

The Malayan Tiger

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INTRODUCTION

'Every time I see a tiger, it is like a dream,' says eminent Indian tiger conservation biologist Ullas Karanth. For those of us working in Malaysia, seeing a tiger in the dense jungle *is* indeed a dream. Despite our many years of collective experience in the country's rich forests, none of us has had the pleasure of experiencing the sensation, dreamlike or not, of encountering a wild tiger.

Of some consolation, where tigers roam they leave incontestable traces of their presence and, when we encounter these signs, we are reminded that we are merely guests in the court of the forest's true master. In those moments, we understand at some level what Karanth is talking about – a feeling that can only come from knowing a large carnivore walks the same trail as you.

Equally, when we encounter obvious signs of human activity, whether a poacher's snare or a farmer's plantation, we are reminded of the increasing rate with which our fellows trespass on the tiger's terrain. As we ponder just how many tigers can still survive in these landscapes dominated by people, with forests crisscrossed by logging roads and opened up by extraction, we feel certain that there needs to be a place where the tiger still holds court—wilderness where people enter with caution and a healthy respect for the power of their host.

In 2004, Malaysia's tigers were recognized as a new subspecies, genetically distinct from the tigers of northern Indochina, *P.t. corbetti* [1]. A more recent morphological study questions the validity of this classification, citing the lack of morphological differences between the two as the main cause for concern (see Luo et al., Chapter 3 and Kitchener and Yamaguchi, Chapter 4 for more on this debate) [2] but regardless of the eventual taxonomic classification, we refer to wild tigers resident to Peninsular Malaysia as Malayan tigers. Even before scientists suggested the Malayan tiger's taxonomic significance, Malaysia had showcased the tiger as an animal of national significance, enshrined in Malaysia's national coat-of-arms. Politically, the conservation of tigers and their habitats is implied within both the National Policy on Biological Diversity [3] and the National Physical Plan (NPP) [4], Malaysia's first blueprint for spatial planning. Both documents formally address Malaysia's commitment to the development of the country and the conservation of its biodiversity. The goal of the National Tiger Action Plan for Malaysia [5], enacted in 2008, is to have by the year 2020 thriving tiger populations at carrying capacities in Malaysia's forests, connected with 'green linkages' known as the Central Forest Spine (Fig. 29.1) [4]. This chapter is based on that Action Plan.

FOREST COVER, TIGER DISTRIBUTION, AND POTENTIAL POPULATION SIZE

At the turn of the nineteenth century, primary rainforest covered approximately 90% of Peninsular Malaysia [6]. Forest cover declined to 74% by 1957 [7], occupied by an estimated tiger population of 3,000 [8]. Land continued to be converted to large scale rubber and oil palm plantations, further reducing forest cover to around 47% in the 1980s, a level that has been, more or less, maintained under the National Forestry Act of 1984 [9]. The majority of the forests are managed by state forestry departments as Permanent Reserved Forest, which are further classified into Protection (for soil and water) and Production (for timber extraction) Forests. About 6% of the total land area in Malaysia is classified as Totally Protected and includes areas of national parks and wildlife reserves managed by the Department of Wildlife and National Parks (DWNP), and state parks managed by the state governments. Another 3% is Stateland Forest managed by the state governments (Fig. 29.2) [9].

While historically tigers were found throughout Peninsular Malaysia, today only 51% (66,211 km²) of the land cover is deemed potential tiger habitat (Fig. 29.3) [10]. This includes



FIGURE 29.1 The National Physical Plan of Peninsular Malaysia has identified the Central Forest Spine (CFS) and green linkages to connect the four increasingly isolated forest complexes: 1) Banjaran Titiwangsa-Banjaran Bintang-Banjaran Nakawan, 2) Taman Negara Banjaran Timur, 3) South East Pahang, Chini, and Bera Wetlands, and 4) Endau Rompin Park-Kluang Wildlife Reserves. The CFS forms the backbone of the Environmentally Sensitive Area network for the purpose of environmental and biodiversity protection [4].

29% (37,674 km²) confirmed tiger habitat; 9% (11,655 km²) expected tiger habitat; and 13% (16,882 km²) possible tiger habitat. Tigers appear to be widely distributed throughout the larger forest blocks and even use non-forested lands, such as riverine woodlands, *belukar* (early-succession scrub), agricultural lands, and abandoned fields.

