



WWF®

REPORT

GREATER
MEKONG

2014



WWF-Greater Mekong

MYSTERIOUS MEKONG
NEW SPECIES DISCOVERIES 2012-2013



WWF is one of the world's largest and most experienced independent conservation organizations, with over 5 million supporters and a global network active in more than 100 countries. WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by: conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

Produced by Christian Thompson (the green room), Maggie Kellogg, Thomas Gray and Sarah Bladen (WWF)

Published in 2014 by WWF-World Wide Fund For Nature (Formerly World Wildlife Fund).

© Text 2014 WWF
All rights reserved

Front cover

The Cambodian Tailorbird (*Orthotomus chaktomuk*), a new bird species discovered in 2013 © James Eaton / Birdtour Asia.



A tributary of the Mekong River flows through unbroken and highly biodiverse rainforests of the Greater Mekong region, Cambodia.

At a glance, by country...

Cambodia	13
China (Guangxi / Yunnan)	116
Laos	32
Myanmar	26
Thailand	117
Vietnam	99

Note: The sum of the above figures does not equal the total number of new species discovered in 2012 and 2013, as some species have a distribution spanning more than one country.



Blind huntsman spider, *Sinopoda scurion*, in its original cave habitat in Laos.

EXECUTIVE SUMMARY

An extraordinary 367 new species were discovered in the Greater Mekong in 2012 and 2013. Among the species newly described by scientists are 290 plants, 24 fish, 21 amphibians, 28 reptiles, 1 bird and 3 mammals [see Appendix].

The Greater Mekong region of Southeast Asia, through which the Mekong River flows, consists of Cambodia, Laos, Myanmar, Thailand, Vietnam and Yunnan province and Guangxi Zhuang Autonomous Region in southern China. The region is home to some of the planet's most

charismatic and endangered wild species, including the tiger, Asian elephant, Irrawaddy dolphin, saola, and Mekong giant catfish—and between 1997 and 2011 an incredible 1,710 new organisms were described¹ by science in these landscapes.^{1,2,3,4,5}

Adding to the fantastic bestiary of creatures living in the Greater Mekong are new characters such as the Cambodian Tailorbird, Laotian giant flying squirrel, 'hunch-bat of Vietnam', an iridescent-coloured rainbow lizard, a fish who is ahead of the reproduction game, the 'Zorro'-masked water snake, a salmon-coloured orchid and a primitive white-headed viper. A skydiving gecko, giant flying frog, "fishzilla" (walking snakehead fish), brightly-coloured bronzeback snake, pufferfish and blind huntsman spider further add to the newly discovered assemblage.

These discoveries, painstakingly identified and recorded by the world's scientists and compiled here by WWF-Greater Mekong, demonstrate that the region is the frontline for scientific exploration. But they also remind us of what we stand to lose if regional development is not sustainable. The recent extinction of the rhino in the region⁶ and the ongoing plight of the tiger, whose numbers in the region may be as low as 250 individuals⁷, are poignant reminders of this. In addition, the devastating illicit trade in wildlife is now worth at least 16 billion US dollars annually.⁸

WWF seeks a world that values, accounts for, and safeguards natural capital as vital to human well-being and economic prosperity. Our focus is on the world's richest and most diverse natural capital including tropical forests and river basins. They underpin well-being and prosperity across entire regions, and yet, global markets value them more dead than alive. Today the region's forests are being cleared on an industrial scale, mainly for land to produce commodities we all use. According to a recent WWF report, *Ecosystems in the Greater Mekong: past trends, current status, possible futures*, between 1973-2009 the Greater Mekong countries lost 42.4 million hectares of forest, 30 per cent of forest cover.⁹

Our dynamic and innovative solutions-oriented approach to conservation sees us working with global networks of scientists, policymakers, businesses, financial institutions, and communities to help turn this around. Dwindling forests generate short-term profits, but economists estimate that their true value to the global economy – if managed sustainably – could be in the order of trillions of dollars each year.

Today the Greater Mekong region forms part of one of the five most threatened biodiversity hotspots in the world.¹⁰ Rapid unsustainable development, including poorly planned infrastructure, uncontrolled and non-transparent extractive activities, and agricultural expansion, as well as the rampant wildlife trade, are profoundly degrading the health of the region's ecosystems—and consequently, the well-being of the millions of people who directly depend on natural resources. Warmer temperatures, and more extreme floods, droughts, and storms as a result of climate change, only exacerbate these pressures.

Thorough and consistent management of ecosystems across the Greater Mekong region will help nations adequately address complex, challenging, and regional-scale issues like habitat loss and fragmentation, unsustainable natural resource use, poaching, and climate change.



367 SPECIES
DISCOVERED IN
2012 AND 2013 IN
THE GREATER MEKONG



Bulbophyllum salmoneum,
a new orchid species

© Orchids Online

¹ Refers to the official process by which a species is described in the peer-reviewed scientific literature once discovered and therefore formally determined as 'new'.

Colourful characters: New discoveries in focus

The tailor of Phnom Penh: A new city- dwelling bird

Orthotomus chaktomuk
(Cambodia)



Orthotomus chaktomuk

© James Eaton / Birdtour Asia

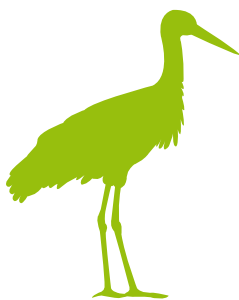
In 2013, a new bird species was described by scientists hiding in plain sight in Cambodia's capital Phnom Penh.¹¹

The Cambodian Tailorbird (*Orthotomus chaktomuk*), as the new species is called, is a small, light and dark grey bird, with an orange-red tuft on its head, about the size of a Eurasian Wren (*Troglodytes troglodytes*). The species is likely confined to dense shrub habitat in the floodplain of the Mekong river on the edge of the city. The dense shrub habitat allowed it to remain undetected for so long despite living on the outskirts of a major city. It is one of two bird species endemic to Cambodia, the other being the Cambodian Laughingthrush (*Garrulax ferrarius*).

locations around the city, including a construction site. The discovery of an un-described bird species in a busy capital city is obviously exceptionally uncommon!

Its specific name comes from a Khmer word that means four-faces, which describes where the bird is found: in the floodplain where the Bassac, Mekong, and Tonlé Sap rivers meet.

Tailorbirds are named for the meticulous way in which they construct their nests by weaving leaves together. Unfortunately, due to the small (and shrinking) size of the birds' habitat, the species is listed as "Near Threatened" on the International Union for Conservation of Nature's Red List.



+ 1

ONE NEW BIRD
HAS BEEN DISCOVERED
IN THE GREATER MEKONG

The species was first spotted in 2009 during routine bird surveys for avian flu and has since been spotted in other

White-head Burmese viper

Azemiops kharini
(Yunnan, Guangxi
and Vietnam)

Scientists recently discovered a new primitive viper species, from Tam Dao Mountain, Tam Dao Village, Vinh Phuc Province, Vietnam.¹²

The venomous species is thought to be a primitive viper species because it has an elliptically shaped, flattened head; enlarged head plates; smooth dorsal scales; folding front fangs; the absence of heat-sensing pits; and a coiled venom gland duct in adults.

The species can be found in dense bamboo and tree-fern groves interspersed with open, sun-lit zones, and usually inhabits deep leaf litter that accumulates near fallen trees. Its diet consists mostly of rodents that are associated with quick-flowing mountain streams. The genus is known to inhabit cooler mountainous areas at altitudes of up to 1000 m, as well as disturbed areas, including agricultural lands and secondary forests.

The White-head Burmese viper is dispersed across a broader range than the Black-head Fea's Viper (*Azemiops fea*), with a distribution stretching from eastern China to northern Indochina.¹³ The two species of *Azemiops* are found a short distance from each other, and are apparently separated by the Red River Valley. *Azemiops fea* can be seen west of the Red River, and *Azemiops kharini* can be seen to the east of the Red River.



+ 28

TWENTY-EIGHT NEW REPTILES
HAVE BEEN DISCOVERED IN
THE GREATER MEKONG



Azemiops kharini

© Nguyen Thien Tao / Vietnam National Museum of Nature

A new pufferfish

Tetraodon palustris
(Thailand)

A new freshwater pufferfish was encountered in 2013 by scientists in the Mekong Basin of Thailand.¹⁴

The yellow species with grey-green blotches was discovered as a result of a survey conducted by a determined group of scientists aiming to further knowledge of pufferfish.

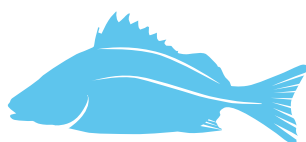
An ichthyological survey was conducted from January 2011 to December 2012 in the Mekong basin in the northeastern region of Thailand as an attempt to supplement the small number of published scientific studies on freshwater pufferfishes in the genus *Tetraodon* from the Mekong Basin of Thailand. It was during this survey that the authors collected an unknown freshwater pufferfish of the genus *Tetraodon* from marshes and swamps. The shape and colour pattern of this new species differs from those of previously described *Tetraodon* from the Mekong basin.

The freshwater rivers of northeastern Thailand, from which this species was discovered, form part of one of the priority conservation landscapes of

WWF-Greater Mekong. WWF projects in Thailand and adjacent Laos work with local communities to develop fish conservation zones. We hope these help protect the amazing fish diversity of the Mekong including giants such as Mekong Giant Catfish (*Pangasianodon gigas*) as well as undiscovered species.

Pufferfish are among the more charismatic species of fish found in Earth's waters, with a defence mechanism that sees the fish inflate to ward off predators. Pufferfish are also believed to be the second-most poisonous vertebrates in the world, after the golden poison frog (*Phyllobates terribilis*), with certain internal organs highly toxic to most animals when eaten.

The new species joins 25 other known species of pufferfish from Southeast Asia and more than 850 known fish species from Greater Mekong.



+ 24

TWENTY-FOUR NEW FISH
HAVE BEEN DISCOVERED IN
THE GREATER MEKONG



Tetraodon palustris

© Chavaltit Vidthayanon / Mekong River Commission

Laotian giant flying squirrel

Biswamoyopterus laoensis

(Laos)

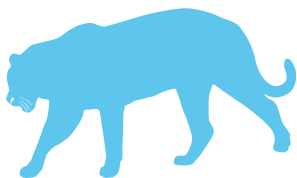
As new mammal discoveries become increasingly rare in the animal kingdom, it is extraordinary that a new species of flying squirrel from the genus *Biswamoyopterus* was described in 2013 from Laos.¹⁵

The discovery is based on a single individual collected from a local bush meat market in Ban Thongnami, Pak Kading District, Bolikhamxai Province. Wildlife trade, driven by both local consumption and the global market for luxury wildlife products, is one of the biggest threats to biodiversity across the Mekong region. WWF is thus working, in all our priority landscapes and protected areas, to ensure government enforcement agencies have the motivation and capacity to effectively crack down on illegal wildlife trade.

