



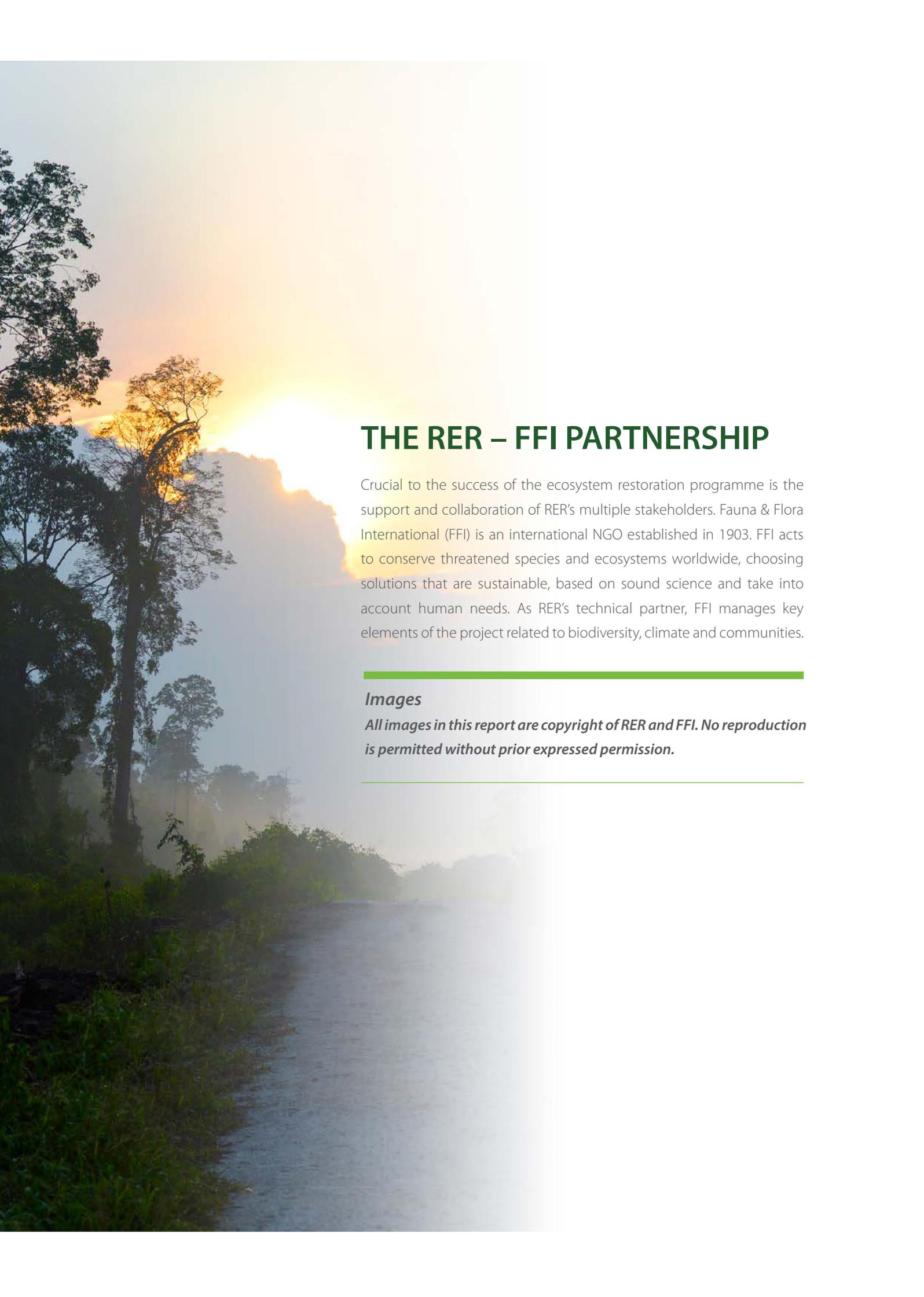
# Biodiversity of the Kampar Peninsula



**Summary Report**

November 2016, RER Publication Series No. 1





## THE RER – FFI PARTNERSHIP

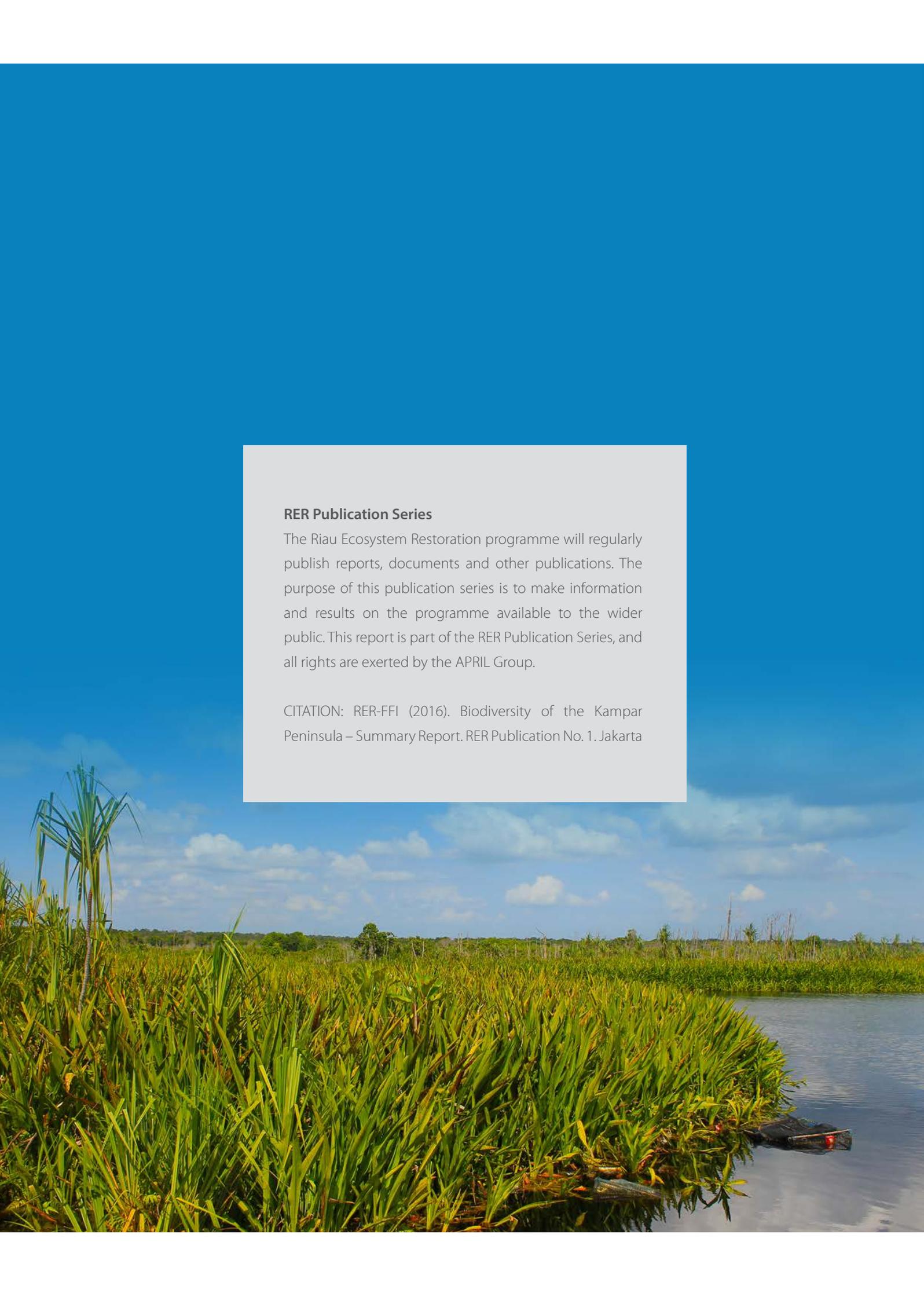
Crucial to the success of the ecosystem restoration programme is the support and collaboration of RER's multiple stakeholders. Fauna & Flora International (FFI) is an international NGO established in 1903. FFI acts to conserve threatened species and ecosystems worldwide, choosing solutions that are sustainable, based on sound science and take into account human needs. As RER's technical partner, FFI manages key elements of the project related to biodiversity, climate and communities.

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### **RER Publication Series**

The Riau Ecosystem Restoration programme will regularly publish reports, documents and other publications. The purpose of this publication series is to make information and results on the programme available to the wider public. This report is part of the RER Publication Series, and all rights are exerted by the APRIL Group.

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Serkap river. Credit: Prayitno Goenarto

# FOREWORD

The Restorasi Ekosistem Riau (RER) programme in Riau province, Sumatra is the largest peatland restoration programme to be funded by the private sector in Southeast Asia, encompassing a total area of 149,807 hectares. RER is comprised of five former logging concessions – four on the Kampar peninsula and one on Padang island – that are now managed as ecosystem restoration concessions under licence from the Indonesian Ministry of Environment and Forestry. Due to Kampar peninsula's and Padang island's isolated location in central Sumatra and status as a production forest area, few studies have documented their biodiversity value until now.

This report focuses on establishing a biodiversity baseline for the RER concessions on the Kampar peninsula. Finding, watching, photographing, identifying and reporting on the plant and animal species in an area are fundamental to understanding how an ecosystem functions and what management steps are needed for its conservation. Within this extraordinary landscape, RER's partner, Fauna & Flora International (FFI), has thus far identified 220 species of bird, 152 species of plant, 72 mammals, and 75 amphibians and reptiles. The initial survey results hint at the enormous potential for further interesting discoveries.