Malaysia's largest contiguous tiger landscape is found in the Main Range to the west, running longitudinally from southern Thailand to southern Malaysia, connected to the

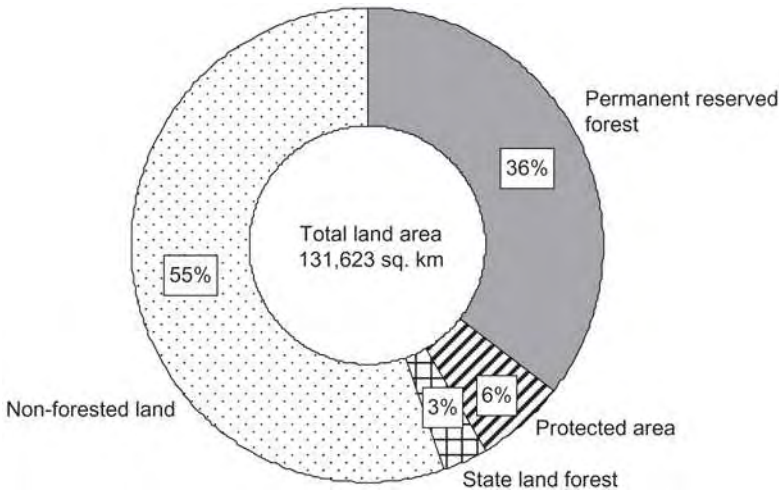


FIGURE 29.2 There are three types of forest designation in Peninsular Malaysia: Permanent Reserved Forests, Totally Protected Areas, and state land forests, which are under the direct jurisdiction of the respective states [9].

Greater Taman Negara, which includes Taman Negara National Park, the country's premier national park, and the surrounding Permanent Reserved Forests to the east (Fig. 29.1 1 and 2 respectively) [10]. At 49,181 km², this area corresponds with the 5th largest landscape of the 76 Tiger Conservation Landscapes identified in Asia and assumes a significant conservation value to the global tiger conservation effort (see Sanderson et al., Chapter 9) [11]. Encroachment and degazettment threaten forest reserves, but the main tiger landscape appeared to be at least legally secured from large-scale forest conversion.

Assuming that the potential habitats have 100% occupancy of tigers and the mean estimated adult tiger density in those tropical forests is 1-3 tigers/100 km² [12-15], the 'confirmed' and 'expected' tiger habitats alone could support between 500 and 1,500 adult tigers. Interestingly, the lower end of the estimated range corresponds to earlier official estimates of 500 [16] and 600-650 tigers [17]. We plan to test these assumptions in the coming years to offer a more accurate picture of the status of the tiger and to use the improved estimate as a yard stick to monitor the effectiveness of tiger conservation interventions.

MAJOR THREATS AND CONSERVATION EFFORTS

Cumulative impacts of forest fragmentation resulting from the construction of linear infrastructures and land-use practices not compatible with wildlife conservation pose the main long-term threats to tiger habitat in Malaysia. The North-South highway in western Malaysia, connecting Thailand, Malaysia, and Singapore, effectively eliminated all tigers west of that road. Now a similar multi-lane highway is being planned for eastern Malaysia, where tiger habitat currently extends all the way to the coast [10]. Another highway bisecting a bottleneck area in the north of Taman Negara was recently constructed. Fortunately,