This arboreal species with red and white fur is the second member of the genus *Biswamoyopterus* to be discovered by scientists (the other

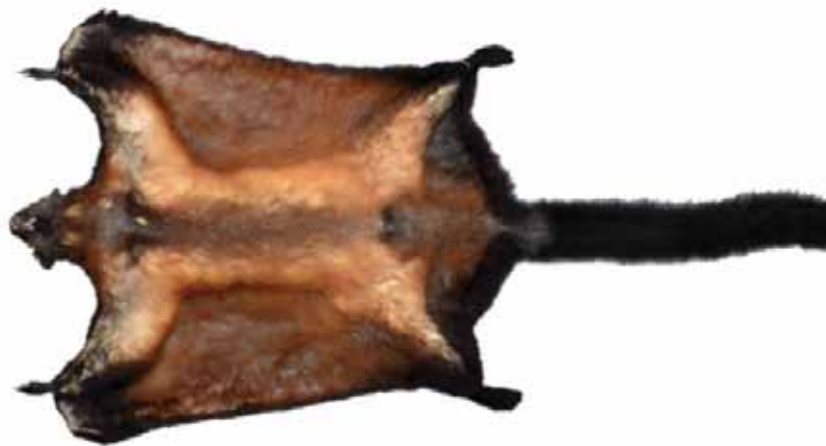
being *Biswamoyopterus biswasi* from Arunachal Pradesh, northeast India). Over 1,000km separate the two very similar species, with the new species residing in an area of central Laos characterised by extensive limestone karst formations. This habitat is also home to other unique and rare endemic rodents, including the Laotian rock rat, known locally as Kha-nyou (*Laonastes aenigmamus*), and the Lao limestone rat (*Saxatilomys paulinae*).¹⁶

The species is among three new mammals discovered in 2012 and 2013 in the Greater Mekong.



+ 3

THREE NEW MAMMALS
HAVE BEEN DISCOVERED
IN THE GREATER MEKONG



Biswamoyopterus laoensis

© Daosavanh Sanamxay

The 'hunch-bat of Vietnam'

Hipposideros griffini
(Vietnam)



© Vu Dinh Thong / Institute of Ecology and Biological Resources, Hanoi

Hipposideros griffini

Hipposideros griffini, discovered in 2012, is unlikely to win a beauty contest anytime soon. With an appearance to rival the lead character of Victor Hugo's 1831 literary classic *The Hunchback of Notre-Dame* (a.k.a. *Notre-Dame de Paris*), mother nature certainly did not grant this species with a very charming appearance.¹⁷ However, what it lacks in beauty, it makes up for in function: its very peculiar nose may assist in echolocation, the sonar-like ability used by bats to help them navigate.

This new member of the bat community joins more than 70 other species within the genus *Hipposideros* in the world today. It was found at 248m above sea level in Cat Ba National Park on Cat Ba Island in Ha Long Bay in northern Vietnam, as well as in Chu Mom Ray National Park, situated on the mainland more than 1,000km (600 miles) to the south. It was located in disturbed and primary forests.

Cat Ba Island has been the site of other extraordinary new species discoveries in recent years, including a rare leopard gecko (*Goniurosaurus catbaensis*) in

2008.¹⁸ This gecko, which has large, cat-like eyes and distinctive stripes along the length of its body, is found only in the moist tropical forests of northern Vietnam's Cat Ba National Park.

Griffin's leaf-nosed bat, as this species is more commonly known, was first seen in 2008, but it was not until later, after catching some of the bats, that a team of researchers led by Dr Vu Dinh Thong from the Institute of Ecology and Biological Resources, Hanoi, found out it was actually a new species that had never before been documented.

The new bat species was named in honour of the late Donald Redfield Griffin (1915–2003) of Rockefeller University (New York). He was a pioneer in the field of bat echolocation research.

Another new bat species, *Murina balaensis*, was discovered in 2013 in Thailand.¹⁹

A rainbow lizard

Lygosoma veunsaiensis
(Cambodia)

This species was discovered in the remote rainforest of Veun Sai-Siem Pang Conservation Area in Ratanakiri Province, Cambodia, by a Fauna and Flora International herpetologist, Neang Thy. *Lygosoma veunsaiensis* is a new type of skink with several distinct characteristics including its iridescent skin, which is a result of the way its scales refract sunlight to create a rainbow-like shimmer.²⁰ It is also unusually long, a trait that is amplified by its proportionally lengthy tail and short legs (less than half a centimetre long).²¹

It was a very fortunate discovery, as Neang Thy explained: “These creatures are difficult to find because they spend so much of their life hidden underground. Some similar species are known from only a few individuals. We were very lucky to find this one.”²²

This species was named for the region in which it was found, the Veun Sai-Siem Pang Conservation Area

(VSSPCA), as a tribute and to underscore the area’s importance for the conservation of Cambodia’s threatened biodiversity.²³

Indeed, the need to respond to such threats to biodiversity are becoming all the more urgent as Cambodia is proving to be a hotbed for new species discoveries. Lack of research in recent decades could explain this sudden rush of new findings, according to Peter Geissler from Zoologisches Forschungsmuseum Alexander Koenig in Germany, one of the authors who described the skink. “Three decades of conflict effectively prevented herpetological investigations until the late 1990s,” he said, “and now we have a chance to uncover many of the things that have previously been missed, especially new reptiles.”²⁴



Lygosoma veunsaiensis

© Gabor Csorba / Hungarian Natural History Museum

Giant, bright green, flying frog

Rhacophorus helenae
(Vietnam)

Helen's Flying Frog, *Rhacophorus helenae*, a huge, green, "flying" frog was discovered less than 100km from Ho Chi Minh City, an urban centre with over 9 million people.^{25,26}

Helen's Flying Frog can grow to almost 10cm in length and belongs to the group of frogs that have the greatest ability to glide. With large feet that are fully webbed and flaps of webbing on the outside of their arms, they can glide sometimes 50 feet (15 metres) gracefully down from trees to breed in forest pools, and even from tree to tree.²⁷

They likely spend most of their time out of human sight in the forest canopy, which would explain why this new species with such a fantastic appearance has been completely unknown to science until now.

To date, Helen's Flying Frog is still only known from two patches of lowland forest surrounded by agricultural land in Binh Thuan and Dong Nai provinces in southern Vietnam. Lowland forests are among the most threatened habitats in the world, largely because they are so accessible (i.e. no mountains for people to scale in order to get there).

Despite its recent scientific discovery, Helen's Flying Frog is unfortunately already under great threat from ongoing habitat loss and degradation.²⁸ Scientists are warning that the frog could merit listing as a threatened species under IUCN Red List criteria.

Dr Jodi Rowley had the honour of naming the new species *Rhacophorus helenae* after her mother.²⁹

+ 21

TWENTY-ONE
NEW AMPHIBIANS
HAVE BEEN DISCOVERED IN
THE GREATER MEKONG



Rhacophorus helenae



Rhacophorus helenae

© Jodi J L Rowley / Australian Museum

© Jodi J L Rowley / Australian Museum

A fish who's ahead in the reproduction game

Phallostethus cuulong
(Vietnam)

This new 'penis head' fish (*Phallostethus cuulong*), is certainly among the more bizarre discoveries to surface in the Mekong Delta region of Vietnam.^{30,31}

The fish is a newcomer to the Phallostethidae family of fish, whose thin, nearly transparent bodies are characterized by the unusual placement of their sex organs.³²

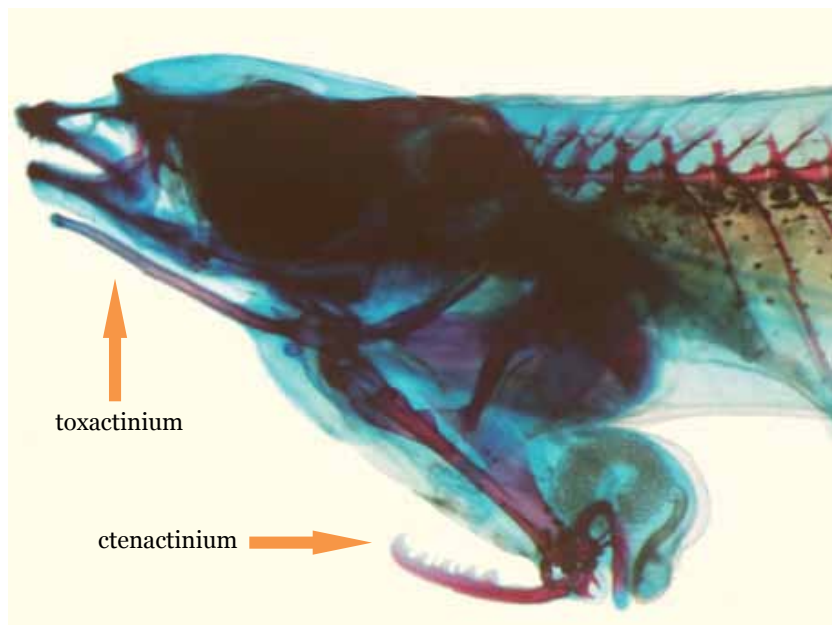
The male fish's priapium (the technical name for its sex organ) is a complex, muscular organ located underneath the fish's chin. In addition to including the urogenital opening and the anus, the priapium is also equipped with a bony rod (toxactinium) and a saw-like hook (ctenactinium), which is used to clutch on to the female during mating. The female fish's genitals are also located at her throat, and unlike most fish, fertilization for the *Phallostethus cuulong* takes place

inside the female's body. The hook probably increases the success of fertilization, researchers say.³³

Researchers from Can Tho University in Vietnam and zoologist Koichi Shibukawa of the Nagao Natural Environment Foundation in Tokyo, Japan collected and studied nine specimens of this new fish species, including six males and three females.³⁴ They were found in the slow-flowing shallow waters around banks of canals and rivers in Soc Trang and Tra Vinh Provinces, Vietnam.³⁵



Phallostethus cuulong
(male, top; female, bottom)



Phallostethus cuulong

'Zorro'-masked water snake

Homalopsis mereljcoxi
(Cambodia, Thailand and Vietnam)

A new species of masked water snake was discovered in Ban Badan Reservoir, Nakhon Ratchasima Province, Thailand.³⁶

Sporting a Zorro-like mask across their wide heads, water snakes of the genus *Homalopsis* exceed 1.3m and are marked by a pattern of alternating brown and cream bands along the length of their bodies. These snakes are nocturnal ambush predators whose diet consists mostly of small fish. Members of the *Homalopsis* genus are viviparous^{††} and females give birth to relatively large young.

Snakes from this genus are relatively abundant in the low elevation wetlands of Southeast Asia. At Tonle Sap in Cambodia, they are harvested in large numbers for their skin and as a source of protein. Despite its newness to science, *Homalopsis mereljcoxi* is the most exploited species of those within the genus in the Greater Mekong region. Given their larger size and distinct

markings, they are seen as more desirable, particularly by the novelty leather industry.³⁷

Only one species of the *Homalopsis* genus was recognised for the majority of the last 250 years (Linnaeus' original description of *Coluber buccatus* in 1758) until 2006 when another species was identified. Despite the distribution, abundance, and excessive exploitation of these snakes, the genus and species have remained poorly studied.

The new species was identified by scientist John C. Murphy and colleagues during their examination of 163 specimens of the genus *Homalopsis*. It is named in honour of Merel "Jack" Cox, for his years of dedication to the study of the snakes of Thailand.



Homalopsis mereljcoxi

^{††} Giving birth to live young.



© John C. Murphy

The new snake species *Homalopsis merejcoxi* is ironically already the most exploited *Homalopsis* species and is exploited in the snake harvest at Tonle Sap, in Cambodia.

Salmon orchid

Bulbophyllum salmoneum
(Laos and Vietnam)



Bulbophyllum salmoneum



+ 290

TWO HUNDRED AND NINETY
NEW PLANTS HAVE BEEN DISCOVERED
IN THE GREATER MEKONG

Such is the influence of the Mekong River basin in the makeup of the region that even the plants are beginning to resemble fish! This new salmon orchid species was found in the environs of Mo village in Quang Binh province, Minh Hoa district, Thuong Hoa municipality, Vietnam.³⁸

The salmon orchid, with 3cm-long green sepals, was described by Leonid V. Averyanov and J.J. Vermeulen. It is found 400-800 metres above sea level in the Annamite Mountains.

