



WWF

REPORT

2019

DAWNA TENASSERIM:

THE LAND OF CATS

PROTECTING OUR FELINE NATURAL HERITAGE



EXECUTIVE SUMMARY



Tiger, leopard, clouded leopard - names that conjure up images of graceful, mysterious felines stalking prey in the world's most spectacular forests.

To scientists they are Felidae - and they live in every region of the world except for Antarctica and Australia. Amazingly, almost one fifth of the world's 36 cat species can be found in a landscape straddling Myanmar and Thailand - the Dawna Tenasserim. The landscape is home to at least 7 of the 11 felines found in Southeast Asia. However, these big cats that underpin the cultures, art and identities of many of the region's inhabitants are under threat. The 2019 Intergovernmental Panel for Biodiversity and Ecosystem Services detailed the shocking rate of biodiversity loss globally, and the risks to wildlife in tropical and sub-tropical areas especially. Saving the spectacular feline biodiversity of the Dawna Tenasserim demands concerted effort now.

In 1850, Francis Mason, an American naturalist visiting the 'Tenasserim' region of Myanmar (a part of the Dawna Tenasserim landscape) described, a land of "unimaginable beauty" with "tigers almost everywhere." So prevalent once was this big cat, that in 1903 shocked visitors to Yangon's famous Shwedagon Pagoda spotted a tigress crouching on its golden steps. Chaos ensued as monks fled the structure and British soldiers fumbled to kill the unwelcome visitor. Right up until 1931, tigers were so common that they were considered pests, and the government of Myanmar at the time even provided licenses and rewards for killing them. However, decades of rampant killing of tigers and other big cats have taken a major toll on their numbers. Populations have plummeted and in Myanmar in 2018, an official from the Ministry of Natural Resources and Environmental Conservation expressed concerns over whether tigers had become functionally extinct in the country. Thailand however has taken a somewhat different approach to its tigers and is increasingly recognized as a hub of tiger conservation in Southeast Asia.¹ However other felines have been and continue to be hunted as pests and for skins and bushmeat.



DAWNA TENASSERIM

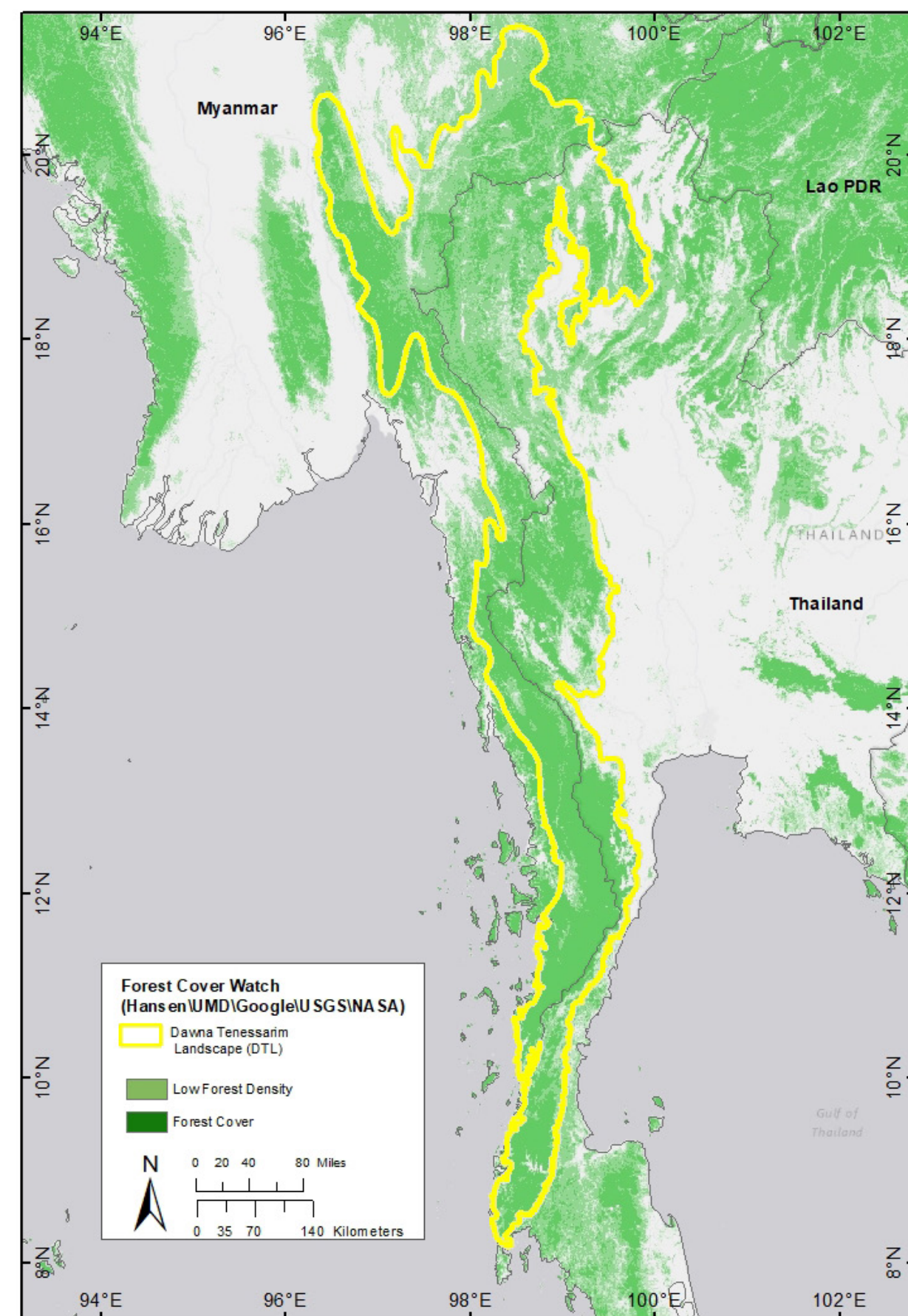
Stretching across the Myanmar-Thai border, the still relatively unknown Dawna Tenasserim landscape contains the largest contiguous forested area - eight million hectares - within mainland Southeast Asia.