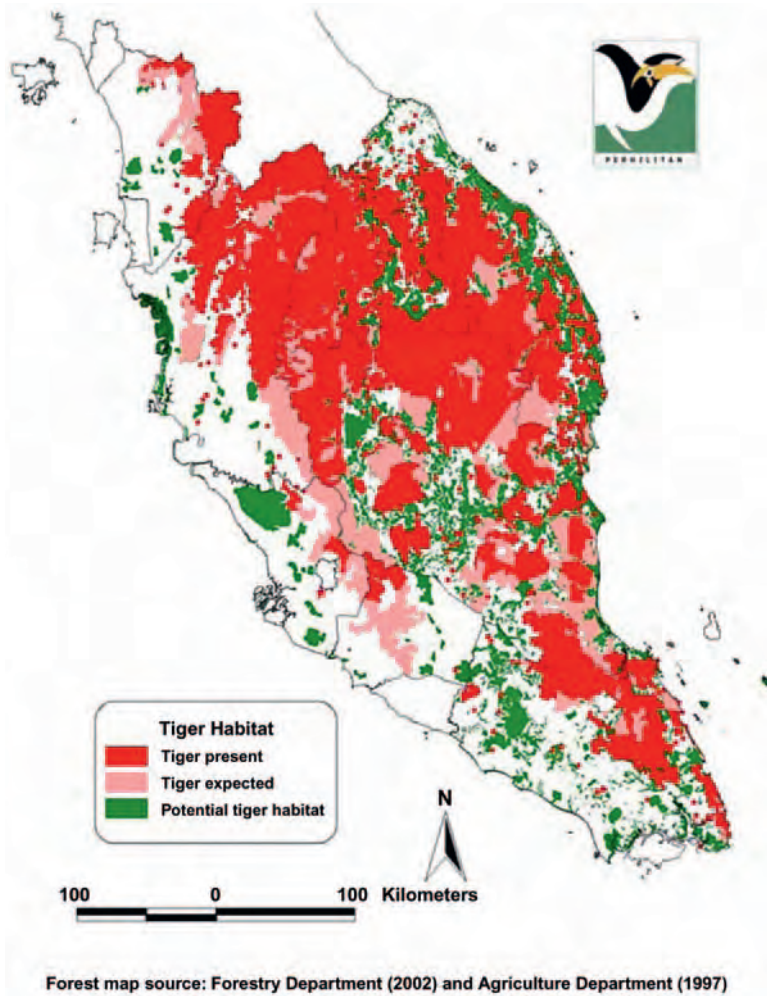


FIGURE 29.3 Three types of tiger habitat in Peninsular Malaysia are identified based on tiger data collected by the Department of Wildlife and National Parks Peninsular Malaysia between 1991 and 2003. Confirmed tiger habitats are either Totally Protected Areas or Permanent Reserved Forests with records of tigers. Expected tiger habitats are forest blocks physically connected to the confirmed tiger habitats but yet to be surveyed. Possible tiger habitats are forest blocks isolated from the confirmed tiger habitats in all states with tigers and *belukar* (early-succession scrub) in the four states, Kelantan, Pahang, Terengganu, and Johor, where tiger signs were commonly reported outside the forests. Map available from http://www.wildlife.gov.my/webpagev4_en/printed_material/kmaklumat/harimau.pdf (downloaded on October 3, 2009)

through its review of the Environmental Impact Assessment, DWNP has ensured that the new highway incorporates wildlife crossing structures, in this case viaducts, to allow for the safe passage of wildlife under the road at strategic places. Without this mitigation, the highway would, without a doubt, dramatically disrupt what is a priority linkage area in northern Greater Taman Negara.

The integrity and connectivity of the natural landscape is also addressed in the NPP [4], where 2 of its 36 policies have direct implications for tiger conservation. Specifically, they relate to establishing green linkages through the Central Forest Spine (Fig. 29.1), so dubbed as it represents the backbone of the country's forest network, and integrating and maintaining Environmentally Sensitive Areas (ESAs) in the planning and management of land and land-use. Through the protection and restoration of this forest system, the NPP aims to maintain and enhance the country's forest cover, reconnecting the fragmented forests for better protection of the nation's environment and biodiversity, all within a timeline that runs to the year 2020. The management criteria for the three classes of ESAs are in line with tiger conservation in that it promotes the protection of core areas of biodiversity and resource-rich forest (Rank 1) inter-connected through a system of large forest blocks where ecologically sound land-use, compatible with tiger conservation, is practiced (Rank 2). All three priority areas for tiger conservation, Belum-Temengor-Stong, Taman Negara, and Endau Rompin complex (Fig. 29.4.), are considered to be Rank 1 where development, agriculture and logging are prohibited. Furthermore, two of the four priority sites, identified in the National Tiger Action Plan to maintain the tigers' dispersal corridor (Fig. 29.4), correspond with forest 'spine' linkages (Fig. 29.1). Encompassing approximately 51,000 km², the Central Forest Spine is comprised mostly of Rank 1 and 2 areas, interspersed by smaller Rank 3 areas where controlled developments, compatible with the nature of environmental constraints, are allowed. We are actively involved in the implementation of the NPP through our work with the Federal Department of Town and Country Planning and the respective state