This isolated mountain range that links Laos and Vietnam is the location of the largest and most ambitious project in the history of WWF's involvement in the Greater Mekong region. The Carbon & Biodiversity Project (CarBi)ⁱⁱⁱ aims to halt deforestation, through forest protection and sustainable use of forest resources, and preserve the Annamite landscape's unique species diversity.

CarBi covers an expanse of more than 200,000 ha of forest, including one of the largest continuous natural forest areas in continental Asia. This area of remarkably high biodiversity and unique endemism – including the enigmatic saola *Pseudoryx nghetinhensis* – is also unfortunately one where deforestation and illegal logging are rife.

The partnerships through which this project is facilitated will also help to reduce the many threats the region is facing, including illegal or unsustainable logging, unsustainable agriculture, and the illegal timber trade, by training local administration and forestry officials and promoting sustainable forest management. While it is important for species and forest conservation, the project will also enhance the income of the area's culturally diverse people who depend on forests for their livelihoods.

Find out more:
panda.org/greatermekong/carbi

ⁱⁱⁱ The full title of the project is: Avoidance of deforestation and forest degradation in the border area of southern Laos and central Vietnam for the long-term preservation of carbon sinks and biodiversity (CarBi).

A zebra-striped lizard

*Cyrtodactylus
phuketensis*
(Thailand)



© Montri Srimontha

Cyrtodactylus phuketensis

This zebra-striped species is roughly 11.5cm long and looks ‘other worldly’. The decorative gecko is currently known only from Khao Phra Thaeo Non-hunting Area, Phuket Island, southwestern Thailand.³⁹

Phuket Island is one of Thailand’s most popular tourist destinations. Although most of the forested areas of the island have suffered much from human disturbance and have been replaced by settlements, tourism infrastructure, and agricultural plantations, some patches of primary and mature secondary forest remain, especially in the centre of the island, where two recently described, endemic reptile species were found.

The snake fauna of the island benefitted from some dedicated surveys in the 1970s, but overall the lizard fauna has received little attention thus far.

In the Khao Phra Thaeo Non-hunting Area and its direct surroundings, a team of scientists collected a series of *Cyrtodactylus* species which showed obvious similarities to *C. macrotuberculatus*. However, after being thoroughly investigated, differences began to surface and although related, the new eye-catching finds were determined to be an entirely new species.

Blind huntsman spider

Sinopoda scurion
(Laos)



© Peter Jäger / Senckenberg Research Institute, Frankfurt

Look, no eyes! Blind huntsman spider, *Sinopoda scurion*

Arachnologist Dr Peter Jäger of the Senckenberg Research Institute in Frankfurt, Germany, has discovered the first eyeless huntsman spider in the world.^{40,41}

With a leg span of only six centimetres and a body size of around twelve millimetres, the spider *Sinopoda scurion* does not number amongst the larger of the huntsman spiders, which include more than 1,100 species. However, it is the first of its kind in the world without any eyes.⁴²

“I found the spider in a cave in Laos, around 100 kilometres away from the famous Xe Bang Fai cave,” reports Peter Jäger, head of the Senckenberg Research Institute’s arachnology section. “We already knew of spiders of this genus from other caves, but they always had eyes and complete pigmentation. *Sinopoda scurion* is the first huntsman spider without eyes.” The lack of eyes is attributable to living permanently without daylight.⁴³

The spiders are in good company: fish, scorpions and crabs adapted to caves have already been found in the caves of Laos. Because of the small-scale area in which the spider species can be found it is possible to

study their adjustment to the cave as a dwelling - the number of eyes present and the visual faculty may possibly shed light on the time of settlement.⁴⁴ Jäger also pointed out that “the spiders can be used as indicators for the threat to their habitats. These are often endangered by tourism or the exploitation of the limestone rocks to make cement.”

The eyeless huntsman spider was named after the Swiss company Scurion that makes headlamps for caves.⁴⁵ The headlamps by Scurion help scientists to illuminate the darkest corners of caves, and thus recognise hazards such as poisonous snakes and scorpions, but also discover very small organisms.⁴⁶

The eyeless huntsman is not the first significant “creepy crawly” to be found in Laotian caves. Other unusual arthropods include the Laotian huntsman spider *Heteropoda maxima* with a leg span of up to 11 inches (30cm), the whip scorpion *Typopeltis magnificus* with a span of 10 inches (26cm) and the predatory centipede *Thereuopoda longicornis* with a total span of almost one foot, three inches (about 40cm).



Ptychozoon kaengkrachanense

Skydiving gecko

*Ptychozoon
kaengkrachanense*
(Thailand)

A new species of Parachute Gecko, *Ptychozoon kaengkrachanense* was discovered in the montane evergreen forest in Kaeng Krachan National Park, Phetchaburi Province, western Thailand.⁴⁷ By extending flaps of skin on its flanks and between its toes, the Kaeng Krachan Parachute Gecko is able to glide between the trees in its rainforest habitat.⁴⁸

Three dark markings in the shape of chevrons on its back and other features such as a unique tail distinguish the new species from all known *Ptychozoon* species.⁴⁹ *Ptychozoon kaengkrachanense* is the fifth species of *Ptychozoon* recorded from Thailand, along with *P. horsfieldii*, *P. kuhli*, *P. lionotum* and *P. trinotaterra*, but it is the only species of *Ptychozoon* endemic to the country.

Its rainforest home is also special. The species is the 68th reptile species recorded from Kaeng Krachan National Park, which was already known to house the richest herpetofauna of all protected areas of Thailand and it thus reinforces the exceptional value of the park in terms of biodiversity and its conservation.⁵⁰

On a larger scale, the environment in which the species was discovered falls within the Dawna-Tenasserim Landscape. This area spans more than 58,000km², and is one of the highest priority conservation areas for tigers globally, on a par with sites in India, and one of the most significant biodiversity areas in Southeast Asia.

This vast wilderness comprises a continuous block of forest straddling western Thailand and eastern Myanmar. The region is also globally important for Asian elephant (*Elephas maximus*) conservation, and shelters one of the few remaining breeding populations of the endangered Siamese crocodile (*Crocodylus siamensis*). Among the many other notable species occurring here are: Asian tapir (*Tapirus indicus*), Asiatic black bear (*Ursus thibetanus*), sun bear (*Helarctos malayanus*), gaur (*Bos gaurus*), Rufous-necked hornbill (*Aceros nipalensis*) and wild water buffalo (*Bubalus arnee*).

“Fishzilla” Walking snakehead fish

Channa longistomata
(Vietnam)



Channa longistomata

© Museum of Research Institute for Aquaculture, Vietnam

A new snakehead fish was discovered in Vietnam, Ha Nam province, Kim Bang district, Tam Chuc lake, Ba Sao town.⁵¹

Channa longistomata was named according to its specific characteristics, including a long mouth, distinct from that of the other 25 similar species. The outer edges of its fins are tinged red-pink or yellow, and its pectoral fins display 3-5 black bars.

Called a snakehead, as its head looks like that of a snake, the new species is predatory, subsisting on a diet of smaller fish and invertebrates. Certain other attributes of this species also seem more snake-like than fish-like: incredibly, this snakehead fish is able to breath atmospheric air and can even survive on land for up to four days, as long as it stays wet. Its movements on land may appear more cumbersome than a smoothly slithering snake, but this species can writhe and wriggle its way up to ¼

mile on wet land between bodies of water.⁵² *National Geographic* has dubbed snakehead fish as “Fishzilla”.⁵³

Each spawning-age female can release up to 15,000 eggs at once. Snakeheads can mate as often as five times a year. This means in just two years, a single female can release up to 150,000 eggs⁵⁴. The genus can grow to 1.2m maximum length and are important in aquaculture and commonly used in rice-fish farming. Snakeheads of various varieties are valued as food. In Vietnam, they are called ca loc, ca qua, or ca chui, and enjoyed in clay pot dishes and pickled preparations.⁵⁵

The new species can be found in provinces of the Da river basin (Dien Bien, Lai Chau, Son La and Hoa Binh) and in lakes near the regions of lime mountains of Ha Nam and Ninh Binh.

Brightly-coloured bronzeback

Dendrelaphis nigroserratus
(Myanmar and Thailand)

This new snake species was found at Kaeng Krachan National Park in southern Thailand, incredibly while it was in the middle of consuming a Wallace's Flying Frog (*Rhacophorus nigropalmatus*).⁵⁶

This relatively large species of *Dendrelaphis* measures up to 156 cm and is distinguished by a thick black stripe behind the eye, which extends onto the neck in a sawtooth pattern of black, oblique bars.⁵⁷

Also known as the Sawtooth-necked Bronzeback, this snake can be found in hilly evergreen forest between 900 and 1,350 metres above sea level (i.e. lower montane forest). It has been recorded near forest streams and stands of bamboo, but is absent from deforested areas.⁵⁸ According to scientists, the new discovery underscores the notion that further exploration is needed in the hilly western parts of Thailand, one of the areas in which this species occurs, along with parts of southern Thailand and southern parts of neighbouring Myanmar.⁵⁹

Thailand has been accessible to foreign visitors for a long time. Consequently, many herpetologists have visited the country to explore and document its herpetofaunal richness. Nevertheless, new species are still being described, especially snakes. In general, snakes are notoriously hard to find due to their low densities and elusive habits, such that more undescribed species are expected to inhabit the country.



The long hard road: Like most wildlife in the Greater Mekong, *Dendrelaphis nigroserratus*, from Thailand and Myanmar, is under threat from increasing habitat destruction.

OPPORTUNITIES: WWF IN MYANMAR

With three of the most pristine large rivers and some of the most extensive intact forest in the region, Myanmar is one of the most biologically diverse and ecologically productive nations on Earth.

Living resources vital to human well-being – forests, fisheries, freshwater ecosystems, fertile soils, coastal and marine ecosystems – the country's natural capital, are the foundation of Myanmar's long-term sustainable economic development. Myanmar has witnessed its neighbours over-exploit their natural capital, creating precariously fragmented ecosystems unable to support sustainable economic growth over the medium and long term.

But as Myanmar opens up politically and economically, it is experiencing many of the same pressures faced by the rest of the Greater Mekong, from deforestation to illegal wildlife trade, sand mining to hydropower.

The government and civil society organizations of Myanmar are now seeking partnerships and state-of-the-art guidance on how to best manage their natural capital, preserving the country's globally important biodiversity for the near and long-term health and prosperity of the people of this vast and diverse nation.

In 2014, WWF will formally establish a new office in the country, with the aim of supporting Myanmar's development ambitions with a focus on spatial planning and biodiversity conservation in parallel with ecosystem services protection and sustainable livelihoods.

Learn more: panda.org/greatermekong/myanmar





View of the Dawna-Tenasserim Landscape on the Myanmar-Thailand border.

Giving green a chance: Conclusions & recommendations

Fostering sustainable green economies across the Greater Mekong could provide the solution to the region's development dilemma: how can sustainable economic growth and prosperity be achieved while ensuring environmental protection and human well-being?

