced so that they are only semi-distinct. The outer edge of the patagia has a lot of dark smudging, through which are three to four, light yellowish-brown wavy lines that pierce it.

The lower surface of the patagia (ventral side) has a generally greyish-yellow-brown colour with spotting so reduced in intensity that it is barely discernable from the similar background colour. While the dorsum is of similar pattern to *D. spilopterus* as in bands extending onto the flanks, these too are blurred in outline, on an otherwise greenish-yellow body. Upper surfaces of the limbs are either unbanded or the bands on the anterior limbs are faint and barely noticeable. The dewlap is lime green near the jawline, becoming whitish, rather than yellow at the distal parts. Scales around the eye

have a yellowish tinge.

D. wellingtoni sp. nov. is readily separated from the three preceding species by having an upper surface of the patagia that has a coral-like pattern caused by the dark spotting being surrounded by semi-defined whitish outlines. This pattern is continuous from the body to the outer edge of the patagia and there is no obvious black smudging on the edges. The ventral surface of the patagia is generally yellowish-green but with a series of about 6-10 irregularly shaped spots on the far outer edge. Scales around the eye have an orangeish tinge.

Banding on the upper surface of the limbs is semi-distinct. The dewlap is greenish brown near the jaw and becomes light green to white at the distal parts.

D. hawkeswoodi sp. nov. is readily separated from the four preceding species by its generally chocolate brown body colour, with obvious white markings running down the back, including a dark brown iris. Females are similar in form but greyish. The dewlap in the male is peppered greyish brown near the jaw and becoming white at the distal parts. Most of the upper surfaces of the limbs are dark brown with two to three irregularly shaped narrow lighter brown bands that are only semi-distinct. Scales around the eye have a brown tinge and form a well defined ring with much darker brown scales outside of this ring. In females there is no such well-defined ring around the eye.

D. woolffi sp. nov. is readily separated from the five preceding species in that the upper surface of the patagia is similar in colour to that of the type form (type subspecies) of *D. spilopterus* but differs from this (and all other species and subspecies) in that the darker spots are of irregular shape, rather than generally circular or oval, and some of these join to give spots of an even more irregular shape.

The dark of the outer edges is configured in the three patches in which there are light triangular intrusions from the inner side, which either do not reach the outer edge, where it remains dark, or barely does so, this arrangement being in contrast to (and analogous to) the lines running through this section of the patagia in some of the other species. The dorsum of the body is generally brownish in colour as opposed to strongly green or yellow in other species including in type *D. spilopterus*.

The ventral surface of the patagia is mainly a dull green colour, with barely distinct spots of similar colour to the rest. The sides of the venter of the body at the anterior end are moderately peppered grey.

The upper surface of the patagia on the female is mainly dark brown all over, with a semi-circular arrangement of mainly merged orange dots forming about five radiated lines (anterior to posterior), each running across the body, on which they actually disappear. This dark brown tends to blackish on the outer edges.

The ventral surface of the patagia is mainly a dull green colour, with apparently randomly arranged dark aqua smudges near the outer edge, over which are wavy dull yellow lines radiating from the body outwards, these lines in the main being continuous and formed from tightly spaced and merged dots of somewhat irregular shape.

The sides of the venter of the body at the anterior end are moderately peppered grey.

In both sexes the banding on the body is moderately distinct and alternates light tan and medium to dark brown, the outer edges of the darker banding being triangular in shape, the points facing outwards, at both anterior and posterior edges as one runs down the median line. Banding on the upper

surfaces of the legs is semi-distinct as the contrast between darker and lighter is not great.

Around the eye, there is a close ring that is reddish brown and well defined, followed by a larger blackish ring, also well defined beyond which are dark, light and reddish brown markings on nearby parts of the head.

In both sexes, the iris is a dark grey colour.

The subspecies *D. spilopterus polilloensis subsp. nov.* is separated from the nominate subspecies by *D. spilopterus spilopterus subsp. nov.* by having a reddish tinge to the body and poorly defined markings, if any on the upper surfaces of the limbs. The dewlap is mainly yellow all over, rather than mainly green at the parts near the jaw and is also white at the most distal point.

The morphologically similar and closely related species *D. quadrasii* Boettger, 1893 from the island of Sibuyon, *D. spadix sp. nov.* from Mindoro Island, and *D. romblonensis sp. nov.* from Romblon Island are separated from the preceding six species by 1/ Having a dorsal surface of the patagia that is either yellow to orange all over or with markings so faded as to not be noticeable; 2/ There is a region on the outer edge of the patagia that is black with wave-like markings running across the lateral fringe; 3/ Underneath the patagia is mainly yellow, except for the greyish outer edges; 4/ Markings on the head are strongly contrasting; 5/ The tympanum is also scaled over in these three species, versus not so in the previously grouped species; 6/ A strongly yellow dewlap in the lower or distal parts.

D. spadix sp. nov. is separated from *D. quadrasii* by having a dewlap that is yellow all over, versus pink and then green anteriorly in *D. quadrasii*, as well as having prominent white markings on the upper surfaces of the forelimbs.

There is a dark brown border around the eye instead of a yellow one.

D. romblonensis sp. nov. is separated from the two preceding species by the following characters:

Most of the dorsal surface of the patagia is a dull brown in colour overlain with numerous moderate-sized orange-yellow spots poorly defined and looking more like smudges, giving the general appearance of a light orange-brown colour with ill-defined markings. The outer part is blackish, through which about three thick beige lines of fairly even width run though to the outer edge. Ventrally the patagi is dull dark brown and with numerous evenly scattered elongate yellow dashes (elongate spots) of small size, arranged in about 17-22 lines. The dorsum is light brown to beige, the darker bands on the body being expanded so that the lighter interspaces are in the form of fairly thin lines only, versus being of similar size to the darker ones in most other species.

The iris is bright orange and around the eye is a poorly defined thin ring of dark chocolate brown, beyond which the nearby parts of the head are beige in colour with extensive dark brown peppering, at times merging to form darker areas or blotches.

Venter is whitish and with significant dark purplish brown peppering, being most prominent both anteriorly and near the flanks.

The dewlap is light yellow all over.

All the preceding species are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the following unique suite of characters (in adult males):

Lacrimal bone absent; nostrils oriented laterally on snout; patagia not bright red, but is bright yellow, with or without scattered brown spots; six or more ribs supporting patagium;

dorsal patagium with or without melanic marginal patch but lacking distinct white spots (as seen in *D. (Draco) ornatus* (Gray, 1845) outlined below); dewlap large, triangular, mainly yellow or white in color; dewlap and ventral surfaces of throat lappets are not tangerine orange; there is no melanic postrectal ocellus enclosing a white tubercle; there is no enlarged, thornlike supraciliary scale; tympanum may or may not be scaled over.

In terms of adult females, they are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the same as for the males (described above) except that if present, the small dewlap is unmarked or speckled, not black and the dorsal surface of the patagia is black or dark brown with pale cream striations or pale cream marbling (both the preceding definitions modified from McGuire and Alcalá 2000).

The morphologically similar species *D. (Draco) ornatus* (Gray, 1845) is readily separated from all the preceding species by having well defined white spots on the side of the head, especially around the eye, similar well defined spots arranged in bands across the upper surface of body at the anterior edge of the darker cross bands, which are on average slightly narrower than the lighter interspaces, as well as about six smallish randomly arranged white spots on the darker blackish outer edge of the patagia (dorsal side).

The upper surface of the patagia is mainly an orange red colour in the nominate form found in most of the range for the species, or a dull yellow colour in *D. ornatus boholensis subsp. nov.*, heavily infused with well defined black spots, as well as with or without significant black smudging on the posterior half to two thirds.

Ventrally the defining feature of the patagia is on the outer edge, where pigment is blackish, within which are about six well-defined white spots. In nominate *D. ornatus ornatus* the ventral surface of the patagia closer to the body is yellowish brown anteriorly and orange posteriorly, heavily marked with darker brownish flecks, versus similar in *D. ornatus boholensis subsp. nov.* but without the heavy darker brownish flecks, instead having a more immaculate colouration and appearance.

The dewlap is reddish-brown anteriorly, and then mainly green and heavily spotted dark brown or black. Only the lower tip is yellowish in colour. Banding on limbs is well defined due to the good contrast between dark and light interspaces.

Iris is grey and there is a well-defined marone (purplish-red) ring around the eye.

The tympanum is scaled over.

The type form of *Draco spilopterus* from central Philippines is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Luzon island*" and in life online at: <https://www.flickr.com/photos/paulbourdin/4611421064/> and <https://www.flickr.com/photos/40928097@N07/40502700783/> and <https://www.inaturalist.org/observations/32740260> and <https://www.inaturalist.org/observations/32624603> and <https://www.inaturalist.org/observations/32087765> *D. hoseae sp. nov.* from the Bicol Peninsula region in Southern Luzon is depicted in life online at: <https://www.inaturalist.org/observations/125620521> and

<https://www.inaturalist.org/observations/104557480>

D. wellsi sp. nov. from Panay and Negros Islands is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus* / Panay island" and in life online at: <https://www.inaturalist.org/observations/21099756>

and

<https://www.inaturalist.org/observations/57761>

and also (dead) at:

https://www.reddit.com/r/herpetology/comments/fbt5om/too_bad_i_wasnt_able_to_see_it_alive_ive_only/

D. wellingtoni sp. nov. from Siquijor Island is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus* / Siquijor island".

D. hawkeswoodi sp. nov. (both sexes) are depicted in life in Supsup *et al.* (2016) in Figs 18 and 19 and one of these images is online at:

https://www.researchgate.net/figure/Draco-spilopterus-male-from-Mt-Lantoy-Photo-by-Puna-N_fig11_308632387

D. wolffi sp. nov. in life is depicted in Siler *et al.* (2012) on page 451 (Fig. 14, A, B, C) and page 452 (Fig. 15).

D. quadrasi Boettger, 1893 from the island of Sibuyon is depicted in life in Siler *et al.* (2012) on pages 450 (bottom right) and 451 (Fig. 13 C and D) and online at:

<https://www.inaturalist.org/observations/53942104>

and

<https://www.inaturalist.org/observations/50414374>

D. spadix sp. nov. is depicted online at:

<https://reptile-database.reptarium.cz/species?genus=Draco&species=quadrasi>

D. romblonensis sp. nov. is depicted in life in Siler *et al.* (2012) on page 451 (Fig 13 A and B).

D. (Draco) ornatus (Gray, 1845) of the type form in life is published online at:

https://www.researchgate.net/figure/Draco-ornatus-has-been-recorded-only-from-Dinagat-Island-and-Agusan-del-Norte-Province_fig28_309224699

The colouration of the Bohol Island subspecies *D. ornatus boholensis* subsp. nov. is depicted in McGuire and Alcalá (2000) on page 92 as "*Draco ornatus*".

Distribution: The Philippines endemic species *Draco (Draco) wolffi* sp. nov. is apparently confined to Tablas Island, which has a land area of about 839.156 km square km.

Etymology: *D. wolffi* sp. nov. is named in honour of Paul Woolf of Walloon, (Ipswich), Queensland, Australia, in recognition of his many services to herpetology spanning some decades, including as foundation president of the Herpetological Society of Queensland Incorporated.

DRACO (DRACO) SPILOPTERUS POLILLOENSIS SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:937C8D62-73D4-405E-A713-920DDA51C74D

Holotype: A preserved specimen at the Texas Natural History Collections, The University of Texas at Austin, Texas, USA, specimen number TNHC 55016 collected from Barangay Sibucan, Sitio San Francisco, Municipality of Polillo, Quezon Province (Polillo Island), Philippines.

This facility allows access to its holdings.

Paratypes: All specimens collected from Polillo Island, Philippines. 1/ Twenty six preserved specimens at the Texas Natural History Collections, The University of Texas at Austin, Texas, USA, specimen numbers TNHC 55014-22, 55098, 55107-55111, 57759-57765, 57767-57769 and 58453., 2/ Twenty preserved specimens at the Smithsonian Institution,

National Museum of Natural History, Washington DC, USA, specimen numbers USNM 513112, 513113, 513114, 513115, 513117, 513119, 513120, 513123, 513124, 513133, 513134, 513137, 513141, 513146, 513150, 513155, 513170, 513182, 513186 and 513191.

Diagnosis: The subspecies *D. spilopterus polilloensis* subsp. nov. is a taxon confined to the Polillo group of islands from Polillo in the west to Jomalig Island in the east and including Palasn, Patnanongan, Kalongkooan and Kalotkot islands. It has until now been treated as a putative population of the nominate form of *D. (Draco) spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa.

Also until now, the Philippines endemic species *Draco (Draco) hawkeswoodi* sp. nov. from Cebu Island, *D. (Draco) wellsi* sp. nov. from Negros and Panay Islands, *D. (Draco) hoseae* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco) wellingtoni* sp. nov. from Siquijor Island and *D. (Draco) wolffi* sp. nov. from Tablas Island have all been treated as populations of putative *D. (Draco) spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa, although a number of earlier authors have suggested that one or more of the preceding named species were in fact separate species.

The six morphologically similar species can be separated from one another as follows:

D. spilopterus has a dorsum in adult males that has four semi-distinct darker cross bands on the dorsum of the body between the fore and hind limbs, that extend across the top and down onto the flanks and having a dorsal patagia (wing membrane) pattern that is mainly yellow, with numerous small semi-distinctly edged dark brown spots, with dark blackish smudging on the outer edge that does not have any well defined lines running through it. The lower surface of the patagia is similar to the upper, with the spotting still reasonably well defined and only a tiny amount of black smudging on the outer edge. The dewlap is dark green with a strong yellow at the distal part. Upper surfaces of the limbs are heavily banded dark, these being moderately thick and well-defined, the lighter interspaces being a middle-green colour. Scales around the eye have a yellowish tinge.

D. hoseae sp. nov. is similar in most respects to *D. spilopterus* as just described, but is readily separated from that species by having darker cross bands reduced to spots along the mid dorsal line or adjacent and not extending onto the flanks as is the case in *D. spilopterus*. Banding on the upper limbs is reduced to become incomplete, reduced in intensity or alternatively in the form of spots and triangles. Scales around the eye have a yellowish tinge.

D. wellsi sp. nov. is readily separated from the two preceding species by having spotting on the upper surface of the patagia reduced in terms of the size of the spots, these are now small to tiny, reduced in density so there are less on the patagia and their intensity is reduced so that they are only semi-distinct. The outer edge of the patagia has a lot of dark smudging, through which are three to four, light yellowish-brown wavy lines that pierce it.

The lower surface of the patagia (ventral side) has a generally greyish-yellow-brown colour with spotting so reduced in intensity that it is barely discernable from the similar background colour. While the dorsum is of similar pattern to *D. spilopterus* as in bands extending onto the flanks, these too are blurred in outline, on an otherwise greenish-yellow body. Upper surfaces of the limbs are either unbanded or the bands on the anterior limbs are faint and barely noticeable.

The dewlap is lime green near the jawline, becoming whitish, rather than yellow at the distal parts. Scales around the eye have a yellowish tinge.

D. wellingtoni sp. nov. is readily separated from the three preceding species by having an upper surface of the patagia that has a coral-like pattern caused by the dark spotting being surrounded by semi-defined whitish outlines. This pattern is continuous from the body to the outer edge of the patagia and there is no obvious black smudging on the edges. The ventral surface of the patagia is generally yellowish-green but with a series of about 6-10 irregularly shaped spots on the far outer edge. Scales around the eye have an orangeish tinge.

Banding on the upper surface of the limbs is semi-distinct. The dewlap is greenish brown near the jaw and becomes light green to white at the distal parts.

D. hawkeswoodi sp. nov. is readily separated from the four preceding species by its generally chocolate brown body colour, with obvious white markings running down the back, including a dark brown iris. Females are similar in form but greyish. The dewlap in the male is peppered greyish brown near the jaw and becoming white at the distal parts. Most of the upper surfaces of the limbs are dark brown with two to three irregularly shaped narrow lighter brown bands that are only semi-distinct. Scales around the eye have a brown tinge and form a well defined ring with much darker brown scales outside of this ring. In females there is no such well-defined ring around the eye.

D. woolfi sp. nov. is readily separated from the five preceding species in that the upper surface of the patagia is similar in colour to that of the type form (type subspecies) of *D. spilopterus* but differs from this (and all other species and subspecies) in that the darker spots are of irregular shape, rather than generally circular or oval, and some of these join to give spots of an even more irregular shape.

The dark of the outer edges is configured in the three patches in which there are light triangular intrusions from the inner side, which either do not reach the outer edge, where it remains dark, or barely does so, this arrangement being in contrast to (and analogous to) the lines running through this section of the patagia in some of the other species. The dorsum of the body is generally brownish in colour as opposed to strongly green or yellow in other species including in type *D. spilopterus*.

The ventral surface of the patagia is mainly a dull green colour, with barely distinct spots of similar colour to the rest. The sides of the venter of the body at the anterior end are moderately peppered grey.

The upper surface of the patagia on the female is mainly dark brown all over, with a semi-circular arrangement of mainly merged orange dots forming about five radiated lines (anterior to posterior), each running across the body, on which they actually disappear. This dark brown tends to blackish on the outer edges.

The ventral surface of the patagia is mainly a dull green colour, with apparently randomly arranged dark aqua smudges near the outer edge, over which are wavy dull yellow lines radiating from the body outwards, these lines in the main being continuous and formed from tightly spaced and merged dots of somewhat irregular shape.

The sides of the venter of the body at the anterior end are moderately peppered grey.

In both sexes the banding on the body is moderately distinct and alternates light tan and medium to dark brown, the outer edges of the darker banding being triangular in shape, the

points facing outwards, at both anterior and posterior edges as one runs down the median line. Banding on the upper surfaces of the legs is semi-distinct as the contrast between darker and lighter is not great.

Around the eye, there is a close ring that is reddish brown and well defined, followed by a larger blackish ring, also well defined beyond which are dark, light and reddish brown markings on nearby parts of the head.

In both sexes, the iris is a dark grey colour.

The subspecies *D. spilopterus polilloensis* subsp. nov. is separated from the nominate subspecies by *D. spilopterus spilopterus* subsp. nov. by having a reddish tinge to the body and poorly defined markings, if any on the upper surfaces of the limbs. The dewlap is mainly yellow all over, rather than mainly green at the parts near the jaw and is also white at the most distal point.

The morphologically similar and closely related species *D. quadrasii* Boettger, 1893 from the island of Sibuyon, *D. spadix* sp. nov. from Mindoro Island, and *D. romblonensis* sp. nov. from Romblon Island are separated from the preceding six species by 1/ Having a dorsal surface of the patagia that is either yellow to orange all over or with markings so faded as to not be noticeable; 2/ There is a region on the outer edge of the patagia that is black with wave-like markings running across the lateral fringe; 3/ Underneath the patagia is mainly yellow, except for the greyish outer edges; 4/ Markings on the head are strongly contrasting; 5/ The tympanum is also scaled over in these three species, versus not so in the previously grouped species; 6/ A strongly yellow dewlap in the lower or distal parts.

D. spadix sp. nov. is separated from *D. quadrasii* by having a dewlap that is yellow all over, versus pink and then green anteriorly in *D. quadrasii*, as well as having prominent white markings on the upper surfaces of the forelimbs.

There is a dark brown border around the eye instead of a yellow one.

D. romblonensis sp. nov. is separated from the two preceding species by the following characters:

Most of the dorsal surface of the patagia is a dull brown in colour overlain with numerous moderate-sized orange-yellow spots poorly defined and looking more like smudges, giving the general appearance of a light orange-brown colour with ill-defined markings. The outer part is blackish, through which about three thick beige lines of fairly even width run though to the outer edge. Ventrally the patagi is dull dark brown and with numerous evenly scattered elongate yellow dashes (elongate spots) of small size, arranged in about 17-22 lines.

The dorsum is light brown to beige, the darker bands on the body being expanded so that the lighter interspaces are in the form of fairly thin lines only, versus being of similar size to the darker ones in most other species.

The iris is bright orange and around the eye is a poorly defined thin ring of dark chocolate brown, beyond which the nearby parts of the head are beige in colour with extensive dark brown peppering, at times merging to form darker areas or blotches.

Venter is whitish and with significant dark purplish brown peppering, being most prominent both anteriorly and near the flanks.

The dewlap is light yellow all over.

All the preceding species are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the following unique suite of characters (in adult males):

Lacrimal bone absent; nostrils oriented laterally on snout;

patagia not bright red, but is bright yellow, with or without scattered brown spots; six or more ribs supporting patagium; dorsal patagium with or without melanic marginal patch but lacking distinct white spots (as seen in *D. (Draco) ornatus* (Gray, 1845) outlined below); dewlap large, triangular, mainly yellow or white in color; dewlap and ventral surfaces of throat lappets are not tangerine orange; there is no melanic postrictal ocellus enclosing a white tubercle; there is no enlarged, thornlike supraciliary scale; tympanum may or may not be scaled over.

In terms of adult females, they are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the same as for the males (described above) except that if present, the small dewlap is unmarked or speckled, not black and the dorsal surface of the patagia is black or dark brown with pale cream striations or pale cream marbling (both the preceding definitions modified from McGuire and Alcalá 2000).

The morphologically similar species *D. (Draco) ornatus* (Gray, 1845) is readily separated from all the preceding species by having well defined white spots on the side of the head, especially around the eye, similar well defined spots arranged in bands across the upper surface of body at the anterior edge of the darker cross bands, which are on average slightly narrower than the lighter interspaces, as well as about six smallish randomly arranged white spots on the darker blackish outer edge of the patagia (dorsal side).

The upper surface of the patagia is mainly an orange red colour in the nominate form found in most of the range for the species, or a dull yellow colour in *D. ornatus boholensis subsp. nov.*, heavily infused with well defined black spots, as well as with or without significant black smudging on the posterior half to two thirds.

Ventrally the defining feature of the patagia is on the outer edge, where pigment is blackish, within which are about six well-defined white spots. In nominate *D. ornatus ornatus* the ventral surface of the patagia closer to the body is yellowish brown anteriorly and orange posteriorly, heavily marked with darker brownish flecks, versus similar in *D. ornatus boholensis subsp. nov.* but without the heavy darker brownish flecks, instead having a more immaculate colouration and appearance.

The dewlap is reddish-brown anteriorly, and then mainly green and heavily spotted dark brown or black. Only the lower tip is yellowish in colour. Banding on limbs is well defined due to the good contrast between dark and light interspaces.

Iris is grey and there is a well-defined marone (purplish-red) ring around the eye.

The tympanum is scaled over.