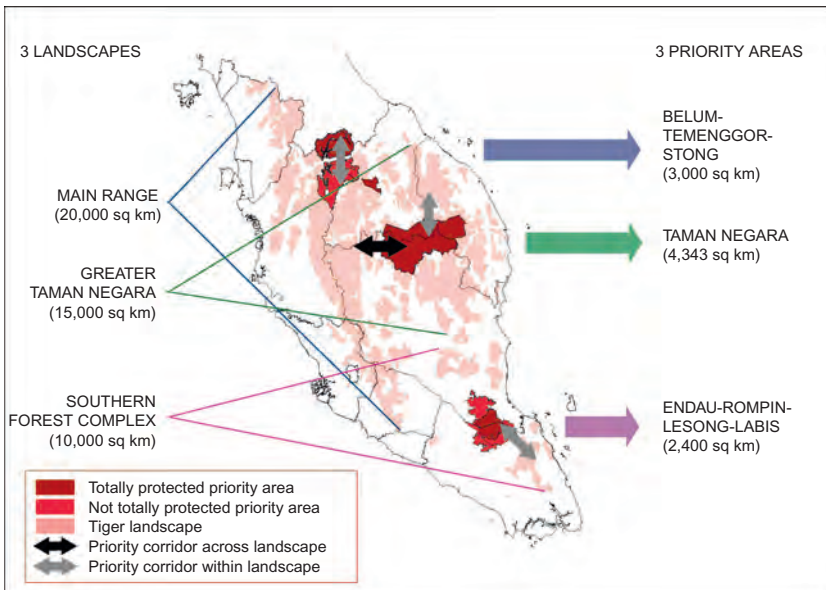


FIGURE 29.4 Three priority areas for tiger conservation in the respective tiger landscape are identified. The priority wildlife corridor to be restored and maintained across the landscapes is the Main Range-Greater Taman Negara linkage. Within the landscapes, there are three areas where the habitat connectivity is most important: Belum-Temengor, Taman Negara-Lebir-Tembat, and Endau-Rompin-Mersing.

government and land offices to mainstream the tiger conservation agenda into the national and regional development plans.

While habitat protection is essential for the long-term survival of the tiger, illegal trade is a more urgent threat, having the greatest potential to do maximum harm in a short time. Previously, Malaysia had not been identified as a significant trader in tiger derivatives [18] but recent surveys carried out by TRAFFIC and seizures made by DWNP have shown that poaching and trade in Malaysia has become a serious threat to the conservation of tigers. Recent interviews with poachers and traders show that the illicit market in tigers, their body parts, and derivatives is operating on a larger scale than earlier understood. Traders and poachers alike have stated that tiger populations are declining due to over-hunting, with more effort being expended to find tigers. This, combined with the widespread availability of medicines claiming to contain tiger bones [19] and the reported availability of tiger meat in some of the country's restaurants, highlights the need to address the issue of the poaching of and trade in tigers. Tiger parts, as well as other illegally sourced wild animals and plants, are also often smuggled out of Malaysia. Many go overland to Thailand, while some are likely going by air or sea to end-use markets in China and elsewhere. Poachers include both locals and foreigners who are either intentionally targeting valuable species, or opportunistically snaring these animals while illegally collecting other forest products such as agarwood or aloewood (the resinous heartwood produced primarily by the *Aquilaria* species). To stem these threats, DWNP focuses its patrolling efforts in priority sites, such as Taman Negara, with occasional support from the Royal Malaysian Armed Forces during special operations. Between 2001 and 2005, 70 Thai and five Cambodian agarwood poachers were arrested, mostly in Taman Negara. In reality, however, these foreign agarwood collectors are everywhere where large forests remain in Malaysia.

Some of the tiger's key prey species, such as wild pig and deer, are also regularly offered for sale in restaurants. Since these protected game species can be hunted and sold legally within approved periods each year, and deer meat is also available from deer farms, law enforcement is extremely difficult. To provide more effective protection of tigers and their prey, marked improvement in focused and intelligence-driven anti-poaching patrolling and enforcement of wildlife and wildlife trade laws have been identified as the issues of utmost priority. To this end, inter-agency collaboration with other relevant bodies will be enhanced. For example, we intend to work with: the Forestry Department to actively enforce wildlife laws at checkpoints, at key logging access roads, and to carry out spot-checks at logging concessions; local councils to revoke business licenses from restaurants and traditional medicine shops that violate wildlife laws; other national enforcement agencies (e.g., Royal Malaysian Customs, Anti-smuggling Unit, Immigration Department, and Royal Malaysian Police) to develop a broader intelligence network; and the ASEAN-Wildlife Enforcement Network and CITES member countries to reduce the illegal trade in tiger parts across national borders. Enactment of new wildlife legislation to replace the Protection of Wild Life Act 1972, and a new CITES-implementing law are expected to close some of the existing loopholes and include mandatory jail sentences for offences against endangered species such as the tiger. At the time of writing, the new legislation is still under review while the International Trade in Endangered Species Act, passed in 2007, will be enforceable once gazette and the accompanying regulations are in place.

The most important ecological determinant of tiger density is the abundance of large prey (>20 kg) in a given area [20, 21]. In Malaysia, this means sambar (*Cervus unicolor*), barking deer

(*Muntiacus muntjac*), and wild pig (*Sus scrofa*). The extent to which the truly large ungulates, such as the gaur (*Bos frontalis*) and tapir (*Tapirus indicus*), are part of the tiger's regular diet is unclear. In fact, little is known about the feeding ecology of Malayan tigers or prey population dynamics. In Taman Negara, the biomass of the tiger prey base is crudely estimated to be between 266 and 426 kg/km² [12]; around a tenth of the prey biomass reported in some of the more resource rich forests of India [21, 22].