Regrettably, Sumatra's fragile and unique peat swamp ecosystems have long been exposed to numerous threats in the shape of uncontrolled drainage, deforestation and forest encroachment due to agricultural expansion. Encroachment is often compounded by other problems, such as illegal logging, 'slash-and-burn' land clearance, and wildlife poaching. In the case of the Kampar peninsula, these problems were becoming entrenched due to economic and political interests associated with the use of forest resources until RER began assuming management responsibility in 2013. Today, as we move towards an integrated landscape approach that combines production with conservation, restoration and community empowerment, the Kampar peninsula is being responsibly managed, in an effort to protect natural capital and the biodiversity and ecosystem services on which we all depend.

This Summary Report is the first in a planned series of reports that will be produced as RER's peatland restoration programme matures and more technical data is gathered by RER partners, scientists and other related stakeholders. We hope that this report will reassure readers that through innovative, collaborative and science-based efforts that go beyond protection and production, wise-use management of a peatland landscape can be achieved.

Sincerely,

**Dr Tony Whitten**

Fauna & Flora International  
Regional Director, Asia-Pacific

## ACKNOWLEDGEMENTS

Peat swamp forest is a unique ecosystem that is most extensive in Southeast Asia, yet its diversity value remains poorly understood. These forests contain distinct plant communities, provide habitat for a wide array of animals, and are important for the conservation of threatened species. The information presented here is the result of a phenomenal effort by the FFI Indonesia Programme field survey team. They endured one of the most physically challenging and inhospitable environments on this planet, the peat swamp forests of Sumatra. Their untiring efforts, tenacity and sheer commitment to this task deserve deep appreciation and admiration.

This report is dedicated to each and every member of the field teams.