Green economy approaches aim to understand and emphasise the interdependencies of human systems and natural systems. These approaches ask that we 'join the dots' between ecosystem integrity and resilience of human systems to understand the interrelationships of ecosystem quality, economic systems and conditions determining human well-being. Environmental capacity, from local systems to the biosphere, cannot be reduced to a productive capacity alone. Ecosystem integrity also determines the capacity of a place to provide for the people

that live there, enable livelihoods or support achievement of equitable development goals – and to adapt to increased human pressures while continuing to supply ecosystem services to social and economic systems.

As one of the most biologically diverse places on the planet, the Greater Mekong is home to numerous endangered and endemic species. The Mekong River Basin alone is the richest river basin in the world in terms of fish stocks, and livelihoods of people in the region are directly linked to the basin's productivity. The economic and social development of the Greater Mekong Subregion (GMS) depends on the continued productivity of its interconnected ecological systems. This ecological productivity, and hence the prosperity of the GMS, depend upon intact, healthy and diverse natural ecosystems, which provide resilience to the increasingly evident impacts of climate change, while ensuring continued access to water, energy, food, export commodities, and livelihoods for over 70 million people. The challenge for the GMS is how to maintain or assure environmental capacity in the face of the rapid economic and social change being observed across the six countries in the region.

Each country in the GMS – and their respective economic structures – is different and so require solutions tailored to their national needs. Regionally however, it has been declared that well-maintained biodiversity and ecosystem services are essential to achieving regional and national development and social goals. GMS countries are undertaking a range of activities to improve natural resource management, biodiversity conservation and climate resilience. Cambodia, China (Yunnan and Guangxi), Laos, Myanmar and Thailand agreed to enter into a regional collaboration on the environment and established the Core Environment Program–Biodiversity Conservation Corridors Initiative (CEP-BCI) in 2008. Numerous other programs are also being implemented with support from various partners, contributing to a comprehensive approach to sustaining natural capital in the region.

Furthermore, in July 2011, the GMS Environment Ministers Meeting announced that their regional vision of a “poverty free and ecologically rich GMS” will be achieved through the development of “a green, inclusive and balanced economy, and as a first step in this transition we aim to maintain and enhance ecosystems and the services they provide.” In the same year, at the 2011 GMS Summit, countries endorsed a new ten-year strategic framework that contains many core elements of a transition to a green economy; but there is still a need to create and enhance incentives for reducing footprint pressures on natural capital in the Greater Mekong through changing the top-down framework or enabling policy conditions for achieving conservation goals in each country.

According to the 2011 UNEP report “Towards a Green Economy”, several enabling conditions can help facilitate the transition to a green economy. Key steps that need to be taken to create these enabling conditions include:

- Prioritizing government investment and spending in areas that stimulate the greening of economic sectors as opposed to depleting our natural capital
- Identifying and addressing environmental and social costs in addition to financial costs
- Investing in capacity building and training
- Establishing and/or strengthening sound policy and regulatory frameworks
- Strengthening international or transboundary environmental governance

Sound regulatory frameworks implemented via harmonized policies and legislation across the GMS are critical to GMS countries adequately addressing complex, challenging, regional-scale issues like habitat loss and fragmentation, unsustainable natural resource use, and climate change. All of these factors combined inevitably result in the extinctions of the region’s unique biodiversity, including many species yet to be discovered. Addressing all of these challenges requires stronger transboundary and regional collaboration because countries cannot solve these problems individually. Regional collaboration needs high levels of political support. It also needs to be formalised into a regional agreement, which is supported through an effective institutional framework and mechanism.

In addition, underpinning these regional efforts to encourage and maintain healthy ecosystems and sustainable populations of species, like those featured in this report, WWF aims to work closely with governments and key partners to:

- RESTORE focal species populations to ecosystems where they were once abundant
- RECOVER focal species populations where populations still exist
- RECONNECT habitat to ensure focal species populations increase

Recognising that investing in conservation of natural capital is unlikely to succeed without concurrent supporting realization of green economies in practice, WWF also supports governments and conservation partners by:

- Developing community-based natural resource management and livelihoods
- Encouraging adoption of sustainable production, consumption and ecosystem stewardship standards in the private sector
- Empowering civil society in their role as educators and ‘watchdogs’ on social and environmental safeguards and environmental justice

Only by fostering increased sustainable forestry, alternative land uses and sustainable livelihoods at all levels (regional, national, provincial, and local) will further pressure on remaining populations of the region’s unique species be reduced.

APPENDIX

Greater Mekong new species 2012 and 2013.

Plants

SPECIES	SCIENTIST(S)	YEAR	COUNTRY
<i>Acronema crassifolium</i>	Huan C.Wang, X.M.Zhou & Y.H.Wang	2013	China (Yunnan)
<i>Aeginetia flava</i>	J.Parn.	2012	Thailand
<i>Amischotolype barbarossa</i>	Duist.	2012	Thailand
<i>Amischotolype divaricata</i>	Duist.	2012	Cambodia / Myanmar / Thailand / Vietnam
<i>Amischotolype wetzeniana</i>	Duist.	2012	Myanmar / Thailand
<i>Anomum calcaratum</i>	Lamxay & M.F.Newman	2012	Laos
<i>Anomum calcicola</i>	Lamxay & M.F.Newman	2012	Laos
<i>Anomum celsum</i>	Lamxay & M.F.Newman	2012	Laos / Vietnam
<i>Anomum chryseum</i>	Lamxay & M.F.Newman	2012	Laos
<i>Anomum glabrifolium</i>	Lamxay & M.F.Newman	2012	Laos
<i>Anomum plicatum</i>	Lamxay & M.F.Newman	2012	Laos
<i>Anomum prionocarpum</i>	Lamxay & M.F.Newman	2012	Laos
<i>Anomum rubidum</i>	Lamxay & N.S.Lý	2012	Vietnam
<i>Anomum stephanocoleum</i>	Lamxay & M.F.Newman	2012	Laos
<i>Anomum tenellum</i>	Lamxay & M.F.Newman	2012	Laos / Vietnam
<i>Amorphophallus arcuspadix</i>	A.Galloway, Ongsakul & Petra Schmidt	2012	Laos
<i>Amorphophallus bolikhamsayensis</i>	A.Galloway, Ongsakul & Petra Schmidt	2012	Laos
<i>Amorphophallus brevipetiolatus</i>	A.Galloway, Ongsakul & Petra Schmidt	2012	Laos
<i>Amorphophallus crispifolius</i>	A.Galloway, Ongsakul & Petra Schmidt	2012	Laos
<i>Amorphophallus ferruginosus</i>	A.Galloway	2012	Laos
<i>Amorphophallus terrestris</i>	Hett. & Claudel	2012	Cambodia / Thailand
<i>Ancylostemon dimorphosepalus</i>	W.H.Chen & Y.M.Shui	2012	China (Yunnan)
<i>Annamocalamus kontumensis</i>	H.N.Nguyen, N.H.Xia & V.T.Tran	2013	Vietnam
<i>Ardisia rubricaulis</i>	S.Z.Mao & C.M.Hu	2013	China (Guangxi)
<i>Argostenma glabra</i>	Joongku Lee, T.B.Tran & R.K.Choudhary	2013	Vietnam
<i>Argostenma phyllocharis</i>	Sridith	2012	Thailand
<i>Arisaema claviforme</i>	Brugg., J.Ponert, Rybková & Vuong	2013	Vietnam
<i>Arisaema honbaense</i>	Luu, Tich, G.Tran & V.D.Nguyen	2013	Vietnam
<i>Arisaema lushuiense</i>	G.W.Hu & H.Li	2012	China (Yunnan)
<i>Aristolochia multinensis</i>	Y.S.Huang & Yan Liu	2013	China (Guangxi)
<i>Aspidistra coccigera</i>	Aver. & Tillich	2012	Vietnam
<i>Aspidistra jiewhoei</i>	Tillich & Škorničk.	2013	Vietnam
<i>Aspidistra jingxiensis</i>	Yan Liu & C.R.Lin	2012	China (Guangxi)
<i>Aspidistra phanluongii</i>	Vislobokov	2012	Vietnam
<i>Aspidistra truongii</i>	Aver. & Tillich	2013	Vietnam
<i>Bauhinia hekouensis</i>	T.Y.Tu & D.X.Zhang	2013	China (Yunnan)
<i>Bauhinia nakhonphanomensis</i>	Chatan	2013	Thailand
<i>Begonia bella</i>	Phutthai	2012	Thailand
<i>Begonia chongzuensis</i>	Yan Liu, S.M.Ku & C.I.Peng	2012	China (Guangxi)
<i>Beilschmiedia turbinata</i>	Bing Liu & Y.Yang	2013	China (Yunnan) / Vietnam
<i>Boesenbergia collinsii</i>	Mood & L.M.Prince	2013	Thailand
<i>Boesenbergia kerrii</i>	Mood, L.M.Prince & Triboun	2013	Thailand
<i>Boesenbergia kingii</i>	Mood & L.M.Prince	2013	China (Yunnan) / Myanmar / Thailand
<i>Boesenbergia maxwellii</i>	Mood, L.M.Prince & Triboun	2013	Myanmar / Thailand
<i>Bolbitis lanceolata</i>	S.K.Wu & J.Y.Xiang	2012	Laos
<i>Briggsia damingshanensis</i>	L.Wu & B.Pan	2012	China (Guangxi)
<i>Bulbophyllum salmoneum</i>	Aver. & J.J.Verm.	2012	Vietnam
<i>Calamus batoensis</i>	A.J.Hend. & N.Q.Dung	2013	Vietnam
<i>Calamus flavinervis</i>	A.J.Hend. & N.Q.Dung	2013	Vietnam
<i>Calamus phuocbinhensis</i>	A.J.Hend. & N.Q.Dung	2013	Vietnam
<i>Calamus quangngaiensis</i>	A.J.Hend. & N.Q.Dung	2013	Vietnam
<i>Calanthe bingtaoi</i>	J.W.Zhai, L.J.Chen & Z.J.Liu	2013	China (Yunnan)
<i>Calanthe leonidii</i>	P.J.Cribb & D.A.Clayton	2012	Vietnam
<i>Calanthe uenshanensis</i>	J.W.Zhai, L.J.Chen & Z.J.Liu	2013	China (Yunnan)
<i>Camchaya thailandica</i>	Bunwong, Chantar. & S.C.Keeley	2012	Thailand
<i>Camellia cattienensis</i>	Orel	2012	Vietnam
<i>Camellia dalatensis</i>	V.D.Luong, Ninh & Hakoda	2012	Vietnam
<i>Camellia inusitata</i>	Orel, Curry & Luu	2012	Vietnam
<i>Camellia oconoriana</i>	Orel, Curry & Luu	2013	Vietnam
<i>Capparis daknongensis</i>	Sy, G.C.Tucker, Cornejo & Joongku Lee	2013	Vietnam
<i>Carex paracheniana</i>	X.F.Jin, D.A.Simpson & C.Z.Zheng	2012	China (Guangxi)
<i>Carex pengii</i>	X.F.Jin & C.Z.Zheng	2013	China (Guangxi)
<i>Caryodaphnopsis malipoensis</i>	Bing Liu & Y.Yang	2013	China (Yunnan)
<i>Celastrus yuloensis</i>	X.Y.Mu	2012	China (Yunnan)
<i>Changnienia malipoensis</i>	D.H.Peng, Z.J.Liu & J.W.Zhai	2013	China (Yunnan)
<i>Clematis peii</i>	L.Xie, W.J.Yang & L.Q.Li	2012	China (Yunnan)
<i>Cochinchinochloa braiana</i>	H.N.Nguyen & V.T.Tran	2013	Vietnam
<i>Coelogyne phuinhongklaensis</i>	Ngerns. & Tippayarsi	2012	Thailand
<i>Conchidium dickasonii</i>	Ormerod	2012	Myanmar
<i>Cordiglossis longipedicellata</i>	Joongku Lee, T.B.Tran & R.K.Choudhary	2013	Vietnam
<i>Cremastra malipoensis</i>	G.W.Hu	2013	China (Yunnan)
<i>Curculigo fabrei</i>	Hul	2013	Cambodia
<i>Curcuma arracanensis</i>	W.J.Kress & V.Gowda	2012	Myanmar
<i>Curcuma leonidii</i>	Škorničk. & Luu	2013	Vietnam
<i>Dendrobium cobra</i>	Ormerod	2012	China (Yunnan)
<i>Dendrocalamus cauhiensis</i>	N.H.Xia & V.T.Nguyen	2013	Vietnam
<i>Dendrocalamus longiligulatus</i>	N.H.Xia & V.T.Nguyen	2013	Vietnam
<i>Dendrocalamus multiflosculus</i>	H.N.Nguyen, N.H.Xia & V.T.Nguyen	2013	Vietnam
<i>Dendrocalamus nianhei</i>	V.T.Nguyen & V.L.Le	2012	Vietnam
<i>Dendrocalamus taybacensis</i>	N.H.Xia, V.T.Nguyen & V.L.Le	2013	Vietnam
<i>Dendrocalamus velutinus</i>	N.H.Xia, V.T.Nguyen & V.D.Vu	2012	Vietnam
<i>Dendrokingstonia gardneri</i>	Chaowasku	2012	Thailand / Vietnam
<i>Derris glabra</i>	Sirich.	2012	Thailand
<i>Derris pseudomarginata</i>	Sirich.	2012	Thailand
<i>Deyeuxia gaotigongensis</i>	Paszo	2013	China (Yunnan)
<i>Diceratothera bracteolata</i>	J.R.I.Wood & Scotland	2012	China (Yunnan) / Thailand
<i>Dillenia tetrapetala</i>	Joongku Lee, T.B.Tran & R.K.Choudhary	2012	Vietnam
<i>Distichochlamys benenica</i>	Q.B.Nguyen & Škorničk.	2012	Vietnam
<i>Dracaena jayniana</i>	Wilkin & Suksathan	2012	Thailand
<i>Dracaena kaweasakii</i>	Wilkin & Suksathan	2013	Thailand
<i>Elatostema albistipulum</i>	W.T.Wang	2012	China (Yunnan)
<i>Elatostema androstachyum</i>	W.T.Wang, A.K.Monro & Y.G.Wei	2013	China (Guangxi)

