WWF NEW SPECIES REPORT

GREATER MEKONG
2018-2019

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FOREWORD

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The Greater Mekong region, spanning Cambodia, Laos, Myanmar, Thailand and Viet Nam, is one of the most biologically diverse places on earth, home to iconic species such as tigers, elephants and Irrawaddy dolphins and countless more. Scientists continue to discover new species in the region and throughout 2018 and 2019, they found 110 new species of plants and animals, not including insects, fungi and mollusks.

Some of these species have never been seen before, discovered during expeditions through the Mekong River basin and deep within the mountains on the Myanmar - Thailand border. Others have simply been waiting to be discovered, long known by local villagers or hidden in museum collections.

Each new species is a miracle still hidden within nature. They are a reminder to us of nature's resilience as species adapt to different environmental conditions and they are a wake-up call for us to halt the current decline of nature. Healthy thriving nature underpins our survival and we must work to restore and safeguard nature for the future of our people and our planet.

As we emerge from the COVID-19 crisis, let us see it as an opportunity to chart a new course, where we prosper and grow while repairing our relationship with nature. We have a duty to build a safe, healthy future for people, this planet and the species out there we haven't even met yet.

ALISTAIR MONUMENT
CONSERVATION IMPACT DIRECTOR, ASIA PACIFIC
WWF INTERNATIONAL

"Each new species is a miracle still hidden within nature"

INTRO

METHODS TO SPECIES DISCOVERY

01 PHYSICAL ENCOUNTER

Scientists find new species everywhere, with discoveries increasing due to increased access to remote areas. When scientists recognize a new species, they collect a specimen and bring it back to study at their lab.

02 SPECIES REVISION

Besides spotting a new species in the wild, scientists also discover new species by studying old ones. Advances in science, such as the microscope and DNA testing technology, have enabled them to accurately determine how closely species are related to each other, leading to revisions of original classifications.

03 MORPHOLOGY AND GENETIC ANALYSIS

With their specimen, scientists make comprehensive observations of their species' morphology, or what it looks like, measuring everything down to the smallest detail.

For genetic analysis, molecular technology is needed. Scientists extract the DNA from the specimen and feed it into a computer which analyses the genetic data. This data is then added to other software for phylogenetic analysis, which tells them the evolutionary relationships between the new species and others in the genus, resulting in a family tree.

INTERESTING FACTS

It exists in the Mekong, Mae Klong and Tapi rivers, but not the Chao Phraya river in between-- how did it travel across?

LOCATION

MEKONG, MAE KLONG AND TAPI RIVER BASINS

ACANTOPSIS BRUINEN

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DISCOVERED BY

David Boyd, Lawrence Page - University of Florida

So Nam, Thach Phanara - Fisheries Administration in Phnom Penh, Cambodia

ACANTOPSIS BRUINEN - ZACHARY RANDALL

KEY FEATURES

- Unique colour patterns: single row of spots on top of head
- Three “labial barbels”, the fleshy filaments growing from its mouth
- Longest heads among its Acantopsis cousins

Discovery method: Species revision

Common name: Horseface loach

Name basis: After the Bruinen river, from Lord of the Rings

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“The most morphologically distinct and recognizable horseface loach in the Mekong.”

David Boyd

TYLOTOTRITON NGARSUENSIS

"Even in populated areas, new species can be found and in doing so underscores the need for field work so we can more accurately catalog the biodiversity of this planet."

Lee Grismer

Discovery method:
Found as researchers were studying frogs
Common name: Ywangan crocodile newt
Name basis: Reference to Ngar Su Village

CITATIONS - SEE INDEX

DISCOVERED BY

L. Lee Grismer, Marta S. Grismer - La Sierra University

Perry L. Wood Jr. - University of Kansas

Evan S.H. Quah - Universiti Sains Malaysia

Robert E. Espinoza - California State University

Matthew L. Murdoch - Villanova University, USA

Aung Lin - Fauna and Flora International, Myanmar

INTERESTING FACTS

It is so commonly found that villagers have long known about it.

