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Амурский тигр в Северо-Восточной Азии: проблемы сохранения в XXI веке

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Амурский тигр в Северо-Восточной Азии: проблемы сохранения в XXI веке :

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Представлены основные доклады, сделанные участниками научно-практической конференции «Амурский тигр в Северо-Восточной Азии: проблемы сохранения в XXI веке», состоявшейся 15–18 марта 2010 г. во Владивостоке. Освоение Дальнего Востока подрывает ресурсную базу амурского тигра с такой скоростью, что только немедленное и эффективное вмешательство может предотвратить катастрофу.

Книга адресована специалистам в охране, разведении, исследовании экологии крупных хищников, а также определяющим политику органам и лицам и утверждает, что необходимость принятия срочных мер неотложна.

The Amur Tiger in Northeast Asia: Planning for the 21st Century : Proceedings of

International Conference, 15–18 March, 2010, Vladivostok.– Vladivostok : Dalnauka, 2010. – 396 p. + insert 12 p. – ISBN

The book contains the basic reports made by participants of the international conference «Amur tiger in Northeast Asia: problems of conservation in 21th century», held on March 15-18th, 2010 in Vladivostok. Development of the Russian Far East undermines the resource base of the Amur tiger with such speed that only immediate and effective interference in this situation can prevent disaster.

The book is addressed to experts in conservation, breeding, ecology of large predators, as well as to authorities and to persons defining a policy. It approves that taking prompt actions is urgent.

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СТАТУС И ВОССТАНОВЛЕНИЕ АМУРСКИХ ТИГРОВ В СРАВНЕНИИ С ДРУГИМИ ПОДВИДАМИ ТИГРА

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Первая Азиатская конференция по сохранению тигра на министерском уровне, проходившая в январе 2010 г., обязалась приложить все усилия по удвоению числа диких тигров в последующие 12 лет. Вызов обескураживающий. Мы считаем, что популяция диких тигров сократилась более чем на 98 % за последние приблизительно 200 лет и только за последние 10 лет уменьшилась, по крайней мере, на одну треть и оценивается между 2800 и 4800 особями, не считая детенышей. Балийский тигр исчез в 1940-х годах; Каспийский – в 1960-х, Яванский – в 1970-х, и Южно-китайский – вероятно, в 1990-х годах. В то время как численность других подвидов уменьшается, число Амурских тигров увеличивается. Число стран, поддерживающих экологически-функционирующие популяции тигров, уменьшилось за последнее десятилетие на одну треть, с 14 до 9. Количество потенциальных и занимаемых местообитаний тигра к 2006 г. сократилось до 7% от исторического ареала и уменьшилось, по меньшей мере, на 41% только между 1996 и 2006 гг. Было идентифицировано шестнадцать приоритетных ландшафтов для сохранения тигра, которые должны обеспечить наивысший результат.

Всемирное совещание по тигру, проходившее в Катманду в 2009 г., идентифицировало ключевые действия, необходимые для стабилизации и восстановления числа тигров. Они включали:

- 1) усиление законов и правоохранительной базы и технологий на местах и улучшение трансграничных взаимодействий, включая обмен кадрами;
- 2) расширение и улучшение управления особо охраняемыми природными территориями;
- 3) создание научно обоснованных программ мониторинга по тигру и их жертвам с финансированием и увеличением штата сотрудников для выполнения обоих направлений;
- 4) поиск постоянного финансирования для программ сохранения тигра в целом и для специфичных нужд, таких как уменьшение конфликтов между тигром и человеком и работа с местным населением;
- 5) развитие интенсивной инфраструктуры и земельное планирование, такое как создание центральных зон для разведения тигра, куда запрещен доступ, зон новой инфраструктуры для лесозаготовок и охотпользования, создание соединяющих коридоров, включая трансграничные коридоры, между охраняемыми территориями, и выведение из эксплуатации любых тигриных местообитаний, где только возможно;
- 6) улучшение работы с местным населением, включая развитие альтернативных источников заработка и средств к существованию для людей, живущих рядом