Camera-trapping studies conducted between 1998 and 2005 at 14 sites (35,000 total trap nights) indicate that the most abundant ungulate species, other than the Asian elephant, is the wild pig, followed by barking deer, tapir, and mouse deer (*Tragulus* spp) [12, 15, 23-25]. Sambar deer have localized distributions and are relatively rare. They are also a potentially significant component of a tiger's diet, and yet, they are legally hunted under the current wildlife legislation. Furthermore, legal protection, high fecundity, adaptability to human-dominated landscapes, and the fact that the majority of Malaysians are Muslims (who do not consume pig meat) all contribute to the general perception that wild pigs are hyper-abundant in the country, implying that the supply is enough for wild predators and people. This public perception is not supported with credible biological information, however, and so there will, in the coming years, be an increased emphasis on better protection of the primary prey base through increased knowledge, improved protection under national legislation, and better regulation of the issuance of hunting and dealer licenses.

A third threat to the Malayan tiger arises from human-tiger conflict. While this phenomenon represents only 4% of all wildlife-related complaints, the impact on tigers is compounded immeasurably as people who fear for their safety or perceive economic risks from tigers will not, generally, support conservation agendas. Between 1991 and 2007 there were 2,560 complaints made by the public about tigers, including occasions where tigers had simply been sighted close to villages or plantations. All states with tiger populations are affected by tiger conflict but only about 2% and 20% of all tiger-related complaints detailed attacks on humans and livestock, respectively. Between 1991 and 2005, DWNP recorded 40 attacks on humans, less than 0.1% of the combined total of all wildlife-related complaints. Eleven cases were fatal. Since 2005, victims (or their families) of these attacks can apply for compensation through the government's Relief Fund for Wildlife Attack Victims, an annual grant of MYR 1 million (US\$ 286,000). Although attacks on humans are always reported, those made on livestock may not always be as many farmers perceive there to be no immediate or monetary benefit in doing so. In areas where local communities regularly suffer losses of livestock—often as a direct result of poor husbandry and management—it is highly likely that the angry and frustrated farmers will take the matter into their own hands and trap, poison, or otherwise kill tigers in the area. In addition to the unknown number removed from the population in this way, around 2-3 tigers a year are also removed and placed in captivity by DWNP. It is also suspected that poachers operate in high conflict areas, accepting payment from villagers in return for 'removing' these perceived problem animals.

WWF-Malaysia's pilot mitigation project in Jerangau, Terengganu, showed that cattle depredation can be minimized if existing livestock management systems are improved [26]. In the study, WWF-Malaysia assisted selected communities to build paddocks to house otherwise free-roaming cattle at night. Loss of cattle to tigers was, accordingly, prevented for those who took part in the study. However, there is a problem of continuity, as upon perceiving the threat to be dealt with, cattle owners reverted to allowing their animals to roam free

at night. A longer-term solution requires the program participants to continue using these mitigation measures once support from organizations, such as WWF-Malaysia, has left. As Jerangau is one of many areas affected by livestock depredation by tigers, financial sustainability to replicate WWF-Malaysia's success is the biggest challenge.

Ultimately, the success of any conservation actions must be reflected in the population status of the target species, both in terms of distribution and density. By using the population status as the overall indicator of success, we hold ourselves accountable to wild tigers for which resources are mobilized. Our target is a minimum of 1,000 adult tigers in Malaysia by the year 2020. This can be achieved with a mean estimated density of 2.5 tigers/100 km² at 80% occupancy of the Central Forest Spine and will be measured using internationally accepted methodologies, standardized to Malaysian application.

As we enter the twenty-first century, we find ourselves in a position of renewed hope. Twenty years ago, the idea that individuals from a national government and concerned NGOs would come together to devise real and tangible plans and mechanisms for the conservation of such a controversial species may have been dismissed as a fool's dream. In Malaysia, that dream has become a reality through the recent formation of the Malaysian Conservation Alliance for Tigers (MYCAT), a unique alliance of four non-governmental organizations, supported by the Malaysian Government (see Kawanishi and Seidensticker, Chapter 11). Today, tiger conservation in Malaysia is grounded on a solid partnership between these two sectors, brought together by a common desire to create a better future that includes wild tigers. And with this partnership, we believe our collective dream to 'experience' thriving tiger populations connected by green linkages, in perpetuity, will be a reality for Malaysia.

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