THREATS

Habitat destruction, harvest for the illegal pet trade and medicinal trade

SHAN STATE, MYANMAR

KEY FEATURES

- Almost solid black - its cousins have bright orange coloration
- Shorter head and larger size than other species
- Appears to breed later in the year than most other species

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INTERESTING FACTS

Often mistaken as the Chinese softshell turtle.

THREATS

Competition from native species.

NORTH-CENTRAL VIET NAM AND HAINAN ISLAND, CHINA

> "Pelodiscus variegatus is a familiar, yet poorly known species."
>
> **Balázs Farkas**

DISCOVERED BY

Balázs Farkas *Gyúró*, Hungary (unaffiliated)

Thomas Ziegler Cologne Zoo and Cologne University, Germany

Cuong e Pham Viet Nam Academy of Science and Technology

An Vinh Ong Vinh University, Viet Nam

Uwe Fritz Museum of Zoology, Dresden, Germany

PELODISCUSVARIEGATUS

Discovery method: Species revision
Common name: Spotted softshell turtle
Name basis: Variegatus derived from Latin for "spotted"

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PELODISCUS VARIEGATUS - THOMAS ZIEGLER

KEY FEATURES

- Large dark spots on underbelly shell

ROHDEA HARDERI

Discovery method:
Found while researchers were exploring Viet Nam
Name basis: Honours Dr. Daniel Harder, founder of the Missouri Botanical Garden's Viet Nam Botanical Conservation Program

CITATIONS - SEE INDEX

DISCOVERED BY

Noriyuki Tanaka - Japan (unaffiliated)

Dylan P. Hannon, Sean C. Lahmeyer - Huntington Botanical Gardens, USA

Daniel K. Harder - California Academy of Sciences

Leonid V. Averyanov - Russian Academy of Sciences

INTERESTING FACTS

It is "self-compatible", or able to fertilize itself.

THREATS

Habitat destruction from timber extraction and agricultural activities.

NORTHWESTERN VIET NAM

KEY FEATURES

- Flowers bloom from green to yellow, Bears smooth, red or orange fruits

CALAMARIA DOMINICI

Discovery method: Found on a forest path
Common name: Dominic's reed snake
Name basis: Honoring Dominic Scriven, founder of Wildlife at Risk (WAR)

CITATIONS - SEE INDEX

DISCOVERED BY

Thomas Ziegler - Cologne Zoological Garden and University of Cologne, Germany

Vu A. Tran - Wildlife At Risk, Viet Nam

Randall D. Babb, Thomas R. Jones - Arizona Game and Fish Department

Paul E. Moler - Florida Fish and Wildlife **Conservation Commission**

Robert W. Van Devender - Appalachian State University, USA

Truong Q. Nguyen - Viet Nam Academy of Science and TechnologySciences

@CALAMARIA DOMINICI - THOMAS ZIEGLER

INTERESTING FACTS

Viet Nam is home to 16% of all 60 recognized species of reed snakes.

THREATS

Habitat destruction, endemicity (found only in one location), prone to illegal pet trade.

CENTRAL HIGHLANDS OF VIET NAM (ENDEMIC)

@NGUYEN QUANG NGOC TONKIN / SHUTTERSTOCK.COM

KEY FEATURES

- Irregular yellow and purplish-black spots

LEPTOBRACHIUM TENASSERIMENSE

Discovery method: Species revision
(with new specimen collected)
Common name: Tenasserim spadefoot toad”
Name basis: Derived from “Tenasserim”, historical name of the 1,700 km long mountain chain between Myanmar, Thailand and Malaysia

CITATIONS - SEE INDEX

DISCOVERED BY

Parinya Pawangkhanant, Chatmongkon Suwannapoom - University of Phayao, Thailand

Nikolay A. Poyarkov, Tang Van Duong - Moscow State University

Mali Naiduangchan - Rabbit in the Moon Foundation

INTERESTING FACTS

Breeding males lack spines on their fingers, breast and upper lip.

THREATS

Habitat destruction.