- с тиграми, разрешение конфликтов между тигром и человеком с помощью политической, технической и финансовой поддержки;
- 7) пресечение спроса на дериваты тигра и усиление спроса на живых тигров в природе с помощью кампаний по изменению «тигрино-потребительского» поведения. Создание на основе наследования территорий условий сохранения тигра на Дальнем Востоке России и расширение этих территорий в Китай для стабилизации и восстановления Амурского тигра является нашим вызовом и благоприятной возможностью. Российская Дальневосточная модель сохранения тигра является лучшей, которой должны следовать другие страны, в которых живет тигр.

THE STATUS AND RECOVERY OF AMUR TIGERS, IN COMPARISON TO OTHER TIGER SUBSPECIES

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What is the conservation status of the Amur tiger compared to the other tiger subspecies? How can this information inform a science-based plan to stabilize and recover the Amur tiger? The *First Asian Ministerial Conference on Tiger Conservation* held in Hua Hin, Thailand in January 2010¹ set our target to make the commitments and management interventions required to double the wild tiger population across their range in 12 years (in shorthand, TX2).

There is no time to lose because we have already lost so much.

We examine the status of tiger populations from five perspectives: historical population collapse; tiger subspecies extirpations; trends in extent of cover types² that support tigers; trends in estimated tiger numbers; and functional extinctions of tigers in Tiger Range Countries (TRCs)³. Then we prioritize Tiger Conservation Landscapes (TCLs) for recovery investments; and summarize the actions suggested by the TRCs for “game-changing” actions to stabilize and recover tiger numbers⁴.

HISTORICAL COLLAPSE IN TIGER NUMBERS

Nowell and Jackson (1996) estimated there were 100,000 wild tigers at the beginning of the 20th century. This is an order of magnitude estimate; it was never meant to be a precise estimate of tiger numbers⁵. We now have new tools to estimate historical tiger population size, by employing the “signals” that geneticists can identify. Mitochondrial DNA and microsatellite data suggest a mean value of 23,280 for the effective population size of tigers from peninsular India prior to historical impact (~200 years before present) (Mondol et al., 2009) or a total median population of 57,000–233,000, depending on the ratio of effective population size to census number used in the calculation - 0.4 (Smith, McDougal, 1991) or the more typical wildlife species ratio of 0.1 (Frankham, 1995). With a mean estimated population of <2,000 today, tigers have declined in the Indian subcontinent by >98% in ~200 years. We expect this population contraction is mirrored over the rest of the tiger’s range.

¹ Hua Hin Declaration on Tiger Conservation at the First Asia Ministerial Conference on Tiger Conservation, January 29, 2010, Hua Hin, Prachuap, Khiri Khan, Thailand.

² Vegetative cover type that may be suitable for tigers does not constitute habitat type; tigers need both suitable cover and prey for an area to become suitable “habitat”; today, many potential areas for tigers have adequate cover but are devoid of prey because of over-hunting.

³ Defined as a population so reduced that it no longer plays a significant role in ecosystem function or the population is not longer viable without direct management interventions.

⁴ From *Saving Wild Tigers: Kathmandu Summary Document*, A Report From the Global Tiger Workshop, October 27-30, 2009. Kathmandu, Nepal, Ministry of Forests and Soil Conservation, Government of Nepal.

⁵ Peter Jackson, personal communication.

TIGER SUBSPECIES EXTIRPATIONS

We have witnessed the tiger's geographic range⁶ collapse in the 20th century. The edge populations were the first to be extirpated: the Bali tiger in the 1940s, Caspian tiger in the 1960s, Javan tiger in the 1970s, and the South China tiger probably during the 1990s. We (Dinerstein et al., 2007) estimated that tigers occupied only 7% of their historical range by 2006, based on the tiger's historical range constructed by Nowell and Jackson (1996). Further, the estimated area of tiger range occupancy had declined 41% in the decade between 1996 and 2006 (Sanderson et al., 2006). While other subspecies were declining or disappearing, the Amur tiger population in the Russian Far East was increasing. The collapse and subsequent recovery of the Amur tiger in the last half of the 20th century is well known to all here. This is the exception among tiger subspecies.