Forests cover 82% of the Dawna Tenasserim landscape and serve as important refuges for many wildlife species, including some that are critically endangered or endemic. The Dawna Tenasserim landscape is recognized as one of the Earth's most biologically significant areas for biodiversity conservation and is one of WWF's 9 priority places around the world. Ethnic minorities and indigenous groups are an important part of the Dawna Tenasserim, serving in many cases as stewards of the landscape their ancestors have lived in for centuries.

That this landscape harbours such a treasure trove of feline biodiversity is truly remarkable, home to seven of the nine cat species found in Southeast Asia: tiger, leopard, clouded leopard, Asiatic golden cat, jungle cat, marbled cat and leopard cat. Six can be found within a single national park (Kaeng Krachan National Park in Thailand). However, of these, jungle cat is particularly rare and known from few records and localities. It is likely that populations of this species may be particularly threatened due to persecution, and loss and degradation of habitat.² Southeast Asia in general is significant for feline biodiversity, covering about 3% of the world's land area yet supporting 30% (11) of the 36 global cat species presently recognised by The IUCN Red List of Threatened Species.³

Tigers are the best known of the felines and the Western Forest Complex (WEFCOM) of Thailand harbours the largest population of tigers within mainland Southeast Asia. This complex of parks, sanctuaries and protected areas in the northern part of the Dawna Tenasserim is the largest protected area complex in the region and presents the best hope for the survival of tigers within Southeast Asia.

Despite the threats to wildlife described in this report, it is important to point out that the feline populations are still relatively healthy and intact. In the most recent camera trapping in the Myanmar side of the Dawna Tenasserim in mid-2019 (covering only limited areas) six of the seven cat species in the landscape were camera trapped (with the exception of jungle cat).





IN 2018/19 WWF, ALONG WITH PARTNERS, CONDUCTED CAMERA TRAPPING SURVEYS IN:

1. TANINTHARYI DIVISION
2. KAENG KRACHAN NATIONAL PARK
3. KUIBURI NATIONAL PARK
4. UMPHANG WILDLIFE SANCTUARY
5. MAE WONG AND KLONG LAN NATIONAL PARKS



IN THESE SELECTED SITES FROM THE DAWNA TENASSERIM, THE FOLLOWING FELINES WERE CAMERA TRAPPED OVER THIS PERIOD



PHOTO CREDITS: CLOUDED LEOPARD, LEOPARD (left page): © KWC / WWF-Myanmar TIGER (left and right page), MARBLED CAT (left and right page), LEOPARD CAT, LEOPARD (right page): © The Department of National Parks, Wildlife and Plant Conservation (DNP) / WWF-Thailand ASIATIC GOLDEN CAT: © Karen Forest Department / WWF Myanmar

THE LAND THAT TIME FORGOT

Impossibly high waterfalls cascade over rock outcroppings and plunge into dense jungle. Deep valleys huddle beneath towering granite and limestone mountains cloaked in misty clouds. The Dawna Tenasserim is truly a unique and beautiful place where global biodiversity thrives; home to at least 168 mammal species and 560 bird species.

Tigers, Asian elephants, gaur, banteng, clouded leopards, Asian tapirs, Asiatic wild dogs, hornbills and Siamese crocodiles roam the jungles and rivers of the Dawna Tenasserim.

Endemic species dwell here that exist nowhere else on Earth, including the Gurney's Pitta, Burmese Yuhina, and the Kitti's hog-nosed bat, the world's smallest mammal, weighing a little more than a large bumblebee. The Dawna Tenasserim was a stronghold for both Javan and Sumatran rhinoceroses in the Greater Mekong throughout the 1950s and 60s and possibly well beyond, although there is no recent evidence of them.

The Dawna Tenasserim is remarkable in that it is the meeting point of four distinct biogeographic zones: Indo-Burmese, IndoChinese, Sundaic and Sino-Himalayan. It is comprised of two ecoregions: the Kayah-Karen Montane Rain Forests ecoregion and the Tenasserim Moist Forests ecoregion. The warm climate in the landscape also promotes abundant plant growth and its forests are considered among the oldest in the world.

The great forests of the Dawna Tenasserim are however not homogenous. Due to different rainfall patterns, forests in the east or Thai side of the mountains are made up of more dry deciduous varieties, while the west-facing or Myanmar slopes are a mixture of moist deciduous and evergreen. This can

be attributed to the rain shadow effect of the mountain ranges which result in differences in average annual rainfall from around 140cm on the Thai side to 560cm in Myanmar. Additionally, the Dawna Tenasserim is the origin of about 1300 species and 180–190 genera of orchids, comprising the majority of tropical orchid genera in the world. As parts of the landscape remain poorly explored scientifically, particularly in Myanmar, more biodiversity discoveries are expected.

Despite its natural abundance, the landscape also has an ancient and diverse history of human habitation intertwined with the environment. For example, the cave art at Khao Pla Ra, just outside of Huai Kha Khaeng Wildlife Sanctuary in Uthai Thani, Thailand, dates back to approximately 3,000 years. The highly stylized cave art depicts the way of life for prehistoric communities, including the vital importance of their interactions with the natural landscape. Today, the largest ethnic group within the Dawna Tenasserim Landscape is the Karen. 'Karen' refers to a number of ethnic groups who speak 12 related 'Karenic languages' that are part of the Tibeto-Burman language group. In addition to the Karen, the Dawna Tenasserim is also home to Thai, Shan, Bamar, Mon, Lisu, Lahu, Hmong and various other ethnic groups.



“The Dawna Tenasserim is a modern day Eden - a place of staggering beauty and rich biodiversity. The fact that it harbors seven cat species puts it right up there with some of the world’s most iconic ecosystems and begs for us to protect this world class landscape.”