KEY FEATURES

- Black and bluish-white spotted pattern covering throat, chest, belly and underside of limbs
- black and turquoise colored iris
- Thin, dark stripe on the corners of eyes
- Distinct dark markings on head and upper surface
- One very long finger (out of four)
- Unique stripes on fore and hind legs

CEROPEGIA FOETIDIFLORA

Discovery method: Found

Name basis: Ceropegia derived from Latin for “fountain of wax”; foetidiflora alludes to the flower’s strong musty smell

CITATIONS - SEE INDEX

DISCOVERED BY

Manit Kidyoo - Chulalongkorn University, Thailand

INTERESTING FACTS

Looks like a claw of an arcade toy machine.

THREATS

Endemicity.

BUENG KAN, NORTHEASTERN THAILAND (ENDEMIC)

KEY FEATURES

- Perennial herb that grows in sandy soil and evergreen forest hills
- Narrow elliptic leaves and flowers
- Hairy surface
- Strong musty smell

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CREPIDIUM FALCIFOLIUM

Discovery method: Found on a limestone hill

Name basis: Refers to hooked leaf shape

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PHOTOAVENTURE STUDIO / SHUTTERSTOCK.COM

DISCOVERED BY

Anchalee Nuammee, Tosak Seelanan - Chulalongkorn University, Thailand

Henrik Æ. Pedersen - University of Copenhagen

CREPIDIUM FALCIFOLIUM - WINS BUDDHAWONG

INTERESTING FACTS

It has been collected before, but was identified as the *Crepidium godefroyi*.

THREATS

Only two populations know, little information about distribution and abundance.

NAKHON SRI THAMMARAT, THAILAND

KEY FEATURES

- Has curved green leaf that looks like a sickle
- Grows in humus-rich soil in shaded areas in mixed deciduous forest on limestone hills

RHYACOSCHISTURA LARRECI

Discovery method: Found in a river drainage
Name basis: Rhyacoschistura derived from Greek for “torrent”, “divided” and “tail”,; larreci named after the Living Aquatic Resources Research Center (LARReC)

CITATIONS - SEE INDEX

DISCOVERED BY

Maurice Kottelat -
National University of Singapore

RHYACOSCHISTURA LARRECI - MAURICE KOTTELAT

INTERESTING FACTS

Its air bladder is split in two halves.

THREATS

Only two populations know, little information about distribution and abundance.

MEKONG DRAINAGE, XAYABURI, LAOS

KEY FEATURES

- Has a pelvic fin and a bony flap beneath the eye
- Flank has numerous narrow slanted bars, very irregularly organised and shaped

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CYRTODACTYLUS MEERSI

Discovery method: Species revision (with new specimen collected)
Common name: Bago Yoma bent-toed gecko
Name basis: Named in honor of Mr. John Meers for his donations to Fauna & Flora International

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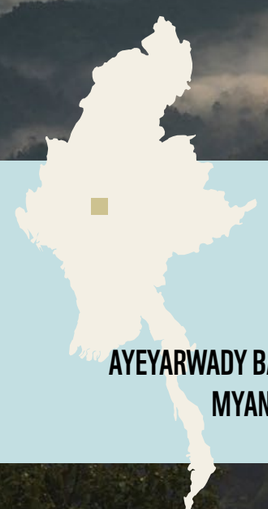
INTERESTING FACTS

There are approximately 1,777 species of geckos in the world.

THREATS

Habitat destruction from agricultural land conversion.