Plants

SPECIES	SCIENTIST(S)	YEAR	COUNTRY
<i>Elatostema angustibracteum</i>	W.T.Wang	2012	China (Yunnan)
<i>Elatostema caudiculatum</i>	W.T.Wang	2012	China (Yunnan)
<i>Elatostema cucullatoniculatum</i>	W.T.Wang	2012	China (Yunnan)
<i>Elatostema dacinense</i>	W.T.Wang & Z.Y.Wu	2013	China (Guangxi)
<i>Elatostema flexuosum</i>	W.T.Wang	2012	China (Yunnan)
<i>Elatostema fugongense</i>	W.T.Wang	2012	China (Yunnan)
<i>Elatostema glabribracteam</i>	W.T.Wang	2012	China (Yunnan)
<i>Elatostema heterocladum</i>	W.T.Wang, A.K.Monro & Y.G.Wei	2013	China (Guangxi)
<i>Elatostema heterogrammicum</i>	W.T.Wang	2012	China (Yunnan)
<i>Elatostema laevicaule</i>	W.T.Wang, A.K.Monro & Y.G.Wei	2013	China (Guangxi)
<i>Elatostema longitepalum</i>	W.T.Wang	2012	China (Yunnan)
<i>Elatostema lushuiheense</i>	W.T.Wang	2012	China (Yunnan)
<i>Elatostema nerifolium</i>	W.T.Wang & Z.Y.Wu	2012	China (Yunnan) / Vietnam
<i>Elatostema oligophlebium</i>	W.T.Wang, Y.G.Wei & L.F.Fu	2012	China (Guangxi)
<i>Elatostema parvioides</i>	W.T.Wang	2012	China (Yunnan)
<i>Elatostema robustipes</i>	W.T.Wang, F.Wen & Y.G.Wei	2012	China (Guangxi)
<i>Elatostema sexcostatum</i>	W.T.Wang, C.X.He & L.F.Fu	2012	China (Guangxi)
<i>Elettariopsis limiana</i>	Picheans. & Yupparach	2012	Thailand
<i>Elettariopsis poonsakiana</i>	Picheans. & Yupparach	2012	Thailand
<i>Elettariopsis ranongensis</i>	Picheans. & Yupparach	2012	Thailand
<i>Epipactis dickasonii</i>	Ormerod	2012	Myanmar
<i>Eremochloa renvozei</i>	Traiperm & Boonkerd	2012	Thailand
<i>Eriocaulon chantaranothaii</i>	Praj. & J.Parn.	2012	Thailand
<i>Eriocaulon Chiangmaiense</i>	Praj. & J.Parn.	2012	Thailand
<i>Eriocaulon nautiliformoides</i>	Praj. & J.Parn.	2012	Cambodia / Thailand
<i>Eriocaulon parnellii</i>	Praj. & Chantar.	2012	Thailand
<i>Eriocaulon phatamense</i>	Praj. & Chantar.	2012	Thailand
<i>Eriocaulon phuchongense</i>	Praj. & Chantar.	2012	Thailand
<i>Eriocaulon phuphanoides</i>	Praj. & J.Parn.	2012	Thailand
<i>Erythranthe sinoalba</i>	G.L.Nesom	2012	China (Yunnan)
<i>Euphorbia maershanensis</i>	F.N.Wei & J.S.Ma	2013	China (Guangxi)
<i>Ferrocalamus fibrillosus</i>	H.N.Nguyen & V.T.Tran	2012	Vietnam
<i>Flacourtia turbinata</i>	H.J.Dong & H.Peng	2013	China (Yunnan)
<i>Gastrodia albidoides</i>	Y.H.Tan & T.C.Hsu	2012	China (Yunnan)
<i>Gentiana zhenxiangensis</i>	L.H.Wu & Z.T.Wang	2012	China (Yunnan)
<i>Gigantochloa multifloscula</i>	H.N.Nguyen, N.H.Xia & V.T.Tran	2012	Vietnam
<i>Globba sherwoodiana</i>	W.J.Kress & V.Gowda	2012	Myanmar
<i>Greenea adangensis</i>	Tange	2013	Thailand
<i>Greenea montana</i>	Tange	2013	Thailand
<i>Greenea rivularis</i>	Tange	2013	Laos / Thailand
<i>Greenea vietnamensis</i>	Tange	2013	Vietnam
<i>Hedychium dichotomatum</i>	Picheans. & Wongsuwan	2013	China (Yunnan)
<i>Hemiboea pseudomagnibracteata</i>	B.Pan & W.H.Wu	2012	China (Guangxi)
<i>Hemiboea sinovietnamica</i>	W.B.Xu & X.Y.Zhuang	2012	China (Guangxi)
<i>Himalaiella natmataungensis</i>	Fujikawa	2012	Myanmar
<i>Holcoglossum singchianum</i>	G.Q.Zhang, L.J.Chen & Z.J.Liu	2013	China (Yunnan)
<i>Hoya daimenglongensis</i>	Shao Y.He & P.T.Li	2012	China (Yunnan)
<i>Hoya lithophytica</i>	Kidyoo	2012	Thailand
<i>Hoya lockii</i>	V.T.Pham & Aver.	2012	Vietnam
<i>Hoya longipedunculata</i>	V.T.Pham & Aver.	2012	Vietnam
<i>Hoya mappigera</i>	Rodda & Simonsson	2012	Thailand
<i>Hoya soidaensis</i>	Kidyoo	2013	Thailand
<i>Hoya somadeeae</i>	Rodda & Simonsson	2012	Thailand
<i>Hoya thuathienhuensis</i>	T.B.Tran, Rodda & Simonsson	2012	Vietnam
<i>Hoya vanguiengensis</i>	Rodda & Simonsson	2012	Laos
<i>Hydrobryum austrolaoticum</i>	Koi & M.Kato	2012	Laos
<i>Hydrobryum phurueanum</i>	Werukamkul, Ampornpan, Koi & M.Kato	2012	Thailand
<i>Hydrobryum subcrustaceum</i>	Koi & M.Kato	2012	Laos
<i>Hydrobryum subcylindricum</i>	Koi & M.Kato	2012	Laos
<i>Hydrobryum taeniatum</i>	Koi & M.Kato	2012	Laos
<i>Hydrobryum takakioides</i>	Koi & M.Kato	2012	Laos
<i>Hydrobryum varium</i>	Ampornpan, Werukamkul, Koi & M.Kato	2012	Thailand
<i>Hydrobryum verrucosum</i>	Koi & M.Kato	2012	Laos
<i>Hymenorchis phitamii</i>	Aver.	2012	Vietnam
<i>Indigofera smitinandii</i>	Mattapha & Chantar.	2013	Thailand
<i>Indigofera udonthaniensis</i>	Mattapha & Chantar.	2013	Thailand
<i>Ischaemum thomasi</i>	Traiperm & Boonkerd	2012	Thailand
<i>Jasminum bhumbolianum</i>	Chalermglin	2013	Thailand
<i>Justicia hansenii</i>	Rueangs. & Chantar.	2013	Thailand
<i>Kaempferia pichansoonthonii</i>	Wongsuwan & Phokham	2013	Thailand
<i>Kaempferia udonensis</i>	Picheans. & Phokham	2013	Thailand
<i>Kaempferia xiengkhouangensis</i>	Picheans. & Phokham	2013	Laos
<i>Korthalsia minor</i>	A.J.Hend. & N.Q.Dung	2013	Laos / Vietnam
<i>Lagerstroemia huamotensis</i>	W.J.de Wilde & Duyfjes	2013	Thailand
<i>Lagerstroemia kratiensis</i>	W.J.de Wilde & Duyfjes	2013	Cambodia
<i>Lagerstroemia menglaensis</i>	C.H.Gu, M.C.Ji & D.D.Ma	2012	China (Yunnan)
<i>Lespedeza cambodianum</i>	V.D.Nguyen	2013	Cambodia
<i>Ligusticum gongshanense</i>	F.T.Pu, R.Li & H.Li	2012	China (Yunnan)
<i>Lilium yapingense</i>	Y.D.Gao & X.J.He	2013	China (Yunnan)
<i>Liparis damingshanensis</i>	L.Wu & Y.S.Huang	2012	China (Guangxi)
<i>Litsea dorsalicana</i>	M.Q.Han & Y.S.Huang	2013	China (Guangxi)
<i>Lockia sonii</i>	Aver.	2012	Vietnam
<i>Maclurochloa tonkinensis</i>	H.N.Nguyen & V.T.Tran	2013	Vietnam
<i>Magnolia kwangnanensis</i>	S.G.Chen & Q.W.Zeng	2013	China (Yunnan)
<i>Mallotus tokia</i>	Welzen	2013	Thailand
<i>Meconopsis exilis</i>	Tosh.Yoshida, H.Sun & Grey-Wilson	2012	China (Yunnan) / Myanmar
<i>Meconopsis muscicola</i>	Tosh.Yoshida, H.Sun & Boufford	2012	China (Yunnan)
<i>Meconopsis yaoshanensis</i>	Tosh.Yoshida, H.Sun & Boufford	2012	China (Yunnan)
<i>Memecylon pseudomegacarpum</i>	M.Hughes	2013	Thailand
<i>Michelia xianianhei</i>	Q.N.Vu	2012	Vietnam
<i>Microchirita albiflora</i>	D.J.Middleton & Triboun	2013	Thailand
<i>Microchirita karaketti</i>	D.J.Middleton & Triboun	2013	Thailand
<i>Microchirita purpurea</i>	D.J.Middleton & Triboun	2013	Thailand
<i>Microchirita suddeei</i>	D.J.Middleton & Triboun	2013	Thailand
<i>Microchirita woodii</i>	D.J.Middleton & Triboun	2013	Thailand
<i>Musa haekkinenii</i>	N.S.Ly & Haev.	2012	Vietnam
<i>Nervilia khaoyaica</i>	Suddee, Watthana & S.W.Gale	2013	Thailand
<i>Neuwiedia malipoensis</i>	Z.J.Liu, L.J.Chen & K.Wei Liu	2012	China (Yunnan)
<i>Nianhochloa bidoupensis</i>	H.N.Nguyen & V.T.Tran	2012	Vietnam
<i>Nomocharis gongshanensis</i>	Y.D.Gao & X.J.He	2012	China (Yunnan)
<i>Ophiopogon rupestris</i>	Aver. & N.Tanaka	2013	Vietnam
<i>Ophiopogon tristylatus</i>	Aver., N.Tanaka & Luu	2013	Vietnam
<i>Ophiopogon yangshuoensis</i>	R.H.Jiang & W.B.Xu	2013	China (Guangxi)
<i>Oreocharis dayaoshanioides</i>	Yan Liu & W.B.Xu	2012	China (Guangxi)