The type form of *Draco spilopterus* from central Philippines is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Luzon island*" and in life online at:

<https://www.flickr.com/photos/paulbourdin/4611421064/> and

<https://www.flickr.com/photos/40928097@N07/40502700783/> and

<https://www.inaturalist.org/observations/32740260>

and

<https://www.inaturalist.org/observations/32624603>

and

<https://www.inaturalist.org/observations/32087765>

D. hosei sp. nov. from the Bicol Peninsula region in Southern Luzon is depicted in life online at:

<https://www.inaturalist.org/observations/125620521>

and

<https://www.inaturalist.org/observations/104557480>

D. wellsii sp. nov. from Panay and Negros Islands is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Panay island*" and in life online at:

<https://www.inaturalist.org/observations/21099756>

and

<https://www.inaturalist.org/observations/57761>

and also (dead) at:

https://www.reddit.com/r/herpetology/comments/fbt5om/too_bad_i_wasnt_able_to_see_it_alive_live_only/

D. wellingtoni sp. nov. from Siquijor Island is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Siquijor island*".

D. hawkeswoodi sp. nov. (both sexes) are depicted in life in Supsup *et al.* (2016) in Figs 18 and 19 and one of these images is online at:

https://www.researchgate.net/figure/Draco-spilopterus-male-from-Mt-Lantoy-Photo-by-Puna-N_fig11_308632387

D. wolffi sp. nov. in life is depicted in Siler *et al.* (2012) on page 451 (Fig. 14, A, B, C) and page 452 (Fig. 15).

D. quadrasii Boettger, 1893 from the island of Sibuyon is depicted in life in Siler *et al.* (2012) on pages 450 (bottom right) and 451 (Fig. 13 C and D) and online at:

<https://www.inaturalist.org/observations/53942104>

and

<https://www.inaturalist.org/observations/50414374>

D. spadix sp. nov. is depicted online at:

<https://reptile-database.reptarium.cz/species?genus=Draco&species=quadrasii>

D. romblonensis sp. nov. is depicted in life in Siler *et al.* (2012) on page 451 (Fig 13 A and B).

D. (Draco) ornatus (Gray, 1845) of the type form in life is published online at:

https://www.researchgate.net/figure/Draco-ornatus-has-been-recorded-only-from-Dinagat-Island-and-Agusan-del-Norte-Province_fig28_309224699

The colouration of the Bohol Island subspecies *D. ornatus boholensis subsp. nov.* is depicted in McGuire and Alcalá (2000) on page 92 as "*Draco ornatus*".

Distribution: The subspecies *D. spilopterus polilloensis subsp. nov.* is a taxon confined to the Polillo group of islands from Polillo in the west to Jomalig Island in the east and including Palasn, Patnanongan, Kalongkooan and Kalotkot islands. It has until now been treated as a putative population of the nominate form of *D. (Draco) spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa.

Etymology: The subspecies *D. spilopterus polilloensis subsp. nov.* is named in reflection of where it is found, being the Polillo island group in the Philippines.

DRACO (DRACO) SPADIX SP. NOV.

LSIDurn:lsid:zoobank.org:act:AD4AC19D-477C-4638-A6F4-68988AC7F9BD

Holotype: A preserved specimen at the Texas Natural History Collections, The University of Texas at Austin, Texas, USA, specimen number TNHC 55064 collected from Barangay Lumang Bayan, 24 km from Calapan on Calapan to Puerto Galera Road, Municipality of San Teodoro, on the island of Mindoro, Philippines.

This facility allows access to its holdings.

Paratypes: 1/ Five preserved specimens at the Texas Natural History Collections, The University of Texas at Austin, Texas, USA, specimen numbers TNHC 55065-69 collected

from the island of Mindoro, Philippines., 2/ Three preserved specimens at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen numbers CAS SUR 25766, CAS SUR 25801 and CAS HERP 85662 all collected from the island of Mindoro, Philippines.

Diagnosis: Until now, the species *Draco (Draco) spadix* sp. nov. from Mindoro Island and *D. (Draco) romblonensis* sp. nov. from Romblon Island have been treated as insular populations of the Philippines endemic species *D. quadrasii* herein confined to Sibuyan Island.

The three species are separated from one another as follows:

D. spadix sp. nov. is separated from *D. quadrasii* by having a dewlap that is yellow all over, versus pink and then green anteriorly in *D. quadrasii*, as well as having prominent white markings on the upper surfaces of the forelimbs.

There is a dark brown border around the eye instead of a yellow one.

D. romblonensis sp. nov. is separated from the two preceding species by the following characters:

Most of the dorsal surface of the patagia is a dull brown in colour overlain with numerous moderate-sized orange-yellow spots poorly defined and looking more like smudges, giving the general appearance of a light orange-brown colour with ill-defined markings. The outer part is blackish, through which about three thick beige lines of fairly even width run though to the outer edge. Ventrally the patagia is dull dark green and with numerous evenly scattered elongate yellow dashes (elongate spots) of small size, arranged in about 17-22 lines.

The dorsum is light brown to beige, the darker bands on the body being expanded so that the lighter interspaces are in the form of fairly thin lines only, versus being of similar size to the darker ones in most other species.

The iris is bright orange and around the eye is a poorly defined thin ring of dark chocolate brown, beyond which the nearby parts of the head are beige in colour with extensive dark brown peppering, at times merging to form darker areas or blotches.

Venter is whitish and with significant dark purplish brown peppering, being most prominent both anteriorly and near the flanks.

The dewlap is light yellow all over.

The morphologically similar and closely related species *D. quadrasii* Boettger, 1893 from the island of Sibuyan, *D. spadix* sp. nov. from Mindoro Island, and *D. romblonensis* sp. nov. from Romblon Island are separated from the six species *Draco (Draco) hawkeswoodi* sp. nov. from Cebu Island, *D. (Draco) wellsi* sp. nov. from Negros and Panay Islands, *D. (Draco) hosei* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco) wellingtoni* sp. nov. from Siquijor Island, *D. (Draco) woolfi* sp. nov. from Tablas Island and *D. (Draco) spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa, including the subspecies *D. (Draco) spilopterus polilloensis* sp. nov. from the Polillo group of islands east of Luzon

by 1/ Having a dorsal surface of the patagia that is either yellow to orange all over or with markings so faded as to not be noticeable; 2/ There is a region on the outer edge of the patagia that is black with wave-like markings running across the lateral fringe; 3/ Underneath the patagia is mainly yellow, except for the greyish outer edges; 4/ Markings on the head are strongly contrasting; 5/ The tympanum is also scaled over in these three species, versus not so in the previously grouped species; 6/ A strongly yellow dewlap in the lower or

distal parts.

Until now, the Philippines endemic species *Draco (Draco) hawkeswoodi* sp. nov. from Cebu Island, *D. (Draco) wellsi* sp. nov. from Negros and Panay Islands, *D. (Draco) hosei* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco) wellingtoni* sp. nov. from Siquijor Island and *D. (Draco) woolfi* sp. nov. from Tablas Island have all been treated as populations of putative *D. (Draco) spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa, although a number of earlier authors have suggested that one or more of the preceding named species were in fact separate species.

These six morphologically similar species can be separated from one another as follows:

D. spilopterus has a dorsum in adult males that has four semi-distinct darker cross bands on the dorsum of the body between the fore and hind limbs, that extend across the top and down onto the flanks and having a dorsal patagia (wing membrane) pattern that is mainly yellow, with numerous small semi-distinctly edged dark brown spots, with dark blackish smudging on the outer edge that does not have any well defined lines running through it. The lower surface of the patagia is similar to the upper, with the spotting still reasonably well defined and only a tiny amount of black smudging on the outer edge. The dewlap is dark green with a strong yellow at the distal part. Upper surfaces of the limbs are heavily banded dark, these being moderately thick and well-defined, the lighter interspaces being a middle-green colour. Scales around the eye have a yellowish tinge.

D. hosei sp. nov. is similar in most respects to *D. spilopterus* as just described, but is readily separated from that species by having darker cross bands reduced to spots along the mid dorsal line or adjacent and not extending onto the flanks as is the case in *D. spilopterus*. Banding on the upper limbs is reduced to become incomplete, reduced in intensity or alternatively in the form of spots and triangles. Scales around the eye have a yellowish tinge.

D. wellsi sp. nov. is readily separated from the two preceding species by having spotting on the upper surface of the patagia reduced in terms of the size of the spots, these are now small to tiny, reduced in density so there are less on the patagia and their intensity is reduced so that they are only semi-distinct. The outer edge of the patagia has a lot of dark smudging, through which are three to four, light yellowish-brown wavy lines that pierce it.

The lower surface of the patagia (ventral side) has a generally greyish-yellow-brown colour with spotting so reduced in intensity that it is barely discernable from the similar background colour. While the dorsum is of similar pattern to *D. spilopterus* as in bands extending onto the flanks, these too are blurred in outline, on an otherwise greenish-yellow body. Upper surfaces of the limbs are either unbanded or the bands on the anterior limbs are faint and barely noticeable. The dewlap is lime green near the jawline, becoming whitish, rather than yellow at the distal parts. Scales around the eye have a yellowish tinge.

D. wellingtoni sp. nov. is readily separated from the three preceding species by having an upper surface of the patagia that has a coral-like pattern caused by the dark spotting being surrounded by semi-defined whitish outlines. This pattern is continuous from the body to the outer edge of the patagia and there is no obvious black smudging on the edges. The ventral surface of the patagia is generally yellowish-green but with a series of about 6-10 irregularly shaped spots on the far outer edge. Scales around the eye

have an orangeish tinge.

Banding on the upper surface of the limbs is semi-distinct. The dewlap is greenish brown near the jaw and becomes light green to white at the distal parts.

D. hawkeswoodi sp. nov. is readily separated from the four preceding species by its generally chocolate brown body colour, with obvious white markings running down the back, including a dark brown iris. Females are similar in form but greyish. The dewlap in the male is peppered greyish brown near the jaw and becoming white at the distal parts. Most of the upper surfaces of the limbs are dark brown with two to three irregularly shaped narrow lighter brown bands that are only semi-distinct. Scales around the eye have a brown tinge and form a well defined ring with much darker brown scales outside of this ring. In females there is no such well-defined ring around the eye.

D. woolfi sp. nov. is readily separated from the five preceding species in that the upper surface of the patagia is similar in colour to that of the type form (type subspecies) of *D. spilopterus* but differs from this (and all other species and subspecies) in that the darker spots are of irregular shape, rather than generally circular or oval, and some of these join to give spots of an even more irregular shape.

The dark of the outer edges is configured in the three patches in which there are light triangular intrusions from the inner side, which either do not reach the outer edge, where it remains dark, or barely does so, this arrangement being in contrast to (and analogous to) the lines running through this section of the patagia in some of the other species. The dorsum of the body is generally brownish in colour as opposed to strongly green or yellow in other species including in type *D. spilopterus*.

The ventral surface of the patagia is mainly a dull green colour, with barely distinct spots of similar colour to the rest. The sides of the venter of the body at the anterior end are moderately peppered grey.

The upper surface of the patagia on the female is mainly dark brown all over, with a semi-circular arrangement of mainly merged orange dots forming about five radiated lines (anterior to posterior), each running across the body, on which they actually disappear. This dark brown tends to blackish on the outer edges.

The ventral surface of the patagia is mainly a dull green colour, with apparently randomly arranged dark aqua smudges near the outer edge, over which are wavy dull yellow lines radiating from the body outwards, these lines in the main being continuous and formed from tightly spaced and merged dots of somewhat irregular shape.

The sides of the venter of the body at the anterior end are moderately peppered grey.

In both sexes the banding on the body is moderately distinct and alternates light tan and medium to dark brown, the outer edges of the darker banding being triangular in shape, the points facing outwards, at both anterior and posterior edges as one runs down the median line. Banding on the upper surfaces of the legs is semi-distinct as the contrast between darker and lighter is not great.

Around the eye, there is a close ring that is reddish brown and well defined, followed by a larger blackish ring, also well defined beyond which are dark, light and reddish brown markings on nearby parts of the head.

In both sexes, the iris is a dark grey colour.

The subspecies *D. spilopterus polilloensis* subsp. nov. is separated from the nominate subspecies by *D. spilopterus spilopterus* subsp. nov. by having a reddish tinge to the body

and poorly defined markings, if any on the upper surfaces of the limbs. The dewlap is mainly yellow all over, rather than mainly green at the parts near the jaw and is also white at the most distal point.

All the preceding species are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the following unique suite of characters (in adult males):

Lacrimal bone absent; nostrils oriented laterally on snout; patagia not bright red, but is bright yellow, with or without scattered brown spots; six or more ribs supporting patagium; dorsal patagium with or without melanic marginal patch but lacking distinct white spots (as seen in *D. (Draco) ornatus* (Gray, 1845) outlined below); dewlap large, triangular, mainly yellow or white in color; dewlap and ventral surfaces of throat lappets are not tangerine orange; there is no melanic postrectal ocellus enclosing a white tubercle; there is no enlarged, thornlike supraciliary scale; tympanum may or may not be scaled over.

In terms of adult females, they are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the same as for the males (described above) except that if present, the small dewlap is unmarked or speckled, not black and the dorsal surface of the patagia is black or dark brown with pale cream striations or pale cream marbling (both the preceding definitions modified from McGuire and Alcalá 2000).

The morphologically similar species *D. (Draco) ornatus* (Gray, 1845) is readily separated from all the preceding species by having well defined white spots on the side of the head, especially around the eye, similar well defined spots arranged in bands across the upper surface of body at the anterior edge of the darker cross bands, which are on average slightly narrower than the lighter interspaces, as well as about six smallish randomly arranged white spots on the darker blackish outer edge of the patagia (dorsal side).

The upper surface of the patagia is mainly an orange red colour in the nominate form found in most of the range for the species, or a dull yellow colour in *D. ornatus boholensis* subsp. nov., heavily infused with well defined black spots, as well as with or without significant black smudging on the posterior half to two thirds.

Ventrally the defining feature of the patagia is on the outer edge, where pigment is blackish, within which are about six well-defined white spots. In nominate *D. ornatus ornatus* the ventral surface of the patagia closer to the body is yellowish brown anteriorly and orange posteriorly, heavily marked with darker brownish flecks, versus similar in *D. ornatus boholensis* subsp. nov. but without the heavy darker brownish flecks, instead having a more immaculate colouration and appearance.

The dewlap is reddish-brown anteriorly, and then mainly green and heavily spotted dark brown or black. Only the lower tip is yellowish in colour. Banding on limbs is well defined due to the good contrast between dark and light interspaces.

Iris is grey and there is a well-defined marone (purplish-red) ring around the eye.

The tympanum is scaled over.

The type form of *Draco spilopterus* from central Philippines is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Luzon island*" and in life online at: <https://www.flickr.com/photos/paulbourdin/4611421064/> and

<https://www.flickr.com/photos/40928097@N07/40502700783/>

and
<https://www.inaturalist.org/observations/32740260>
 and
<https://www.inaturalist.org/observations/32624603>
 and
<https://www.inaturalist.org/observations/32087765>
D. hoseae sp. nov. from the Bicol Peninsula region in Southern Luzon is depicted in life online at:
<https://www.inaturalist.org/observations/125620521>
 and
<https://www.inaturalist.org/observations/104557480>
D. wellsi sp. nov. from Panay and Negros Islands is depicted in McGuire and Alcalá (2000) on page 117 as “*Draco spilopterus* / Panay island” and in life online at:
<https://www.inaturalist.org/observations/21099756>
 and
<https://www.inaturalist.org/observations/57761>
 and also (dead) at:
https://www.reddit.com/r/herpetology/comments/fbt5om/too_bad_i_wasnt_able_to_see_it_alive_ive_only/wellingtoni
D. wellingtoni sp. nov. from Siquijor Island is depicted in McGuire and Alcalá (2000) on page 117 as “*Draco spilopterus* / Siquijor island”.
D. hawkeswoodi sp. nov. (both sexes) are depicted in life in Supsup *et al.* (2016) in Figs 18 and 19 and one of these images is online at:
https://www.researchgate.net/figure/Draco-spilopterus-male-from-Mt-Lantoy-Photo-by-Puna-N_fig11_308632387
D. wolffi sp. nov. in life is depicted in Siler *et al.* (2012) on page 451 (Fig. 14, A, B, C) and page 452 (Fig. 15).
D. quadrasi Boettger, 1893 from the island of Sibuyon is depicted in life in Siler *et al.* (2012) on pages 450 (bottom right) and 451 (Fig. 13 C and D) and online at:
<https://www.inaturalist.org/observations/53942104>
 and
<https://www.inaturalist.org/observations/50414374>
D. spadix sp. nov. is depicted online at:
<https://reptile-database.reptarium.cz/species?genus=Draco&species=quadrasi>
D. romblonensis sp. nov. is depicted in life in Siler *et al.* (2012) on page 451 (Fig 13 A and B).
D. (Draco) ornatus (Gray, 1845) of the type form in life is published online at:
https://www.researchgate.net/figure/Draco-ornatus-has-been-recorded-only-from-Dinagat-Island-and-Agusan-del-Norte-Province_fig28_309224699
 The colouration of the Bohol Island subspecies *D. ornatus boholensis* subsp. nov. is depicted in McGuire and Alcalá (2000) on page 92 as “*Draco ornatus*”.
Distribution: *Draco (Draco) spadix* sp. nov. appears to be restricted to Mindoro Island, Philippines.
Etymology: The new species name “*spadix*” comes from the Latin word, which means brown, in reflection of the dorsal colouration of adults of this species.
DRACO (DRACO) ROMBLONENSIS SP. NOV.
LSIDurn: [lsid:zoobank.org:act:65A301AF-E22B-4D4D-90F2-6133A8D1AFE0](https://zoobank.org/act:65A301AF-E22B-4D4D-90F2-6133A8D1AFE0)
Holotype: A preserved adult male specimen at the Smithsonian Institution, National Museum of Natural History, Washington DC, USA, (Amphibians and Reptiles) specimen number USNM 38638 collected from Romblon Island, Philippines.
 This facility allows access to its holdings.

Paratypes: All collected from collected from Romblon Island, Philippines. 1/ Five preserved specimens at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen numbers CAS HERP 128151, 128162, 128168, 128169 and 185499., 2/ Three preserved specimens at the Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA specimen numbers MCZ Herp R 20095, 20096 and 20097., 3/ Two preserved specimens at the Smithsonian Institution, National Museum of Natural History, Washington, DC, USA, (Amphibians and Reptiles) specimen numbers USNM 496889, 496890.

Diagnosis: Until now, the species *Draco (Draco) romblonensis* sp. nov. from Romblon Island and *D. (Draco) spadix* sp. nov. from Mindoro Island have been treated as insular populations of the Philippines endemic species *D. quadrasi* herein confined to Sibuyan Island.

The three species are separated from one another as follows:

D. spadix sp. nov. is separated from *D. quadrasi* by having a dewlap that is yellow all over, versus pink and then green anteriorly in *D. quadrasi*, as well as having prominent white markings on the upper surfaces of the forelimbs.

There is a dark brown border around the eye instead of a yellow one.

D. romblonensis sp. nov. is separated from the two preceding species by the following characters:

Most of the dorsal surface of the patagia is a dull brown in colour overlain with numerous moderate-sized orange-yellow spots poorly defined and looking more like smudges, giving the general appearance of a light orange-brown colour with ill-defined markings. The outer part is blackish, through which about three thick beige lines of fairly even width run though to the outer edge. Ventrally the patagi is dull dark brown and with numerous evenly scattered elongate yellow dashes (elongate spots) of small size, arranged in about 17-22 lines.

The dorsum is light brown to beige, the darker bands on the body being expanded so that the lighter interspaces are in the form of fairly thin lines only, versus being of similar size to the darker ones in most other species.

The iris is bright orange and around the eye is a poorly defined thin ring of dark chocolate brown, beyond which the nearby parts of the head are beige in colour with extensive dark brown peppering, at times merging to form darker areas or blotches.

Venter is whitish and with significant dark purplish brown peppering, being most prominent both anteriorly and near the flanks.

The dewlap is light yellow all over.

The morphologically similar and closely related species *D. quadrasi* Boettger, 1893 from the island of Sibuyan, *D. spadix* sp. nov. from Mindoro Island, and *D. romblonensis* sp. nov. from Romblon Island are separated from the six species *Draco (Draco) hawkeswoodi* sp. nov. from Cebu Island, *D. (Draco) wellsi* sp. nov. from Negros and Panay Islands, *D. (Draco) hoseae* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco) wellingtoni* sp. nov. from Siquijor Island, *D. (Draco) wolffi* sp. nov. from Tablas Island and *D. (Draco) spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa, including the subspecies *D. (Draco) spilopterus polilloensis* sp. nov. from the Polillo group of islands east of Luzon

by 1/ Having a dorsal surface of the patagia that is either yellow to orange all over or with markings so faded as to not

be noticeable; 2/ There is a region on the outer edge of the patagia that is black with wave-like markings running across the lateral fringe; 3/ Underneath the patagia is mainly yellow, except for the greyish outer edges; 4/ Markings on the head are strongly contrasting; 5/ The tympanum is also scaled over in these three species, versus not so in the previously grouped species; 6/ A strongly yellow dewlap in the lower or distal parts.

Until now, the Philippines endemic species *Draco* (*Draco*) *hawkeswoodi* sp. nov. from Cebu Island, *D. (Draco)* *wellsi* sp. nov. from Negros and Panay Islands, *D. (Draco)* *hoserae* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco)* *wellingtoni* sp. nov. from Siquijor Island and *D. (Draco)* *woolffi* sp. nov. from Tablas Island have all been treated as populations of putative *D. (Draco)* *spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa, although a number of earlier authors have suggested that one or more of the preceding named species were in fact separate species.

These six morphologically similar species can be separated from one another as follows:

D. spilopterus has a dorsum in adult males that has four semi-distinct darker cross bands on the dorsum of the body between the fore and hind limbs, that extend across the top and down onto the flanks and having a dorsal patagia (wing membrane) pattern that is mainly yellow, with numerous small semi-distinctly edged dark brown spots, with dark blackish smudging on the outer edge that does not have any well defined lines running through it. The lower surface of the patagia is similar to the upper, with the spotting still reasonably well defined and only a tiny amount of black smudging on the outer edge. The dewlap is dark green with a strong yellow at the distal part. Upper surfaces of the limbs are heavily banded dark, these being moderately thick and well-defined, the lighter interspaces being a middle-green colour. Scales around the eye have a yellowish tinge.

D. hoserae sp. nov. is similar in most respects to *D. spilopterus* as just described, but is readily separated from that species by having darker cross bands reduced to spots along the mid dorsal line or adjacent and not extending onto the flanks as is the case in *D. spilopterus*. Banding on the upper limbs is reduced to become incomplete, reduced in intensity or alternatively in the form of spots and triangles. Scales around the eye have a yellowish tinge.

D. wellsii sp. nov. is readily separated from the two preceding species by having spotting on the upper surface of the patagia reduced in terms of the size of the spots, these are now small to tiny, reduced in density so there are less on the patagia and their intensity is reduced so that they are only semi-distinct. The outer edge of the patagia has a lot of dark smudging, through which are three to four, light yellowish-brown wavy lines that pierce it.

The lower surface of the patagia (ventral side) has a generally greyish-yellow-brown colour with spotting so reduced in intensity that it is barely discernable from the similar background colour. While the dorsum is of similar pattern to *D. spilopterus* as in bands extending onto the flanks, these too are blurred in outline, on an otherwise greenish-yellow body. Upper surfaces of the limbs are either unbanded or the bands on the anterior limbs are faint and barely noticeable. The dewlap is lime green near the jawline, becoming whitish, rather than yellow at the distal parts. Scales around the eye have a yellowish tinge.