AYEYARWADY BASIN, MYANMAR

@VIEWFOTO STUDIO / SHUTTERSTOCK.COM

DISCOVERED BY

L. Lee Grismer, Marta S. Grismer - La Sierra University

Perry L. Wood Jr., Mark W. Herr, Rafe M. Brown - University of Kansas

Evan S.H. Quah - Universiti Sains Malaysia

Matthew L. Murdoch - Villanova University, USA

Robert E. Espinoza - California State University

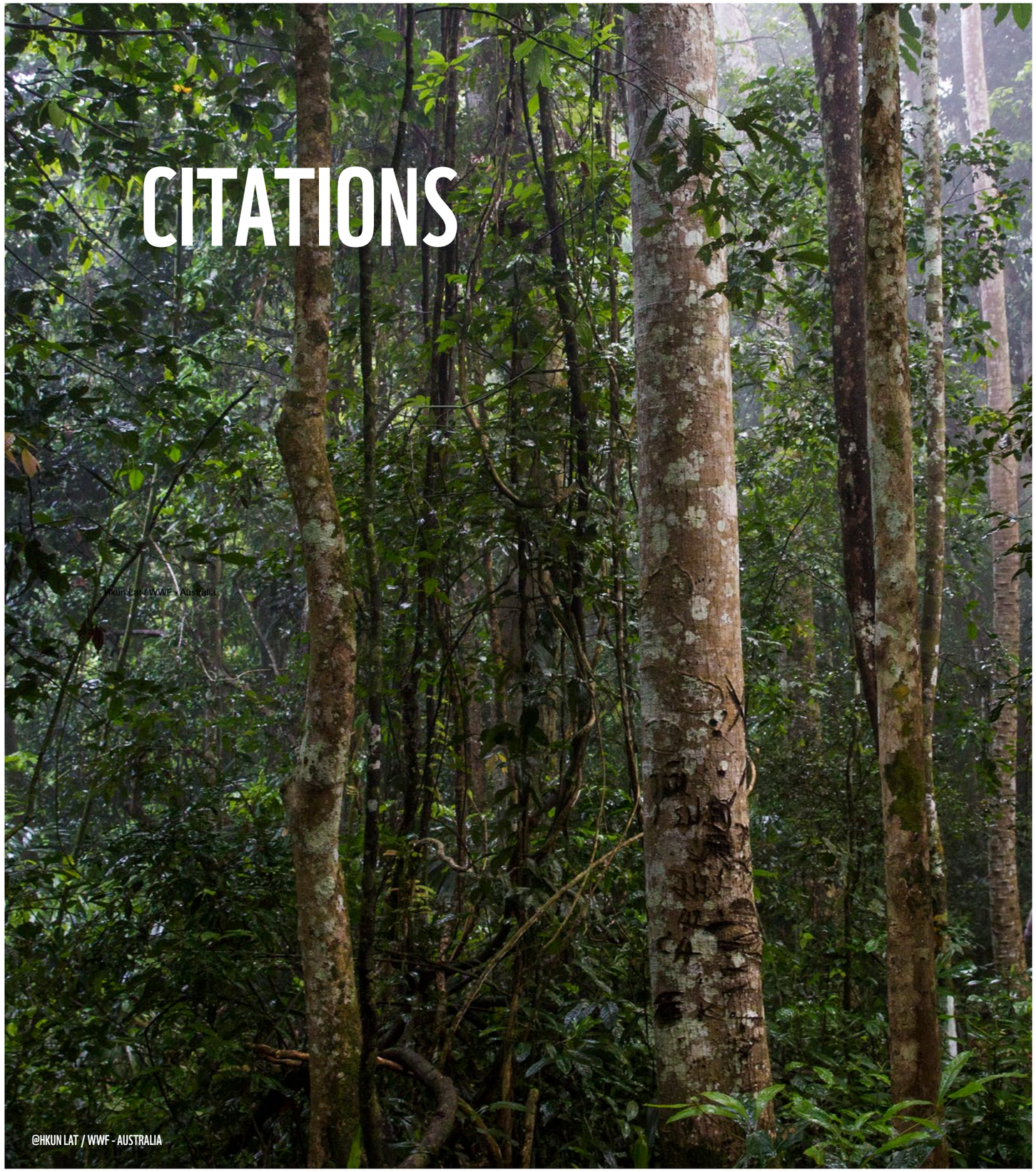
Aung Lin - Fauna and Flora International, Myanmar

CYRTODACTYLUS MEERSI - LEE L. GRISMER

KEY FEATURES

- Top of the head and body has dark-brown spots, those on body have a yellow edges
- Straw-colored head, body, limbs and tail
- Yellowish bands on tail

CITATIONS



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