Achmad Alifianto, Achmad Ridha Junaid, Ade Kusuma Sumantri, Ady Kristanto, Ahmad Dani, Alya Faryanti Purbahapsari, Andi Arya Fajar Art C., Andri Irawan, Arief Hamidi, Donny Gunaryadi, Eka Kurnia P., Fazlurrahman Shomat, Ganjar Cahyadi, Husnul Fikri, Irene Margareth R.P., Mahendra Primajati, Nugraha Putra Maulana, Ripin, Ryan Avriandy, Safrina Ayu, Trisnawati, Sephy Noerfahmy.



A close-up photograph of a Black-and-Yellow Broadbill bird perched on a dark brown tree branch. The bird has a black head with a prominent yellow ring around its eye, a bright blue-green bill, and a pinkish-red breast. Its wings and tail are black with yellow and white markings. The background is a soft-focus green forest.

## REPORT OBJECTIVES

This first-ever species inventory of the peat swamp forests of the Kampar peninsula is conducted under the Riau Ecosystem Restoration Programme (RER). Established by Asia Pacific Resources International Limited (APRIL) in 2013, RER's multi-year programme uses an integrated landscape-level approach to protect, assess, restore and manage the Kampar peninsula. The primary aim of RER is to restore previously degraded peatland forests and generate multiple ecosystem benefits through broad stakeholder and community collaboration.

The aim of this report is to **present a summary of the first documented inventory of the species biodiversity of the RER concessions** on the Kampar peninsula, one of the last remaining peat swamp forests in eastern Sumatra. **This terrestrial biodiversity baseline** (plants, mammals, birds, amphibians and reptiles) will inform future management, restoration and monitoring efforts. This Summary Report presents only the findings from the inventory of species. It does not describe the habitat types of the Kampar peninsula.

Black-and-Yellow Broadbill.  
Credit: RER/FFI

# EXECUTIVE SUMMARY

The species inventory of the Kampar peninsula was conducted from May to December 2015. It covered woody and non-woody plant species, and mammal, bird, reptile and amphibian species. Aquatic animals and plants are not covered in this inventory.

The inventory was conducted by FFI field teams, and covered three of four Ecosystem Restoration Concessions (ERCs) licensed to APRIL in the Kampar peninsula by the Indonesian Ministry of Environment and Forestry. The concessions included in this Report are PT Gemilang Cipta Nusantara, PT Sinar Mutiara Nusantara, and PT The Best One UniTimber. PT Global Alam Nusantara will be inventoried in 2017.

The total area under the Riau Ecosystem Restoration (RER) programme is 150,000 ha, 130,000 ha of which is on the Kampar peninsula, and 20,000 ha on Padang Island. This inventory covers 92,507 ha, approximately 70% of the RER area on the Kampar peninsula.

Five Critically Endangered species are present within the study area: two tree species (both Dipterocarpaceae) and two mammals were recorded during these surveys, and one reptile was recorded by Tropenbos.

The Light Red Meranti, or Meranti Bakau *Shorea platycarpa*, is confined to peat swamp forests, is limited to the Malay peninsula and Sumatra, and is a commercial timber species. The Resak Paya *Vatica*

*teysmanniana* is also confined to peat swamp forests, and is endemic to Sumatra. It is also commercially harvested. Both are listed as Critically Endangered due to habitat loss.

The Sumatran Tiger *Panthera tigris sumatrae* and the Sunda Pangolin *Manis javanica* are listed as Critically Endangered due to habitat loss and trade in body parts. The Sumatran Tiger is found only on Sumatra. The Painted Terrapin *Batagur borneoensis* uses both freshwater and estuarine habitats, nesting on the coast. It is listed as Critically Endangered due to egg harvesting and loss of its freshwater habitats.

The key findings of the inventory are:

- The peat swamp forests of the Kampar peninsula support typical and representative terrestrial plant and animal species of this ecosystem.
- Three mega-fauna species of Sumatra - Elephant, Rhinoceros and Tapir - were not recorded. Only the Tiger is present.
- 44 species present are listed on the IUCN Red List as Critically Endangered, Endangered or Vulnerable.
- The majority of threatened species are closely associated, or completely confined to, mixed swamp forest.
- The Kampar peninsula is used by migratory birds.
- New distributional records were obtained for Bonaparte's Nightjar *Caprimulgus concretus*, Black Partridge *Melanoperdix nigra* and *Hylarana rawa*, a recently described endemic frog.

IUCN RED LIST SPECIES IN RER				
	Total	CR	EN	VU
Plants	152	2	3	3
Mammals	70	2	4	10
Birds	220	0	3	7
Amphibians/Reptiles	107	1	4	5
<b>Total</b>	<b>549</b>	<b>5</b>	<b>14</b>	<b>25</b>

CR: Critically Endangered, EN: Endangered, VU: Vulnerable

# INTRODUCTION

APRIL has made a US\$100 million commitment to support biodiversity conservation and community development through Ecosystem Restoration licenses. The RER programme aims to revive the landscape, secure sustainable livelihoods for forest-dependent communities, and create a landscape model to help safeguard two peat forest regions in Riau province: the Kampar peninsula and Pulau Padang.

RER aims to protect and restore a 130,000-ha area of peat swamp forest on the Kampar peninsula, one of the largest remaining areas of peat swamp forest in Riau province, central Sumatra

Together, these regions will comprise 150,000 ha of Ecological Restoration licences. This document refers to biodiversity baseline surveys carried out on the Kampar peninsula only.

RER aims to protect and restore a 130,000-ha area of peat swamp forest on the Kampar peninsula, one of the largest remaining areas of peat swamp forest in Riau province, on the east coast of Sumatra. This programme forms part of a response to the initiative launched by Indonesia's Ministry of Environment and Forestry to protect 1.7 million hectares of Indonesia's forest through issuance of restoration licences. The RER programme is responsible for managing the restoration of the Kampar peat swamp forest over a 60-year period.