D. wellingtoni sp. nov. is readily separated from the three preceding species by having an upper surface of the patagia

that has a coral-like pattern caused by the dark spotting being surrounded by semi-defined whitish outlines. This pattern is continuous from the body to the outer edge of the patagia and there is no obvious black smudging on the edges. The ventral surface of the patagia is generally yellowish-green but with a series of about 6-10 irregularly shaped spots on the far outer edge. Scales around the eye have an orangeish tinge.

Banding on the upper surface of the limbs is semi-distinct. The dewlap is greenish brown near the jaw and becomes light green to white at the distal parts.

D. hawkeswoodi sp. nov. is readily separated from the four preceding species by its generally chocolate brown body colour, with obvious white markings running down the back, including a dark brown iris. Females are similar in form but greyish. The dewlap in the male is peppered greyish brown near the jaw and becoming white at the distal parts. Most of the upper surfaces of the limbs are dark brown with two to three irregularly shaped narrow lighter brown bands that are only semi-distinct. Scales around the eye have a brown tinge and form a well defined ring with much darker brown scales outside of this ring. In females there is no such well-defined ring around the eye.

D. woolffi sp. nov. is readily separated from the five preceding species in that the upper surface of the patagia is similar in colour to that of the type form (type subspecies) of *D. spilopterus* but differs from this (and all other species and subspecies) in that the darker spots are of irregular shape, rather than generally circular or oval, and some of these join to give spots of an even more irregular shape.

The dark of the outer edges is configured in the three patches in which there are light triangular intrusions from the inner side, which either do not reach the outer edge, where it remains dark, or barely does so, this arrangement being in contrast to (and analogous to) the lines running through this section of the patagia in some of the other species. The dorsum of the body is generally brownish in colour as opposed to strongly green or yellow in other species including in type *D. spilopterus*.

The ventral surface of the patagia is mainly a dull green colour, with barely distinct spots of similar colour to the rest. The sides of the venter of the body at the anterior end are moderately peppered grey.

The upper surface of the patagia on the female is mainly dark brown all over, with a semi-circular arrangement of mainly merged orange dots forming about five radiated lines (anterior to posterior), each running across the body, on which they actually disappear. This dark brown tends to blackish on the outer edges.

The ventral surface of the patagia is mainly a dull green colour, with apparently randomly arranged dark aqua smudges near the outer edge, over which are wavy dull yellow lines radiating from the body outwards, these lines in the main being continuous and formed from tightly spaced and merged dots of somewhat irregular shape.

The sides of the venter of the body at the anterior end are moderately peppered grey.

In both sexes the banding on the body is moderately distinct and alternates light tan and medium to dark brown, the outer edges of the darker banding being triangular in shape, the points facing outwards, at both anterior and posterior edges as one runs down the median line. Banding on the upper surfaces of the legs is semi-distinct as the contrast between darker and lighter is not great.

Around the eye, there is a close ring that is reddish brown

and well defined, followed by a larger blackish ring, also well defined beyond which are dark, light and reddish brown markings on nearby parts of the head.

In both sexes, the iris is a dark grey colour.

The subspecies *D. spilopterus polilloensis subsp. nov.* is separated from the nominate subspecies by *D. spilopterus spilopterus subsp. nov.* by having a reddish tinge to the body and poorly defined markings, if any on the upper surfaces of the limbs. The dewlap is mainly yellow all over, rather than mainly green at the parts near the jaw and is also white at the most distal point.

All the preceding species are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the following unique suite of characters (in adult males):

Lacrimal bone absent; nostrils oriented laterally on snout; patagia not bright red, but is bright yellow, with or without scattered brown spots; six or more ribs supporting patagium; dorsal patagium with or without melanic marginal patch but lacking distinct white spots (as seen in *D. (Draco) ornatus* (Gray, 1845) outlined below); dewlap large, triangular, mainly yellow or white in color; dewlap and ventral surfaces of throat lappets are not tangerine orange; there is no melanic postriacal ocellus enclosing a white tubercle; there is no enlarged, thornlike supraciliary scale; tympanum may or may not be scaled over.

In terms of adult females, they are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the same as for the males (described above) except that if present, the small dewlap is unmarked or speckled, not black and the dorsal surface of the patagia is black or dark brown with pale cream striations or pale cream marbling (both the preceding definitions modified from McGuire and Alcalá 2000).

The morphologically similar species *D. (Draco) ornatus* (Gray, 1845) is readily separated from all the preceding species by having well defined white spots on the side of the head, especially around the eye, similar well defined spots arranged in bands across the upper surface of body at the anterior edge of the darker cross bands, which are on average slightly narrower than the lighter interspaces, as well as about six smallish randomly arranged white spots on the darker blackish outer edge of the patagia (dorsal side).

The upper surface of the patagia is mainly an orange red colour in the nominate form found in most of the range for the species, or a dull yellow colour in *D. ornatus boholensis subsp. nov.*, heavily infused with well defined black spots, as well as with or without significant black smudging on the posterior half to two thirds.

Ventrally the defining feature of the patagia is on the outer edge, where pigment is blackish, within which are about six well-defined white spots. In nominate *D. ornatus ornatus* the ventral surface of the patagia closer to the body is yellowish brown anteriorly and orange posteriorly, heavily marked with darker brownish flecks, versus similar in *D. ornatus boholensis subsp. nov.* but without the heavy darker brownish flecks, instead having a more immaculate colouration and appearance.

The dewlap is reddish-brown anteriorly, and then mainly green and heavily spotted dark brown or black. Only the lower tip is yellowish in colour. Banding on limbs is well defined due to the good contrast between dark and light interspaces.

Iris is grey and there is a well-defined marone (purplish-red) ring around the eye.

The tympanum is scaled over.

The type form of *Draco spilopterus* from central Philippines is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Luzon island*" and in life online at: <https://www.flickr.com/photos/paulbourdin/4611421064/> and

<https://www.flickr.com/photos/40928097@N07/40502700783/> and

<https://www.inaturalist.org/observations/32740260> and

<https://www.inaturalist.org/observations/32624603> and

<https://www.inaturalist.org/observations/32087765>

D. hoserae sp. nov. from the Bicol Peninsula region in Southern Luzon is depicted in life online at:

<https://www.inaturalist.org/observations/125620521> and

<https://www.inaturalist.org/observations/104557480>

D. wellsii sp. nov. from Panay and Negros Islands is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Panay island*" and in life online at:

<https://www.inaturalist.org/observations/21099756> and

<https://www.inaturalist.org/observations/57761>

and also (dead) at:

https://www.reddit.com/r/herpetology/comments/fbt5om/too_bad_i_wasnt_able_to_see_it_alive_ive_only/

D. wellingtoni sp. nov. from Siquijor Island is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Siquijor island*".

D. hawkeswoodi sp. nov. (both sexes) are depicted in life in Supsup *et al.* (2016) in Figs 18 and 19 and one of these images is online at:

https://www.researchgate.net/figure/Draco-spilopterus-male-from-Mt-Lantoy-Photo-by-Puna-N_fig11_308632387

D. wolffi sp. nov. in life is depicted in Siler *et al.* (2012) on page 451 (Fig. 14, A, B, C) and page 452 (Fig. 15).

D. quadrasii Boettger, 1893 from the island of Sibuyan is depicted in life in Siler *et al.* (2012) on pages 450 (bottom right) and 451 (Fig. 13 C and D) and online at:

<https://www.inaturalist.org/observations/53942104> and

<https://www.inaturalist.org/observations/50414374>

D. spadix sp. nov. is depicted online at:

<https://reptile-database.reptarium.cz/species?genus=Draco&species=quadrasii>

D. romblonensis sp. nov. is depicted in life in Siler *et al.* (2012) on page 451 (Fig 13 A and B).

D. (Draco) ornatus (Gray, 1845) of the type form in life is published online at:

https://www.researchgate.net/figure/Draco-ornatus-has-been-recorded-only-from-Dinagat-Island-and-Agusan-del-Norte-Province_fig28_309224699

The colouration of the Bohol Island subspecies *D. ornatus boholensis subsp. nov.* is depicted in McGuire and Alcalá (2000) on page 92 as "*Draco ornatus*".

Distribution: *Draco (Draco) romblonensis sp. nov.* appears to be restricted to Romblon Island, Philippines. This island has a land area of about 83 square km, making this a range-restricted endemic. It should therefore be immediately listed as a vulnerable species.

Etymology: The new species name "*romblonensis*" reflects the name of the place this taxon occurs.

DRACO (DRACO) ORNATUS BOHOLENSIS SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:28D19C37-A9A8-4EDA-8CEB-FECE3649AA8B

Holotype: A preserved specimen at the Smithsonian Institution, National Museum of Natural History, Washington DC, USA, (Amphibians and Reptiles) specimen number USNM 229010 collected from the Sierra Bullones, 9 km east of, Abachanan (= Abacajan) Barrio, Bohol Island, Philippines. This facility allows access to its holdings.

Paratypes: All collected from Bohol Island, Philippines.

1/ 51 preserved specimens at the Smithsonian Institution, National Museum of Natural History, Washington DC, USA, (Amphibians and Reptiles) specimen numbers USNM 228979, 28981,

228983, 228986, 228987-89, 228992, 228994-96, 228998-229004, 229007, 229011-13, 229015-18,

229020, 229022-24, 229030, 229032-33, 229035, 229039-40, 229042-47, 229049-52, 229054, 29057-59, 229061-62.

2/ Six preserved specimens at the Texas Natural History Collections, The University of Texas at Austin, Texas, USA, specimen numbers TNHC 58464, 58507-9, 58512, 58851.

Diagnosis: Until now, *Draco (Draco) ornatus boholensis subsp. nov.* has been treated as an insular population of *D. ornatus* (Gray, 1845) with a type locality of the Philippines but based on Gray's original description and the more detailed description of the same material by Boulenger in 1885, the type material is of the form found on the islands of Leyte and Samar, which is also similar in form to the specimens from Dingat and northern Mindanao.

Specimens from the island of Bohol are quite different morphologically from the type form and so are herein formally named as the subspecies *D. ornatus boholensis subsp. nov.*

They are separated from one another as follows:

The upper surface of the patagia is mainly an orange red colour in the nominate form found in most of the range for the species, or a dull yellow colour in *D. ornatus boholensis subsp. nov.*, heavily infused with well defined black spots, as well as with or without significant black smudging on the posterior half to two thirds.

Ventrally the defining feature of the patagia is on the outer edge, where pigment is blackish, within which are about six well-defined white spots. In nominate *D. ornatus ornatus* the ventral surface of the patagia closer to the body is yellowish brown anteriorly and orange posteriorly, heavily marked with darker brownish flecks, versus similar in *D. ornatus boholensis subsp. nov.* but without the heavy darker brownish flecks, instead having a more immaculate colouration and appearance.

On adult males, the white spots on the body strongly contrast against the dark greyish green dorsum of *D. ornatus boholensis subsp. nov.* versus less so in *D. ornatus ornatus* which typically has a lighter brown dorsum.

The white spots on the black distal part of the upper surface of the patagia are quite large in *D. ornatus ornatus* versus small in *D. ornatus boholensis subsp. nov.*

D. (Draco) ornatus (Gray, 1845) of both subspecies are readily separated from the morphologically similar species *Draco (Draco) hawkeswoodi sp. nov.* from Cebu Island, *D. (Draco) wellsi sp. nov.* from Negros and Panay Islands, *D. (Draco) hoseræ sp. nov.* from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco) wellingtoni sp. nov.* from Siquijor Island and *D. (Draco) wolffi sp. nov.* from Tablas Island, *D. (Draco) spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa,

including the subspecies *D. (Draco) spilopterus polilloensis subsp. nov.* from the Polillo Islands east of there, *Draco (Draco) romblonensis sp. nov.* from Romblon Island, *D. (Draco) spadix sp. nov.* from Mindoro Island and *D. quadrasii* herein confined to Sibuyan Island by the following suite of characters:

They have well defined white spots on the side of the head, especially around the eye, similar well defined spots arranged in bands across the upper surface of body at the anterior edge of the darker cross bands, which are on average slightly narrower than the lighter interspaces, as well as about six smallish randomly arranged white spots on the darker blackish outer edge of the patagia (dorsal side).

The upper surface of the patagia is mainly an orange red colour in the nominate form found in most of the range for the species, or a dull yellow colour in *D. ornatus boholensis subsp. nov.*, heavily infused with well defined black spots, as well as with or without significant black smudging on the posterior half to two thirds.

Ventrally the defining feature of the patagia is on the outer edge, where pigment is blackish, within which are about six well-defined white spots. In nominate *D. ornatus ornatus* the ventral surface of the patagia closer to the body is yellowish brown anteriorly and orange posteriorly, heavily marked with darker brownish flecks, versus similar in *D. ornatus boholensis subsp. nov.* but without the heavy darker brownish flecks, instead having a more immaculate colouration and appearance.

The dewlap is reddish-brown anteriorly, and then mainly green and heavily spotted dark brown or black. Only the lower tip is yellowish in colour. Banding on limbs is well defined due to the good contrast between dark and light interspaces.

Iris is grey and there is a well-defined marone (purplish-red) ring around the eye.

The tympanum is scaled over.

Male *D. (Draco) ornatus* (Gray, 1845) of both subspecies are separated from all Philippine *Draco* species by the following suite of characters:

Lacrimal bone absent; nostrils oriented laterally on snout; dewlap and ventral surfaces of throat lappets not tangerine orange; dewlap large, triangular, distal half of dewlap is vivid green; Six or more ribs supporting patagium; no melanistic postrictal ocellus enclosing a white tubercle; no enlarged, thornlike supraciliary scale; tympanum scaled over; dorsal patagium with a large melanistic marginal patch enclosing several distinct, white spots; patagia is not bright red.

Female *D. (Draco) ornatus* (Gray, 1845) of both subspecies are separated from all Philippine *Draco* species by the the same characters as for the males except for the following:

1/ If present, the small dewlap is unmarked or speckled, not black;

2/ Dorsal patagium vivid orange and red with black marbling, a large melanistic marginal patch enclosing several crisp, white spots (the preceding diagnosis being modified from McGuire and Alcalá 2000).

D. (Draco) ornatus (Gray, 1845) of the type form in life is published online at:

https://www.researchgate.net/figure/Draco-ornatus-has-been-recorded-only-from-Dinagat-Island-and-Agusan-del-Norte-Province_fig28_309224699

The colouration of the Bohol Island subspecies *D. ornatus boholensis subsp. nov.* is depicted in McGuire and Alcalá (2000) on page 92 as "*Draco ornatus*".

Distribution: *Draco (Draco) ornatus boholensis subsp. nov.*

is restricted to Bohol and Lapin Islands, The Philippines. Nominative *D. ornatus* occupy the remainder of the range of the species, being Samar, Leyte, Dingat, Northern Mindanao and immediately offshore islets.

Etymology: *D. ornatus boholensis* subsp. nov. is named in reflection of the type locality for this taxon.

DRACO (DRACO) CYANOPTERUS EXQUISITA SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:439D508E-72E0-42C0-A85F-01A1B612EDA0

Holotype: A preserved specimen at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen number CAS SUR 28349 collected from Mount Mambajao, 6 km north, (60 degrees East) of Catarman town, Camiguin Sub-province, Misamis Oriental at 548 metres ASL, Camiguin Island, Philippines, Latitude 9.1639194 N., Longitude 124.714161 E.

This facility allows access to its holdings.

Paratypes: All from Camiguin Island, the Philippines.

1/ Two preserved specimens at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen numbers CAS SUR 28200 and CAS SUR 28339.

2/ Nine preserved specimens at the University of Kansas Biodiversity Institute. Kansas, USA, KUBI Herpetology Collection, specimen numbers KU KUH 309937 to KU KUH 309945.

Diagnosis: The insular population of *Draco (Draco) cyanopterus exquisita* subsp. nov. restricted to Camiguin Island and most abundant around Mount Mambajao is readily separated from the nominate form of *D. cyanopterus* Peters, 1867 from Mindanao, Dingat and Siargo as follows:

D. cyanopterus exquisita subsp. nov. has reduced green on the dorsal parts of the patagia. In nominate *D. cyanopterus cyanopterus* it is an emerald green across the main part of the mid section of the patagia, broken only by 3 brown lines that intersect them, occasionally with a reduction in green at the posterior edge in some specimens.

In *D. cyanopterus exquisita* subsp. nov. this green is reduced to be more of a dark green smudge and with greater intrusions of brown across the mid-section of the dorsal parts of the patagia.

In *D. cyanopterus cyanopterus* slightly more than half of the dewlap (that closest to the jaw) is not yellow, versus more than half in *D. cyanopterus exquisita* subsp. nov..

In *D. cyanopterus cyanopterus* the white, yellow or beige on the body side of the dorsal surface of the patagia is mainly in the form of poorly defined circles, versus as irregularly shaped smudges in *D. cyanopterus exquisita* subsp. nov..

McGuire and Alcala (2000) gave a definition of *D. cyanopterus*, adopted and repeated verbatim here as part of this description.

The two relevant subspecies:

"can be distinguished from all other species of *Draco* in the Philippines by the following combination of characteristics:

- (1) moderately large size [maximum SVL of males = 89 mm ($n = 11$), females = 95 mm ($n = 6$)];
- (2) nostrils oriented laterally;
- (3) presence of an enlarged, thornlike supraciliary scale;
- (4) dorsal scales variable in size, often with strong keeling;
- (5) tympanum large, unscaled;
- (6) mode of six ribs supporting patagium;
- (7) lacrimal bone absent;
- (8) large black postrictal ocellus surrounding an enlarged white tubercle absent;
- (9) dorsal patagial coloration of males composed of large pale spots within a thin, dark brown to black reticulum with

enlarged, unscaled, chartreuse patches between ribs; (10) dorsal patagial coloration of females with dark reticulum or mottling overlying peach to orange proximally, medial portion of each wing mottled with black and either dark green or orange, distal third of patagium with several large black patches separated by gray bars that overlay ribs; (11) ventral surface of the patagium salmon in most males, sometimes yellow, immaculate or with a few small melanistic spots proximally or near patagial margin; (12) ventral surface of patagium in females yellow, immaculate or with few small melanistic spots proximally or near patagial margin; (13) males with triangular dewlap, reddish brown with white spots proximally, orange-yellow distally; (14) gray, tan, or brown dorsal body coloration in both sexes; (15) orbital region of males heavily suffused with dark pigments."

Distribution: The insular population of *Draco (Draco) cyanopterus exquisita* subsp. nov. is restricted to Camiguin Island and most abundant around Mount Mambajao. The island is 229.8 square km in area.

Etymology: *Draco (Draco) cyanopterus exquisita* subsp. nov. is named in reflection of the exquisite appearance of these lizards.

DRACO (DRACO) VIRENS SP. NOV.

LSIDurn:lsid:zoobank.org:act:399CAAEE7-B8D7-4B05-AD5A-DB688A61C375

Holotype: A preserved specimen at the Louisiana State University Museum of Natural Science, Louisiana, USA, specimen number LSUMZ Herps 41748 collected from Baracatan, Davao Province, Mindanao, Philippines, Latitude 6.9783 N., Longitude 125.4207 E.

This facility allows access to its holdings.

Paratypes: Four preserved specimens at the Smithsonian Institution, National Museum of Natural History, Washington DC, USA, (Amphibians and Reptiles) specimen numbers USNM 34752 to 34755 all collected from Mount Apo, Mindanao Island, Philippines, Latitude 6.9875 N., Longitude 125.2710 E.

Diagnosis: Until now, each of the Philippine endemic species *D. (Draco) virens* sp. nov. from south-east Mindanao, *D. (Draco) oculiscaeruleis* sp. nov. from Bongao, Jolo, Sanga Sanga and Siasi islands in the Sulu Archipelago and *D. (Draco) magnaauris* sp. nov. from Siminul Island in the Tawi Tawi group have been treated as localized populations of *D. (Draco) guentheri* Boulenger, 1885, herein restricted to south-west Mindanao (south of Nasipit in the north, west of Malaybalay in the north-east and Pikit in the south east).

Each species, are separated from one another by significant biogeographical barriers including in the cases of *D. oculiscaeruleis* sp. nov. and *D. magnaauris* sp. nov. by deep sea barriers separating the species from all others, these barriers remaining during ice-age maxima.

D. (Draco) virens sp. nov. appears to have a centre of distribution in the Davao Del Sur, which is mainly separated by low-lying areas, including the wider Mindanao Basin from the Butwig Mountains and adjacent ranges to the immediate north, west and south-west along the Zamboanga Peninsula, which is the centre of distribution for *D. guentheri*. It is assumed that the populations of the two taxa as defined herein have remained allopatric during the most recent glacial maxima.

The four relevant species are separated from one another as follows:

D. (Draco) virens sp. nov. appears to be morphologically the most divergent of the four species and is most easily separated from the other three species by:

1/ Having the tympanum covered with small scales, versus large prominent and unscaled in the other three species;
2/ There is an absence of the enlarged thorn-like supraciliary scale seen in the other three species;

3/ The upper labials below the eye are yellow in colour, versus faded green in *D. guentheri*, green in *D. oculiscaeruleis* sp. nov. and marked dark in colour on a green background in *D. magnaauris* sp. nov..

D. (Draco) virens sp. nov. is further separated from each of *D. guentheri*, *D. oculiscaeruleis* sp. nov. and *D. magnaauris* sp. nov. by having a dewlap that is bright green all over, spotted dark, with white at the distal tip, versus unspotted green anteriorly, followed with greyish-purple-brown or brownish-red in the middle and then bright yellow on the tip in nominate *D. guentheri*.; versus unspotted green anteriorly, light yellow becoming darker distally in *D. oculiscaeruleis* sp. nov.; or green with dark mottling anteriorly, then mainly white and then yellow on the tip in *D. magnaauris* sp. nov..

The upper surface of the patagia in *D. virens* sp. nov. has a rich olive green background overlain with a latticework of black, as well as scattered large green dots, with blurred edges and mainly on the outer parts of the patagia.

The general appearance is of a marbled look. The dorsal surface of the patagia of *D. guentheri*, *D. magnaauris* sp. nov. and *D. oculiscaeruleis* sp. nov. is more generally green, with the black in the form of peppering and overall not a marbled look, as is the case in *D. virens* sp. nov.. In *D. magnaauris* sp. nov. the dorsal surface of the patagia is different from the other species in that it is best described as being generally green with black markings overlaying it in the form of semidistinct radial lines or blotches arranged to be radiating from the body between the wider green interspaces. For *D. virens* sp. nov. the underneath of the patagia is a light dull olive colour, becoming darker as one moves out from the body and then with an olive marbled near black area at the outer edge.

For *D. guentheri*, *D. magnaauris* sp. nov. and *D. oculiscaeruleis* sp. nov. the underneath of the patagia is a salmon colour near the body, becoming a purplish red or brick red towards the outer edges.

Black markings on the dorsum of the body tending to form bands are prominent in *D. virens* sp. nov. and *D. magnaauris* sp. nov., but not so in *D. guentheri*. and *D. oculiscaeruleis* sp. nov..