- STUART CHAPMAN, WWF TIGERS ALIVE LEADER

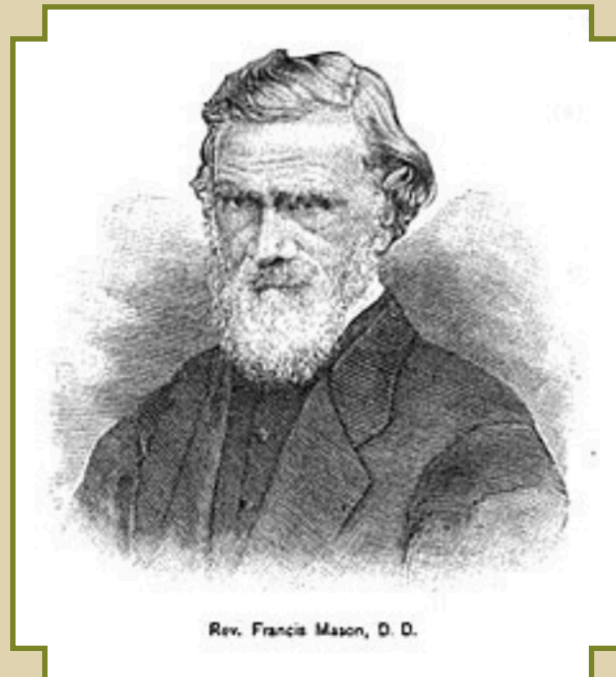


“We count tigers because we are trying to save Myanmar’s nature. When tigers are present, you can generally infer that the ecosystem is thriving, so we use them like a metric. It takes a whole lot of effort to save tigers and increase their numbers, but once you know you’re keeping tiger numbers stable, you can be sure that their habitat is thriving with all the other significant wildlife.”

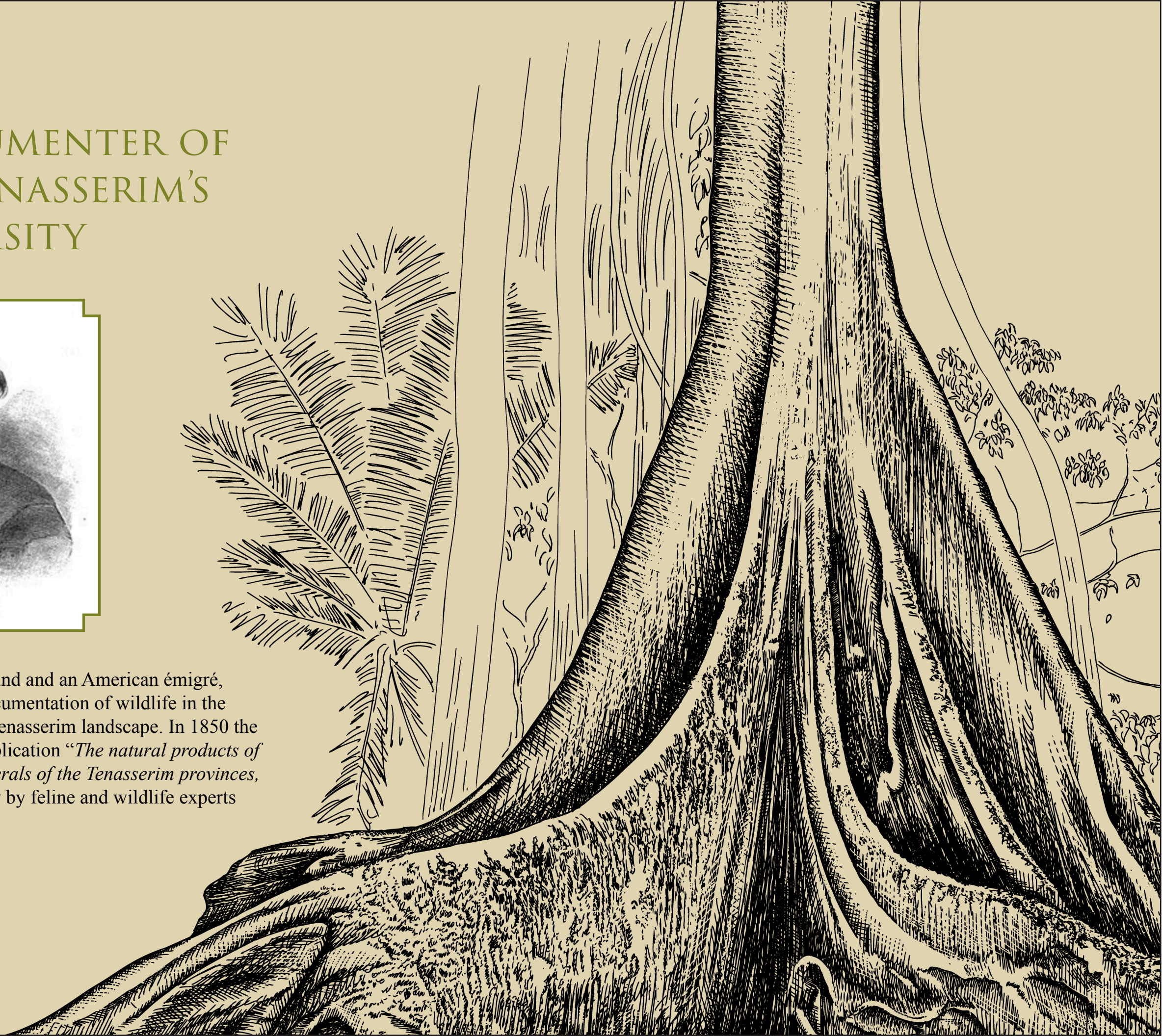
- PAING SOE, CONSERVATION BIOLOGIST, WWF-MYANMAR



THE FIRST DOCUMENTER OF THE DAWNA TENASSERIM'S BIODIVERSITY



Rev. Francis Mason, originally born in England and an American émigré, was a notable force in the cataloguing and documentation of wildlife in the Tenasserim (Tanintharyi) area of the Dawna Tenasserim landscape. In 1850 the amateur naturalist published the landmark publication “*The natural products of Burmah, or notes on the fauna, flora and minerals of the Tenasserim provinces, and the Burman empire*” still referred to today by feline and wildlife experts interested in the region.