Plants

SPECIES	SCIENTIST(S)	YEAR	COUNTRY
<i>Oreocharis glandulosa</i>	Y.H.Tan & J.W.Li	2013	China (Yunnan)
<i>Oreocharis jinpingensis</i>	W.H.Chen & Y.M.Shui	2013	China (Yunnan)
<i>Paraboea angustifolia</i>	Yan Liu & W.B.Xu	2012	China (Guangxi)
<i>Paraboea arachnoidea</i>	Triboun	2012	Thailand
<i>Paraboea axillaris</i>	Triboun	2012	Thailand
<i>Paraboea bhumiboliana</i>	Triboun & Chuchan	2012	Thailand
<i>Paraboea doitungensis</i>	Triboun & D.J.Middleton	2012	Thailand
<i>Paraboea eburnea</i>	Triboun	2012	Thailand
<i>Paraboea hekouensis</i>	Y.M.Shui & W.H.Chen	2012	China (Yunnan)
<i>Paraboea insularis</i>	Triboun	2012	Thailand
<i>Paraboea lavandulodora</i>	Triboun	2012	Thailand
<i>Paraboea manhaoensis</i>	Y.M.Shui & W.H.Chen	2012	China (Yunnan)
<i>Paraboea middletonii</i>	Triboun	2013	Thailand
<i>Paraboea monticola</i>	Triboun & D.J.Middleton	2012	Thailand
<i>Paraboea nana</i>	Triboun & Dongkumfu	2012	Thailand
<i>Paraboea nobilis</i>	Triboun & D.J.Middleton	2012	Thailand
<i>Paraboea peninsularis</i>	Triboun & D.J.Middleton	2012	Thailand
<i>Paraboea phanomensis</i>	Triboun & D.J.Middleton	2012	Thailand
<i>Paraboea quercifolia</i>	Triboun	2012	Thailand
<i>Paraboea rosea</i>	Triboun	2012	Thailand
<i>Paraboea sanguaniae</i>	Triboun	2012	Thailand
<i>Paraboea siamensis</i>	Triboun	2012	Thailand
<i>Paraboea takensis</i>	Triboun	2012	Thailand
<i>Paraboea tenuicalyx</i>	Triboun	2012	Thailand
<i>Paraboea vachareea</i>	Triboun & Sonsupab	2012	Myanmar / Thailand
<i>Peliosanthes brevicoronata</i>	M.N.Tamura & Poopath	2013	Thailand
<i>Peliosanthes cambodiana</i>	Aver. & N.Tanaka	2013	Cambodia
<i>Peliosanthes grandiflora</i>	Aver. & N.Tanaka	2012	Vietnam
<i>Peliosanthes minutiflora</i>	N.Tanaka, J.Murata & S.K.Wu	2013	China (Yunnan)
<i>Peliosanthes nivea</i>	Aver. & N.Tanaka	2012	Vietnam
<i>Peliosanthes nutans</i>	Aver. & N.Tanaka	2012	Vietnam
<i>Pendulorchis gaoligongense</i>	G.Q.Zhang, K.Weil Liu & Z.J.Liu	2013	China (Yunnan)
<i>Petrosamea funingensis</i>	Qiang Zhang & B.Pan	2013	China (Yunnan)
<i>Phaius baolocensis</i>	Duy, Tao Chen & D.X.Zhang	2012	Vietnam
<i>Phyllanthus chayamaritiae</i>	Chantar. & Kantachot	2013	Thailand
<i>Pilea caevernicola</i>	A.K.Monro, C.J.Chen & Y.G.Wei	2012	China (Guangxi)
<i>Pilea shizongensis</i>	A.K.Monro, C.J.Chen & Y.G.Wei	2012	China (Yunnan)
<i>Piper chantaranothaii</i>	Suwanph. & D.A.Simpson	2012	Thailand
<i>Piper doiphukaense</i>	Suwanph. & Chantar.	2012	Thailand
<i>Piper khaoyaiense</i>	Suwanph. & D.A.Simpson	2012	Thailand
<i>Piper smitinandianum</i>	Suwanph. & Chantar.	2012	Thailand
<i>Platanthera dulongensis</i>	X.H.Jin & Efimov	2012	China (Yunnan)
<i>Platanthera ovatilabris</i>	X.H.Jin & Efimov	2012	China (Yunnan)
<i>Pleurospermum tripartitum</i>	F.T.Pu, R.Li & H.Li	2012	China (Yunnan)
<i>Polygala obliqua</i>	Pendry	2013	Thailand
<i>Polypleurum pluricostatum</i>	Koi & M.Kato	2012	Laos
<i>Polyspora huongiana</i>	Orel, Curry & Luu	2012	Vietnam
<i>Polystichum oblanceolatum</i>	H.He & Li Bing Zhang	2012	China (Guangxi)
<i>Potentilla jiaozishanensis</i>	Huan C.Wang & Z.R.He	2013	China (Yunnan)
<i>Primulina bullata</i>	S.N.Lu & F.Wen	2013	China (Guangxi)
<i>Primulina debaoensis</i>	N.Jiang & Hong Li	2013	China (Guangxi)
<i>Primulina fengshanensis</i>	F.Wen & Yue Wang	2012	China (Guangxi)
<i>Primulina gongchengensis</i>	Y.S.Huang & Yan Liu	2012	China (Guangxi)
<i>Primulina guangxiensis</i>	Yan Liu & W.B.Xu	2012	China (Guangxi)
<i>Primulina guizhongensis</i>	Bo Zhao, B.Pan & F.Wen	2013	China (Guangxi)
<i>Primulina multifida</i>	B.Pan & K.F.Chung	2012	China (Guangxi)
<i>Primulina pseudomollifolia</i>	W.B.Xu & Yan Liu	2012	China (Guangxi)
<i>Primulina sinovietnamica</i>	W.H.Wu & Qiang Zhang	2012	China (Guangxi)
<i>Primulina yangshuoensis</i>	Y.G.Wei & F.Wen	2012	China (Guangxi)
<i>Prunus gongshanensis</i>	J.Wen	2012	China (Yunnan) / Myanmar
<i>Pseudosasa xishuangbannaensis</i>	D.Z.Li, Y.X.Zhang & Triplett	2013	China (Yunnan)
<i>Pterospermum gracile</i>	P.Wilkie	2013	Thailand
<i>Raphiocarpus tamdaoensis</i>	Phuong, Xuyen & Y.G.Wei	2012	Vietnam
<i>Rhachidosorus siamensis</i>	S.Linds.	2012	Thailand
<i>Rhododendron baihuaiense</i>	Y.P.Ma	2013	China (Yunnan)
<i>Rhynchosyche burmanicum</i>	B.M.Anderson	2013	Myanmar
<i>Rhynchosyche vietnamense</i>	B.M.Anderson	2013	Vietnam
<i>Rubia pianmaensis</i>	R.Li & H.Li	2013	China (Yunnan)
<i>Sarcoglyphis brevilabia</i>	Aver.	2012	Vietnam
<i>Saussurea bijiangensis</i>	Y.L.Chen ex B.Q.Xu, N.H.Xia & G.Hao	2013	China (Yunnan)
<i>Schizostachyum nghianum</i>	N.H.Xia & V.T.Tran	2013	Vietnam
<i>Schoenorchis scolopendria</i>	Aver.	2012	Vietnam
<i>Solanum sakharii</i>	Hul	2013	Cambodia
<i>Somrania albiflora</i>	D.J.Middleton	2012	Thailand
<i>Somrania lineata</i>	D.J.Middleton & Triboun	2012	Thailand
<i>Stephania novenantha</i>	Heng C.Wang	2013	China (Guangxi)
<i>Terniopsis filiformis</i>	Werukamkul, Ampornpan, Koi & M.Kato	2012	Thailand
<i>Terniopsis heterostaminata</i>	Werukamkul, Ampornpan, Koi & M.Kato	2012	Thailand
<i>Theana vietnamica</i>	Aver.	2012	Vietnam
<i>Thismia filiformis</i>	Chantanaorr.	2012	Thailand
<i>Thismia gongshanensis</i>	Hong Qing Li & Y.K.Bi	2013	China (Yunnan)
<i>Tribounia grandiflora</i>	D.J.Middleton	2012	Thailand
<i>Tupistra theana</i>	Aver. & N.Tanaka	2012	Vietnam
<i>Typhonium rhizomatosum</i>	A.Galloway & Petra Schmidt	2012	Thailand
<i>Typhonium supraneae</i>	A.Galloway, Petra Schmidt & Sinhab.	2012	Thailand
<i>Typhonium viridispathum</i>	A.Galloway & Sinhab.	2012	Thailand
<i>Vanilla atropogon</i>	Schuit., Aver. & Rybková	2013	Vietnam
<i>Vietorchis furcata</i>	Aver. & Nuraliev	2013	Vietnam
<i>Winitia expansa</i>	Chaowasku	2013	Thailand
<i>Wrightia calcicola</i>	D.J.Middleton	2013	Thailand
<i>Xyris bituberosa</i>	Phonsena & Chantar.	2012	Thailand
<i>Xyris emarginata</i>	Phonsena & Chantar.	2012	Thailand
<i>Xyris thailandica</i>	Phonsena & Chantar.	2012	Thailand
<i>Zingiber popaense</i>	Nob.Tanaka	2012	Myanmar
<i>Acanthocobitis pictilis</i>	Kottelat, M.	2012	Myanmar / Thailand
<i>Balitora ludongensis</i>	Liu, S.-W., Y. Zhu, R.-F. Wei and X.-Y. Chen	2012	China (Guangxi)
<i>Betta mahachaiensis</i>	Kowasupat, C., B. Panijpan, P. Ruenwongsa and N. Sriwattanothai,	2012	Thailand
<i>Channa longistomata</i>	Nguyen, V.H., T.H.T. Nguyen and T.D.P. Nguyen	2012	Vietnam
<i>Draconectes narinosus</i>	Kottelat, M.	2012	Vietnam
<i>Erethistoides longispinis</i>	Ng, H.H., C.J. Ferraris Jr. and D.A. Neely	2012	Myanmar
<i>Erethistoides luteolus</i>	Ng, H.H., C.J. Ferraris Jr. and D.A. Neely	2012	Myanmar