The iris of *D. virens* sp. nov. is a deep dark aqua-grey colour, versus light aqua with a slight green tinge in *D. guentheri*, greenish grey in *D. oculiscaeruleis* sp. nov. and greyish-brown in *D. magnaauris* sp. nov..

Dark markings on the upper surfaces of the limbs are prominent in *D. virens* sp. nov., but not so in the other three species.

McGuire and Alcalá (2000) reported that *D. magnaauris* sp. nov. as identified herein appear to be smaller in adult size than the other three species.

Draco rizali Wandolleck, 1900, with a type locality of Dapitan, Mindanao is a junior synonym of *D. guentheri* as defined herein, meaning the name was not available for the newly named species.

The four preceding species, being *D. guentheri* Boulenger, 1885, *D. virens* sp. nov., *D. oculiscaeruleis* sp. nov. and *D. magnaauris* sp. nov. are separated from all other Philippine and Borneo species of *Draco* by the following suite of characters:

1/ Moderately large size [maximum SVL of males = 85 mm, females = 97 mm;

2/ Nostrils oriented laterally;

3/ Enlarged, thornlike supraciliary scale present;

4/ Dorsal scales variable in size, often with strong keeling;

5/ Presence of large, unscaled tympanum (3 species) or scaled tympanum (1 species);

6/ Mode of six ribs supporting patagium;

7/ Lacrimal bone absent;

8/ Large black postorbital ocellus surrounding an enlarged white tubercle absent;

9/ Dorsal patagial coloration of males dark green with numerous spots of bluish or yellow-green, outer margin salmon;

10/ Dorsal patagial coloration of females black, with slight gray wash, enclosing bright reddish to orange spots;

11/ In males, ventral surface of patagium is salmon or brick red to purple (lighter in the inner regions), usually with only one dark spot near the outer margin or alternatively olive green becoming dark at the outer edges;

12/ In females, the ventral surface of the patagium is light yellow, with variable numbers of small dark spots;

13/ Males with triangular dewlap, usually green near the jaw, then orange, purple or reddish midway with a bright yellow or white tip, sometimes mainly yellow in the distal regions;

14/ Green dorsal body coloration in males, with black flecks, peppering or marbling; females are a metallic, iridescent gray;

15/ Males with orbital region heavily suffused with dark pigment forming an unbroken dark ring in the two Mindanao species (*D. guentheri* and *D. virens* sp. nov.) and a broken ring in the two Sulu Archipelago species (*D. oculiscaeruleis* sp. nov. and *D. magnaauris* sp. nov.)

(the preceding was adapted and modified from Taylor 1922 and McGuire and Alcalá 2000).

Distribution: *D. (Draco) virens* sp. nov. appears to have a centre of distribution in the the Davao Del Sur, Mindanao Island, Philippines, which is mainly separated by low-lying areas, including the wider Mindanao Basin from the Butwig Mountains and adjacent ranges to the immediate north, west and south-west along the Zamboanga Peninsula, which is the centre of distribution for *D. guentheri*. It is assumed that the populations of the two taxa as defined herein have remained allopatric during the most recent glacial maxima.

Etymology: The new species name *D. (Draco) virens* sp. nov. comes from the Latin word "virens" which means green, in reflection of the colour of the adult male lizards.

DRACO (DRACO) OCULISCAERULEIS SP. NOV.

LSIDurn:lsid:zoobank.org:act:36033341-331E-4EBA-832E-86F435E86515

Holotype: A preserved adult specimen at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen number CAS HERP 60889 collected from Jolo Island, Philippines, Latitude 5.979764 N., Longitude 121.194094 E.

This facility allows access to its holdings.

Paratypes: All collected from Jolo Island, Philippines, Latitude 5.979764 N., Longitude 121.194094 E.

1/ Eight preserved specimens at the California Academy of Sciences, San Francisco, USA, herpetology collection, specimen numbers CAS 18410-18411 and 60890-60895.

2/ Six preserved specimens at the Smithsonian Institution, National Museum of Natural History, Washington, DC, USA, (Amphibians and Reptiles) specimen numbers USNM 38742 and 38744-38748.

Diagnosis: Until now, each of the Philippine endemic species *D. (Draco) virens sp. nov.* from south-east Mindanao, *D. (Draco) oculiscaeruleis sp. nov.* from Bongao, Jolo, Sanga Sanga and Siasi islands in the Sulu Archipelago and *D. (Draco) magnaauris sp. nov.* from Siminul Island in the Tawi Tawi group have been treated as localized populations of *D. (Draco) guentheri* Boulenger, 1885, herein restricted to south-west Mindanao (south of Nasipit in the north, west of Malaybalay in the north-east and Pikit in the south east).

Each species, are separated from one another by significant biogeographical barriers including in the cases of *D. oculiscaeruleis sp. nov.* and *D. magnaauris sp. nov.* by deep sea barriers separating the species from all others, these barriers remaining during ice-age maxima.

D. (Draco) virens sp. nov. appears to have a centre of distribution in the Davao Del Sur, which is mainly separated by low-lying areas, including the wider Mindanao Basin from the Butwig Mountains and adjacent ranges to the immediate north, west and south-west along the Zamboanga Peninsula, which is the centre of distribution for *D. guentheri*. It is assumed that the populations of the two taxa as defined herein have remained allopatric during the most recent glacial maxima.

D. oculiscaeruleis sp. nov. is separated from the other three taxa by the following unique combination of characters:

- 1/ Large prominent and unscaled tympanum;
- 2/ An enlarged thorn-like supraciliary scale;
- 3/ Green upper labials, versus faded green in *D. guentheri*, marked dark in colour on a green background in *D. magnaauris sp. nov.* or yellow in *D. virens sp. nov.*;
- 4/ A dewlap that is mainly light yellow becoming darker distally;
- 5/ A dorsum that is generally green, with the black in the form of peppering and overall not a marbled look;
- 6/ The underneath of the patagia is a salmon colour near the body, becoming a purplish red or brick red towards the outer edges;
- 7/ Dark banding or blotches on the body are obscure and not prominent and likewise for markings on the upper surfaces of the limbs;
- 8/ Greenish-grey iris.

As a group, the four relevant species are separated from one another as follows:

D. (Draco) virens sp. nov. appears to be morphologically the most divergent of the four species and is most easily separated from the other three species by:

- 1/ Having the tympanum covered with small scales, versus large prominent and unscaled in the other three species;
- 2/ There is an absence of the enlarged thorn-like supraciliary scale seen in the other three species;
- 3/ The upper labials below the eye are yellow in colour, versus faded green in *D. guentheri*, green in *D. oculiscaeruleis sp. nov.* and marked dark in colour on a green background in *D. magnaauris sp. nov.*.

D. (Draco) virens sp. nov. is further separated from each of *D. guentheri*, *D. oculiscaeruleis sp. nov.* and *D. magnaauris sp. nov.* by having a dewlap that is bright green all over, spotted dark, with white at the distal tip, versus unspotted green anteriorly, followed with greyish-purple-brown or brownish-red in the middle and then bright yellow on the tip in nominate *D. guentheri*.; or versus unspotted green anteriorly, light yellow becoming darker distally in *D. oculiscaeruleis sp. nov.*; or green with dark mottling anteriorly, then mainly white and then yellow on the tip in *D. magnaauris sp. nov.*.

The upper surface of the patagia in *D. virens sp. nov.* has a rich olive green background overlain with a latticework of black, as well as scattered large green dots, with blurred edges and mainly on the outer parts of the patagia.

The general appearance is of a marbled look. The dorsal surface of the patagia of *D. guentheri*, *D. magnaauris sp. nov.* and *D. oculiscaeruleis sp. nov.* is more generally green, with the black in the form of peppering and overall not a marbled look, as is the case in *D. virens sp. nov.*. In *D. magnaauris sp. nov.* the dorsal surface of the patagia is different from the other species in that it is best described as being generally green with black markings overlaying it in the form of semidistinct radial lines or blotches arranged to be radiating from the body between the wider green interspaces.

For *D. virens sp. nov.* the underneath of the patagia is a light dull olive colour, becoming darker as one moves out from the body and then with an olive marbled near black area at the outer edge.

For *D. guentheri*, *D. magnaauris sp. nov.* and *D. oculiscaeruleis sp. nov.* the underneath of the patagia is a salmon colour near the body, becoming a purplish red or brick red towards the outer edges.

Black markings on the dorsum of the body tending to form bands are prominent in *D. virens sp. nov.* and *D. magnaauris sp. nov.*, but not so in *D. guentheri*. and *D. oculiscaeruleis sp. nov.*.

The iris of *D. virens sp. nov.* is a deep dark aqua-grey colour, versus light aqua with a slight green tinge in *D. guentheri*, greenish grey in *D. oculiscaeruleis sp. nov.* and greyish-brown in *D. magnaauris sp. nov.*.

Dark markings on the upper surfaces of the limbs are prominent in *D. virens sp. nov.*, but not so in the other three species.

McGuire and Alcalá (2000) reported that *D. magnaauris sp. nov.* as identified herein appear to be smaller in adult size than the other three species.

Draco rizali Wandolleck, 1900, with a type locality of Dapitan, Mindanao is a junior synonym of *D. guentheri* as defined herein, meaning the name was not available for the newly named species.

The four preceding species, being *D. guentheri* Boulenger, 1885, *D. virens sp. nov.*, *D. oculiscaeruleis sp. nov.* and *D. magnaauris sp. nov.* are separated from all other Philippine and Borneo species of *Draco* by the following suite of characters:

- 1/ Moderately large size [maximum SVL of males = 85 mm, females = 97 mm];
- 2/ Nostrils oriented laterally;
- 3/ Enlarged, thornlike supraciliary scale present;
- 4/ Dorsal scales variable in size, often with strong keeling;
- 5/ Presence of large, unscaled tympanum (3 species) or scaled tympanum (1 species);
- 6/ Mode of six ribs supporting patagium;
- 7/ Lacrimal bone absent;
- 8/ Large black postrictal ocellus surrounding an enlarged white tubercle absent;
- 9/ Dorsal patagial coloration of males dark green with numerous spots of bluish or yellow-green, outer margin salmon;
- 10/ Dorsal patagial coloration of females black, with slight gray wash, enclosing bright reddish to orange spots;
- 11/ In males, ventral surface of patagium is salmon or brick red to purple (lighter in the inner regions), usually with only one dark spot near the outer margin or alternatively olive

green becoming dark at the outer edges;

12/ In females, the ventral surface of the patagium is light yellow, with variable numbers of small dark spots;

13/ Males with triangular dewlap, usually green near the jaw, then orange, purple or reddish midway with a bright yellow or white tip, sometimes mainly yellow in the distal regions;

14/ Green dorsal body coloration in males, with black flecks, peppering or marbling; females are a metallic, iridescent gray;

15/ Males with orbital region heavily suffused with dark pigment forming an unbroken dark ring in the two Mindanao species (*D. guentheri* and *D. virens sp. nov.*) and a broken ring in the two Sulu Archipelago species (*D. oculiscaeruleis sp. nov.* and *D. magnaauris sp. nov.*)

(the preceding was adapted and modified from Taylor 1922 and McGuire and Alcalá 2000).

Distribution: *D. (Draco) oculiscaeruleis sp. nov.* is known from Bongao, Jolo, Sanga Sanga and Siasi islands in the Sulu Archipelago, Philippines.

Etymology: The new species name *D. (Draco) oculiscaeruleis sp. nov.* comes from the Latin words "*oculis caeruleis*" which means blue eye, in reflection of the colour of the adult male lizards eyes.

DRACO (DRACO) MAGNAAURIS SP. NOV.

LSIDurn:lsid:zoobank.org:act:1EA5644C-086A-46DC-8A21-92C6358E2C42

Holotype: A preserved specimen at the at the Carnegie Museum of Natural History, CM Herps Collection, Pittsburgh, PA, USA, specimen number CM 1856 collected from Siminul Island, Philippines, Latitude 4.8928 N., Longitude 119.8237 E.

This facility allows access to its holdings.

Diagnosis: Until now, each of the Philippine endemic species *D. (Draco) virens sp. nov.* from south-east Mindanao, *D. (Draco) oculiscaeruleis sp. nov.* from Bongao, Jolo, Sanga Sanga and Siasi islands in the Sulu Archipelago and *D. (Draco) magnaauris sp. nov.* from Siminul Island in the Tawi Tawi group have been treated as localized populations of *D. (Draco) guentheri* Boulenger, 1885, herein restricted to south-west Mindanao (south of Nasipit in the north, west of Malaybalay in the north-east and Pikit in the south east).

Each species, are separated from one another by significant biogeographical barriers including in the cases of *D. oculiscaeruleis sp. nov.* and *D. magnaauris sp. nov.* by deep sea barriers separating the species from all others, these barriers remaining during ice-age maxima.

D. (Draco) virens sp. nov. appears to have a centre of distribution in the the Davao Del Sur, which is mainly separated by low-lying areas, including the wider Mindanao Basin from the Butwig Mountains and adjacent ranges to the immediate north, west and south-west along the Zamboanga Peninsula, which is the centre of distribution for *D. guentheri*. It is assumed that the populations of the two taxa as defined herein have remained allopatric during the most recent glacial maxima.

D. magnaauris sp. nov. is separated from the other three taxa by the following unique combination of characters:

1/ Large prominent and unscaled tympanum;

2/ An enlarged thorn-like surpaciary scale;

3/ Upper labials that are marked dark in colour on a green background, versus green upper labials in

D. magnaauris sp. nov., versus faded green in *D. guentheri* or yellow in *D. virens sp. nov.*;

4/ A dewlap that is green with dark mottling anteriorly, then

mainly white and then yellow on the tip;

5/ A dorsum that is generally green, with the black in the form of peppering and overall not a marbled look;

6/ The underneath of the patagia is a salmon colour near the body, becoming a purplish red or brick red towards the outer edges;

7/ Black markings on the dorsum of the body tending to form bands are prominent, but not so on the limbs;

8/ Greyish-brown iris.

As a group, the four relevant species are separated from one another as follows:

D. (Draco) virens sp. nov. appears to be morphologically the most divergent of the four species and is most easily separated from the other three species by:

1/ Having the tympanum covered with small scales, versus large prominent and unscaled in the other three species;

2/ There is an absence of the enlarged thorn-like surpaciary scale seen in the other three species;

3/ The upper labials below the eye are yellow in colour, versus faded green in *D. guentheri*, green in *D. oculiscaeruleis sp. nov.* and marked dark in colour on a green background in *D. magnaauris sp. nov.*.

D. (Draco) virens sp. nov. is further separated from each of *D. guentheri*, *D. oculiscaeruleis sp. nov.* and *D. magnaauris sp. nov.* by having a dewlap that is bright green all over, spotted dark, with white at the distal tip, versus unspotted green anteriorly, followed with greyish-purple-brown or brownish-red in the middle and then bright yellow on the tip in nominate *D. guentheri*.; or versus unspotted green anteriorly, light yellow becoming darker distally in *D. oculiscaeruleis sp. nov.*; or green with dark mottling anteriorly, then mainly white and then yellow on the tip in *D. magnaauris sp. nov.*.

The upper surface of the patagia in *D. virens sp. nov.* has a rich olive green background overlain with a latticework of black, as well as scattered large green dots, with blurred edges and mainly on the outer parts of the patagia.

The general appearance is of a marbled look. The dorsal surface of the patagia of *D. guentheri*, *D. magnaauris sp. nov.* and *D. oculiscaeruleis sp. nov.* is more generally green, with the black in the form of peppering and overall not a marbled look, as is the case in *D. virens sp. nov.*. In *D. magnaauris sp. nov.* the dorsal surface of the patagia is different from the other species in that it is best described as being generally green with black markings overlaying it in the form of semidistinct radial lines or blotches arranged to be radiating from the body between the wider green interspaces.

For *D. virens sp. nov.* the underneath of the patagia is a light dull olive colour, becoming darker as one moves out from the body and then with an olive marbled near black area at the outer edge.

For *D. guentheri*, *D. magnaauris sp. nov.* and *D. oculiscaeruleis sp. nov.* the underneath of the patagia is a salmon colour near the body, becoming a purplish red or brick red towards the outer edges.

Black markings on the dorsum of the body tending to form bands are prominent in *D. virens sp. nov.* and *D. magnaauris sp. nov.*, but not so in *D. guentheri*. and *D. oculiscaeruleis sp. nov.*.

The iris of *D. virens sp. nov.* is a deep dark aqua-grey colour, versus light aqua with a slight green tinge in *D. guentheri*, greenish grey in *D. oculiscaeruleis sp. nov.* and greyish-brown in *D. magnaauris sp. nov.*.

Dark markings on the upper surfaces of the limbs are prominent in *D. virens sp. nov.*, but not so in the other three species.

McGuire and Alcalá (2000) reported that *D. magnaauris* sp. nov. as identified herein appear to be smaller in adult size than the other three species.

Draco rizali Wandolleck, 1900, with a type locality of Dapitan, Mindanao is a junior synonym of *D. guentheri* as defined herein, meaning the name was not available for the newly named species.

The four preceding species, being *D. guentheri* Boulenger, 1885, *D. virens* sp. nov., *D. oculiscaeruleis* sp. nov. and *D. magnaauris* sp. nov. are separated from all other Philippine and Borneo species of *Draco* by the following suite of characters:

- 1/ Moderately large size [maximum SVL of males = 85 mm, females = 97 mm];
- 2/ Nostrils oriented laterally;
- 3/ Enlarged, thornlike supraciliary scale present;
- 4/ Dorsal scales variable in size, often with strong keeling;
- 5/ Presence of large, unscaled tympanum (3 species) or scaled tympanum (1 species);
- 6/ Mode of six ribs supporting patagium;
- 7/ Lacrimal bone absent;
- 8/ Large black postrectal ocellus surrounding an enlarged white tubercle absent;
- 9/ Dorsal patagial coloration of males dark green with numerous spots of bluish or yellow-green, outer margin salmon;
- 10/ Dorsal patagial coloration of females black, with slight gray wash, enclosing bright reddish to orange spots;
- 11/ In males, ventral surface of patagium is salmon or brick red to purple (lighter in the inner regions), usually with only one dark spot near the outer margin or alternatively olive green becoming dark at the outer edges;
- 12/ In females, the ventral surface of the patagium is light yellow, with variable numbers of small dark spots;
- 13/ Males with triangular dewlap, usually green near the jaw, then orange, purple or reddish midway with a bright yellow or white tip, sometimes mainly yellow in the distal regions;
- 14/ Green dorsal body coloration in males, with black flecks, peppering or marbling; females are a metallic, iridescent gray;
- 15/ Males with orbital region heavily suffused with dark pigment forming an unbroken dark ring in the two Mindanao species (*D. guentheri* and *D. virens* sp. nov.) and a broken ring in the two Sulu Archipelago species (*D. oculiscaeruleis* sp. nov. and *D. magnaauris* sp. nov.);

(the preceding was adapted and modified from Taylor 1922 and McGuire and Alcalá 2000).

Distribution: *D. (Draco) magnaauris* sp. nov. is known only from Siminul Island (total land area of about 167.25 square km) in the Tawi Tawi group, Philippines, but may occur on other islands in this southern Philippines group of islands. It is a range-restricted endemic and so should be regarded as "vulnerable".

Etymology: The new species name *D. (Draco) magnaauris* sp. nov. comes from the Latin words "*magna auris*" which means "large ear", in reflection of the character state in adult lizards.

DRACO (DRACO) VIRIDFACIUM SP. NOV.

LSIDurn:lsid:zoobank.org:act:A432C496-7CB2-4396-8442-07DB8B4964DD

Holotype: A preserved specimen at the University of Kansas Biodiversity Institute, Herpetology Collection, Kansas, USA, specimen number KU KUH 304681 collected from Camiguin Norte Island in the Babuyan Island Group, Cagayan Province, Philippines.

This facility allows access to its holdings.

Paratypes: 49 preserved specimens at the University of Kansas Biodiversity Institute, Herpetology Collection, Kansas, USA, specimen numbers KU 304582, 304682-87, PNM 9085, KU 307968, 307971, 307992-95, 308034-41, KU 304715-26, 304734-38, 304763-66, 304768 304770-72 and KU 304780-81, all collected from Camiguin Norte Island in the Babuyan Island Group, Cagayan Province, Philippines.

Diagnosis: *Draco (Draco) viridfacium* sp. nov. is a species closely related to *D. (Draco) spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa and is morphologically similar to that species *sensu stricto* as described in this paper under the description of *D. hoseerae* sp. nov..

D. (Draco) viridfacium sp. nov. is separated from that species (*D. spilopterus*) as well as the morphologically similar species *Draco (Draco) wellsi* sp. nov. from Negros and Panay Islands, *D. (Draco) hoseerae* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco) wellingtoni* sp. nov. from Siquijor Island, *D. (Draco) hawkeswoodi* sp. nov. from Cebu Island and *D. (Draco) woolfi* sp. nov. from Tablas Island (all previously treated as local populations of *D. spilopterus*) by the following suite of characters:

The dominant colour of the inner areas of the dorsal surface of the pelagia is dark brown rather than yellow with dark spots or similar as seen in all the preceding named species, being those formerly classed as *D. spilopterus*. Instead it appears to be dark brown with semi-distinct beige spots or mottling. This pattern remains much the same to the outer edge of the pelagia and there is no obvious darker zone near the outer edge. The ring around the eye is beige.

On the dorsum on the body the colour is a combination of reasonably distinct and defined beige and chocolate brown bands, the darker bands being significantly thicker than the lighter ones. The dewlap is a dull olive green all over except for the tip which is whitish or white. There are also semi-distinct greyish-yellow markings overlaying the upper half of the dewlap.

Upper surfaces of the limbs are a dark brown colour and with distinct lighter light greyish-beige cross bands being about a third as thick as the darker interspaces.

The newly named species *D. (Draco) bruneialvum* sp. nov. from Babuyan Claro Island also in the Babuyan Island Group, Cagayan Province, Philippines, differs significantly from all the preceding species, including *D. viridfacium* sp. nov. by having a dorsal surface of the pelagia that is dull yellow brown throughout and with expanded and merged brown dots that form clusters of joined dots with light interspaces, giving a reticulated pattern if viewed at a distance. Near the anterior outer edge these spots tend to both merge and expand further, giving a slight darkening, but this is not of the blackish nature seen in some of the other species. Instead the colour is of the same medium brown seen all over the pelagia. On the outer edge of the pelagia are numerous narrow brown lines running to the edge over the otherwise yellowish background, these being very

distinct, giving this species a very distinctive looking pelagia. Other than a small number of slightly distinct lighter spots on the dorsum of the body, it is otherwise a plain slightly reddish brown colour. The dewlap is yellow all over, although slightly greenish at the upper parts. The dewlap has no obvious markings on it either, being pretty much immaculate. Upper surfaces of the limbs are brownish with indistinct lighter markings not forming bands.

Until now, the Philippines endemic species *Draco* (*Draco*) *wellsi* sp. nov. from Negros and Panay Islands, *D. (Draco)* *hoserae* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco)* *wellingtoni* sp. nov. from Siquijor Island, *D. (Draco)* *hawkeswoodi* sp. nov. from Cebu Island and *D. (Draco)* *woolffi* sp. nov. from Tablas Island have all been treated as populations of putative *D. (Draco)* *spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa, although a number of earlier authors have suggested that one or more of the preceding named species were in fact separate species.