1. TIGER

(*Panthera tigris*)

ENDANGERED

Tigers are arguably one of the most iconic species in the world. Tigers used to roam across most of Asia, but today they are restricted to just 7% of their original range, in isolated forests and grasslands across 13 countries. Tigers need vast territories to survive but over the past few decades their habitats have been destroyed, degraded and fragmented by human activities. This either wipes out the entire population or leaves them marooned on ‘islands’ of habitat from which they are unable to safely travel from one area to the next in order to mate and find food. In addition to their cultural significance throughout the Asian region, tigers are important for their role as apex predators that manage the populations of other species. The largest of all cat species, tigers are an “umbrella species” – whose targeted conservation also supports many other species in the same area.

To date the Dawna Tenasserim remains a largely intact landscape that continues to offer the big, contiguous stretches of habitat required by tigers. While there remain no definitive numbers for tigers in the Dawna Tenasserim, they are expected to range from 180-220 individuals. Portions of the landscape have afforded tigers protection in varying degrees whereas

large parts of their potential range are outside of any formal protection. The Western Forest Complex in Thailand harbors the largest population of tigers within mainland Southeast Asia at approximately 150 individuals and has been recognized by WWF as a priority Tiger Conservation Landscape. The Dawna Tenasserim is the last stronghold of viable tiger populations in the Greater Mekong and offers one of the best hopes for the survival of tigers.

Tigers rely on sight and sound for hunting, rather than smell. They give birth to two to four cubs every two years and if all the cubs in one litter die, a second litter may be produced within five months. Tigers generally gain independence at two years and attain sexual maturity at age three or four for females and at four or five years for males. Juvenile mortality is high however – about half of all cubs do not survive more than two years. Tigers have been known to live up to 20 years in the wild. Tigers are mostly solitary, apart from associations between mother and offspring. Individual tigers have a large territory, up to 400 km² for males and 70km² for females.⁴



“Although Mae Wong [in the Western Forest Complex] is home to breeding tigers, cubs struggle to survive here because prey is scarce, due to commercial poaching in the past. Our main focus to save tigers here is recovery of the ungulate prey that tigers rely on.”

— ROB STEINMETZ, WWF-THAILAND TIGER SCIENTIST

ANNOUNCEMENT OF MYANMAR TIGER NUMBERS

In July 2019, the Myanmar Forest Department released for the first time the number of tigers for which there is evidence in the country: 22 individuals. This is the absolute minimum number of tigers living in Myanmar. For a number of reasons, including logistical challenges, inaccessibility and conflict, only 8% of 46,000km² of potential tiger habitat has been surveyed so far. While there are likely several more tigers present in Myanmar's forests, this has represented a breakthrough in that the surveys have provided evidence of tigers breeding in the Dawna Tenasserim. The results now offer hope that with sufficient measures including most urgently, protection, that Myanmar could once again become a country with a viable tiger population.



“Tigers are sufficiently abundant in the Provinces, almost everywhere. Twice during my residence at Tayoy (Dawei) they came into the gate of my compound, broke open the door of the goat-house, and succeeded in killing a goat each time before they could be routed.”

- Francis Mason - 1850



Naret Sueaturien has worked for WWF Thailand for more than 15 years. In that time much of his focus has been on Kuiburi National Park located within the Dawna Tenasserim landscape. The park is famous for its easy to see wild Asian elephants as well as a large population of gaur. However, one iconic species has long been noticeable for its absence; the tiger. The Dawna Tenasserim is the last stronghold for tigers in the Greater Mekong region, with roughly 120 individuals, mostly clustered in the Western Forest Complex, a complex of protected areas the size of El Salvador. Thailand's other significant complex of protected areas is the Kaeng Krachan Forest Complex, which includes the largest national park, the almost 3,000km² Kaeng Krachan. Kuiburi National Park is part of the Kaeng Krachan Forest Complex and along with other parks in this complex had historically struggled to manage wildlife poaching. As a result, 7 years ago was the last time there was evidence of a tiger in Kuiburi. In Kaeng Krachan to the north, only a single tiger has been camera trapped. Naret has walked with park rangers and local villagers over every hill and valley in the park over the past decade - always hoping for some sign of the return of the tiger. Thailand has recognized the importance of its tigers to global biodiversity

THE RETURN OF TIGERS TO KUIBURI

as well as its national heritage and has made significant investments into SMART patrol systems, often supported with capacity building and training from WWF and other conservation organizations.

In early 2019, Naret had his wish come true. Along with a team of rangers, they found a series of pug marks in the park that came from a tiger. Evidence in the form of paw prints was then found in multiple locations of the park over the coming months. While there is yet to be photographic evidence, the Department of National Parks and WWF are convinced that this is a tiger. After years of creating the enabling environment and working closely with local communities to secure it, finally the painstaking efforts have yielded results. However, more support is needed to continue WWF's long-term commitment to this park and to expand it to other 'tiger heartlands' such as Umphang where WWF Thailand has recently begun work. The support contributes to research in the form of monitoring, of community outreach and benefit sharing programs and ensuring there are enough rangers to adequately protect the wildlife from threats such as poaching and the illegal wildlife trade.

2. LEOPARD

(*Panthera pardus*)

VULNERABLE

NOTE: THE INDOCHINESE SUBSPECIES OCCURRING IN DAWNA TENASSERIM IS LIKELY TO BE LISTED AS 'ENDANGERED' IN THE NEAR FUTURE

Leopards occupy the widest range of habitats among all old world cat species. This species is highly adaptable and has an extraordinarily high habitat tolerance in both warm and cold climates. Leopards have been known to occupy habitats as diverse as deserts, rainforests, montane forests and swamps.