Fish

Fish

SPECIES	SCIENTIST(S)	YEAR	COUNTRY
<i>Erethistoides vesculus</i>	Ng, H.H., C.J. Ferraris Jr. and D.A. Neely	2012	Myanmar
<i>Glyptothorax igniculus</i>	Heok Hee Ng & Sven O. Kullander	2013	Myanmar
<i>Lates uwisara</i>	Pethiyagoda, R. and A.C. Gill	2012	Myanmar
<i>Oreias sonlaensis</i>	Nguyen, T.H., V.H. Nguyen and T.T. Hoang	2012	Vietnam
<i>Oreias trilineatus</i>	Nguyen, T.H., V.H. Nguyen and T.T. Hoang	2012	Vietnam
<i>Oreonectes elongatus</i>	Tang, L., Y. Zhao and C. Zhang	2012	China (Guangxi)
<i>Parabotia brevirostris</i>	Zhu, D.-G. and Y. Zhu	2012	China (Guangxi)
<i>Phallostethus cuulong</i>	Shibukawa, K., D.D. Tran and L.X. Tran	2012	Vietnam
<i>Physoschistura chulabhornae</i>	Apinun Suvarnaraksha	2013	Thailand
<i>Schistura prolixifasciata</i>	Zheng, L.-P., J.-X. Yang and X.-Y. Chen	2012	China (Yunnan)
<i>Scleropages inscriptus</i>	Roberts, T.R.	2012	Myanmar
<i>Sinocyclocheilus flexuosdorsalis</i>	Zhu, D.-G. and Y. Zhu	2012	China (Guangxi)
<i>Tetraodon palustris</i>	Pasakorn Saenjundaeng, Chavalit Vidthayanon & Chaiwut Grudpun	2013	Thailand
<i>Triplophysa huanjiangensis</i>	Yang, J., T.-J. Wu and J.-H. Lan	2012	China (Guangxi)
<i>Triplophysa huapingensis</i>	Zheng, L.-P., J.X. Yang and X.-Y. Chen	2012	China (Guangxi)
<i>Triplophysa lüuensis</i>	Wu, T.-J., J. Yang and J.-H. Lan	2012	China (Guangxi)
<i>Yunnanilus niulanensis</i>	Chen, Z., J. Yang and J. Yang	2012	China (Yunnan)

Amphibians

<i>Amolops indoburmanensis</i>	Dever, Fuiten, Konu, and Wilkinson	2012	Myanmar
<i>Ansonia thinthinae</i>	Wilkinson, Sellas, and Vindum	2012	Myanmar
<i>Gracixalus nonggangensis</i>	Mo Y, Zhang W, Luo Y, Zhou S, Chen W	2013	China (Guangxi)
<i>Gracixalus waza</i>	Nguyen TQ, Le MD, Pham CT, Nguyen TT, Bonkowski M, Ziegler T.	2013	Vietnam
<i>Hoplobatrachus litoralis</i>	Hasan, Kuramoto, Islam, Alam, Khan, and Sumida	2012	Myanmar
<i>Ichthyophis nguyenorum</i>	Nishikawa, Matsui, and Orlov	2012	Vietnam
<i>Kaloula inochinensis</i>	Chan KO, Blackburn DC, Murphy RW, Stuart BL, Emmett DA, Ho CT, Brown RM	2013	Cambodia / Laos / Vietnam
<i>Kaloula nonggangensis</i>	Mo Y, Zhang W, Zhou S, Chen T, Tang H, Meng Y, Chen W	2013	China (Guangxi)
<i>Leptobranchium rakhinensis</i>	Wogan	2012	Myanmar
<i>Leptobranchium xanthops</i>	Stuart, Phimmachak, Seateun, and Sivongxay	2012	Laos / Vietnam
<i>Leptolalax botsfordi</i>	Jodi J.L. Rowley, Vinh Quang Dau, Tao Thien Nguyen	2013	Vietnam
<i>Leptolalax firthi</i>	Rowley, Hoang, Dau, and Le	2012	Vietnam
<i>Leptolalax zhangyapingi</i>	Jiang K, Yan F, Suwannapoom C, Chomdej S, Che J.	2013	Thailand
<i>Philautus nianeeae</i>	Stuart, Phimmachak, Seateun & Sheridan	2013	Laos
<i>Polypedates discantus</i>	Rujirawan A, Stuart BL, Aowphol A	2013	Thailand
<i>Rhacophorus robertingeri</i>	Orlov, Poyarkov, Vassilieva, Ananjeva, Nguyen, Sang, and Geissler	2012	Vietnam
<i>Theلودerma bambusicolum</i>	Orlov, Poyarkov, Vassilieva, Ananjeva, Nguyen, Sang, and Geissler	2012	Vietnam
<i>Theلودerma chuyangsinense</i>	Orlov, Poyarkov, Vassilieva, Ananjeva, Nguyen, Sang, and Geissler	2012	Vietnam
<i>Tylotriton parhai</i>	Kanto Nishikawa, Wichase Khonsue, Porraee Pomchote & Masafumi Matsui	2013	Thailand
<i>Tylotriton uyanoi</i>	Kanto Nishikawa, Wichase Khonsue, Porraee Pomchote & Masafumi Matsui	2013	Thailand
<i>Tylotriton zieglerei</i>	Kanto Nishikawa, Masafumi Matsui, and Tao Thien Nguyen	2013	Vietnam

Reptiles

<i>Azemioops albocephala</i>	Orlov, Ryabov & Nguyen	2013	China (Yunnan)
<i>Azemioops kharini</i>	Orlov, Ryabov & Nguyen	2013	China (Guangxi, Yunnan) / Vietnam
<i>Calotes bachae</i>	Hartmann, Geissler, Poyarkov, Ithow, Galoyan, Rödder & Böhme	2013	Vietnam
<i>Cyrtodactylus astrum</i>	Grismer, Wood Jr, Quah, Anuar, Muin, Sumontha, Ahmad, Bauer, Wangkulangkul, Grismer & Pauwels	2012	Thailand
<i>Cyrtodactylus bidoupimontis</i>	Nazarov, Poyarkov, Orlov, Phung, Nguyen, Hoang & Ziegler	2012	Vietnam
<i>Cyrtodactylus bintangtinggi</i>	Grismer, Wood Jr, Quah, Anuar, Muin, Sumontha, Ahmad, Bauer, Wangkulangkul, Grismer & Pauwels	2012	Thailand
<i>Cyrtodactylus bugiamapensis</i>	Nazarov, Poyarkov, Orlov, Phung, Nguyen, Hoang & Ziegler	2012	Vietnam
<i>Cyrtodactylus dati</i>	Ngo Van Tri	2013	Cambodia / Vietnam
<i>Cyrtodactylus kingsadai</i>	Ziegler, Phung, Le & Nguyen	2013	Vietnam
<i>Cyrtodactylus lekaguli</i>	Grismer, Wood Jr, Quah, Anuar, Muin, Sumontha, Ahmad, Bauer, Wangkulangkul, Grismer & Pauwels	2012	Thailand
<i>Cyrtodactylus phuketensis</i>	Sumontha, Pauwels, Kunya, Nitikul, Samphanthamit & Grismer	2012	Thailand
<i>Cyrtodactylus phuocbinhensis</i>	Nguyen, Le, Tran, Orlov, Lathrop, Macculloch, Le, Jin, Nguyen, Nguyen, Hoang, Che, Murphy & Zhang	2013	Vietnam
<i>Cyrtodactylus sanook</i>	Pauwels, Sumontha, Latinne & Grismer	2013	Thailand
<i>Cyrtodactylus taynguyenensis</i>	Nguyen, Le, Tran, Orlov, Lathrop, Macculloch, Le, Jin, Nguyen, Nguyen, Hoang, Che, Murphy & Zhang	2013	Vietnam
<i>Cyrtodactylus thochuensis</i>	Ngo Van Tri & Grismer	2012	Vietnam
<i>Dendrelaphis nigroserratus</i>	Vogel, Van Rooijen & Hauser	2012	Myanmar / Thailand
<i>Gekko adleri</i>	Nguyen, Wang, Yang, Lehmann, Le, Ziegler & Bonkowski	2013	China (Guangxi) / Vietnam
<i>Hemiphyllodactylus zugii</i>	Nguyen, Lehmann, Le Duc, Duong, Bonkowski & Ziegler	2013	China (Guangxi) / Vietnam
<i>Homalopsis mereljocxi</i>	Murphy, Voris, Murthy, Traub & Cumberbatch	2012	Cambodia / Thailand / Vietnam
<i>Japalura brevicauda</i>	Manthey, Denzer, Hou & Wang	2012	China (Yunnan)
<i>Japalura yulongensis</i>	Manthey, Denzer, Hou & Wang	2012	China (Yunnan)
<i>Lycodon davidi</i>	Vogel, Nguyen, Kingsda & Ziegler	2012	Laos
<i>Lygosoma veunsaiensis</i>	Geissler, Hartmann & Neang	2012	Cambodia
<i>Oligodon cattiensis</i>	Vassilieva, Geissler, Galoyan, Poyarkov Jr, Van Devender & Böhme	2013	Vietnam
<i>Oligodon kampucheaensis</i>	Neang, Grismer & Daltry	2012	Cambodia
<i>Oligodon nagao</i>	David, Nguyen, Nguyen, Jiang, Chen, Teynié & Ziegler	2012	China (Guangxi) / Laos / Vietnam
<i>Ptychozoon kaengkrachanense</i>	Sumontha, Pauwels, Kunya, Limlikhitakorn, Ruksue, Taokratok, Ansermet & Chanhome	2012	Thailand
<i>Sphenomorphus sheai</i>	Nguyen, Nguyen, Van Devender, Bonkowski & Ziegler	2013	Vietnam

Birds

<i>Orthotomus chaktomuk</i>	S. P. Mahood, A. J. I. John, J. C. Eames, C. H. Oliveros, R. G. Moyle, Hong Chamnan, C. M. Poole, H. Nielsen & F. H. Sheldon	2013	Cambodia
-----------------------------	--	------	----------

Mammals

<i>Biswamoyopterus laevis</i>	Daosavanh Sanamxay, Bounsavane Douangboubpha, Sara Bumrungsri, Sysouphanh Xayavong, Vilakhan Xayaphet, Chutamas Satasook & Paul J.J. Bates	2013	Laos
<i>Hipposideros griffini</i>	Thong, V. D., S. J. Puechmille, A. Denzinger, C. Dietz, G. Csorba, P. J. J. Bates, E. C. Teeling, and H.-U. Schnitzler.	2012	Vietnam
<i>Murina balaensis</i>	Pipat Soisook, Sunate Karapan, Chutamas Satasook & Paul J. J. Bates	2013	Thailand