Those six morphologically similar species can be separated from one another (and the above two preceding species) as follows:

D. spilopterus has a dorsum in adult males that has four semi-distinct darker cross bands on the dorsum of the body between the fore and hind limbs, that extend across the top and down onto the flanks and having a dorsal patagia (wing membrane) pattern that is mainly yellow, with numerous small semi-distinctly edged dark brown spots, with dark blackish smudging on the outer edge that does not have any well defined lines running through it. The lower surface of the patagia is similar to the upper, with the spotting still reasonably well defined and only a tiny amount of black smudging on the outer edge. The dewlap is dark green with a strong yellow at the distal part. Upper surfaces of the limbs are heavily banded dark, these being moderately thick and well-defined, the lighter interspaces being a middle-green colour. Scales around the eye have a yellowish tinge.

D. hoserae sp. nov. is similar in most respects to *D. spilopterus* as just described, but is readily separated from that species by having darker cross bands reduced to spots along the mid dorsal line or adjacent and not extending onto the flanks as is the case in *D. spilopterus*. Banding on the upper limbs is reduced to become incomplete, reduced in intensity or alternatively in the form of spots and triangles. Scales around the eye have a yellowish tinge.

D. wellsii sp. nov. is readily separated from the two preceding species by having spotting on the upper surface of the patagia reduced in terms of the size of the spots, these are now small to tiny, reduced in density so there are less on the patagia and their intensity is reduced so that they are only semi-distinct. The outer edge of the patagia has a lot of dark smudging, through which are three to four, light yellowish-brown wavy lines that pierce it.

The lower surface of the patagia (ventral side) has a generally greyish-yellow-brown colour with spotting so reduced in intensity that it is barely discernable from the similar background colour. While the dorsum is of similar pattern to *D. spilopterus* as in bands extending onto the flanks, these too are blurred in outline, on an otherwise greenish-yellow body. Upper surfaces of the limbs are either unbanded or the bands on the anterior limbs are faint and barely noticeable. The dewlap is lime green near the jawline, becoming whitish, rather than yellow at the distal parts. Scales around the eye have a yellowish tinge.

D. wellingtoni sp. nov. is readily separated from the three

preceding species by having an upper surface of the patagia that has a coral-like pattern caused by the dark spotting being surrounded by semi-defined whitish outlines. This pattern is continuous from the body to the outer edge of the patagia and there is no obvious black smudging on the edges. The ventral surface of the patagia is generally yellowish-green but with a series of about 6-10 irregularly shaped spots on the far outer edge. Scales around the eye have an orangeish tinge.

Banding on the upper surface of the limbs is semi-distinct. The dewlap is greenish brown near the jaw and becomes light green to white at the distal parts.

D. hawkeswoodi sp. nov. is readily separated from the four preceding species by its generally chocolate brown body colour, with obvious white markings running down the back, including a dark brown iris. Females are similar in form but greyish. The dewlap in the male is peppered greyish brown near the jaw and becoming white at the distal parts. Most of the upper surfaces of the limbs are dark brown with two to three irregularly shaped narrow lighter brown bands that are only semi-distinct. Scales around the eye have a brown tinge and form a well defined ring with much darker brown scales outside of this ring. In females there is no such well-defined ring around the eye.

D. woolffi sp. nov. is readily separated from the five preceding species in that the upper surface of the patagia is similar in colour to that of the type form (type subspecies) of *D. spilopterus* but differs from this (and all other species and subspecies) in that the darker spots are of irregular shape, rather than generally circular or oval, and some of these join to give spots of an even more irregular shape.

The dark of the outer edges is configured in the three patches in which there are light triangular intrusions from the inner side, which either do not reach the outer edge, where it remains dark, or barely does so, this arrangement being in contrast to (and analogous to) the lines running through this section of the patagia in some of the other species. The dorsum of the body is generally brownish in colour as opposed to strongly green or yellow in other species including in type *D. spilopterus*.

The ventral surface of the patagia is mainly a dull green colour, with barely distinct spots of similar colour to the rest. The sides of the venter of the body at the anterior end are moderately peppered grey.

The upper surface of the patagia on the female is mainly dark brown all over, with a semi-circular arrangement of mainly merged orange dots forming about five radiated lines (anterior to posterior), each running across the body, on which they actually disappear. This dark brown tends to blackish on the outer edges.

The ventral surface of the patagia is mainly a dull green colour, with apparently randomly arranged dark aqua smudges near the outer edge, over which are wavy dull yellow lines radiating from the body outwards, these lines in the main being continuous and formed from tightly spaced and merged dots of somewhat irregular shape.

The sides of the venter of the body at the anterior end are moderately peppered grey.

In both sexes the banding on the body is moderately distinct and alternates light tan and medium to dark brown, the outer edges of the darker banding being triangular in shape, the points facing outwards, at both anterior and posterior edges as one runs down the median line. Banding on the upper surfaces of the legs is semi-distinct as the contrast between darker and lighter is not great.

Around the eye, there is a close ring that is reddish brown and well defined, followed by a larger blackish ring, also well defined beyond which are dark, light and reddish brown markings on nearby parts of the head.

In both sexes, the iris is a dark grey colour.

The subspecies *D. spilopterus polilloensis subsp. nov.* is separated from the nominate subspecies by *D. spilopterus spilopterus subsp. nov.* by having a reddish tinge to the body and poorly defined markings, if any on the upper surfaces of the limbs. The dewlap is mainly yellow all over, rather than mainly green at the parts near the jaw and is also white at the most distal point.

The morphologically similar and closely related species *D. quadrasii* Boettger, 1893 from the island of Sibuyon, *D. spadix sp. nov.* from Mindoro Island, and *D. romblonensis sp. nov.* from Romblon Island are separated from the preceding eight species by 1/ Having a dorsal surface of the patagia that is either yellow to orange all over or with markings so faded as to not be noticeable; 2/ There is a region on the outer edge of the patagia that is black with wave-like markings running across the lateral fringe; 3/ Underneath the patagia is mainly yellow, except for the greyish outer edges; 4/ Markings on the head are strongly contrasting; 5/ The tympanum is also scaled over in these three species, versus not so in the previously grouped species; 6/ A strongly yellow dewlap in the lower or distal parts.

D. spadix sp. nov. is separated from *D. quadrasii* by having a dewlap that is yellow all over, versus pink and then green anteriorly in *D. quadrasii*, as well as having prominent white markings on the upper surfaces of the forelimbs.

There is a dark brown border around the eye instead of a yellow one.

D. romblonensis sp. nov. is separated from the two preceding species by the following characters:

Most of the dorsal surface of the patagia is a dull brown in colour overlain with numerous moderate-sized orange-yellow spots poorly defined and looking more like smudges, giving the general appearance of a light orange-brown colour with ill-defined markings. The outer part is blackish, through which about three thick beige lines of fairly even width run though to the outer edge. Ventrally the patagi is dull dark green and with numerous evenly scattered elongate yellow dashes (elongate spots) of small size, arranged in about 17-22 lines.

The dorsum is light brown to beige, the darker bands on the body being expanded so that the lighter interspaces are in the form of fairly thin lines only, versus being of similar size to the darker ones in most other species.

The iris is bright orange and around the eye is a poorly defined thin ring of dark chocolate brown, beyond which the nearby parts of the head are beige in colour with extensive dark brown peppering, at times merging to form darker areas or blotches.

Venter is whitish and with significant dark purplish brown peppering, being most prominent both anteriorly and near the flanks.

The dewlap is light yellow all over.

All the preceding species are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the following unique suite of characters (in adult males):

Lacrimal bone absent; nostrils oriented laterally on snout; patagia not bright red, but is bright yellow, with or without scattered brown spots; six or more ribs supporting patagium; dorsal patagium with or without melanic marginal patch but lacking distinct white spots (as seen in *D. (Draco) ornatus*

(Gray, 1845) outlined below); dewlap large, triangular, mainly yellow or white in color (except in the species *D. viridifacium sp. nov.* where it is an olive green colour); dewlap and ventral surfaces of throat lappets are not tangerine orange; there is no melanic poststrictal ocellus enclosing a white tubercle; there is no enlarged, thornlike supraciliary scale; tympanum may or may not be scaled over.

In terms of adult females, they are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the same as for the males (described above) except that if present, the small dewlap is unmarked or speckled, not black and the dorsal surface of the patagia is black or dark brown with pale cream striations or pale cream marbling (both the preceding definitions modified from McGuire and Alcalá 2000).

The morphologically similar species *D. (Draco) ornatus* (Gray, 1845) is readily separated from all the preceding species by having well defined white spots on the side of the head, especially around the eye, similar well defined spots arranged in bands across the upper surface of body at the anterior edge of the darker cross bands, which are on average slightly narrower than the lighter interspaces, as well as about six smallish randomly arranged white spots on the darker blackish outer edge of the patagia (dorsal side).

The upper surface of the patagia is mainly an orange red colour in the nominate form found in most of the range for the species, or a dull yellow colour in *D. ornatus boholensis subsp. nov.*, heavily infused with well defined black spots, as well as with or without significant black smudging on the posterior half to two thirds.

Ventrally the defining feature of the patagia is on the outer edge, where pigment is blackish, within which are about six well-defined white spots. In nominate *D. ornatus ornatus* the ventral surface of the patagia closer to the body is yellowish brown anteriorly and orange posteriorly, heavily marked with darker brownish flecks, versus similar in *D. ornatus boholensis subsp. nov.* but without the heavy darker brownish flecks, instead having a more immaculate colouration and appearance.

The dewlap is reddish-brown anteriorly, and then mainly green and heavily spotted dark brown or black. Only the lower tip is yellowish in colour. Banding on limbs is well defined due to the good contrast between dark and light interspaces.

Iris is grey and there is a well-defined marone (purplish-red) ring around the eye.

The tympanum is scaled over.

D. viridifacium sp. nov. in colour is depicted in Oliveros *et al.* (2011) on page 7 in Fig 2D.

D. bruneialvum sp. nov. in colour is depicted in Oliveros *et al.* (2011) on page 9 in Fig 3A.

The type form of *Draco spilopterus* from central Philippines is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Luzon island*" and in life online at:

<https://www.flickr.com/photos/paulbourdin/4611421064/> and

<https://www.flickr.com/photos/40928097@N07/40502700783/> and

<https://www.inaturalist.org/observations/32740260> and

<https://www.inaturalist.org/observations/32624603> and

<https://www.inaturalist.org/observations/32087765>

D. hoseri sp. nov. from the Bicol Peninsula region in

Southern Luzon is depicted in life online at:
<https://www.inaturalist.org/observations/125620521>
 and
<https://www.inaturalist.org/observations/104557480>
D. wellsii sp. nov. from Panay and Negros Islands is depicted in McGuire and Alcalá (2000) on page 117 as “*Draco spilopterus* / Panay island” and in life online at:
<https://www.inaturalist.org/observations/21099756>
 and
<https://www.inaturalist.org/observations/57761>
 and also (dead) at:
https://www.reddit.com/r/herpetology/comments/fbt5om/too_bad_i_wasnt_able_to_see_it_alive_ive_only/
D. wellingtoni sp. nov. from Siquijor Island is depicted in McGuire and Alcalá (2000) on page 117 as “*Draco spilopterus* / Siquijor island”.
D. hawkeswoodi sp. nov. (both sexes) are depicted in life in Supsup *et al.* (2016) in Figs 18 and 19 and one of these images is online at:
https://www.researchgate.net/figure/Draco-spilopterus-male-from-Mt-Lantoy-Photo-by-Puna-N_fig11_308632387
D. wolffi sp. nov. in life is depicted in Siler *et al.* (2012) on page 451 (Fig. 14, A, B, C) and page 452 (Fig. 15).
D. quadrasi Boettger, 1893 from the island of Sibuyan is depicted in life in Siler *et al.* (2012) on pages 450 (bottom right) and 451 (Fig. 13 C and D) and online at:
<https://www.inaturalist.org/observations/53942104>
 and
<https://www.inaturalist.org/observations/50414374>
D. spadix sp. nov. is depicted online at:
<https://reptile-database.reptarium.cz/species?genus=Draco&species=quadrasi>
D. romblonensis sp. nov. is depicted in life in Siler *et al.* (2012) on page 451 (Fig 13 A and B).
D. (Draco) ornatus (Gray, 1845) of the type form in life is published online at:
https://www.researchgate.net/figure/Draco-ornatus-has-been-recorded-only-from-Dinagat-Island-and-Agusan-del-Norte-Province_fig28_309224699
 The colouration of the Bohol Island subspecies *D. ornatus boholensis* subsp. nov. is depicted in McGuire and Alcalá (2000) on page 92 as “*Draco ornatus*”.
Distribution: The Philippines endemic species *D. viridifacium* sp. nov. is only definitively known from the island of Camiguin Norte Island in the Babuyan Island Group, Cagayan Province, Philippines.
 As a range restricted endemic, it must be regarded as a vulnerable species.
 Babuyan Claro Island is about 40 km overwater north-west of Camaguin Norte Island.
Etymology: *D. viridifacium* sp. nov. is named in reflection of the Latin words “*viridi faucium*” which means “green throat”, relevant to the adult males of the species.
DRACO (DRACO) BRUNNEIALVUM SP. NOV.
LSIDurn:lsid:zoobank.org:act:087F6DB7-F470-418E-BDA0-DA70F7A058DE
Holotype: A preserved specimen at the University of Kansas Biodiversity Institute, Herpetology Collection, Kansas, USA, specimen number KU 304799 collected from Barangay Babuyan Claro, Babuyan Island Group, Cagayan Province, Philippines.
 This facility allows access to its holdings.
Paratypes: Seven preserved specimens at the University

of Kansas Biodiversity Institute, Herpetology Collection, Kansas, USA, specimen numbers KU 304806, 304838-43 all collected from Barangay Babuyan Claro, Babuyan Island Group, Cagayan Province, Philippines.

Diagnosis: *Draco (Draco) bruneialvum* sp. nov. and *D. (Draco) viridifacium* sp. nov. are both species closely related to *D. (Draco) spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa and is morphologically similar to that species *sensu stricto* as described in this paper under the description of *D. hoseerae* sp. nov..

The newly named species *D. (Draco) bruneialvum* sp. nov. from Babuyan Claro Island in the Babuyan Island Group, Cagayan Province, Philippines, differs significantly from all of *D. (Draco) spilopterus*, and the morphologically similar species *Draco (Draco) wellsii* sp. nov. from Negros and Panay Islands, *D. (Draco) hoseerae* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco) wellingtoni* sp. nov. from Siquijor Island, *D. (Draco) hawkeswoodi* sp. nov. from Cebu Island and *D. (Draco) wolffi* sp. nov. from Tablas Island (all previously treated as local populations of *D. spilopterus*), as well as the newly described *D. viridifacium* sp. nov. from Camiguin Norte also in the Babuyan Group of islands by the following suite of characters:

The dorsal surface of the pelagia is dull yellow brown throughout and with expanded and merged brown dots that form clusters of joined dots with light interspaces, giving a reticulated pattern if viewed at a distance. Near the anterior outer edge these spots tend to both merge and expand further, giving a slight darkening, but this is not of the blackish nature seen in some of the other species. Instead the colour is of the same medium brown seen all over the pelagia. On the outer edge of the pelagia are numerous narrow brown lines running to the edge over the otherwise yellowish background, these being very distinct, giving this species a very distinctive looking pelagia.

Other than a small number of slightly distinct lighter spots on the dorsum of the body, it is otherwise a plain slightly reddish brown colour. The dewlap is yellow all over, although slightly greenish at the upper parts. The dewlap has no obvious markings on it either, being pretty much immaculate. Upper surfaces of the limbs are brownish with indistinct lighter markings not forming bands.

D. (Draco) viridifacium sp. nov. is separated from the preceding species as well as the morphologically similar species *Draco (Draco) wellsii* sp. nov. from Negros and Panay Islands, *D. (Draco) hoseerae* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco) wellingtoni* sp. nov. from Siquijor Island, *D. (Draco) hawkeswoodi* sp. nov. from Cebu Island and *D. (Draco) wolffi* sp. nov. from Tablas Island (all previously treated as local populations of *D. spilopterus*) by the following suite of characters:

The dominant colour of the inner areas of the dorsal surface of the pelagia is dark brown rather than yellow with dark spots or similar as seen in all the preceding named species, being those formerly classed as *D. spilopterus*. Instead it appears to be dark brown with semi-distinct beige spots or mottling. This pattern remains much the same to the outer edge of the pelagia and there is no obvious darker zone near the outer edge. The ring around the eye is beige.

On the dorsum on the body the colour is a combination of reasonably distinct and defined beige and chocolate brown bands, the darker bands being significantly thicker than the lighter ones. The dewlap is a dull olive green all over except

for the tip which is whitish or white. There are also semi-distinct greyish-yellow markings overlaying the upper half of the dewlap.

Upper surfaces of the limbs are a dark brown colour and with distinct lighter light greyish-beige cross bands being about a third as thick as the darker interspaces.

Until now, the Philippines endemic species *Draco* (*Draco*) *wellsi* sp. nov. from Negros and Panay Islands, *D. (Draco)* *hoserae* sp. nov. from the southern parts of Luzon Island, south and east of the flat areas around Gumaoa, *D. (Draco)* *wellingtoni* sp. nov. from Siquijor Island, *D. (Draco)* *hawkeswoodi* sp. nov. from Cebu Island and *D. (Draco)* *woolffi* sp. nov. from Tablas Island have all been treated as populations of putative *D. (Draco)* *spilopterus* (Wiegmann, 1834), herein confined to Luzon Island north and west of the flat areas around Gumaoa, although a number of earlier authors have suggested that one or more of the preceding named species were in fact separate species.

Those six morphologically similar species can be separated from one another (and the above two preceding species) as follows:

D. spilopterus has a dorsum in adult males that has four semi-distinct darker cross bands on the dorsum of the body between the fore and hind limbs, that extend across the top and down onto the flanks and having a dorsal patagia (wing membrane) pattern that is mainly yellow, with numerous small semi-distinctly edged dark brown spots, with dark blackish smudging on the outer edge that does not have any well defined lines running through it. The lower surface of the patagia is similar to the upper, with the spotting still reasonably well defined and only a tiny amount of black smudging on the outer edge. The dewlap is dark green with a strong yellow at the distal part. Upper surfaces of the limbs are heavily banded dark, these being moderately thick and well-defined, the lighter interspaces being a middle-green colour. Scales around the eye have a yellowish tinge.

D. hoserae sp. nov. is similar in most respects to *D. spilopterus* as just described, but is readily separated from that species by having darker cross bands reduced to spots along the mid dorsal line or adjacent and not extending onto the flanks as is the case in *D. spilopterus*. Banding on the upper limbs is reduced to become incomplete, reduced in intensity or alternatively in the form of spots and triangles. Scales around the eye have a yellowish tinge.

D. wellsii sp. nov. is readily separated from the two preceding species by having spotting on the upper surface of the patagia reduced in terms of the size of the spots, these are now small to tiny, reduced in density so there are less on the patagia and their intensity is reduced so that they are only semi-distinct. The outer edge of the patagia has a lot of dark smudging, through which are three to four, light yellowish-brown wavy lines that pierce it.

The lower surface of the patagia (ventral side) has a generally greyish-yellow-brown colour with spotting so reduced in intensity that it is barely discernable from the similar background colour. While the dorsum is of similar pattern to *D. spilopterus* as in bands extending onto the flanks, these too are blurred in outline, on an otherwise greenish-yellow body. Upper surfaces of the limbs are either unbanded or the bands on the anterior limbs are faint and barely noticeable. The dewlap is lime green near the jawline, becoming whitish, rather than yellow at the distal parts. Scales around the eye have a yellowish tinge.

D. wellingtoni sp. nov. is readily separated from the three preceding species by having an upper surface of the patagia that has a coral-like pattern caused by the dark spotting

being surrounded by semi-defined whitish outlines. This pattern is continuous from the body to the outer edge of the patagia and there is no obvious black smudging on the edges. The ventral surface of the patagia is generally yellowish-green but with a series of about 6-10 irregularly shaped spots on the far outer edge. Scales around the eye have an orangeish tinge.

Banding on the upper surface of the limbs is semi-distinct. The dewlap is greenish brown near the jaw and becomes light green to white at the distal parts.

D. hawkeswoodi sp. nov. is readily separated from the four preceding species by its generally chocolate brown body colour, with obvious white markings running down the back, including a dark brown iris. Females are similar in form but greyish. The dewlap in the male is peppered greyish brown near the jaw and becoming white at the distal parts. Most of the upper surfaces of the limbs are dark brown with two to three irregularly shaped narrow lighter brown bands that are only semi-distinct. Scales around the eye have a brown tinge and form a well defined ring with much darker brown scales outside of this ring. In females there is no such well-defined ring around the eye.

D. woolffi sp. nov. is readily separated from the five preceding species in that the upper surface of the patagia is similar in colour to that of the type form (type subspecies) of *D. spilopterus* but differs from this (and all other species and subspecies) in that the darker spots are of irregular shape, rather than generally circular or oval, and some of these join to give spots of an even more irregular shape.

The dark of the outer edges is configured in the three patches in which there are light triangular intrusions from the inner side, which either do not reach the outer edge, where it remains dark, or barely does so, this arrangement being in contrast to (and analogous to) the lines running through this section of the patagia in some of the other species. The dorsum of the body is generally brownish in colour as opposed to strongly green or yellow in other species including in type *D. spilopterus*.

The ventral surface of the patagia is mainly a dull green colour, with barely distinct spots of similar colour to the rest. The sides of the venter of the body at the anterior end are moderately peppered grey.

The upper surface of the patagia on the female is mainly dark brown all over, with a semi-circular arrangement of mainly merged orange dots forming about five radiated lines (anterior to posterior), each running across the body, on which they actually disappear. This dark brown tends to blackish on the outer edges.

The ventral surface of the patagia is mainly a dull green colour, with apparently randomly arranged dark aqua smudges near the outer edge, over which are wavy dull yellow lines radiating from the body outwards, these lines in the main being continuous and formed from tightly spaced and merged dots of somewhat irregular shape.

The sides of the venter of the body at the anterior end are moderately peppered grey.

In both sexes the banding on the body is moderately distinct and alternates light tan and medium to dark brown, the outer edges of the darker banding being triangular in shape, the points facing outwards, at both anterior and posterior edges as one runs down the median line. Banding on the upper surfaces of the legs is semi-distinct as the contrast between darker and lighter is not great.

Around the eye, there is a close ring that is reddish brown and well defined, followed by a larger blackish ring, also

well defined beyond which are dark, light and reddish brown markings on nearby parts of the head.

In both sexes, the iris is a dark grey colour.

The subspecies *D. spilopterus polilloensis subsp. nov.* is separated from the nominate subspecies by *D. spilopterus spilopterus subsp. nov.* by having a reddish tinge to the body and poorly defined markings, if any on the upper surfaces of the limbs. The dewlap is mainly yellow all over, rather than mainly green at the parts near the jaw and is also white at the most distal point.