In the rainforests of Southeast Asia, this species spends much of its time in trees high above the forest floor. In fact, leopards often hunt their prey from branches or haul their kill up into the forest canopy in order to keep it away from scavengers. The strong swimming skills of leopards also allow them to hunt fish and crabs.

These large cats are most closely related to lions and jaguars. Leopards can weigh up to 90 kg, and their bodies can be as long as 210cm not including their tail.³ The distinctive spots on the leopard's coat are called rosettes and help individuals blend into tree canopies so they are not detected by prey.

There is no specific breeding period for leopards, allowing females to give birth to cubs at any time of the year. Litters usually consist of three cubs after a gestation period of three

months. Cubs typically have a greyish coat with little to no signs of rosette markings. The two years that cubs spend with their mother is the only time that individuals will live in a social setting. Otherwise leopards are predominantly a solitary species like most large cat species (except for lions).⁴

Black or melanistic leopards are sometimes referred to as black panthers. They appear monochromatic because of excessive black pigmentation of skin. These individuals are more common in Asia than in other parts of the leopard's range.⁴ In survey sites within the Dawna Tenasserim, the population of melanistic leopards is close to 30%. Further south, in Malaysia, melanistic coat variations predominate. Despite this species' adaptability and widespread occurrence, all subpopulations of leopards are on the decline largely due to targeted hunting for criminal trade, over-hunting of prey by people, and habitat conversion. With their populations severely diminished in neighbouring countries such as Cambodia (possibly already below numbers for a viable population), the Dawna Tenasserim once again offers a refuge and stronghold for this species in the Greater Mekong.

“Black leopards commonly called black tiger, are frequently met with in Tavoy province. They are dangerous beasts. A few years ago a Burman was devoured by one not eight miles distant from Tavoy (Dawei) city.”

- FRANCIS MASON 1850

LEOPARDS IN PERIL

In 2016 an article by S. Rostro-García et al. detailed the 'Range collapse of the Indochinese leopard (*Panthera pardus delacouri*) in Southeast Asia.' The authors found the Indochinese leopard, a genetically distinct subspecies that historically occurred throughout mainland South-east Asia, now occurs only in 6.2% of its historical range. The leopard is extinct in Singapore, likely gone in Laos and Vietnam, nearly extirpated in Cambodia and China, and with much reduced populations in Malaysia, Myanmar and Thailand. The authors find the survival of the subspecies dependent on only two major stronghold populations: Peninsular Malaysia and the Dawna Tenasserim (specifically the Northern Tenasserim Forest Complex). They estimate a total remaining population of 973–2503 individuals, with only 409–1051 breeding adults.





3. CLOUDED LEOPARD

(*Neofelis nebulosa*)

VULNERABLE

Clouded leopard is the second-most commonly recorded cat in Myanmar.⁵ The stunning clouded leopard is a medium-sized cat weighing between 11 and 20kg. Their bodies measure 60 to 110 cm, excluding their exceptionally long tail that doubles their overall length. This tail gives clouded leopards extraordinary balance, while short legs and broad paws give clouded leopards famed arboreal (living mostly in trees) ability. However, a growing body of research, including from Myanmar and Thailand, questions the generalized assumption that this species is highly arboreal. As there has yet to be any arboreal survey effort, it is difficult to assess just how arboreal the species is.³

Clouded leopards are believed to hunt most of their prey on the ground using their large canines. Their teeth are the largest of all wild cats proportional to body size. A common meal for a clouded leopard may include deer, wild pigs, monkeys, squirrels, or birds. Throughout its range, the clouded leopard spends most of the time in tropical evergreen rainforests but can also be found in dry tropical forests and mangrove swamps.

The clouded leopard's name comes from the cloud-like ellipses that spot its coat. The base of the fur is a pale yellow to rich brown, making the darker cloud-like markings look even more distinctive. The limbs and underbelly are marked with large black ovals, and the back of its neck is conspicuously marked with two thick black bars. The pelt is prized by poachers, contributing to the species' overall population decline and vulnerable status.⁴

4. ASIATIC GOLDEN CAT

(*Pardofelis temminckii*)

NEAR THREATENED

Within the Dawna Tenasserim, Asiatic golden cats seem to be relatively abundant. They have been camera trapped in proximity to the Dawei-Htee Khee Road in Myanmar, historically in Tanintharyi Nature Reserve as well as through national parks in both the Kaeng Krachan Forest Complex and the Western Forest Complex in Thailand, sometimes in pairs. In surveys in Thailand, Asiatic golden cats have been recorded in various forest types and across a wide range of elevations (from 144 m in Khao Ang Rue Nai Wildlife Sanctuary to 1,310 m in Khao Yai National Park) suggesting considerable adaptability.³

The Asiatic golden cat is a striking feline of varying shades of gold ranging from dark brown to almost grey. White lines running across the Asiatic golden cat's cheeks and crown are this species most conspicuous feature. It is typically found in closed forest though has also been observed in more open landscapes such as grasslands. This cat prefers dry deciduous forests, tropical and subtropical moist evergreen forests and mixed evergreen forests - the primary forest types of the Dawna Tenasserim. Adults can grow to be 75 to 85 cm long, with a 40 to 48 cm tail.