The Kampar peninsula has been largely undocumented by scientists, and little is known about the ecology and

biological diversity of its peat swamp forest, rivers and lakes. A comprehensive understanding of its ecological character is a prerequisite to managing the peninsula in the best possible and pragmatic way. Therefore, the first task was to conduct extensive surveys to gather baseline data on the area.

Fauna & Flora International (FFI) formed a partnership with RER to develop its management framework and to advise on policies and practices for the biodiversity assessment, climate issues and community liaison. In 2015, FFI field teams began extensive surveys in three RER Ecosystem Restoration Concessions (ERCs). The surveys documented terrestrial plant, mammal, bird, amphibian and reptile species. Aquatic species will be covered separately.



# OVERVIEW

The Kampar peninsula is bordered to the south by the Kampar river, and to the north by the Siak river and Selat Panjang. To the east these two rivers join together, creating the wedge-shaped peninsula that is referred to as the Kampar peninsula. Its western boundary is where the peat deposits end and mineral soils begin, and the land rises in elevation into the foothills of the Barisan mountain range. The city of Pekanbaru, Capital of Riau province, is situated along this western boundary. To the east of the peninsula are large indistinct islands, which are part of a fragmented coastal deltaic formation.

The peninsula is dominated by peat swamp forests, extending some 70 km north-south at its widest to the west, and 110 km west-east from the dryland western boundary to the meeting of the Kampar and Siak rivers. Within this area are two peat domes, roughly centrally positioned, and several lakes. The largest lake is 8 km long and 2 km wide. From these lakes, five meandering rivers flow away from the centre of the peninsula to Selat Panjang in the north, and the Kampar river to the south. These are the major river systems of the Kampar peninsula. There

are numerous smaller water channels also flowing off the raised peat deposits, but most are small overgrown channels, non-navigable and difficult to discern on maps.

Some of the larger rivers have natural and human-induced forest openings where water accumulates during high rainfall periods. The openings were caused by vegetation removal from past illegal loggers and more recently fires used by fisherman to improve access.

The openings along these rivers create unique habitats and have contributed to the species diversity of the peninsula over time.

There are four protected areas within the peninsula: three Game Reserves (Tasik Belat, Tasik Metas, Tasik Serkap) and Zamrud National Park, which together total 45,000 ha. The remaining peat swamp forests on the Kampar peninsula are virtually enclosed by a ring of fibre plantations (primarily *Acacia crassicarpa*). The three ERCs licensed to APRIL that are described in this Report constitute 92,507 ha within this peninsula.



Kampar Peninsula peat swamp forest. Credit: Mahendra Primajati/FFI



Location of four RER concessions on Kampar Peninsula, Riau

**RER'S FOUR ECOSYSTEM RESTORATION CONCESSION (ERC) LICENCES ON KAMPAR PENINSULA**

Gemilang Cipta Nusantara (GCN)	20,265ha
Sinar Mutiara Nusantara (SMN)	32,830ha
The Best One Unitimber (TBOT)	39,412ha
Global Alam Nusantara (GAN)	36,850ha

# METHODOLOGIES

The inventory was conducted by deploying survey teams, who established field camps in the forest. A set of 32 transects and 220 camera trap stations were established across the three ERC concessions. There were five survey teams, covering plants, mammals,

birds, and amphibians and reptiles. Surveys took place between May and December 2015.

The individual methodologies employed are described briefly below.

## Plant Surveys

Plants were recorded from plots positioned along the set transects. In each plot, plant and tree species were recorded, together with (for tree species) diameter at breast height, total height and height of first branch. Leaves, twigs, fruit and flowers of each tree species were collected for herbarium specimens. The vegetation plots were permanently marked for future monitoring.

## Mammal surveys

Mammals were recorded from visual sightings and records of tracks and signs. Daily surveys were conducted along the transects distributed between the three ERCs. Live traps were used to survey small terrestrial mammals and bats. Between March and November 2015, a total of 350 camera traps were set across the three concessions. Camera traps were set up systematically in 2 x 2 km grid cells using both single and paired setting methods.

## Bird surveys

The team carried out surveys along 31 transects (due to logistical constraints one transect was not surveyed). The surveys used a number of techniques to record birds, both by sight and by their calls. Bird species were also recorded on camera traps located inside the concession areas, and from incidental observations made outside the concessions.

## Reptile and amphibian surveys

Amphibians and reptiles were recorded from visual sightings made along the set transects. Surveys were conducted in the morning and evening for 18-30 days in each concession.



Setting a camera trap to record the more elusive wildlife of the Kampar peat swamp forest.  
Credit: Safrina Ayu Trisnawati/FFI

# PLANTS

## 152 species were recorded

### PLANT FAMILIES AND THEIR ABUNDANCE

The most abundant plant families recorded were Myrtaceae and Dipterocarpaceae, followed by Sapotaceae, Anacardiaceae, and Pandanaceae. Myrtaceae was abundant both in species (nine *Syzygium* and one *Tristaniopsis* sp.) and in number of individuals.

Dipterocarpaceae was represented by six species (three *Shorea*, two *Vatica* and one *Anisoptera*), but the high abundance of *Shorea teysmanniana* and *Shorea uliginosa* made this family very dominant in the forests. Other common species are *Camptosperma coriaceum*, *Palaquium sumatranum*, *Austrobuxus nitidus*, *Stemonurus secundiflorus* and Mengkuang (*Pandanus* sp.).