TRENDS IN EXTENT OF COVER TYPES SUPPORTING TIGERS

Sanderson et al. (2006)—in the most comprehensive analysis ever attempted of the present range occupancy of a large, cryptic, terrestrial mammal living at low density—established that 1,185,000 km² of occupied and potential tiger habitat remained in 2006. This is fractured into 76 units—Tiger Conservation Landscapes (TCLs)⁷. Roughly half of all TCLs are large enough

Table 1
Tiger Conservation Landscapes Supporting
Tiger (*Panthera tigris*) Subspecies

Tiger Subspecies	Number of TCLs	Total km ²
Amur (Siberian) tiger, <i>P. tigris altaica</i>	2	269,983
Indian (Bengal) tiger, <i>P. t. tigris</i>	40	227,569
Indochinese tiger, <i>P. t. corbetti</i>	19	540,758
Malayan tiger, <i>P. t. jacksoni</i>	3	56,934
Sumatran tiger, <i>P. t. sumatrae</i>	12	84,467

to support 100 or more tigers, with the seven larger TCLs offering the potential to support 500 or more tigers. Even where tiger populations in these landscapes are below capacity, these areas provide opportunities to increase tiger numbers with appropriate conservation measures. The number of TCLs and area by tiger subspecies are given in Table 1. TCLs for Amur tigers comprise 269,983 km² or 23% of the total cover type remaining that could support all other tiger subspecies.

TREND IN TIGER NUMBERS

As conservation scientists, we are deeply concerned about understanding and encouraging landscape patterns and conditions where tigers can persist. We frankly find ourselves irritated when shrill, but mostly well-meaning, people demand to know how many tigers remain. Donors demand answers to “measure conservation effectiveness” and for use in communication sound bites. We estimate that tigers have declined >98% since ~ 200 years ago; we have today only the remaining 1–2%.

Peter Jackson, then chairman of the IUCN Cat Specialist Group, compiled expert-based reports and estimated that there were 5,000–7,000 tigers as of 1998 (Seidensticker et al., 1999). Since this estimated was published in 1999, our understanding of wild tiger populations and their habitats has improved substantially in many TRCs. India instituted a country-wide tiger number estimation program in 2005–2006, using rigorous sampling procedures to estimate tiger range occupancy and estimate abundance (Jhala et al., 2008). In the last decade, statistically robust estimates of tiger densities derived from camera traps at specific sites and population models that estimate numbers using mark-capture-recapture methods are available in the peer-reviewed lite-

⁶ We use the subspecies designated by S. Luo (2004).

⁷ TCLs were defined as areas where there is sufficient habitat for a least five tigers and tigers have been confirmed to occur in the last ten years, see (Sanderson et al., 2006). A TCL is a contained tiger meta-population; there is no potential for dispersal of tigers between TCLs without habitat recovery.

Estimated Adult Tigers Surviving in the Wild, 2010 (based on the 2010 IUCN Red Data List computations, with noted exceptions)

Tiger Subspecies	Minimum	Maximum
Amur tiger <i>P. t. altaica</i>	330	390
• China	10s ¹	
• North Korea	NRC ²	
• Russia	330	390
Indian (Bengal) tiger, <i>P. t. tigris</i>	1690	2500
• Bangladesh	200	420
• Bhutan	70	80
• China	NRC	
• India ³	1170	1660
• Myanmar, western	150	150
• Nepal	100	194
Indochinese tiger, <i>P. t. corbetti</i>	250	750
• Cambodia	10s ²	
• Lao PDR	10s ²	
• Myanmar, eastern	10s ²	
• Thailand	250	750
• Vietnam	10s	
Malayan tiger, <i>P. t. jacksoni</i>	300	490
Sumatran tiger, <i>P. t. sumatrae</i>	300 ⁴	680
South China tiger, <i>P. t. amoyensis</i>	NRC	
Javan tiger, <i>P. t. sondaica</i>	Extinct 1980s	
Bali tiger, <i>P. t. balica</i>	Extinct 1940s	
Caspian tiger, <i>P. t. virgata</i>	Extinct 1960s	
Total	2840	4810