There continues to be relatively little known about the ecology and behaviour of the Asiatic golden cat in the wild, as it is one of the least studied cats in tropical Asia. However data suggests that the species may be diurnal or crepuscular (active during daytime or twilight). Birds and small mammals, such as ground squirrel and rat, likely make up a majority of the Asiatic golden cat's diet. Litters of 2 to 3 young are likely born in secluded den sites.⁴



TECHNOLOGY TO THE RESCUE

One of the challenging aspects of conservation work in the Dawna Tenasserim is its political complexity. Recent post-conflict history on the Myanmar side and remaining sensitivities with ethnic groups in the border area mean that conducting biodiversity surveys and camera trapping there can be very difficult. While ethnic groups are often strong proponents of wildlife protection, there are tight controls over information and especially photographic data. Protection efforts of big cats, namely tigers, in

the Dawna Tenasserim benefit from having a complete picture of individuals, especially as some of them are likely moving back and forth over the border. However, this is difficult due to the restrictions on sharing of photographs. WWF is advancing technological solutions to these political challenges such as utilizing stripe extraction technology that allow tigers to be individually identified without ever having exchanged a photograph.

© The Department of National Park, Wildlife and Plant Conservation (DNP) / WWF-Thailand



5. MARBLED CAT (*Pardofelis marmorata*) NEAR THREATENED

Marbled cat has historically been camera trapped in Tanintharyi Nature Reserve⁵ and as part of recent (2019) camera survey in Kaeng Krachan National Park. Although the marbled cat is about the size of a domestic cat and weighs only 3kg, it resembles the larger clouded leopard. Similar to the clouded leopard, it has enlarged canines and brownish fur with a dark blotchy pattern. The marbled cat's name is attributed to the less defined coat pattern than that of the clouded leopard.

The marbled cat is forest dependent, residing in deciduous-evergreen tropical forests and hill forests. The species is found over a large range of elevations, spanning rugged areas where forest loss is not as prevalent. Overall, behavioural data on the marbled cat is

lacking. Research suggests that marbled cats are likely diurnal, spending most of their time in trees. Where marbled cats have been camera trapped in Myanmar, 81% of events were during the day. Their long bodies and tails, short legs and wide feet make them particularly suited for an arboreal lifestyle. The limited camera trap records of marbled cat may not be an actual reflection of local status, but rather a result of semi-arboreal behaviour.⁵

Like big cats, individuals reach maturity approximately 2 years after birth. Birds likely make up the majority of their diet, but they also are known to feed on rodents such as squirrels and rats as well as lizards and frogs.⁴



© The Department of National Park, Wildlife and Plant Conservation (DNP) / WWF-Thailand



4/7/2017

9:06 AM

ID:74



6. JUNGLE CAT

(*Felis chaus*)

LEAST CONCERN - IUCN RED LIST

Critically Endangered - Thailand Red Data List

Having been given up by many as extinct in Thailand, the photographing of a male and female jungle cat in Om Koi Wildlife Sanctuary, Chiang Mai (part of Dawna Tenasserim) by renowned wildlife photographer Parinya Paduntin, in 2017 has given hope that populations persist in the landscape.⁶ In the 1970s, jungle cats were supposed to have been relatively common near villages in certain parts of Thailand. But since the early 1990s, jungle cats have declined drastically due to hunting and habitat destruction. While globally they are an IUCN Red List species of least concern, their official Thai status is critically endangered.

The coat of the jungle cat can range from a sandy grey to a tawny red, with more brown phenotypes found in Pakistan and India. Adults sometimes retain a faint stripe on their legs that never completely faded from when they were cubs. Jungle cats have long legs with relatively short tails ringed by black markings. In the 1930s, a review of the British Natural History Museum's

collection of jungle cat skins and skulls from British India and adjacent countries led to subspecies determination based mainly on differences in fur length and colour. The tawnier coats from Burma were designated *Felis chaus fulvidina*.

The behavior of the jungle cat in the wild is poorly known. For example, in India jungle cats are found to be most active at night whereas in Cambodia the species is most active during the day. Despite this lack of knowledge, it has been observed that jungle cats can be successful in cultivated and artificial landscapes, and sometimes inhabit abandoned burrows or dens of other carnivores.

Jungle cats mainly feed on small rodents and birds also make up a significant portion of their diet. Individuals can catch up to 3 to 4 rodents a day, and will scavenge kills of larger predators to supplement their diet. Sometimes jungle Cats will use their swimming skills to catch fish.⁴

Fuller Protection Required

According to Myanmar's 2018 Conservation of Biodiversity and Protected Areas Law, five species of cats (tiger, leopard, clouded leopard, marbled cat and Asiatic golden cat) are "Completely Protected" (i.e. with penalties for illegally killing involving fines of up to 1,000,000 kyats [650 USD] and up to five years in prison). The other protection categories, that of "Normally Protected" and "Seasonally Protected Species," contain no cat species, leaving fishing cats, leopard cats and jungle cats unprotected.⁵

"The record of jungle cats these days, they are very rare and in Thailand a lot of good people believe it may have gone already. But this time, the person who used this high quality camera trapping system, got very good quality photos of the cat; very clear, very beautiful. It's very, very important to confirm."

- ANAK PATTANAVIBOOL - DIRECTOR OF THAILAND'S WILDLIFE CONSERVATION SOCIETY (IN INTERVIEW WITH VOICE OF AMERICA)

7. LEOPARD CAT

(*Prionailurus bengalensis*)

LEAST CONCERN

Leopard cats seem to be relatively abundant throughout the Dawna Tenasserim. They were the most commonly camera trapped species in a series of surveys in Myanmar, including Tanintharyi Nature Reserve.⁵ As their name suggests, leopard cats have leopard-like coloring. The coat is yellow or reddish and marked with dark spots and stripes. Leopard cats are the size of a large house cat, weighing 3 to 7kg. They range from 45 to 75cm in length, excluding their 23-35cm long tail. Leopard cats are exceptional swimmers, having successfully colonized offshore islands throughout their range outside of the Dawna Tenasserim landscape.

Males typically have territories that overlap with multiple female territories who they try to mate with. In Southeast Asia it is likely that leopard cats breed year round. Their gestation period is approximately 60 to 70 days. Litters typically consist of 1 to 4 young. Cubs become sexually mature 18 months after birth.