### DOMINANT AND SPECIALLY ADAPTED TREES

Big, mature trees with diameter at breast height above 30 cm were common; the maximum diameter recorded was 90 cm. The species recorded are common to peat swamp forests and include: *Shorea teysmanniana*, *Shorea uliginosa*, *Shorea platycarpa*, *Vatica teysmanniana*, *Gonystylus bancanus*, *Myristica lowiiiana*, *Parastemon urophyllus*, *Diospyros siamang* and *Combretocarpus rotundatus*. Many of these species have adaptations to living in the waterlogged environment of peat swamp forest, such as buttress roots, aerial roots, and shallow but strong and widespread root systems.

### DOMINANT NON-TREE SPECIES

In addition to trees, 4 species of orchid were identified: *Bulbophyllum vaginatum*, *Dendrobium* sp. and *Phaius* sp. Pitcher plants were present, including the two most common peat swamp forest species: *Nepenthes ampullaria* and *N. rafflesiana*. Three species of palm were recorded: the sealing wax palm *Cyrtostachys renda*, which is common in cultivation, Palas *Licuala spinosa* and Asam Paya/Kelubi *Eleiodoxa conferta*. These palms are often found growing in the understory, mainly in areas close to streams.



*Vatica teysmanniana*.  
Credit: Arief Hamidi/FFI



Stilt-root of Suntai,  
*Palaquium sumatranum*  
Credit: Arief Hamidi/FFI



*Nepenthes rafflesiana*  
Credit: Eka Kurnia P./FFI

### CONSERVATION SIGNIFICANCE

Eight of the plant species recorded are globally threatened. Two are listed as Critically Endangered, three Endangered and three Vulnerable. *Shorea platycarpa* is a tree restricted to the freshwater swamp forests on both sides of the Straits of Malacca. Its status of Critically Endangered is because of the almost complete loss of freshwater swamp forest in Peninsular Malaysia and Sumatra. These surveys found *S. platycarpa* to be confined to mixed swamp forest very close to streams. These riparian areas are also the most threatened from cutting of wood for local use. The RER concessions may represent one of the last refuges for this species.

*Vatica teysmanniana* is endemic to the peat swamp forests of eastern Sumatra. It is also known from Jambi province and Bangka. Little information is available on this species, and it is listed as Critically Endangered because of widespread loss of its habitat.

Like the two species above, the other six Endangered and Vulnerable species are all peat swamp forest specialists, and do not occur in any other habitat. Only *Anisoptera marginata* is known to occur outside peat swamp forests, on tropical heath forests. *Combretocarpus rotundatus* is confined to peat swamp forests of Peninsular Malaysia, Sumatra and Borneo.

#### GLOBALLY THREATENED PLANTS IN RER

SPECIES	IUCN STATUS	NATIONAL STATUS
Meranti Bakau <i>Shorea platycarpa</i>	CR	
Resak Paya <i>Vatica teysmanniana</i>	CR	Endemic to Sumatra
Mersawa <i>Anisoptera marginata</i>	EN	
Meranti Bunga <i>Shorea teysmanniana</i>	EN	
Resak <i>Vatica pauciflora</i>	EN	
Perepat <i>Combretocarpus rotundatus</i>	VU	
Meranti Sarang Punai <i>Shorea uliginosa</i>	VU	
Ramin <i>Gonystylus bancanus</i>	VU	Protected

CR: Critically Endangered, EN: Endangered, VU: Vulnerable

# MAMMALS

## 70 species were recorded

### UNGULATES

At least two species of deer are present: Sambar Deer *Rusa unicolor*, Greater Oriental Chevrotain *Tragulus napu* and/or Lesser Oriental Chevrotain *Tragulus kanchil*. The Sambar is the largest and most restricted in its distribution, primarily occurring in mixed swamp forests and riparian areas. The two Chevrotains are more widespread, and may range across the entire peninsula.

### WILD PIG

The Bearded Pig *Sus barbatus* was the only species of pig recorded in the forest. Outside the forest in farmlands and secondary scrubland the Wild Pig *Sus scrofa* occurs. The occurrence of both species of pigs in close proximity is interesting, and worth further study. There is only one other locality (southern Malay peninsula) where both species overlap in range.

### RATS, SQUIRRELS, TREESHREWS & CIVETS

Forty-one small mammals were recorded: eleven species from the family Sciuridae (squirrels), five representatives from Tupaiidae (treeshrews), and eight Muridae (Rats). Two Water-shrew species were recorded (Soricidae). Six civet species (Viverridae) and one Mustelid (Mustelidae) were recorded, although no otters were recorded.

### CATS

This study confirmed the presence of five of Sumatra's six cat species on the Kampar peninsula. The five species recorded by camera traps were: Sumatran Tiger *Panthera tigris sumatrae*, Sunda Clouded Leopard *Neofelis diardi*, Marbled Cat *Pardofelis marmorata*, Leopard Cat *Prionailurus bengalensis* and Flat-headed Cat *Prionailurus planiceps*. Only Golden cat *Catopuma temminckii* was not recorded. The Sumatran Tiger and Flat-headed Cat were photographed in two and five locations respectively. An adult Clouded Leopard was filmed with cubs.

### LARGE MAMMALS

The three large mammals of Sumatra, Sumatran Elephant *Elephas maximus sumatranus*, Sumatran Rhinoceros *Dicerorhinus sumatrensis* and Malayan Tapir *Tapirus indicus* were not recorded. There is no historical record of elephant occurrence in the peat swamp forests of the Kampar peninsula. The remaining populations of Rhinoceros on Sumatra are confined to dryland and upland forests, and probably have not extended into peat swamp forests. No data exists for the occurrence of Tapir. Future surveys may reveal presence, as this region lies within the tapir's known range on Sumatra, and it is found in peat swamp forests elsewhere. The Malayan Sunbear *Helarctos malayanus* was recorded.