¹ No reliable country-wide science-based estimation available, expert-based numbers are reported in 10s of individuals and are not included in total here; population appears to be or is functionally extinct.

² NRC = Not recently confirmed

³ India is undertaking its second all-India tiger estimation in the 2009-2010 cool season; results should be available before the end of 2010.

⁴ The 2008 Sumatran Tiger Action Plan reported 300 as the lower number.

has decreased by one third, from 14 to 9, in one decade, mirroring the decline in estimated tiger numbers in the same period. This means that about 175,000 km² (15%) of the total TCL area has no functional tiger populations.

PRIORITIZING TCLs FOR RECOVERY INVESTMENTS

Tiger conservationists are deeply concerned that the unrelenting poaching pressure to supply the expanding demand for tiger parts and products (driven by increased wealth in tiger-

Table 2 rature from sites in India, Nepal, Bhutan, Myanmar, Thailand, Lao PDR, Malaysia, and Indonesia/Sumatra. Russia reported the findings on tiger numbers from their decadal winter tiger count in 2004-2005, and, more recently, the results of the decade-long tiger trend counts. Scientists initiated searches for South China tigers using camera trap technology, sign survey, and local interviews, but they failed to detect any (Tilson et al., 2004).

We summarize our current understanding of tiger numbers by subspecies and TRC in Table 2. The mean number of estimated wild tigers has decreased by at least one third in the last decade.

FUNCTIONAL EXTINCTIONS OF TIGER BY TRCs

Comparing the 1999 list to our present snapshot of tiger numbers, we find a decline in many TRCs with functional tiger populations. In 1999, China, North Korea, Cambodia, Laos, and Vietnam were thought to have functional tiger populations. Today, and until and unless more information becomes available, we have to consider that tiger numbers in these TRCs are so low that they are no longer functional ecologically and cannot be expected to recover without massive and aggressive conservation inputs. The number of TRCs supporting functional tiger populations

consuming countries)⁸ and TRCs' own development goals, which can exceed 10% per annum and are rapidly transforming landscapes, is overwhelming the institutional architecture (protected area systems, governance, and resourcing) established in the 1970s to protect tigers when they were first recognized as endangered. Any strategy to stabilize and recover tiger numbers requires that core tiger breeding populations and their supporting landscapes are secure. Work has been underway to identify and cost-out what it takes to effectively protect these cores, given present demand for tiger parts and products on the illegal wildlife market and the present management capacity to do this work.

Table 3

Priority Tiger Conservation Landscapes for Tiger Population Recovery. TCLs are located by number in Figure (see insert I)