The morphologically similar and closely related species *D. quadrasii* Boettger, 1893 from the island of Sibuyon, *D. spadix sp. nov.* from Mindoro Island, and *D. romblonensis sp. nov.* from Romblon Island are separated from the preceding eight species by 1/ Having a dorsal surface of the patagia that is either yellow to orange all over or with markings so faded as to not be noticeable; 2/ There is a region on the outer edge of the patagia that is black with wave-like markings running across the lateral fringe; 3/ Underneath the patagia is mainly yellow, except for the greyish outer edges; 4/ Markings on the head are strongly contrasting; 5/ The tympanum is also scaled over in these three species, versus not so in the previously grouped species; 6/ A strongly yellow dewlap in the lower or distal parts.

D. spadix sp. nov. is separated from *D. quadrasii* by having a dewlap that is yellow all over, versus pink and then green anteriorly in *D. quadrasii*, as well as having prominent white markings on the upper surfaces of the forelimbs.

There is a dark brown border around the eye instead of a yellow one.

D. romblonensis sp. nov. is separated from the two preceding species by the following characters:

Most of the dorsal surface of the patagia is a dull brown in colour overlain with numerous moderate-sized orange-yellow spots poorly defined and looking more like smudges, giving the general appearance of a light orange-brown colour with ill-defined markings. The outer part is blackish, through which about three thick beige lines of fairly even width run though to the outer edge. Ventrally the patagi is dull dark green and with numerous evenly scattered elongate yellow dashes (elongate spots) of small size, arranged in about 17-22 lines. The dorsum is light brown to beige, the darker bands on the body being expanded so that the lighter interspaces are in the form of fairly thin lines only, versus being of similar size to the darker ones in most other species.

The iris is bright orange and around the eye is a poorly defined thin ring of dark chocolate brown, beyond which the nearby parts of the head are beige in colour with extensive dark brown peppering, at times merging to form darker areas or blotches.

Venter is whitish and with significant dark purplish brown peppering, being most prominent both anteriorly and near the flanks.

The dewlap is light yellow all over.

All the preceding species are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the following unique suite of characters (in adult males):

Lacrimal bone absent; nostrils oriented laterally on snout; patagia not bright red, but is bright yellow, with or without scattered brown spots; six or more ribs supporting patagium; dorsal patagium with or without melanic marginal patch but lacking distinct white spots (as seen in *D. (Draco) ornatus* (Gray, 1845) outlined below); dewlap large, triangular, mainly yellow or white in color (except in the species *D. viridifacium*

sp. nov. where it is an olive green colour); dewlap and ventral surfaces of throat lappets are not tangerine orange; there is no melanic post-ocular ocellus enclosing a white tubercle; there is no enlarged, thornlike supraciliary scale; tympanum may or may not be scaled over.

In terms of adult females, they are separated from all other species of *Draco* (subgenus *Draco*) as defined by Hoser (2014) by the same as for the males (described above) except that if present, the small dewlap is unmarked or speckled, not black and the dorsal surface of the patagia is black or dark brown with pale cream striations or pale cream marbling (both the preceding definitions modified from McGuire and Alcalá 2000).

The morphologically similar species *D. (Draco) ornatus* (Gray, 1845) is readily separated from all the preceding species by having well defined white spots on the side of the head, especially around the eye, similar well defined spots arranged in bands across the upper surface of body at the anterior edge of the darker cross bands, which are on average slightly narrower than the lighter interspaces, as well as about six smallish randomly arranged white spots on the darker blackish outer edge of the patagia (dorsal side).

The upper surface of the patagia is mainly an orange red colour in the nominate form found in most of the range for the species, or a dull yellow colour in *D. ornatus boholensis subsp. nov.*, heavily infused with well defined black spots, as well as with or without significant black smudging on the posterior half to two thirds.

Ventrally the defining feature of the patagia is on the outer edge, where pigment is blackish, within which are about six well-defined white spots. In nominate *D. ornatus ornatus* the ventral surface of the patagia closer to the body is yellowish brown anteriorly and orange posteriorly, heavily marked with darker brownish flecks, versus similar in *D. ornatus boholensis subsp. nov.* but without the heavy darker brownish flecks, instead having a more immaculate colouration and appearance.

The dewlap is reddish-brown anteriorly, and then mainly green and heavily spotted dark brown or black. Only the lower tip is yellowish in colour. Banding on limbs is well defined due to the good contrast between dark and light interspaces.

Iris is grey and there is a well-defined marone (purplish-red) ring around the eye.

The tympanum is scaled over.

D. viridifacium sp. nov. in colour is depicted in Oliveros *et al.* (2011) on page 7 in Fig 2D.

D. bruneialvum sp. nov. in colour is depicted in Oliveros *et al.* (2011) on page 9 in Fig 3A.

The type form of *Draco spilopterus* from central Philippines is depicted in McGuire and Alcalá (2000) on page 117 as "*Draco spilopterus / Luzon island*" and in life online at: <https://www.flickr.com/photos/paulbourdin/4611421064/> and <https://www.flickr.com/photos/40928097@N07/40502700783/> and <https://www.inaturalist.org/observations/32740260> and <https://www.inaturalist.org/observations/32624603> and <https://www.inaturalist.org/observations/32087765> *D. hoserae sp. nov.* from the Bicol Peninsula region in Southern Luzon is depicted in life online at: <https://www.inaturalist.org/observations/125620521>

and

<https://www.inaturalist.org/observations/104557480>

D. wellsii sp. nov. from Panay and Negros Islands is depicted in McGuire and Alcalá (2000) on page 117 as “*Draco spilopterus / Panay island*” and in life online at:

<https://www.inaturalist.org/observations/21099756>

and

<https://www.inaturalist.org/observations/57761>

and also (dead) at:

https://www.reddit.com/r/herpetology/comments/fbt5om/too_bad_i_wasnt_able_to_see_it_alive_ive_only/

D. wellingtoni sp. nov. from Siquijor Island is depicted in McGuire and Alcalá (2000) on page 117 as “*Draco spilopterus / Siquijor island*”.

D. hawkeswoodi sp. nov. (both sexes) are depicted in life in Supsup *et al.* (2016) in Figs 18 and 19 and one of these images is online at:

https://www.researchgate.net/figure/Draco-spilopterus-male-from-Mt-Lantoy-Photo-by-Puna-N_fig11_308632387

D. wolffi sp. nov. in life is depicted in Siler *et al.* (2012) on page 451 (Fig. 14, A, B, C) and page 452 (Fig. 15).

D. quadrasi Boettger, 1893 from the island of Sibuyon is depicted in life in Siler *et al.* (2012) on pages 450 (bottom right) and 451 (Fig. 13 C and D) and online at:

<https://www.inaturalist.org/observations/53942104>

and

<https://www.inaturalist.org/observations/50414374>

D. spadix sp. nov. is depicted online at:

<https://reptile-database.reptarium.cz/species?genus=Draco&species=quadrasi>

D. romblonensis sp. nov. is depicted in life in Siler *et al.* (2012) on page 451 (Fig 13 A and B).

D. (Draco) ornatus (Gray, 1845) of the type form in life is published online at:

https://www.researchgate.net/figure/Draco-ornatus-has-been-recorded-only-from-Dinagat-Island-and-Agusan-del-Norte-Province_fig28_309224699

The colouration of the Bohol Island subspecies *D. ornatus boholensis* subsp. nov. is depicted in McGuire and Alcalá (2000) on page 92 as “*Draco ornatus*”.

Distribution: The Philippines endemic species *D. bruneiialvum* sp. nov. is only definitively known from the island of Babuyan Claro in the Babuyan Island Group, Cagayan Province, Philippines.

As a range restricted endemic, it must be regarded as a vulnerable species.

Babuyan Claro Island is about 40 km overwater north-west of Camaguin Norte Island.

Etymology: *D. bruneiialvum* sp. nov. is named in reflection of the Latin words “*brunneis alvum*” which means “brown blotches”, relevant to the type of markings on the pelagia of adult males of the species.

DRACO (PHILIPPINEDRACO) TOSCANOI SP. NOV.

LSIDurn:lsid:zoobank.org:act:81CF57E1-A3BC-4B1B-B26F-6BEEBCC4CD17

Holotype: A preserved specimen at the at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen number CAS HERP 125066 collected from Ponson Island, Camotes Islands, Cebu Province, Philippines, Latitude 10.80 N., Longitude 124.55 E. This facility allows access to its holdings.

Paratype: A preserved specimen at the at the California Academy of Sciences, San Francisco, California, USA,

herpetology collection, specimen number CAS HERP 129238 collected from Ponson Island, Camotes Islands, Cebu Province, Philippines, Latitude 10.80 N., Longitude 124.55 E.

Diagnosis: Until now, each of the Philippines endemic species *Draco (Philippinedraco) toscanoi* sp. nov. from Ponson Island, *D. (Philippinedraco) graysoni* sp. nov. from Jolo and adjacent islands in the Sulu Archipelago and *Draco (Philippinedraco) bimaculatus brunneis* subsp. nov. from Bohol Island, have all been treated as populations of *Draco bimaculatus* Günther, 1864, herein restricted to Basilan, Dinagat, Leyte, Lugus, Mindanao, Samar and Siargao islands.

The three species and newly named subspecies are each separated from one another as follows:

The type form of *Draco bimaculatus* Günther, 1864 is generally a faded greenish to greyish green on the dorsum of the body. The upper surface of the patagia is green with about four broad blackish bands of even thickness and moderate intensity running from body to outer edge, which has no obvious border. The dewlap is grey at the top, marbled white at the mid to lower parts and with a moderately well-defined white border at the lower edge.

The iris is bluish grey. Markings on the upper surfaces of the limbs are moderately well-defined. The white collar at the back of the head and dewlap is straight edged and not strongly contrasting with the surrounding pigment. The dark markings on the back do not extend as far as the inner edge of the patagia. A yellow ring surrounds the eye. The black spot at the back of the mouth (on the head), before the typanum, which has a tiny white dot in the centre (diagnostic of the subgenus), is moderately distinct.

The top of the head is not significantly darker than the body.

D. toscanoi sp. nov. is generally a brown colour dorsally with yellow-green on the patagia that is otherwise heavily infused a grey-black colour. In contrast with both *D. bimaculatus* and *D. graysoni* sp. nov. the darker bands radiating from the body are 2-3 times as wide as the pale interspaces, versus paler interspaces of about the same width in the other two species. The iris is bluish-grey. The white collar at the back of the head and dewlap is straight edged and is strongly contrasting with the surrounding pigment. The dark markings on the back do not extend as far as the inner edge of the patagia. A yellow ring surrounds the eye. The black spot at the back of the mouth (on the head), before the typanum, which has a tiny white dot in the centre (diagnostic of the subgenus), is moderately distinct. The top of the head is significantly darker than the body.

D. brunneis subsp. nov. is generally a brown colour dorsally with yellow-green on the patagia that is otherwise heavily infused a grey-black colour. In contrast with both *D. bimaculatus* and *D. graysoni* sp. nov. the darker bands radiating from the body are 2-3 times as wide as the pale interspaces, versus paler interspaces of about the same width in the other two species. The iris is bluish-grey. An orange ring surrounds the eye. The white collar at the back of the head and dewlap is jagged edged on the posterior side and is strongly contrasting with the surrounding pigment. The dark markings of the back flow continuously across the patagia to the outer edge of the patagia, where both dark and light interspaces merge to give a yellow and dark grey peppered appearance.

The top of the head is significantly darker than the body.

Unlike the other species The black spot at the back of the mouth (on the head), before the typanum, which has a tiny white dot in the centre (diagnostic of the subgenus), is relatively indistinct.

D. graysoni sp. nov. is similar in most respects to *D. bimaculatus* but is separated from that taxon by the following: 1/ The fact that the black spot at the back of the mouth (on the head), with a tiny white dot in the centre (diagnostic of the subgenus), is very distinct, and contrasting with the surrounding pigment, with the white inner dot appearing slightly larger than the tiny spec size in the other two species and other subspecies; 2/ The top of the head is significantly darker than the body and 3/ The paler interspaces on the dorsum of the patagia that are green in *D. bimaculatus* have a washed out greyish-green colour in *D. graysoni* sp. nov..

The three preceding species, including the newly named subspecies are the entirety of the subgenus *Philippinedraco* Hoser, 2014. They are readily separated from all other species of *Draco* Linnaeus, 1758 by the following suite of characters: An adult snout-vent length of about 73 mm; 8-10 supralabials; tympanum usually covered with smooth skin; lateral pouches with slightly enlarged scales; 122-150 dorsals; five ribs in patagium; and the presence of a black, white-centred spot between the tympanum and the corner of the mouth (not seen in the morphologically similar subgenus *Macquiredraco* Hoser, 2014).

Distribution: *Draco (Philippinedraco) toscanoi* sp. nov. is a range-restricted endemic from Ponson Island, Philippines, with a land area of about 34.55 square km, making it a very range-restricted endemic. According to the 2015 Philippines census the island had 11,308 people, or by simple mathematics a population density of about 327 people per square km.

The species should therefore be regarded as potentially endangered.

According to the website at

<http://countrystudies.us/philippines/34.htm#:~:text=This%20figure%20represents%20an%20annual,years%20into%20the%20next%20century>

quoting an annual growth rate of 2.5 percent, the Philippine human population will double every twenty-nine years well into the current (post year 2000) century, making the conservation situation potentially much worse. While this may not be the exact case for Ponson Island, the prognosis for the local Ponson Island land ecosystems is not good.

Etymology: *Draco toscanoi* sp. nov. is named in honour of a Melbourne, Australia icon, Dr. Joe (Joseph) Toscano, aged 70 in 2022. He has been a fearless corruption fighter for most of his life via radio broadcasts and countless landmark publications.

DRACO (PHILIPPINEDRACO) GRAYSONI SP. NOV.

LSIDurn:lsid:zoobank.org:act:5C893227-2A2D-4B07-AD3E-E811443F0490

Holotype: A preserved specimen at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA, specimen number MCZ Herp R-26185 collected from Jolo Island, Sulu Archipelago, Philippines, Latitude 5.9692 N., Longitude 121.1252 E.

This facility allows access to its holdings.

Diagnosis: Until now, each of the Philippines endemic species *Draco (Philippinedraco) toscanoi* sp. nov. from Ponson Island, *D. (Philippinedraco) graysoni* sp. nov. from Jolo and adjacent islands in the Sulu Archipelago and *Draco (Philippinedraco) bimaculatus brunneis* subsp. nov. from Bohol Island, have all been treated as populations of *Draco bimaculatus* Günther, 1864, herein restricted to Basilan, Dinagat, Leyte, Lugus, Mindanao, Samar and Siargao islands.

The three species and the newly named subspecies are each

separated from one another as follows:

The type form of *Draco bimaculatus* Günther, 1864 is generally a faded greenish to greyish green on the dorsum of the body. The upper surface of the patagia is green with about four broad blackish bands of even thickness and moderate intensity running from body to outer edge, which has no obvious border. The dewlap is grey at the top, marbled white at the mid to lower parts and with a moderately well-defined white border at the lower edge. The iris is bluish grey. Markings on the upper surfaces of the limbs are moderately well-defined. The white collar at the back of the head and dewlap is straight edged and not strongly contrasting with the surrounding pigment. The dark markings on the back do not extend as far as the inner edge of the patagia. A yellow ring surrounds the eye. The black spot at the back of the mouth (on the head), before the typanum, which has a tiny white dot in the centre (diagnostic of the subgenus), is moderately distinct.

The top of the head is not significantly darker than the body.

D. toscanoi sp. nov. is generally a brown colour dorsally with yellow-green on the patagia that is otherwise heavily infused a grey-black colour. In contrast with both *D. bimaculatus* and *D. graysoni* sp. nov. the darker bands radiating from the body are 2-3 times as wide as the pale interspaces, versus paler interspaces of about the same width in the other two species. The iris is bluish-grey. The white collar at the back of the head and dewlap is straight edged and is strongly contrasting with the surrounding pigment. The dark markings on the back do not extend as far as the inner edge of the patagia. A yellow ring surrounds the eye. The black spot at the back of the mouth (on the head), before the typanum, which has a tiny white dot in the centre (diagnostic of the subgenus), is moderately distinct. The top of the head is significantly darker than the body.

D. brunneis subsp. nov. is generally a brown colour dorsally with yellow-green on the patagia that is otherwise heavily infused a grey-black colour. In contrast with both *D. bimaculatus* and *D. graysoni* sp. nov. the darker bands radiating from the body are 2-3 times as wide as the pale interspaces, versus paler interspaces of about the same width in the other two species. The iris is bluish-grey. An orange ring surrounds the eye. The white collar at the back of the head and dewlap is jagged edged on the posterior side and is strongly contrasting with the surrounding pigment. The dark markings of the back flow continuously across the patagia to the outer edge of the patagia, where both dark and light interspaces merge to give a yellow and dark grey peppered appearance.

The top of the head is significantly darker than the body.

Unlike the other species The black spot at the back of the mouth (on the head), before the typanum, which has a tiny white dot in the centre (diagnostic of the subgenus), is relatively indistinct.

D. graysoni sp. nov. is similar in most respects to *D. bimaculatus* but is separated from that taxon by the following: 1/ The fact that the black spot at the back of the mouth (on the head), with a tiny white dot in the centre (diagnostic of the subgenus), is very distinct, and contrasting with the surrounding pigment, with the white inner dot appearing slightly larger than the tiny spec size in the other two species and other subspecies; 2/ The top of the head is significantly darker than the body and 3/ The paler interspaces on the dorsum of the patagia that are green in *D. bimaculatus* have a washed out greyish-green colour in *D. graysoni* sp. nov.. The three preceding species, including the newly named subspecies are the entirety of the subgenus *Philippinedraco*

Hoser, 2014. They are readily separated from all other species of *Draco* Linnaeus, 1758 by the following suite of characters: An adult snout-vent length of about 73 mm; 8-10 supralabials; tympanum usually covered with smooth skin; lateral pouches with slightly enlarged scales; 122-150 dorsals; five ribs in patagium; and the presence of a black, white-centred spot between the tympanum and the corner of the mouth (not seen in the morphologically similar subgenus *Macquiredraco* Hoser, 2014).

Distribution: *D. (Philippinedraco) graysoni sp. nov.* occurs on Jolo and adjacent islands in the Sulu Archipelago. According to the Philippine Statistics Authority, Jolo Island's population has gone from 44,718 in 1903 to 137,266 in 2020 (a three fold increase), which cannot be a good thing for most endemic reptiles. *D. graysoni sp. nov.* should therefore be immediately listed as "threatened" and closely monitored.

Etymology: *D. graysoni sp. nov.* is named in honour of Grayson O'Connor of Box Hill North, Victoria, Australia in recognition of his efforts in combating cybercrime and illegal use of intellectual property in Australia. He has also spent considerable time in the field in the Phillipines, making numerous trips there over many years and including visiting many islands, some being those in more remote locations and only accessible by boat.

DRACO (PHILIPPINEDRACO) BIMACULATUS BRUNNEIS SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:92294B2B-AE35-49C3-9AF9-1CBC44A86CDF

Holotype: A preserved specimen at the at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen number CAS SUR 25100 collected from 10 km south east of Sierra Bullones, Dusita Barrio, Bohol Province, Bohol Island, The Phillipines, Latitude 9.782639 N., Longitude 124.303000 E.

This facility allows access to its holdings.

Paratypes: Four preserved specimens at the at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen numbers CAS 131863, 131864, 200578 and 200579 all collected from Bohol Island, The Phillipines.

Diagnosis: Until now, each of the Phillipines endemic species *Draco (Philippinedraco) toscanoi sp. nov.* from Ponson Island, *D. (Philippinedraco) graysoni sp. nov.* from Jolo and adjacent islands in the Sulu Archipelago and *Draco (Philippinedraco) bimaculatus brunneis subsp. nov.* from Bohol Island, have all been treated as populations of *Draco bimaculatus* Günther, 1864, herein restricted to Basilan, Dinagat, Leyte, Lugus, Mindanao, Samar and Siargao islands.

The three species and the newly named subspecies are each separated from one another as follows:

The type form of *Draco bimaculatus* Günther, 1864 is generally a faded greenish to greyish green on the dorsum of the body. The upper surface of the patagia is green with about four broad blackish bands of even thickness and moderate intensity running from body to outer edge, which has no obvious border. The dewlap is grey at the top, marbled white at the mid to lower parts and with a moderately well-defined white border at the lower edge. The iris is bluish grey. Markings on the upper surfaces of the limbs are moderately well-defined. The white collar at the back of the head and dewlap is straight edged and not strongly contrasting with the surrounding pigment. The dark markings on the back do not extend as far as the inner edge

of the patagia. A yellow ring surrounds the eye. The black spot at the back of the mouth (on the head), before the tympanum, which has a tiny white dot in the centre (diagnostic of the subgenus), is moderately distinct.

The top of the head is not significantly darker than the body.

D. toscanoi sp. nov. is generally a brown colour dorsally with yellow-green on the patagia that is otherwise heavily infused a grey-black colour. In contrast with both *D. bimaculatus* and *D. graysoni sp. nov.* the darker bands radiating from the body are 2-3 times as wide as the pale interspaces, versus paler interspaces of about the same width in the other two species. The iris is bluish-grey. The white collar at the back of the head and dewlap is straight edged and is strongly contrasting with the surrounding pigment. The dark markings on the back do not extend as far as the inner edge of the patagia. A yellow ring surrounds the eye. The black spot at the back of the mouth (on the head), before the tympanum, which has a tiny white dot in the centre (diagnostic of the subgenus), is moderately distinct. The top of the head is significantly darker than the body.

D. brunneis subsp. nov. is generally a brown colour dorsally with yellow-green on the patagia that is otherwise heavily infused a grey-black colour. In contrast with both *D. bimaculatus* and *D. graysoni sp. nov.* the darker bands radiating from the body are 2-3 times as wide as the pale interspaces, versus paler interspaces of about the same width in the other two species. The iris is bluish-grey. An orange ring surrounds the eye. The white collar at the back of the head and dewlap is jagged edged on the posterior side and is strongly contrasting with the surrounding pigment. The dark markings of the back flow continuously across the patagia to the outer edge of the patagia, where both dark and light interspaces merge to give a yellow and dark grey peppered appearance.

The top of the head is significantly darker than the body.

Unlike the other species The black spot at the back of the mouth (on the head), before the tympanum, which has a tiny white dot in the centre (diagnostic of the subgenus), is relatively indistinct.

D. graysoni sp. nov. is similar in most respects to *D. bimaculatus* but is separated from that taxon by the following: 1/ The fact that the black spot at the back of the mouth (on the head), with a tiny white dot in the centre (diagnostic of the subgenus), is very distinct, and contrasting with the surrounding pigment, with the white inner dot appearing slightly larger than the tiny spec size in the other two species and other subspecies; 2/ The top of the head is significantly darker than the body and 3/ The paler interspaces on the dorsum of the patagia that are green in *D. bimaculatus* have a washed out greyish-green colour in *D. graysoni sp. nov.*.