Chevrotain spp. Credit: Andri Irawan/FFI

## PRIMATES

Eight primate species were recorded. Three colobines were recorded: Silvered Langur *Trachypithecus cristatus*, Banded Surili *Presbytis femoralis percura* and Sumatran Surili *Presbytis melalophos mitrata*. Both cercopithecines – Long-tailed Macaque *Macaca fascicularis* and Pig-tailed Macaque *Macaca nemestrina* occur, and are apparently common and widespread. Two gibbons – Agile Gibbon *Hylobates agilis* and Siamang *Symphalangus syndactylus* – and Sunda Slow Loris *Nycticebus coucang* were also recorded.

## BATS

Fifteen bat species were recorded in total, twelve insectivorous. This family is perhaps under-recorded, and future surveys will undoubtedly add to the list. The Spotted-winged Fruit Bat *Balionycteris maculata* is one of the world's smallest fruit-bats, and feeds under the forest canopy. The Large Flying Fox *Pteropus vampyrus* is one of the largest fruitbats in the world, and forms large colonies, although no colonies were located during these surveys.

## CONSERVATION SIGNIFICANCE

Sixteen species (of the 70 recorded) are globally threatened, with two species listed as Critically Endangered: Sumatran Tiger and Sunda Pangolin. The two records of Sumatran Tiger were from mixed swamp forest, but locals report regular sightings from the forest fringe, farmlands and even close to villages. Determining the habitat use of tigers on the Kampar peninsula would be a conservation priority.

The three colobines are of conservation significance, with the Banded Surili confined to a very small area between the Rokan and Siak rivers on Sumatra and the Sumatran Surili endemic to Sumatra and listed as Endangered by IUCN. The Silvered Langur is confined to coastal habitats including mangroves, and is heavily traded on Sumatra.

The two gibbon species are both listed as Endangered, and under severe threat throughout their range. The Kampar peninsula may be one of the last refuges for the Siamang in Sumatra's lowlands. The Slow Loris is threatened by the pet trade, and has recently been transferred to Appendix I of CITES.

The Flat-headed Cat is restricted to peninsular Malaysia, Sumatra and Borneo, and is closely associated with wetlands. It is listed as Endangered by IUCN, due to the widespread loss of wetland habitat throughout the species' range. Five camera trap records from five localities on the Kampar peninsula in the space of a few months is greatly significant, as this elusive species is rarely detected.



Sumatran Tiger. Credit: RER/FFI



Sunda Slow Loris. Credit: Achmad Alifianto/FFI

### GLOBALLY THREATENED MAMMALS IN RER

SPECIES	IUCN STATUS	NATIONAL STATUS
Sunda Pangolin <i>Manis javanica</i>	CR	Protected
Sumatran Tiger <i>Panthera tigris sumatrae</i>	CR	Protected
Sumatran Surili <i>Presbytis melalophos</i>	EN	
Agile Gibbon <i>Hylobates agilis</i>	EN	Protected
Siamang <i>Symphalangus syndactylus</i>	EN	Protected
Flat-headed Cat <i>Prionailurus planiceps</i>	EN	Protected
Sunda Slow Loris <i>Nycticebus coucang</i>	VU	Protected
Pig-tailed Macaque <i>Macaca nemestrina</i>	VU	
Whitehead's Spiny Rat <i>Maxomys whiteheadi</i>	VU	
Rajah Spiny Rat <i>Maxomys rajah</i>	VU	
Sambar Deer <i>Rusa unicolor</i>	VU	Protected
Bearded Pig <i>Sus barbatus</i>	VU	
Malayan Sun Bear <i>Helarctos malayanus</i>	VU	Protected
Sunda Clouded Leopard <i>Neofelis diardi</i>	VU	Protected
Binturong <i>Arctictis binturong</i>	VU	Protected
Dark-tailed Tree Rat <i>Niveventer cremoriventer</i>	VU	

CR: Critically Endangered, EN: Endangered, VU: Vulnerable

# BIRDS

## 220 bird species were recorded

35% of Sumatra's bird species are represented on the Kampar peninsula. Twenty-six of these species were recorded from camera traps. 93% (205 species) are resident species. Fifteen migratory species were recorded, seven of which also have resident populations.

### STORKS

Three species of stork were recorded: Lesser Adjutant *Leptoptilos javanicus*, Milky Stork *Mycteria cinerea* and Storm's Stork *Ciconia stormi*. Adjutant and Milky storks are colonial nesting species, with the latter more often confined to coastal mangrove habitats. Storm's Stork frequently uses peat swamp forest as a foraging site. This survey is possibly the first to film this stork foraging on the forest floor.

### RAPTORS

Fifteen birds of prey were recorded, twelve from Accipitridae and three from Falconidae. Of note is Wallace's Hawk Eagle *Nisaetus nanus*, a lowland specialist species. Two of these birds of prey are migrants.

### PHEASANTS

Four pheasants were recorded. The camera-trap record of Black Partridge *Melanoperdix nigra* is the first record of this species from Riau province, and so represents a range extension for this species on Sumatra.

### CUCKOOS, MALKOHAS & COUCALS

Sixteen species from the family Cuculidae were recorded, the highest family representation in the area.

### NOCTURNAL BIRDS

Six owl species (Strigidae), four nightjars (Caprimulgidae) and four frogmouths (Podargidae) were recorded. Of note is Bonaparte's Nightjar *Caprimulgus concretus*, a lowland forest specialist, which is common throughout the area. This is the first record for this species in Riau province, and so represents a range extension on Sumatra.

### HORNBILLS

Six of Sumatra's ten species of hornbill occur in the Kampar peninsula.