	Landscape	Tiger Population Status
1	Russian Far East (Sikote-Alin-Lazovsky)	Core
2	Terai Arc, Nepal (Suklaphanta-Bardia-Chitwan)	Core
3	Terai Arc, India (Rajaji-Corbett- Nandhour)	Core
4	North Bank, Bhutan/India (Bhutan protected areas-Ripu-Chirang-Manas, Pakeh-Nameri)	Core
5	Kaziranga, India (Kaziranga-Karbi Anglong)	Core
6	Western Ghats, India (Nagarahole-Bandipur-Mudumalai-Sathyamangalam-BRT Hills, Anamalai-Periyar-Kalakad Mundunthurai)	Core
7	Satpuda Maikal, India (Pench-Khana-Achanakmar, Pench-Nagzira-Navegaon-Tadoba)	Core
8	Tennaserims, Thailand (Kuiburi-Kaeng Krachan-Thung Yai-Huai Ka Khang)	Core
9	Malaysia (Belum-Temengor-Taman Negara-Endau Rompin)	Core
10	Aceh- Northern Sumatra, Indonesia (Ulu Masen-Gunung Leuser)	Core
11	Central Sumatra, Indonesia (Bukit Tigapuluh-Rimbang Baling-Batang Hari-Kerinci-Bukit Barisan Seletan)	Core
12	Sunderbans – Bangladesh/India	Core
13	Amur Heilong, Russia/China - Changbaishan (Barsovy-Borisovskoe Plateau-Hunchun-Dungning)	Recovery
14	Lower Mekong, Cambodia/Lao (Mondulkiri-Phnom Prich-Siema-Lomphat-Xe-Pian-Dong Ampham)	Recovery
15	Northern Lao (Nam Et-Phou Louey)	Recovery
16	Hukaung Valley, Myanmar	Recovery

Tiger conservationists have long guided their work based on the hypothesis that for tigers to survive in the long-term, tigers and their prey must be protected and managed at a landscape scale that includes core areas of protection, buffer zones, dispersal corridors, and the restoration of degraded lands, coupled with initiatives through which the conservation of tigers directly and indirectly meets the needs of local people. This ecological approach to conserving tigers recognizes their genetic distinctiveness across their range and their morphological, behavioral,

⁸ TRAFFIC. 2008. What's driving the wildlife Trade? A review of expert opinion on economic and social drivers of the wildlife trade and trade control efforts in Cambodia, Indonesia, LAO PDR, and Vietnam. East Asia and Pacific Region Sustainable Development Discussion Papers. East Asia and Pacific Regional Sustainable Development Department, Washington DC: World Bank.

demographic, and ecological distinctiveness. It recognizes the value of tigers as top predators in ecosystems and their role as umbrella species for conservation of other species and for the ecosystem services their landscapes provide (Dinerstein et al., 1997).

Priority Tiger Conservation Landscapes that will provide the greatest return on investment are identified in Table 3 and Figure⁹. These represent THE core breeding areas for the range-wide tiger recovery. These 16 TCLs constitute the highest priority areas for tigers. The reserves they contain (the core breeding areas) must be the foci of emergency protection measures. The more breeding female tigers there are in a TCL, the greater the resilience and long-term persistence of the population in the TCL. These core TCLs were identified based on the characteristics of a TCL: protected area size and status, size of occupied area, fragmentation and land-use in the landscape matrix impacting tiger dispersal, available prey, number of breeding tigers present, and the characteristics and intensity of threats.

TIGER RANGE COUNTRIES' GOALS, STRATEGIES, AND PRIORITY TRANSFORMATIONAL ACTIONS

Each of the 13 TRCs presented their national strategic documents outlining the status of tigers in the country, ongoing conservation actions, goals for wild tiger conservation, and the challenges to succeed while at the *Kathmandu Technical Workshop* in October 2009¹⁰. Each was unique in detail, but TRC have a high degree of similarity and are often interdependent. Here is a synopsis of priorities:

- Wildlife law enforcement and governance. Most TRCs cited the importance of strengthening their on-the-ground law enforcement capabilities and technologies and the need to improve trans-boundary cooperation in wildlife law enforcement, including intelligence exchange.
- Landscape management and capacity development. Most TRCs viewed capacity building in protected area management as a priority and several cited adoption of improved of scientific monitoring program for tigers and prey, with funding or increase staffed to accomplish both of these.
- Innovative financing. Most TRCs seek development of or use of innovative sustainable financing for tiger conservation programs in general, or for specific uses, such as human-tiger conflict mitigation and community engagement programs.
- Smart infrastructure¹¹ and land-use. Most TRCs addressed infrastructure and land-use priorities, for example making core tiger breeding areas “No-Go” areas for new infrastructure and for hunting and logging. TRCs emphasized the need to establish connectivity, including trans-boundary connectivity, among protected areas, and decommissioning infrastructure in tiger landscapes wherever possible.
- Community engagement. Most TRCs saw community engagement as a priority, with the development of alternative livelihoods for communities living near tigers as a high priority. Addressing human-tiger conflict was a priority for most of the TRCs.