The three preceding species, including the newly named subspecies are the entirety of the subgenus *Philippinedraco* Hoser, 2014. They are readily separated from all other species of *Draco* Linnaeus, 1758 by the following suite of characters: An adult snout-vent length of about 73 mm; 8-10 supralabials; tympanum usually covered with smooth skin; lateral pouches with slightly enlarged scales; 122-150 dorsals; five ribs in patagium; and the presence of a black, white-centred spot between the tympanum and the corner of the mouth (not seen in the morphologically similar subgenus *Macquiredraco* Hoser, 2014).

D. brunneis subsp. nov. in life is depicted in Sanguila *et al.* (2016) on page 58 in Fig. 40 and also online at:

https://www.researchgate.net/figure/Draco-bimaculatus-is-widely-distributed-throughout-low-elevation-and-coastal-areas-of_fig27_309224699

Distribution: *D. brunneis* subsp. nov. occurs only on Bohol Island, The Philippines.

Etymology: *D. brunneis* subsp. nov. is named after the Latin word "brunneis" in reflection of the brown dorsum of most adult specimens.

**DRACO (RHACODRACON) FIMBRIATUS
DILATADORSISQUAMAE SUBSP. NOV.**

LSIDDurn:lsid:zoobank.org:act:B2CDD659-2054-448E-A67B-47FF1283CE42

Holotype: A preserved adult female specimen at the Museum of Vertebrate Zoology, University of California, Berkeley, California, USA, specimen number MVZ:Herp:239473 collected from Cagar Alam Tabapenangjung, Kecamatan Kepahiang, Kabupaten Bengkulu, Sumatra, Indonesia, Latitude -3.69666 S., Longitude 102.52835 E.

This facility allows access to its holdings.

Paratypes: Two preserved specimens (a male and a female), originally held at Rijksmuseum van Natuurlijke Historie, Leyden in the Netherlands, but more recently held at Naturalis, The Netherlands, specimen number RMNH.2920 (same number at both institutions for the two animals), collected from Padang, Sumatra, Indonesia.

Diagnosis: The subspecies *Draco (Rhacodracon) fimbriatus dilatadorsisquamae* subsp. nov. from south Sumatra at the west coast region, is readily separated from the nominal species *D. fimbriatus* Kuhl, 1820, type locality Peninsula Malaysia, by the low number of dorsal scales (155-166) in both sexes, versus 170-226 in nominate *D. fimbriatus* from all other parts of the range of that species, being north-west Sumatra and the Malay Peninsula.

The closely related species *Draco hennigi* (Musters, 1983), type locality of Java, originally described as a subspecies of *D. fimbriatus* Kuhl, 1820, and endemic to the island of Java has 200-256 dorsals.

The dewlap of nominate *D. fimbriatus fimbriatus* (males) is mainly white (at the proximal parts) and including the main part of the dewlap and then yellow at the distal part, versus a small whitish part proximally and then mainly yellow in *D. fimbriatus dilatadorsisquamae* subsp. nov., versus salmon pink or whitish proximally becoming a deeper salmon pink or orange in *D. hennigi* (note McGuire *et al.* 2018 appear to have got this information mixed up in their paper on page 10).

The closely related taxon *D. punctatus* Boulenger, 1900, type locality Laurat Hills, Perak, Peninsula Malaysia and found in Peninsular Malaysia, including immediately adjacent southern Thailand, Sumatra and Borneo is separated from the two preceding species by having a dewlap that is whitish proximally, then mainly an orange-yellow colour and with three to four darker edges running across the side of the dewlap. See for example the image online at:

<https://www.inaturalist.org/observations/101998748>

D. fimbriatus and *D. hennigi* have a dark brown to black eye stripe on the side of the head. This is thin and discontinuous near the snout, but thickens behind the eye. The stripe merges with a thick, discontinuous, dark brown stripe along the ventral line which extends to the base of the tail. Another shorter black stripe occurs below and parallel to the main eye stripe. The same stripe markings are present in *D. punctatus*, but are very indistinct as opposed to relatively bold and prominent in the other two species, the only exception being the north Borneo subspecies *Draco asperacapat* subsp. nov..

Draco fimbriatus dilatadorsisquamae subsp. nov. is also separated from *D. punctatus* by its dorsal count of 155-

166 which is less than the 170-226 range also seen in *D. punctatus*.

The divergent but related taxon, *D. cristatellus* Günther, 1872, type locality being at or near Matang, Sarawak of south-west Sarwak, Borneo is readily separated from *D. punctatus* by its significantly less spinose head as seen in the image of a specimen in life at:

<https://www.inaturalist.org/observations/29688928>

and compared for example with the image of *D. punctatus asperacapat* subsp. nov. online at:

<https://www.inaturalist.org/observations/62016381>

D. cristatellus has a yellowish grey iris, versus light or bright orange in *D. fimbriatus*, dull orange in *D. hennigi* and whitish-grey in *D. punctatus*.

D. abbreviatus Hardwicke and Gray, 1827 with a type locality of Singapore, readily distinguished from the preceding species by having a dull orange eye, boldly marked body and by having a uniform coral pink dewlap (no white or yellow at all and no significant variation in intensity as seen for example in *D. hennigi*), is herein recognized as a valid species, noting that it has been synonymised with other species by many recent authors.

D. punctatus has a dewlap length 1.06 times the head length, versus 1.4 times in *D. fimbriatus*, *D. cristatellus* and *D. hennigi* as well as a less well-defined point at the bottom (being wider at the bottom).

The three Borneo subspecies of *D. punctatus* are separated from the nominate form from Peninsula Malaysia by the following unique characters:

D. punctatus asperacapat subsp. nov. from northern Borneo (Sabah) has a dark anterior edge to the dewlap and there is no dorsal crest continuous with the caudal crest. It also has thick prominent pointed edged, white tipped tubercles on the back of the head.

D. punctatus longacrista subsp. nov. from Upper Makham, central Borneo has a dark anterior edge to the dewlap and has a dorsal crest running down the last third of the back and continuous with the caudal crest on the top of the tail. Tubercles on the back of the head are moderate in thickness and white or light tipped.

D. punctatus coriafacile subsp. nov. from south-east Borneo has a dark anterior edge to the dewlap and there is no dorsal crest continuous with the caudal crest. Tubercles on the back of the head are thin and white or light tipped.

D. punctatus and *D. cristatellus* are both smaller than the other (above named) species, being *D. fimbriatus* and *D. hennigi*, all in the subgenus *Rhacodragon* Fitzinger, 1843, having an average s-v of 78 mm versus over 100 mm.

The four preceding species all consisting of the subgenus *Rhacodragon* Fitzinger, 1843, type species: *Draco fimbriatus* Kuhl, 1820 as defined by Hoser (2014) are readily separated from all other

Draco Linnaeus, 1758 species by the following suite of characters: Nostril lateral, directed outwards; tympanum naked; the adpressed hind limb reaches at least to halfway between the elbow of the adpressed fore limb and the axil; dorsal scales all smaller than the ventrals.

The species *Draco maculatus* Gray, 1845 (*Spotydraco* Hoser, 2014) a closely associated subgenus, is readily separated from *Rhacodracon* by the fact that the dorsal scales are a little larger than, or as large as, the ventrals; on each side of the back is a series of enlarged, keeled, distant scales and the male's gular appendage is much longer than the head (more than 1.4 times).

The species within the genus *Draco* Linnaeus, 1758 (*sensu*

lato) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage or dewlap and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

Distribution: The subspecies *Draco (Rhacodracon) fimbriatus dilatadorsisquamae subsp. nov.* occurs in the west coast region of southern Sumatra near the type locality of Padang.

Etymology: The new subspecies name "*dilatadorsisquamae*" comes from the Latin words "*dilatata dorsis squamae*" meaning "dilated dorsal scales" which is a comparative reference to its nearest related subspecies.

DRACO (RHACODRACON) PUNCTATUS ASPERACAPUT SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:0AEA8973-276A-4B80-8A0F-09B02F23128B

Holotype: A preserved specimen at the Texas Natural History Collections, TNHC Herpetology Collection, The University of Texas at Austin, Texas, USA, specimen number 56766 collected from Poring Hot Springs, Sabah, (North Borneo) Malaysia.

This facility allows access to its holdings.

Paratype: A preserved specimen at the Texas Natural History Collections, TNHC Herpetology Collection, The University of Texas at Austin, Texas, USA, specimen number 56764 collected from Poring Hot Springs, Sabah, (North Borneo) Malaysia.

Diagnosis: The nominate form of the species *D. punctatus* Boulenger, 1900, type locality Laurat Hills, Perak, Peninsula Malaysia and found in Peninsular Malaysia, including immediately adjacent southern Thailand, Sumatra and Borneo is separated from the morphologically similar species *D. fimbriatus* Kuhl, 1820, type locality Peninsula Malaysia and *Draco hennigi* (Musters, 1983), type locality of Java, originally described as a subspecies of *D. fimbriatus* Kuhl, 1820, and endemic to the island of Java by having a dewlap that is whitish proximally, then mainly an orange-yellow colour and with three to four darker edges running across the side of the dewlap. See for example the image online at: <https://www.inaturalist.org/observations/101998748>

D. fimbriatus and *D. hennigi* have a dark brown to black eye stripe on the side of the head. This is thin and discontinuous near the snout, but thickens behind the eye. The stripe merges with a thick, discontinuous, dark brown stripe along the ventral line which extends to the base of the tail. Another shorter black stripe occurs below and parallel to the main eye stripe. The same stripe markings are present in *D. punctatus*, but are very indistinct as opposed to relatively bold and prominent in the other two species, the only exception being the north Borneo subspecies *Draco asperacapat subsp. nov.*

The subspecies *Draco (Rhacodracon) fimbriatus dilatadorsisquamae subsp. nov.* from south Sumatra on the west coast region, is readily separated from the nominal species *D. fimbriatus* Kuhl, 1820, type locality Peninsula Malaysia, by the low number of dorsal scales (155-166) in both sexes, versus 170-226 in nominate *D. fimbriatus* from all other parts of the range of that species, being north-west Sumatra and the Malay Peninsula.

The closely related species *Draco hennigi* (Musters, 1983), type locality of Java, originally described as a subspecies of *D. fimbriatus* Kuhl, 1820, and endemic to the island of Java has 200-256 dorsals.

The dewlap of nominate *D. fimbriatus fimbriatus* (males) is

mainly white (at the proximal parts) and including the main part of the dewlap and then yellow at the distal part, versus a small whitish part proximally and then mainly yellow in *D. fimbriatus dilatadorsisquamae subsp. nov.*, versus salmon pink or whitish proximally becoming a deeper salmon pink or orange in *D. hennigi* (note McGuire *et al.* 2018 appear to have got this information mixed up in their paper on page 10).

Draco fimbriatus dilatadorsisquamae subsp. nov. is also separated from *D. punctatus* by its dorsal count of 155-166 which is less than the 170-226 range also seen in *D. punctatus*.

The divergent but related taxon, *D. cristatellus* Günther, 1872, type locality being at or near Matang, Sarawak of south-west Sarawak, Borneo is readily separated from *D. punctatus* by its significantly less spinose head as seen in the image of a specimen in life at:

<https://www.inaturalist.org/observations/29688928>

and compared for example with the image of *D. punctatus asperacapat subsp. nov.* online at:

<https://www.inaturalist.org/observations/62016381>

D. cristatellus has a yellowish grey iris, versus light or bright orange in *D. fimbriatus*, dull orange in *D. hennigi* and whitish-grey in *D. punctatus*.

D. abbreviatus Hardwicke and Gray, 1827 with a type locality of Singapore, readily distinguished from the preceding species by having a dull orange eye, boldly marked body and by having a uniform coral pink dewlap (no white or yellow at all and no significant variation in intensity as seen for example in *D. hennigi*), is herein recognized as a valid species, noting that it has been synonymised with other species by many recent authors.

D. punctatus has a dewlap length 1.06 times the head length, versus 1.4 times in *D. fimbriatus*, *D. cristatellus* and *D. hennigi* as well as a less well-defined point at the bottom (being wider at the bottom).

The three newly named Borneo subspecies of *D. punctatus* are separated from the nominate form from Peninsula Malaysia by the following unique characters:

D. punctatus asperacapat subsp. nov. from northern Borneo (Sabah) has a dark anterior edge to the dewlap and there is no dorsal crest continuous with the caudal crest. It also has thick (at the base) prominent pointed-edged, white tipped tubercles on the back of the head.

D. punctatus longacrista subsp. nov. from Upper Makham, central Borneo has a dark anterior edge to the dewlap and has a dorsal crest running down the last third of the back and continuous with the caudal crest on the top of the tail. Tubercles on the back of the head are moderate in thickness and white or light tipped.

D. punctatus coriafacile subsp. nov. from south-east Borneo has a dark anterior edge to the dewlap and there is no dorsal crest continuous with the caudal crest. Tubercles on the back of the head are thin and white or light tipped.

D. punctatus and *D. cristatellus* are both smaller than the other (above named) species, being *D. fimbriatus* and *D. hennigi*, all in the subgenus *Rhacodragon* Fitzinger, 1843, having an average s-v of 78 mm versus over 100 mm.

The four preceding species all consisting of the subgenus *Rhacodragon* Fitzinger, 1843, type species: *Draco fimbriatus* Kuhl, 1820 as defined by Hoser (2014) are readily separated from all other

Draco Linnaeus, 1758 species by the following suite of characters: Nostril lateral, directed outwards; tympanum naked; the adpressed hind limb reaches at least to halfway

between the elbow of the adpressed fore limb and the axil; dorsal scales all smaller than the ventrals.

The species *Draco maculatus* Gray, 1845 (*Spottydraco* Hoser, 2014) a closely associated subgenus, is readily separated from *Rhacodracon* by the fact that the dorsal scales are a little larger than, or as large as, the ventrals; on each side of the back is a series of enlarged, keeled, distant scales and the male's gular appendage is much longer than the head (more than 1.4 times).

The species within the genus *Draco* Linnaeus, 1758 (*sensu lato*) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage or dewlap and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

Distribution: *D. punctatus asperacapat subsp. nov.* is known only from the area of the type locality, Sabah, Malaysia in north Borneo.

Etymology: The new subspecies name "*asperacapat*" comes directly from the Latin words "*aspera caput*" meaning "rough head" in reflection of its spinose nature.

DRACO (RHACODRACON) PUNCTATUS LONGACRISTA SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:458681D5-4188-4699-8953-F7A5F82BEA09

Holotype: A preserved specimen at the Naturalis Biodiversity Center, The Netherlands, Amphibia and Reptilia collection, specimen number RMNH.RENA.4995 collected from upper Mahakkam, Borneo, (previously at Rijksmuseum van Natuurlijke Historie, Leyden in the Netherlands with the specimen number RMNH 4995 B).

This facility allows access to its holdings.

Diagnosis: The nominate form of the species *D. punctatus* Boulenger, 1900, type locality Laurat Hills, Perak, Peninsula Malaysia and found in Peninsular Malaysia, including immediately adjacent southern Thailand, Sumatra and Borneo is separated from the morphologically similar species *D. fimbriatus* Kuhl, 1820, type locality Peninsula Malaysia and *Draco hennigi* (Musters, 1983), type locality of Java, originally described as a subspecies of *D. fimbriatus* Kuhl, 1820, and endemic to the island of Java by having a dewlap that is whitish proximally, then mainly an orange-yellow colour and with three to four darker edges running across the side of the dewlap. See for example the image online at: <https://www.inaturalist.org/observations/101998748>

D. fimbriatus and *D. hennigi* have a dark brown to black eye stripe on the side of the head. This is thin and discontinuous near the snout, but thickens behind the eye. The stripe merges with a thick, discontinuous, dark brown stripe along the ventral line which extends to the base of the tail. Another shorter black stripe occurs below and parallel to the main eye stripe. The same stripe markings are present in *D. punctatus*, but are very indistinct as opposed to relatively bold and prominent in the other two species, the only exception being the north Borneo subspecies *Draco asperacapat subsp. nov.*

The subspecies *Draco (Rhacodracon) fimbriatus dilatadorsisquamae subsp. nov.* from south Sumatra on the west coast region, is readily separated from the nominal species *D. fimbriatus* Kuhl, 1820, type locality Peninsula Malaysia, by the low number of dorsal scales (155-166) in both sexes, versus 170-226 in nominate *D. fimbriatus* from all other parts of the range of that species, being north-west Sumatra and the Malay Peninsula.

The closely related species *Draco hennigi* (Musters, 1983),

type locality of Java, originally described as a subspecies of *D. fimbriatus* Kuhl, 1820, and endemic to the island of Java has 200-256 dorsals.

The dewlap of nominate *D. fimbriatus fimbriatus* (males) is mainly white (at the proximal parts) and including the main part of the dewlap and then yellow at the distal part, versus a small whitish part proximally and then mainly yellow in *D. fimbriatus dilatadorsisquamae subsp. nov.*, versus salmon pink or whitish proximally becoming a deeper salmon pink or orange in *D. hennigi* (note McGuire *et al.* 2018 appear to have got this information mixed up in their paper on page 10).

Draco fimbriatus dilatadorsisquamae subsp. nov. is also separated from *D. punctatus* by its dorsal count of 155-166 which is less than the 170-226 range also seen in *D. punctatus*.

The divergent but related taxon, *D. cristatellus* Günther, 1872, type locality being at or near Matang, Sarawak of south-west Sarawak, Borneo is readily separated from *D. punctatus* by its significantly less spinose head as seen in the image of a specimen in life at:

<https://www.inaturalist.org/observations/29688928>

and compared for example with the image of *D. punctatus asperacapat subsp. nov.* online at:

<https://www.inaturalist.org/observations/62016381>

D. cristatellus has a yellowish grey iris, versus light or bright orange in *D. fimbriatus*, dull orange in *D. hennigi* and whitish-grey in *D. punctatus*.

D. abbreviatus Hardwicke and Gray, 1827 with a type locality of Singapore, readily distinguished from the preceding species by having a dull orange eye, boldly marked body and by having a uniform coral pink dewlap (no white or yellow at all and no significant variation in intensity as seen for example in *D. hennigi*), is herein recognized as a valid species, noting that it has been synonymised with other species by many recent authors.

D. punctatus has a dewlap length 1.06 times the head length, versus 1.4 times in *D. fimbriatus*, *D. cristatellus* and *D. hennigi* as well as a less well-defined point at the bottom (being wider at the bottom).

The three newly named Borneo subspecies of *D. punctatus* are separated from the nominate form from Peninsula Malaysia by the following unique characters:

D. punctatus asperacapat subsp. nov. from northern Borneo (Sabah) has a dark anterior edge to the dewlap and there is no dorsal crest continuous with the caudal crest. It also has thick (at the base) prominent pointed-edged, white tipped tubercles on the back of the head.

D. punctatus longacrista subsp. nov. from from Upper Makhham, central Borneo has a dark anterior edge to the dewlap and has a dorsal crest running down the last third of the back and continuous with the caudal crest on the top of the tail. Tubercles on the back of the head are moderate in thickness and white or light tipped.

D. punctatus coriafacile subsp. nov. from south-east Borneo has a dark anterior edge to the dewlap and there is no dorsal crest continuous with the caudal crest. Tubercles on the back of the head are thin and white or light tipped.

D. punctatus and *D. cristatellus* are both smaller than the other (above named) species, being *D. fimbriatus* and *D. hennigi*, all in the subgenus *Rhacodragon* Fitzinger, 1843, having an average s-v of 78 mm versus over 100 mm.

The four preceding species all consisting of the subgenus *Rhacodragon* Fitzinger, 1843, type species: *Draco fimbriatus* Kuhl, 1820 as defined by Hoser (2014) are readily separated

from all other

Draco Linnaeus, 1758 species by the following suite of characters: Nostril lateral, directed outwards; tympanum naked; the adpressed hind limb reaches at least to halfway between the elbow of the adpressed fore limb and the axil; dorsal scales all smaller than the ventrals.

The species *Draco maculatus* Gray, 1845 (*Spottydraco* Hoser, 2014) a closely associated subgenus, is readily separated from *Rhacodracon* by the fact that the dorsal scales are a little larger than, or as large as, the ventrals; on each side of the back is a series of enlarged, keeled, distant scales and the male's gular appendage is much longer than the head (more than 1.4 times).

The species within the genus *Draco* Linnaeus, 1758 (*sensu lato*) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage or dewlap and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

Distribution: *D. punctatus longacrista subsp. nov.* from Upper Makham, central Borneo is only known from this area. It should be listed as threatened, pending the location of extant viable populations.

Etymology: The new subspecies name "*longacrista*" comes directly from the Latin words "*longa crista*" meaning "long crest" in reflection of the apparently unique character state of a long crest running from the rear of the dorsum onto the tail.

DRACO (RHACODRACON) PUNCTATUS CORIAFACILE SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:412313B4-2F4E-4EA7-8EEA-1659E75B4F69

Holotype: A preserved adult male specimen formerly held at Rijksmuseum van Natuurlijke Historie, Leyden in the Netherlands with the specimen number RMNH 19974, more recently transferred to the Naturalis Biodiversity Center, The Netherlands, Amphibia and Reptilia collection, collected from Rantau, South Kalimantan (south Borneo), Indonesia. This facility allows access to its holdings

Paratype: A preserved juvenile specimen formerly held at Rijksmuseum van Natuurlijke Historie, Leyden in the Netherlands with the specimen number RMNH 19975, more recently transferred to the Naturalis Biodiversity Center, The Netherlands, Amphibia and Reptilia collection, collected from Rantau, South Kalimantan (south Borneo), Indonesia.

Diagnosis: The nominate form of the species *D. punctatus* Boulenger, 1900, type locality Laurat Hills, Perak, Peninsula Malaysia and found in Peninsular Malaysia, including immediately adjacent southern Thailand, Sumatra and Borneo is separated from the morphologically similar species *D. fimbriatus* Kuhl, 1820, type locality Peninsula Malaysia and *Draco hennigi* (Musters, 1983), type locality of Java, originally described as a subspecies of *D. fimbriatus* Kuhl, 1820, and endemic to the island of Java by having a dewlap that is whitish proximally, then mainly an orange-yellow colour and with three to four darker edges running across the side of the dewlap. See for example the image online at: <https://www.inaturalist.org/observations/101998748>

D. fimbriatus and *D. hennigi* have a dark brown to black eye stripe on the side of the head. This is thin and discontinuous near the snout, but thickens behind the eye. The stripe merges with a thick, discontinuous, dark brown stripe along the ventral line which extends to the base of the tail. Another shorter black stripe occurs below and parallel to the main eye stripe. The same stripe markings are present in *D. punctatus*,

but are very indistinct as opposed to relatively bold and prominent in the other two species, the only exception being the north Borneo subspecies *Draco asperacapus subsp. nov.*

The subspecies *Draco (Rhacodracon) fimbriatus dilatadorsisquamae subsp. nov.* from south Sumatra on the west coast region, is readily separated from the nominal species *D. fimbriatus* Kuhl, 1820, type locality Peninsula Malaysia, by the low number of dorsal scales (155-166) in both sexes, versus 170-226 in nominate *D. fimbriatus* from all other parts of the range of that species, being north-west Sumatra and the Malay Peninsula.