Total: 367

REFERENCES

- ¹ WWF. 2008. *First Contact in the Greater Mekong*. WWF-Greater Mekong, Lao PDR.
- ² WWF. 2009. *Close Encounters: Greater Mekong New Species Discoveries*. WWF-Greater Mekong, Lao PDR.
- ³ WWF. 2010. *New Blood: Greater Mekong New Species Discoveries 2009*. WWF-Greater Mekong, Lao PDR.
- ⁴ WWF. 2011. *Wild Mekong: New Species in 2010 from the Forests, Wetlands and Waters of the Greater Mekong, Asia's Land of Rivers*. WWF-Greater Mekong, Lao PDR.
- ⁵ WWF. 2012. *Extra-Terrestrial: Extraordinary new species discoveries in 2011 from the Greater Mekong*. WWF-Greater Mekong, Hanoi, Vietnam.
- ⁶ *Inadequate protection causes Javan rhino extinction in Vietnam*. WWF International press release, 25 October 2011. http://wwf.panda.org/what_we_do/how_we_work/conservation/species_programme/species_news/?202074/Inadequate-protection-causes-Javan-rhino-extinction-in-Vietnam.
- ⁷ WWF. 2010. *Tigers on the Brink: Facing up to the Challenge in the Greater Mekong*. WWF-Greater Mekong, Lao PDR.
- ⁸ *ICCWC launches wildlife and forest crime toolkit*. The International Consortium on Combating Wildlife Crime (ICCWC) press release, 25 July 2012. http://www.cites.org/eng/news/pr/2012/20120725_ICCWC_toolkit.php
- ⁹ WWF, 2013. *Ecosystems in the Greater Mekong: past trends, current status, possible futures*. WWF-Greater Mekong, Lao PDR.
- ¹⁰ Tordoff et al. 2007. *Ecosystem Profile: Indo-Burma Biodiversity Hotspot Indochina Region. Final Version*. USA: Critical Ecosystem Partnership Fund, Conservation International.
- ¹¹ Mahood et al. 2013. A new species of lowland tailorbird (Passeriformes: Cisticolidae: Orthotomus) from the Mekong floodplain of Cambodia. *Forktail* 29: 1-14.
- ¹² Orlov NL, Ryabov SA, Nguyen TT. 2013. On the Taxonomy and the Distribution of Snakes of the Genus *Azemiops* Boulenger, 1888: Description of a New Species. *Russian Journal of Herpetology* 20:110-128.
- ¹³ Orlov NL, Ryabov SA, Nguyen TT. 2013. On the Taxonomy and the Distribution of Snakes of the Genus *Azemiops* Boulenger, 1888: Description of a New Species. *Russian Journal of Herpetology* 20:110-128.
- ¹⁴ Saenjundaeng, Pasakorn, Chavalit Vidthayanon & Chaiwut Grudpun. 2013. *Tetraodon palustris*, a new freshwater pufferfish (Tetraodontiformes: Tetraodontidae) from the Mekong Basin of Thailand. *Zootaxa*. 3686(1): 77–84.
- ¹⁵ Sanamxay, Daosavanh; Douangboubpha, Bounsavane; Bumrungsri, Sara; Xayavong, Sysouphanh; Xayaphet, Vilakhan; Satasook, Chutamas; Bates, Paul J.J. (2013). Rediscovery of *Biswamoyopterus* (Mammalia: Rodentia: Sciuridae: Pteromyini) in Asia, with the description of a new species from Lao PDR. *Zootaxa* (Magnolia Press) 3686 (4): 471–481.
- ¹⁶ Sanamxay, Daosavanh; Douangboubpha, Bounsavane; Bumrungsri, Sara; Xayavong, Sysouphanh; Xayaphet, Vilakhan; Satasook, Chutamas; Bates, Paul J.J. (2013). Rediscovery of *Biswamoyopterus* (Mammalia: Rodentia: Sciuridae: Pteromyini) in Asia, with the description of a new species from Lao PDR. *Zootaxa* (Magnolia Press) 3686 (4): 471–481.
- ¹⁷ Vu Dinh Thong, Sebastien J. Puechmaille, Annette Denzinger, Christian Dietz, Gabor Csorba, Paul J. J. Bates, Emma C. Teeling, Hans-Ulrich Schnitzler. A new species of *Hipposideros* (Chiroptera: Hipposideridae) from Vietnam. *Journal of Mammalogy*, 2012; 93 (1): 1 DOI: 10.1644/11-MAMMA-073.19.
- ¹⁸ Ziegler et al. 2008. A new species of *Goniurosaurus* from Cat Ba Island, Hai Phong, northern Vietnam (Squamata: Eublepharidae). *Zootaxa* 1771: 16–30.
- ¹⁹ Pipat Soisook, Sunate Karapan, Chutamas Satasook, and Paul J. J. Bates. 2013. A new species of *Murina* (Mammalia: Chiroptera: Vespertilionidae) from peninsular Thailand. *Zootaxa* 3746 (4): 567–579.
- ²⁰ Peter Geissler, Timo Hartmann & Thy Neang. A new species of the genus *Lygosoma* Hardwicke & Gray, 1827 (Squamata: Scincidae) from northeastern Cambodia, with an updated identification key to the genus *Lygosoma* in mainland Southeast Asia. *Zootaxa* 3190: 56–68 (10 Feb. 2012) 5 plate; 43 references Accepted: 3 Jan. 2012.
- ²¹ *Shiny new lizard discovered in northeast Cambodia*. Fauna & Flora International (FFI). Press release 23 February 2012.
- ²² Ibid.

- ²³ Ibid.
- ²⁴ Ibid.
- ²⁵ Jodi J. L. Rowley, Dao Thi Anh Tran, Huy Duc Hoang & Duong Thi Thuy LE (2012). A New Species of Large Flying Frog (Rhacophoridae: Rhacophorus) from Lowland Forests in Southern Vietnam. *Journal of Herpetology*. 46:480-487.
- ²⁶ Australian Museum. *Huge, Green Flying Frog discovered in the lowland forests of Vietnam* By: Dr Jodi Rowley. Category: Science, Date: 08 Jan 2013 - See more at: <http://www.australianmuseum.net.au/BlogPost/Science-Bytes/Huge-Green-Flying-Frog-discovered-in-the-lowland-forests-of-Vietnam>
- ²⁷ Ibid.
- ²⁸ <http://australianmuseum.net.au/BlogPost/Science/Huge-Green-Flying-Frog-discovered-in-the-lowland-forests-of-Vietnam>
- ²⁹ *New species of flying frog discovered in Vietnam*. ABC News (Australia), Wednesday, 16 January 2013: <http://www.abc.net.au/science/articles/2013/01/16/3670547.htm>
- ³⁰ Shibukawa, K., Tran, D.D. & Tran, L.X. (2012): Phallostethus cuulong, a new species of priapiumfish (Actinopterygii: Atheriniformes: Phallostethidae) from the Vietnamese Mekong. *Zootaxa*, 3363:45–51.
- ³¹ *The fish with its genitals on its head*. New Scientist, 11 July 2012 . Magazine issue 2873. Accessed: 25 May 2013.
- ³² <http://www.livescience.com/22824-penis-head-fish-discovered.html>
- ³³ Ibid.
- ³⁴ Ibid.
- ³⁵ Ibid.
- ³⁶ Murphy, John C.; Harold K. Voris, B.H.C.K. Murthy, Joshua Traub & Christina Cumberbatch, 2012. The masked water snakes of the genus Homalopsis Kuhl & van Hasselt, 1822 (Squamata, Serpentes, Homalopsidae), with the description of a new species. *Zootaxa* 3208: 1–26.
- ³⁷ Brooks, S.E., Allison, E.H. and Reynolds, J.D. 2007. Vulnerability of Cambodian water snakes: Initial assessment of the impact of hunting at Tonle Sap Lake. *Biological Conservation* 39(1): 401-414.
- ³⁸ *Bulbophyllum salmoneum* Aver. et J.J.Verm., sp. nov. in Leonid V. Averyanov. 2012. New Orchid Taxa and Records in the Flora of Vietnam. *Taiwania*, 57(2): 127-152, 2012 (June 2012).
- ³⁹ Sumontha, M., Pauwels, O.S.G., Kunya, K., Nitikul, A., Samphanthamit, P. & Grismer, L.L. (2012) A new forest-dwelling gecko from Phuket Island, Southern Thailand, related to *Cyrtodactylus macrotuberculatus* (Squamata: Gekkonidae). *Zootaxa* 3522: 61–72.
- ⁴⁰ Jäger, P. 2012. Revision of the genus *Sinopoda* Jäger 1999 in Laos with discovery of the first eyeless huntsman spider species. *Zootaxa* 3415: 37–57 (2012).
- ⁴¹ Senckenberg Research Institute and Natural History Museum (2012, August 9). *And then there was light! Discovery of the world's first eyeless huntsman spider*. ScienceDaily. Retrieved May 23, 2013, from <http://www.sciencedaily.com/~ /releases/2012/08/120809090431.htm>
- ⁴² http://www.senckenberg.de/root/index.php?page_id=5210&kid=2&id=2376
- ⁴³ Ibid.
- ⁴⁴ Ibid.
- ⁴⁵ <http://www.sci-news.com/biology/article00520.html>
- ⁴⁶ http://www.senckenberg.de/root/index.php?page_id=5210&kid=2&id=2376
- ⁴⁷ Montri Sumontha, Olivier S.G. Pauwels, Kirati Kunya, Chaiwat Limlikhitaksorn, Sirichai Ruksue, Apirat Taokratok, Michel Ansermet & Lawan Chanhom 2012. A New Species Of Parachute Gecko (Squamata: Gekkonidae: Genus Ptychozoon) From Kaeng Krachan National Park, Western Thailand . *Zootaxa* 3513 68-78.
- ⁴⁸ <http://squamates.blogspot.com/2012/10/a-new-thai-parachute-gecko.html>
- ⁴⁹ Ibid.
- ⁵⁰ Ibid.
- ⁵¹ Nguyen, V.H., T.H.T. Nguyen and T.D.P. Nguyen, 2012. A new fish species of the walking snakehead group, the genus *Channa* (Channidae, Perciformes) in Vietnam. *Vietnam J. Biol.* 34(2):145-157.
- ⁵² [http://en.wikipedia.org/wiki/Snakehead_\(fish\)](http://en.wikipedia.org/wiki/Snakehead_(fish))
- ⁵³ *Fishzilla: Snakehead Invasion*. National Geographic, 10 August 2011.
- ⁵⁴ [http://en.wikipedia.org/wiki/Snakehead_\(fish\)](http://en.wikipedia.org/wiki/Snakehead_(fish))
- ⁵⁵ Ibid.
- ⁵⁶ Vogel, Gernot; Johan Van Rooijen & Sjon Hauser 2012. A new species of *Dendrelaphis* Boulenger, 1890 (Squamata: Colubridae) from Thailand and Myanmar. *Zootaxa* 3392: 35–46.
- ⁵⁷ Ibid.
- ⁵⁸ <http://www.ecologyasia.com/verts/snakes/sawtooth-necked-bronzeback.htm>
- ⁵⁹ <http://www.ecologyasia.com/verts/snakes/sawtooth-necked-bronzeback.htm>

Greater Mekong in numbers

100%
RECYCLED



Today the Greater Mekong region is an integral part of one of the top five most threatened biodiversity hotspots in the world

367

new species were discovered between 2012 and 2013



60 million

The Lower Mekong River provides food and livelihoods for 60 million people

850+

freshwater fish species live in the Mekong and its tributaries



Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

www.panda.org/greatermekong