This predominantly nocturnal species has a high tolerance for human modified landscapes such as degraded forests, palm oil and sugar cane plantations. There is evidence that leopard cats use plantations for hunting rodents, which make up the majority of their diet, but forest areas remain important for the safety of individuals as well as breeding.⁴

“This is the handsomest animal of the tiger tribe in the Provinces. It is spotted with black, as like a leopard, on a yellowish ground, and is as large as a small dog. It is very fierce. A Karen whom I knew was attacked by one and his arm shockingly lacerated but he was saved by his dog: which seized the cat when it attacked his master and the man and dog together proved too much for it.”

- FRANCIS MASON - 1850





SPECIES #8?

FISHING CAT

(*Prionailurus viverrinus*)

ENDANGERED

Formerly occurring widely over most of Southeast Asia, fishing cats (*Prionailurus viverrinus*) now appear to have the second most restricted range of wild felids in the region. Fishing cats have been documented in Myanmar though not in the Dawna Tenasserim landscape. There are known populations in areas in Thailand just outside of the Dawna Tenasserim, and there is camera trap evidence of a fishing cat in Kaeng Krachan in 2002 and suspected to be of a released fishing cat.⁷ There is very little evidence of their presence and it appears unlikely that fishing cats exist within the Dawna Tenasserim, however, claims of their presence persist, leading to their speculative inclusion as a possible feline contender in the landscape.

About twice the size of a typical house cat, the fishing cat is a feline with a powerful build and stocky legs. As its name suggests, the fishing cat is an adept swimmer. Webbing between its paws help it swim and walk in wetlands. Individuals have been observed scooping fish out of shallow water with their paws, or plunging head first into deeper areas. Apart from fish, it also preys on frogs, crustaceans, snakes and birds, and scavenges on carcasses of larger animals.

The olive grey coat of this species is speckled with black spots and black stripes. A short, dense layer of fur keeps them warm and dry while they are swimming and a longer more elaborately colored layer gives fantastic camouflage. Cubs are usually born in the spring, with litter sizes varying between one to four cubs. The young are suckled to the age of six months. Cubs typically learn how to fish from their mother, until they venture out on their own 10 months after birth. On average, fishing cats live up to 12 years in the wild. Fishing cats are often killed as retribution in Thailand for attacks on farmers' chickens rather than poaching for pelts. As with other feline species, fishing cat evidence is rare. This is considered to be a function of restricted coastal habitats often composed of inaccessible terrain.⁴



POSSIBLE
CONTENDER



“I’ll never forget the first time we had evidence of tiger presence in an area that had never been surveyed before.

I literally jumped for joy.”

- PAING SOE, CONSERVATION BIOLOGIST, WWF-MYANMAR



MOUNTING THREATS

The Dawna Tenasserim and the cat species that call it home are facing immediate and growing threats. The integrity of the landscape is being compromised by economic pressures that fuel conversion of forestland for agriculture (rubber, palm oil, maize, betel nut) or other threats that adversely affect its ecological viability (mining, infrastructure development, hydropower). Much of the land surrounding protected areas on the Thai side has already been converted from original forest cover. On the largely intact Myanmar side of the Dawna Tenasserim, threats of encroachment, concession allocation and infrastructure development are growing, underscoring the urgency with which protection modalities need to be agreed upon.

Unsustainable development within the Dawna Tenasserim fragments the landscape, restricting movement of species, curtailing

adaptive responses to increasing climatic extremes and limiting genetic dispersal. Populations of endangered species that live in the Dawna Tenasserim, including tigers, will face growing challenges to subsist in a habitat fragmented by accelerating conversion to agriculture and general trends of national economic development. Large cat species are at risk from poaching, primarily to meet demands from the regional illegal wildlife trade, and are magnified where protection either does not exist or is not recognized. The Dawei-Htee Khee Road is under construction and Special Economic Zones are being planned for either end of this road in Myanmar. These projects will create a growing market demand for forest and wildlife products and decrease habitat in the Dawna Tenasserim, creating compounded impacts of reduced habitat connectivity, increased proximity to human settlements as well as rising threats of poaching.



“The cat diversity and the overall size and quality of the forest habitat in the Dawna Tenasserim are remarkable. But the cats’ days are numbered unless the countries, and the world in general, recognize the value of this cradle of biodiversity and quickly step up to address the threats to it.”

- REGAN PAIROJMAHAKIJ, WWF DAWNA TENASSERIM TRANSBOUNDARY LANDSCAPE MANAGER.

CASE STUDY: DAWEI- HTEE KHEE ROAD

The planned ‘Dawei Road’ will connect a deep sea port and Special Economic Zone in Dawei Myanmar with Thailand and the rest of Southeast Asia via Kanchanaburi. It will cut through the heart of the Dawna Tenasserim. While controversial dimensions of the project and its overall economic viability have delayed progress over the past number of years, design and construction have proceeded rapidly with the soft loan from Thailand’s Neighbouring Economies Development Authority (NEDA) approved in early 2018 by the Myanmar Parliament.

A 2018 Environmental Impact Assessment of the road construction claimed that the area planned for the paved 2 lane Dawei Road had little wildlife and that most of the species found were common species which could easily adapt to the disturbance of the road. In fact, the area is in the midst of one of 5 ‘Tiger Heartlands’ - critical sites for tiger recovery identified by WWF within the Dawna Tenasserim. A 2018

biodiversity survey conducted over a period of six months along the route yielded photos of a surprising array of biodiversity, suggesting a remarkably complete ecosystem including top level predators such as leopard and dhole (wild dog). The survey team camera trapped 23 mammal species moving in close proximity to the road (within 2 km), including three endangered wild cat species: Indochinese leopard (Vulnerable, expected to be uplisted to Endangered), clouded leopard (Vulnerable) and Asiatic golden cat (Near Threatened).