The closely related species *Draco hennigi* (Musters, 1983), type locality of Java, originally described as a subspecies of *D. fimbriatus* Kuhl, 1820, and endemic to the island of Java has 200-256 dorsals.

The dewlap of nominate *D. fimbriatus fimbriatus* (males) is mainly white (at the proximal parts) and including the main part of the dewlap and then yellow at the distal part, versus a small whitish part proximally and then mainly yellow in *D. fimbriatus dilatadorsisquamae subsp. nov.*, versus salmon pink or whitish proximally becoming a deeper salmon pink or orange in *D. hennigi* (note McGuire *et al.* 2018 appear to have got this information mixed up in their paper on page 10).

Draco fimbriatus dilatadorsisquamae subsp. nov. is also separated from *D. punctatus* by its dorsal count of 155-166 which is less than the 170-226 range also seen in *D. punctatus*.

The divergent but related taxon, *D. cristatellus* Günther, 1872, type locality being at or near Matang, Sarawak of south-west Sarawak, Borneo is readily separated from *D. punctatus* by its significantly less spinose head as seen in the image of a specimen in life at:

<https://www.inaturalist.org/observations/29688928>

and compared for example with the image of *D. punctatus asperacapus subsp. nov.* online at:

<https://www.inaturalist.org/observations/62016381>

D. cristatellus has a yellowish grey iris, versus light or bright orange in *D. fimbriatus*, dull orange in *D. hennigi* and whitish-grey in *D. punctatus*.

D. abbreviatus Hardwicke and Gray, 1827 with a type locality of Singapore, readily distinguished from the preceding species by having a dull orange eye, boldly marked body and by having a uniform coral pink dewlap (no white or yellow at all and no significant variation in intensity as seen for example in *D. hennigi*), is herein recognized as a valid species, noting that it has been synonymised with other species by many recent authors.

D. punctatus has a dewlap length 1.06 times the head length, versus 1.4 times in *D. fimbriatus*, *D. cristatellus* and *D. hennigi* as well as a less well-defined point at the bottom (being wider at the bottom).

The three newly named Borneo subspecies of *D. punctatus* are separated from the nominate form from Peninsula Malaysia by the following unique characters:

D. punctatus asperacapus subsp. nov. from northern Borneo (Sabah) has a dark anterior edge to the dewlap and there is no dorsal crest continuous with the caudal crest. It also has thick (at the base) prominent pointed-edged, white tipped tubercles on the back of the head.

D. punctatus longacrista subsp. nov. from from Upper Makham, central Borneo has a dark anterior edge to the dewlap and has a dorsal crest running down the last third of the back and continuous with the caudal crest on the top of the tail. Tubercles on the back of the head are moderate in

thickness and white or light tipped.

D. punctatus coriafacile subsp. nov. from south-east Borneo has a dark anterior edge to the dewlap and there is no dorsal crest continuous with the caudal crest. Tubercles on the back of the head are thin and white or light tipped.

D. punctatus and *D. cristatellus* are both smaller than the other (above named) species, being *D. fimbriatus* and *D. hennigi*, all in the subgenus *Rhacodragon* Fitzinger, 1843, having an average s-v of 78 mm versus over 100 mm.

The four preceding species all consisting of the subgenus *Rhacodragon* Fitzinger, 1843, type species: *Draco fimbriatus* Kuhl, 1820 as defined by Hoser (2014) are readily separated from all other *Draco* Linnaeus, 1758 species by the following suite of characters: Nostril lateral, directed outwards; tympanum naked; the adpressed hind limb reaches at least to halfway between the elbow of the adpressed fore limb and the axil; dorsal scales all smaller than the ventrals.

The species *Draco maculatus* Gray, 1845 (*Spotydraco* Hoser, 2014) a closely associated subgenus, is readily separated from *Rhacodragon* by the fact that the dorsal scales are a little larger than, or as large as, the ventrals; on each side of the back is a series of enlarged, keeled, distant scales and the male's gular appendage is much longer than the head (more than 1.4 times).

The species within the genus *Draco* Linnaeus, 1758 (*sensu lato*) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage or dewlap and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

Distribution: *D. punctatus coriafacile* subsp. nov. from Rantau, southern Borneo is only known from this area. It should be listed as threatened, pending the location of extant viable populations.

Etymology: The new subspecies name "*coriafacile*" comes directly from the Latin words "*coria facile*" meaning "hides easily" in reflection of the excellent camouflage this species has when hiding against a tree trunk in its native habitat.

DRACO (SOMNIADRACO) NORVILLII CUSPISFEMEN SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:98CB344E-0AFC-40ED-893E-6BA6599BB754

Holotype: A preserved juvenile specimen at the California Academy of Sciences, San Francisco, California, USA, herpetology collection, specimen number CAS HERP 239402 collected from Ngaputaw Township, Waphu Mountain at an elevation of about 354 feet, Patheingyi District, Ayeyarwady Division, Myanmar (Burma), Latitude 16.284290 N., Longitude 94.274370 E.

This facility allows access to its holdings.

Diagnosis: Until now the subspecies *Draco (Somniadraco) norvillii cuspisfemen* subsp. nov. from Waphu Mountain in the Mekong Delta, Myanmar has been treated as an isolated population of either *Draco (Somniadraco) norvillii* Alcock, 1895, type locality Dooma Dooma, Assam (India) or more often the similar species *D. blanfordi* Boulenger, 1885, type locality Tavoy (now Dawei) Tenasserim, south-east Myanmar (Burma) near the Thai border.

Female *D. norvillii cuspisfemen* subsp. nov. is separated from the nominate form of *D. norvillii* by having a dorsal patagia that is mainly yellowish-green and purplish red in colour versus green and and brownish-brick red in *D. norvillii*. In *D. norvillii* the narrow markings on the neck and back form four well defined beige crosses, this not being the case in *D.*

norvillii cuspisfemen subsp. nov..

The patagia of female *D. norvillii* of both subspecies is marked greenish or yellowish green at the anterior, grading to reddish at the posterior. From the body about 4-5 broad sweeps of green or yellowish-green radiate outwards, these radiations not forming well defined bands, but rather are spotted or marked with the darker colour and likewise for the darker radiations being speckled or marked with the lighter colour.

By contrast, female *D. blanfordi* of the type form from Tavoy, Myanmar and south to Peninsula Malaysia, including nearby parts of Thailand has a patagia that is generally greenish all over, being dark green on the outer edges with a flush of yellow to red down the inner area.

Across the patagia are numerous small bright green dots and flecks that are evenly spaced. There are however no obvious sweeps or bands of colour radiating out from the body in the form of broad bands or similar as seen in all of *D. norvillii* of both subspecies or *Draco (Somniadraco) taeniopterus* Günther, 1861 of both subspecies.

Female *D. taeniopterus taeniopterus* subsp. nov. of the nominate form is readily separated from all the preceding species by having a dorsal patagia that is mainly yellowish brown in colour and with 3-5 generally unbroken dark greyish brown bands radiating out from the body. These bands are irregularly jagged edged, sometimes being broken, but notable is that as a rule the insides of these bands are immaculate in colour when the patagia is opened in full or if there is internal colour, it is in the form of large, well-defined blotches and not tiny dots, peppering and the like which detract from the contrast, such being the case in the other species (excluding *D. blanfordi* that has no such bands radiating from the body).

The posterior of the patagia of female *D. taeniopterus* has a broad thick flush of purplish-red.

Females of the new subspecies *D. taeniopterus incredibilis* subsp. nov. from north and east of the Kwai Noi River has a patagia superficially similar to that of *D. taeniopterus*, but it differs in that it is light yellow at the anterior part, becoming bright orange-red at the rear. On the outer edge is black. Amongst all this, there are yellow bands radiating out from the body, these being heavily broken by the darker colour underneath, which is brown near the body and is black on the outer half to the of the flap. The yellow over the black is also broken into spots or flecks.

It is the effectively immaculate colouration of the lighter bands in female nominate *D. taeniopterus* that separates that taxon from *D. taeniopterus incredibilis* subsp. nov. which has flecks and the like breaking the equivalent bands.

Female *D. norvillii* of both subspecies, are further separated from the other species by having large and prominent spines on the back of the hind limbs, versus medium to small spines in the other species.

Female *D. taeniopterus* of the nominate subspecies do not have enlarged scales on the dewlap, whereas females of all the other aforementioned taxa do.

D. norvillii of both subspecies are generally defined as follows:

Body with a large, patagia (wing-like membrane) supported by the last five to seven extended ribs. A gular appendage and a lateral flap or wattle on either side of the throat. Tympanum covered with scales. Tail long. Snout about as long as the diameter of the orbit; nostrils directed vertically upwards. Upper head-shields unequal, strongly keeled; 9 or 10 supralabials. Male has a gular appendage that is slightly

longer than the head, covered with large scales. In females, the gular appendage is less than half the length of the head. Dorsal scales unequal, smooth or feebly keeled, the largest as large as the ventrals. Ventrals strongly keeled. A series of widely separated, enlarged, subtriangular scales present on each side of the back. When the legs are held parallel to the body, the forelimb extends to well beyond the tip of the snout, the hind-limb to the axilla. Male has a slight nuchal fold; no caudal crest.

The preceding species are separated from all other species in the subgenus *Somniadraco* Hoser, 2014 by the fact that the dewlap at least in males has enlarged scales; males have a nuchal fold; dorsal patagia in males is usually brown or grey with or without dark markings.

The dewlap of *D. norvilli*, *D. taeniopterus*, *D. blanfordii* is distally expanded with a basal constriction and terminates in a rounded distal edge. By contrast, the dewlap of the morphologically similar species, *D. indochinensis* from Indochina is widest at its base, decreases in width over its entire length, and terminates in a sharp point.

Species within the subgenus *Somniadraco* Hoser, 2014 are readily separated from all other *Draco* Linnaeus, 1758 species and subgenera by the following suite of characters, being one or other of the following three:

1/ The nostril is pierced vertically and directed upwards; the tympanum is naked; the adpressed hind limb does not reach beyond the axil and the tympanum is smaller than the eye opening; or:

2/ The nostril is pierced vertically and directed upwards; the tympanum is naked; the adpressed hind limb reaches beyond the axil (and wing-membranes above have five transverse black bands, inferiorly without markings); or:

3/ The nostril is pierced vertically and directed upwards; the tympanum is scaly and wing-membranes above and below with five regular transverse black bands.

Alternatively, this subgenus may be defined by exclusion of the other subgenera as defined within the paper of Hoser (2014).

The species within the genus *Draco* Linnaeus, 1758 (*sensu lato*) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage or dewlap and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

Draco norvilli in life is depicted online at:

<https://www.inaturalist.org/observations/29561741>
and

<https://www.inaturalist.org/observations/6930271>

Draco blanfordii in life is depicted online at:

<https://www.inaturalist.org/observations/78047071>

D. taeniopterus in life is depicted online at:

<https://www.inaturalist.org/observations/115571269>

and

<https://www.inaturalist.org/observations/115836622>

D. taeniopterus incredibilis in life is depicted online at:

<https://www.inaturalist.org/observations/115518849>

Distribution: *Draco (Somniadraco) norvilli cuspsifemen subsp. nov.* occurs on and near Waphu Mount 404 meters (1,325 feet), this being the highest point of the lower Irrawaddy Delta, which lies between Pathein and Mawtin Zun (point), on the western strip of the generally flat delta area. It may be a range-restricted taxon and until otherwise known, should be treated as being at risk of extinction.

Etymology: The subspecies name *D. norvilli cuspsifemen subsp. nov.* comes from the Latin word "*cuspsifemen*" which means "spikey thighs" in reflection of the large spiked scales at the rear of the hind limbs.

DRACO (SOMNIADRACO) TAENIOPTERUS INCREDIBILIS SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:0F6737F2-6225-409A-B150-C7FFDB9BFEA3

Holotype: A preserved specimen at Museum of Natural History, London, UK, specimen number 1921.4.1.93-8 (the adult female), (being one of six specimens in the group), this one collected from Meh lem, Phrae, Thailand.

This facility allows access to its holdings.

Paratypes: Two preserved specimens at Museum of Natural History, London, UK, specimen number 1940.6.3.34-35 (2 adult males), collected from Sumka Uma, Triangle, Kachin, Upper Burma, Myanmar, Latitude 25.95 N., Longitude 97.82 E.

Diagnosis: Until now *D. taeniopterus taeniopterus subsp. nov.* has been treated as a northern population of *Draco (Somniadraco) taeniopterus* Günther, 1861, with a type locality of Chartaboum, coast of Siam (Thailand).

Female *D. taeniopterus taeniopterus subsp. nov.* of the nominate form is readily separated from all of the morphologically similar taxa *Draco (Somniadraco) norvilli* Alcock, 1895, type locality Dooma Dooma, Assam (India), the similar species *D. blanfordi* Boulenger, 1885, type locality Tavoy (now Dawei) Tenasserim, south-east Myanmar (Burma) near the Thai border and the subspecies *Draco (Somniadraco) norvilli cuspsifemen subsp. nov.* from Waphu Mountain in the Mekong Delta, Myanmar by the following:

Having a dorsal patagia that is mainly yellowish brown in colour and with 3-5 generally unbroken dark greyish brown bands radiating out from the body. These bands are irregularly jagged edged, sometimes being broken, but notable is that as a rule the insides of these bands are immaculate in colour when the patagia is opened in full or if there is internal colour, it is in the form of large, well-defined blotches and not tiny dots, peppering and the like which detract from the contrast, such being the case in the other species (excluding *D. blanfordi* that has no such bands radiating from the body).

The posterior of the patagia of female *D. taeniopterus taeniopterus* has a broad thick flush of purplish-red.

By contrast, females of the new subspecies *D. taeniopterus incredibilis subsp. nov.* from north and east of the Kwai Noi River has a patagia superficially similar to that of *D. taeniopterus*, but it differs in that it is light yellow at the anterior part, becoming bright orange-red at the rear. On the outer edge is black. Amongst all this, there are yellow bands radiating out from the body, these being heavily broken by the darker colour underneath, which is brown near the body and is black on the outer half to the of the flap. The yellow over the black is also broken into spots or flecks.

It is the effectively immaculate colouration of the lighter bands in female nominate *D. taeniopterus* that separates that taxon from *D. taeniopterus incredibilis subsp. nov.* which has flecks and the like breaking the equivalent bands.

Until now the subspecies *Draco (Somniadraco) norvilli cuspsifemen subsp. nov.* from Waphu Mountain in the Mekong Delta, Myanmar has been treated as an isolated population of either *Draco (Somniadraco) norvilli* Alcock, 1895, type locality Dooma Dooma, Assam (India) or more often the similar species *D. blanfordi* Boulenger, 1885, type locality Tavoy (now Dawei) Tenasserim, south-east Myanmar

(Burma) near the Thai border.

Female *D. norvillii cuspsifemen* subsp. nov. is separated from the nominate form of *D. norvillii* by having a dorsal patagia that is mainly yellowish-green and purplish red in colour versus green and and brownish-brick red in *D. norvillii*. In *D. norvillii* the narrow markings on the neck and back form four well defined beige crosses, this not being the case in *D. norvillii cuspsifemen* subsp. nov..

The patagia of female *D. norvilli* of both subspecies is marked greenish or yellowish green at the anterior, grading to reddish at the posterior. From the body about 4-5 broad sweeps of green or yellowish-green radiate outwards, these radiations not forming well defined bands, but rather are spotted or marked with the darker colour and likewise for the darker radiations being speckled or marked with the lighter colour.

By contrast, female *D. blanfordi* of the type form from Tavoy, Myanmar and south to Peninsula Malaysia, including nearby parts of Thailand has a patagia that is generally greenish all over, being dark green on the outer edges with a flush of yellow to red down the inner area.

Across the patagia are numerous small bright green dots and flecks that are evenly spaced. There are however no obvious sweeps or bands of colour radiating out from the body in the form of broad bands or similar as seen in all of *D. norvilli* of both subspecies or *Draco* (*Somniadraco*) *taeniopterus* Günther, 1861 of both subspecies.

Female *D. norvilli* of both subspecies, are further separated from the other species by having large and prominent spines on the back of the hind limbs, versus medium to small spines in the other species.

Female *D. taeniopterus* of the nominate subspecies do not have enlarged scales on the dewlap, whereas females of all the other aforementioned taxa do.

D. norvilli of both subspecies are generally defined as follows:

Body with a large, patagia (wing-like membrane) supported by the last five to seven extended ribs. A gular appendage and a lateral flap or wattle on either side of the throat. Tympanum covered with scales. Tail long. Snout about as long as the diameter of the orbit; nostrils directed vertically upwards. Upper head-shields unequal, strongly keeled; 9 or 10 supralabials. Male has a gular appendage that is slightly longer than the head, covered with large scales. In females, the gular appendage is less than half the length of the head. Dorsal scales unequal, smooth or feebly keeled, the largest as large as the ventrals. Ventrals strongly keeled. A series of widely separated, enlarged, subtriangular scales present on each side of the back. When the legs are held parallel to the body, the forelimb extends to well beyond the tip of the snout, the hind-limb to the axilla. Male has a slight nuchal fold; no caudal crest.

The preceding species are separated from all other species in the subgenus *Somniadraco* Hoser, 2014 by the fact that the dewlap at least in males has enlarged scales; males have a nuchal fold; dorsal patagia in males is usually brown or grey with or without dark markings.

The dewlap of *D. norvilli*, *D. taeniopterus*, *D. blanfordii* is distally expanded with a basal constriction and terminates in a rounded distal edge. By contrast, the dewlap of the morphologically similar species, *D. indochinensis* from Indochina is widest at its base, decreases in width over its entire length, and terminates in a sharp point.

Species within the subgenus *Somniadraco* Hoser, 2014 are readily separated from all other *Draco* Linnaeus, 1758

species and subgenera by the following suite of characters, being one or other of the following three:

1/ The nostril is pierced vertically and directed upwards; the tympanum is naked; the adpressed hind limb does not reach beyond the axil and the tympanum is smaller than the eye opening; or:

2/ The nostril is pierced vertically and directed upwards; the tympanum is naked; the adpressed hind limb reaches beyond the axil (and wing-membranes above have five transverse black bands, inferiorly without markings); or:

3/ The nostril is pierced vertically and directed upwards; the tympanum is scaly (and wing-membranes above and below with, five regular transverse black bands).

Alternatively, this subgenus may be defined by exclusion of the other subgenera as defined within the paper of Hoser (2014).

The species within the genus *Draco* Linnaeus, 1758 (*sensu lato*) are readily distinguished from all other lizards by the fact that the body is depressed and with a large lateral wing-like membrane, supported by the much-expanded five or six posterior ribs, folding like a fan. A gular appendage or dewlap and a lateral smaller one on each side. Tympanum distinct or covered with scales. Tail long. No femoral or preanal pores.

Draco norvilli in life is depicted online at:

<https://www.inaturalist.org/observations/29561741> and

<https://www.inaturalist.org/observations/6930271>

Draco blanfordii in life is depicted online at:

<https://www.inaturalist.org/observations/78047071>

D. taeniopterus in life is depicted online at:

<https://www.inaturalist.org/observations/115571269> and

and

<https://www.inaturalist.org/observations/115836622>

D. taeniopterus incredibilis in life is depicted online at:

<https://www.inaturalist.org/observations/115518849>

Distribution: *D. taeniopterus incredibilis* subsp. nov. occurs from north and east of the Kwai Noi River, Myanmar, north through the Dawna Range as well as adjacent hills and ranges to at least Chiang Mai province, Thailand.

Etymology: The subspecies name *D. taeniopterus incredibilis* subsp. nov. comes from the Latin word "incredibilis" in reflection of the incredible colouration from above of females in this brightly coloured species as it glides from a tree.

RISKS POSED BY TAXONOMIC VANDALISM

Each of the preceding new species and subspecies are believed to be reasonably common where they occur and not under any known existential threat, save for complete removal of habitat in which they live, noting that some of the preceding species, but by no means all, seem to do well in human altered habitat.

Competing species, pests or pathogens are perhaps greater existential threats to some of these taxa.

Due to the range restricted nature of some of these species and subspecies and their vulnerabilities, those ones should be treated as vulnerable taxa immediately and managed accordingly.

Aspects of conservation of Australasian reptiles discussed by Hoser (1989, 1991, 1993 and 1996) apply to these species, as do the comments of Hoser (2019a, 2019b).

Due to a historical past including major geopolitical wars and invasions, southern Asia remains somewhat neglected by the biological sciences and conservation agencies alike

and there remains a huge amount of formally undescribed taxa on various islands including of prominent species (see for example Hoser 2022a-f, Reilly *et al.* 2017, 2019a, 2019b, 2021, 2022).

Identification of and naming of the relevant species is the first and most important step in terms of the long term conservation of each.

It is also critically important that each species is named once and only once!

They should not be subjected to unwarranted taxonomic vandalism as being practiced by the Wolfgang Wüster gang as detailed by Cogger (2014), Dubois (2014), Dubois *et al.* (1988), Hoser (2007, 2009, 2012a-c, 2013, 2015a-f, 2017, 2019a-b), Hawkeswood (2021) and ICZN (2021).

The ICZN formally rejected the Wolfgang Wüster gang's many applications (e.g. Kaiser, 2012, 2013, 2014a-b, Kaiser *et al.* 2012, 2013 and Rhodin *et al.* 2015) to overwrite names of myself (Hoser) and others (ICZN 2021) and the ICZN also strongly opposed their other anti-science and anti-wildlife conservation actions.

On 30 April 2021, the ICZN stated that all names of Hoser and others subject of the Wüster gang's unlawful attacks were valid and available, without need to formally make a plenary ruling to effect what was already in effect and obvious.

Separately Hawkeswood (2021) said exactly the same thing. This is not the first time the ICZN have had to deal with the Wolfgang Wüster gang's immoral, anti-science and anti-conservation actions.

In 1991, the same gang of thieves were ruled against by the ICZN in the matter of names proposed by Wells and Wellington in 1984, 1985a and 1985b.

Notwithstanding the ruling of the ICZN in 1991 (ICZN 1991), in favour of Wells and Wellington's works and a second ruling in their favour in 2001 (ICZN 2001) arising from Sprackland *et al.* (1997) and the ongoing availability of the Wells and Wellington names to the biological sciences, the group known as the Wolfgang Wüster gang of thieves have pressured publishing authors not to use or adopt the Wells and Wellington names (see Hoser 2007, 2009, 2012a, 2012c, 2013, 2015 a-f, 2017, 2019a-b) and more recently those I have formally proposed (see Hoser, 2001a, 2001b).

This attack has been at numerous levels, ranging from control of editors of journals, lies, defamation and a number of other anti-science tactics (see also Shine 1987, Sprackland *et al.* 1997).

Following on from the ICZN ruling of 2021 (ICZN 2021), the scourge of the Wolfgang Wüster's gang of thieves actions against the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) as amended (ICZN 2012) should now be removed from the biological sciences and before any of the 21 newly identified and named species and the 11 newly identified and named subspecies become threatened with extinction as a result.

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CONFLICT OF INTEREST

None.

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