### BULBULS

Twelve species of bulbuls were recorded. Of note is the Hook-billed Bulbul *Setornis criniger*, a species restricted to tropical heath and peat swamp forests on Sumatra and Borneo. The species is thought to rely on plants which grow on nutrient-poor acidic soils.

### BABLERS

Sixteen species of babblers were recorded.

### CONSERVATION SIGNIFICANCE

Of the ten globally threatened bird species recorded, three are listed as Endangered and seven as Vulnerable.

The bird species recorded on the Kampar peninsula appear to be representative of undisturbed peat swamp forest, with continued presence of peat swamp forest specialists such as Hook-billed Bulbul and Grey-breasted Babbler. Lowland specialist species are also present with Wallace's Hawk Eagle, Bonaparte's Nightjar, and Wrinkled Hornbill recorded. The presence of typical forest-floor lowland specialists like Black Partridge and Crestless Fireback in peat swamp forests is rare and additional field surveys are needed to clarify these species' current distributions and population statuses.

Two of the three Endangered species, Storm's Stork and White-winged Duck, are flagship species for peat swamp forest, particularly on Sumatra. The White-winged Duck *Asarcornis scutulata* has very characteristic plumage, and is a priority species for conservation action in Indonesia. Storm's stork is similarly rapidly declining due to habitat loss throughout its southeast Asian range, and Sumatran populations need urgent attention. The Milky Stork is a coastal species, and is thought to use the Kampar

peninsula opportunistically. Further investigation into this stork's presence in and use of peat swamp forests is warranted. A single migratory Arctic Warbler *Phylloscopus borealis* was recorded. Migrants from the family Sylviidae are well represented in Southeast Asia, and further surveys during the northern winter months will undoubtedly add to this list. Three migratory flycatchers were recorded, all of which are strictly forest species. One species,

the Asian Brown Flycatcher *Muscicapa dauurica* has a small resident population, greatly augmented by more than one migrant race. Continuous monitoring will provide a more detailed picture of the use of peat swamp forests by migratory birds. The Straits of Malacca is a major crossing point for migratory birds (shorebirds, raptors and forest birds) from the Malay peninsula to Sumatra. The location of the Kampar peninsula along the Straits is potentially significant.

### GLOBALLY THREATENED BIRDS IN RER

SPECIES	IUCN STATUS	NATIONAL STATUS
Milky Stork <i>Mycteria cinerea</i>	EN	Protected
Storm's Stork <i>Ciconia stormi</i>	EN	Protected
White-winged Duck <i>Asarcornis scutulata</i>	EN	Protected
Lesser Adjutant <i>Leptoptilos javanicus</i>	VU	Protected
Wallace's Hawk Eagle <i>Nisaetus nanus</i>	VU	Protected
Black Partridge <i>Melanoperdix nigra</i>	VU	
Crestless Fireback <i>Lophura erythrophthalma</i>	VU	
Short-toed Coucal <i>Centropus rectunguis</i>	VU	
Bonaparte's Nightjar <i>Caprimulgus concretus</i>	VU	
Hook-billed Bulbul <i>Setornis criniger</i>	VU	

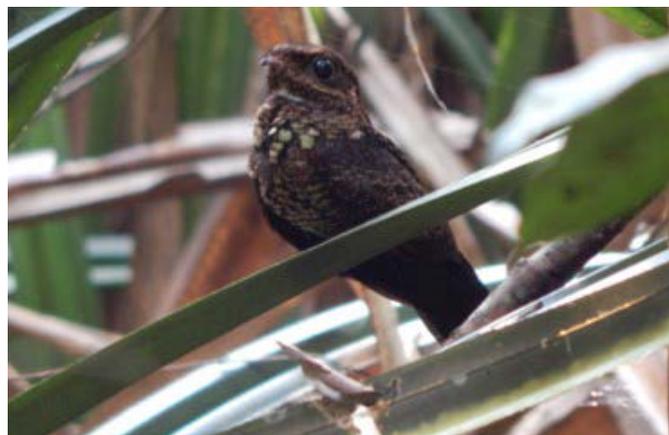
CR: Critically Endangered, EN: Endangered, VU: Vulnerable



Wallace's Hawk-eagle, Vulnerable.  
Credit: Achmad Ridha Junaid/FFI



Chestnut-bellied Malkoha.  
Credit: Achmad Ridha Junaid/FFI



Bonaparte's Nightjar, Vulnerable. Records made during FFI surveys are the first for this species in this region. Credit: Ganjar Cahyadi/FFI

# REPTILES & AMPHIBIANS

**22 species of amphibian and 85 species of reptile were recorded.**

## AMPHIBIANS

The amphibian fauna was not diverse. Of the 22 species recorded, two are listed as Near Threatened on the IUCN Red List: Painted Indonesian Treefrog *Theloderma pictum* and Lesser Swamp Frog *Limnonectes paramacrodon*. A recently described frog *Hylarana rawa* was recorded frequently during surveys. Together with *Hylarana parvaccola*, these are two Sumatran endemic species present on the Kampar peninsula.

## TURTLES & TERRAPINS

Ten species of turtle were recorded. The majority of records came from trapping by local villagers, indicating the high threat to this group of reptiles in the area. The Malaysian Giant Turtle *Orlitia borneensis* appears to be common in the Serkap and Sangar rivers. The Painted Terrapin *Batagur borneensis* was recorded from locals, and not seen on surveys.

## SNAKES

Forty-two species of snake were recorded: eighteen species from the Family Colubridae, three from Elapidae, four from Natricidae three from Pareatidae, three from Pythonidae, five from Viperidae, one from Acrochordidae and one from Xenopeltidae. The family Colubridae was the most represented family, while the families Homalopsidae and Lamprophiidae had two representatives each. Two *Trimeresurus* viper could not be identified to species level. Only the King Cobra *Ophiophagus hannah* is listed as a globally threatened species (Vulnerable).