The persistence of cats and other wildlife in the Dawna Tenasserim can largely be attributed to a combination of Thailand’s extensive and effective protected area management system, as well as the long-standing inaccessibility of areas in southern Myanmar due in large part to longstanding conflict which has led to relatively little incursion into forested areas. As the peace process in ethnic areas

of Myanmar proceeds and economic liberalization accelerates, the refuge of wildlife will quickly be lost unless measures are put in place for protection that at the same time respect and uphold community level needs and aspirations.

While the Dawei-Htee Khee Road threatens to sever the landscape and create habitat fragments, increasing poaching and wildlife trade, there are reasons for hope. As the source of the soft loan for the road and the likely construction contractors, Thailand is in fact a leader in the Greater Mekong region for sustainable infrastructure. It has experience with the construction of world class wildlife mitigation measures (overpasses and underpasses) along Highway 304 running between Khao Yai and Tap Lan National Parks. The Myanmar Government has expressed a strong interest in seeing the Dawei-Htee Khee Road become a landmark example of sustainable road design in Myanmar.

CONCLUSIONS AND RECOMMENDATIONS

If the seven cat species and millions of other plant and wildlife species are to continue thriving in the Dawna Tenasserim, the ecological integrity of the area must be maintained by developing an integrated strategy to counter the complex threats facing the landscape.

The solutions are inevitably political and social in nature and will involve both high level efforts between the two national governments and the recognition and securing of local community rights in both countries. National economic development is essential but must be countered by clear, strategic and well implemented moves to combat poaching and to protect sufficient areas within the landscape and connectivity between them. The cats are umbrella species within the ecosystem - by protecting them we also protect a multitude of other species and secure the invaluable ecosystem benefits that accrue from their healthy habitats.

WWF RECOMMENDS AN 8-POINT ACTION PLAN FOR PROTECTING THE EXCEPTIONAL FELINE BIODIVERSITY IN THE DAWNA TENASSERIM:

- 1 Greater investment is essential for conservation and enforcement within critical areas for feline populations in the Dawna Tenasserim, namely the Western Forest Complex and Kaeng Krachan Forest Complex in Thailand and especially adjacent areas in Myanmar.
- 2 More feline biodiversity surveys are required throughout the Dawna Tenasserim for better understanding of where exactly and how many animals are within the landscape. Also required is further research on prey abundance and habitat needs and suitability for large cats such as tigers.
- 3 Identification and protection of wildlife corridors within and between countries is needed. Fragmentation of habitat is one of the greatest threats to viable populations. Enhancing connectivity allows for genetic dispersal and strengthens the possibility for long-term persistence of endangered species.
- 4 Wildlife protection and ranger units on both sides of the border should be strengthened and supported, along with adherence to law enforcement of illegal wildlife trade and poaching. Community protection of wildlife and their habitats, particularly through Indigenous Community Conservation Areas, should be encouraged.
- 5 Local and indigenous communities must be engaged and incentivized for protection of biodiversity and key wild cat habitat. This may involve a suite of locally appropriate activities including; capacity building, landuse mapping, developing alternative livelihoods, sustainable commodities, ecotourism, piloting biodiversity payment schemes and community based regulations and enforcement.
- 6 High level efforts towards recognition and formalized protection of vital wildlife habitat in the Dawna Tenasserim, particularly in Myanmar, by all relevant stakeholders should continue and be expedited. Solutions that allow agreement on protected areas despite political impasses are essential and require flexible and patient approaches.
- 7 A transboundary approach is needed for effective monitoring and protection of the larger, wide ranging species such as tigers. There is existing evidence of movement of tigers across the border but this has yet to be systematically collected and documented. A common baseline for key species in the landscape requires some degree of information sharing and can hopefully evolve into transboundary cooperation.
- 8 Infrastructure development is a pressing issue in the Dawna Tenasserim. The relatively well known Dawei-Htee Khee Road is just one of a number of planned and ad hoc roads being developed in the landscape. Anticipating, tracking and working with national and regional planning units is essential in mitigating the negative impacts these may have. While the anticipated wildlife crossing measures on the Dawei-Htee Khee Road are a positive step, these are mitigation measures for minimizing impacts and the optimal situation is to avoid roads in critical areas altogether.

How does it make you feel personally to have found a tiger after all these years?



“It brings me HOPE. A hope that encourages me to continue doing my work and a hope that one day the tiger will not just come and go, but stay in Kuiburi. With our strong collaboration with community and many sectors, I still believe that there’s still a tiny chance that we can reestablish a tiger population, not just in Kuiburi, but all over the world.”

- NARET SUEATURIEN – WWF THAILAND CONSERVATION BIOLOGIST





NOTES & REFERENCES

1. Thailand Today. 2017. Thailand becoming hub for tiger conservation, honors rangers. <http://www.thailandtoday.in.th/culture-and-society/elibrary/article/646>.
2. Tantipisanuh N., et al. 2014. Recent distribution records, threats and conservation priorities of small cats in Thailand. *Cat News Special Issue 8*, 31-35.
3. Duckworth J.W. et al. 2014. Editorial. *Cat News Special Issue Nr 8*.
4. <https://www.iucnredlist.org/>
5. Than Zaw et al. 2014. Status and distribution of smaller cats in Myanmar. *Cat News Special Issue 8*.
6. Voice of America. 2017. Rare jungle cats sighted in northern Thailand. <https://www.voanews.com/east-asia/rare-jungle-cats-sighted-northern-thailand>.
7. Cutter, P. & P. Cutter (2009). Recent sightings of Fishing Cats in Thailand. *Cat News 51*: 26-27.



MAJOR CONTRIBUTORS:

Regan Pairojmahakij, Dáni Freund, Lee Poston, Yoganand Kandasamy

REGAN PAIROJMAHAKIJ

Dawna Tenasserim Transboundary Landscape Manager

Regan.Pairojmahakij@wwfgreatermekong.org

Tel: +66 2 619 8534-37

<http://greatermekong.panda.org/>

WWF-Greater Mekong



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.