## CROCODILIANS

Two species of crocodile were confirmed present: Estuarine Crocodile *Crocodylus porosus* and False Gharial *Tomistoma schlegelii*. The Estuarine Crocodile is present in brackish environments and occasionally heads into small rivers close to the sea. The False Gharial is confirmed as present at Serkap River.

## MONITOR LIZARDS

The presence of four species from Varanidae was confirmed, three recorded by FFI and one by LPPM IPB HCV Report in 2015. The monitor lizards are a species complex yet to be worked on by taxonomists, and will undoubtedly reveal many species in years to come.



*Hylarana parvaccola*, endemic to Sumatra.  
Credit: Ganjar Cahyadi/FFI

## CONSERVATION SIGNIFICANCE

Ten of the amphibian and reptile species identified in this survey are globally threatened, with one listed as Critically Endangered, four species as Endangered, and five species as Vulnerable. *Hylarana rawa* is a Sumatran endemic peat swamp frog first described in 2012 from the Giam-Siak Kecil Biosphere Reserve, some 140km northwest of Kampar. Frequent recordings during these surveys suggests that this species may have a wider distribution than previously thought. This small frog species is cryptic, but has a distinctive loud call, which was recorded for the first time during the survey.

Of the ten turtle species present, only Malaysian Giant Turtle and Painted Terrapin are officially protected in Indonesia. Large numbers of Malaysian Giant Turtle

were seen trapped by locals, and also accidentally caught in fishing nets. These turtles are consumed and sold locally. The Painted Terrapin is believed to be extinct in many parts of its range, hence its listing as Critically Endangered. The False Gharial is a highly vulnerable crocodilian, and the target of species action

plans to ensure its survival in the wild. There are very few known wild populations.

The presence of a number of globally threatened reptile species in the Kampar peninsula highlights the importance of this region for reptile conservation.



Amboina Box Turtle.  
Credit: Ganjar Cahyadi /FFI



False Gharial, Vulnerable.  
Credit: Ganjar Cahyadi/FFI

### GLOBALLY THREATENED AMPHIBIANS & REPTILES IN RER

SPECIES	IUCN STATUS	NATIONAL STATUS
Painted Terrapin <i>Batagur borneoensis</i>	CR	Protected
Spiny Turtle <i>Heosemys spinosa</i>	EN	
Malaysian Giant Turtle <i>Orlitia borneensis</i>	EN	Protected
Asian Giant Softshell Turtle <i>Pelochelys cantorii</i>	EN	
Asian Giant Tortoise <i>Manouria emys</i>	EN	
False Gharial <i>Tomistoma schlegelii</i>	VU	Protected
King Cobra <i>Ophiophagus hannah</i>	VU	
Asian Box Turtle <i>Cuora amboinensis</i>	VU	
Black March Turtle <i>Siebenrockiella crassicollis</i>	VU	
Asiatic Softshell Turtle <i>Amyda cartilaginea</i>	VU	

CR: Critically Endangered, EN: Endangered, VU: Vulnerable

# SUMMARY

## **SPECIES ASSEMBLAGES**

The animals and plants present were typical and representative of Sumatran peat swamp forests. Plant, mammal, bird, reptile and amphibian species assemblages recorded were consistent with what is currently known of this ecosystem in Sumatra and elsewhere in southeast Asia. The peat swamp forest ecosystem of the Kampar Peninsula therefore still exhibits a biologically diverse flora and fauna, despite the prevalent adverse impacts from human activities and incompatible land uses.

## **SUMATRA'S LARGE MAMMALS**

Three of Sumatra's mega-fauna were not found on the Kampar peninsula: Sumatran Elephant, Sumatran Rhinoceros and Malayan Tapir. Only the Sumatran Tiger was recorded. Elephant rarely use peat swamp habitats, but the Rhinoceros and Tapir do. This is the first inventory of this area, and future surveys may reveal their presence.

## **THREATENED SPECIES**

Forty-four species found during the surveys are listed in the IUCN Red List of Threatened Species as Critically Endangered, Endangered or Vulnerable. Many of these, and others, are protected under Indonesian Law. This emphasises the fact that RER's management of a major portion of the Kampar peninsula serves an important role of protecting globally threatened species, assisting Indonesia to meet its international commitments.

## **IMPORTANT HABITATS**

This summary report limits itself to results of the species inventory. The data on the habitat types present, and their relationship to species distribution, are not presented here but is a focus of future management and conservation efforts under the RER programme. One of the significant associations made is the relationship between the presence of mixed swamp forests on the Kampar peninsula, and the occurrence of globally threatened species. The majority of threatened species are closely associated, or completely confined to, mixed swamp forest.

## **MIGRATORY SPECIES**

Migratory species are an important component of Indonesia's bird fauna and the role of peat swamp forests as habitat for these species remains largely undocumented. The results of this survey suggest the peat swamp forests of central and eastern Sumatra are an important staging and wintering habitat for migratory species.

## **NEW FINDINGS**

The new findings emerging from these surveys highlight the importance of peat swamp forests in Indonesia, and regionally. They also inform the management of the area under the RER programme. These are new contributions to science, and to the understanding of species. This first inventory has produced new distributional records for Bonaparte's Nightjar, Black Partridge and *Hylarana rawa*, a recently described endemic frog.

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*Crucial to the success of  
the ecosystem restoration  
programme is the support  
and collaboration from  
RER's multiple stakeholders  
and partners.*

Serkap river. Credit: Brad Sanders





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