Suppressing demand for wild tiger parts and enhancing demand for live wild tigers living in the wild. TRCs stressed the need to enhance communication programs to reduce demand for tiger parts with focused campaigns to change tiger-consumptions behavior.

⁹ Global Tiger Initiative. 2009. Stabilizing wild tiger populations: an emergency response to the poaching crisis. Washington DC: World Bank: Global Tiger Initiative.

¹⁰ From Saving Wild Tigers: Kathmandu Summary Document, A Report From the Global Tiger Workshop, October 27-30, 2009. Kathmandu, Nepal, Ministry of Forests and Soil Conservation, Government of Nepal.

¹¹ J Quintero et al. 2009. Smart green infrastructure in tiger range countries: a multi-level approach. Washington DC: World Bank, Global Tiger Initiative. Smart Green Infrastructure uses careful design, tiger-friendly construction practices, community engagement, strong assessment, monitoring, and adaptive management to ensure that infrastructure does not interrupt natural processes.

CONCLUSION

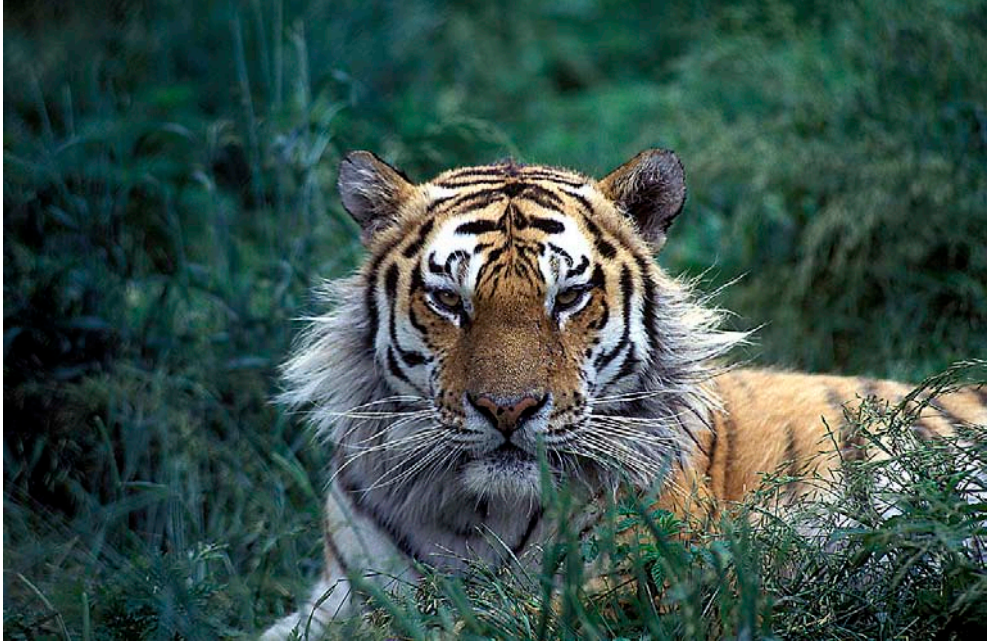
Building on the legacy of tiger conservation in the Russian Far East and extending this to Northeast China, to stabilize and recover the Amur tiger is our challenge and opportunity.

We have ample evidence that we are watching the tiger slip away over much of their range. As we lose tigers from ecosystems, it means that conditions in those ecosystems are eroding. The ecosystems themselves lose their resilience to natural change. The ecosystem services that tiger forests provide to people are compromised. Lacking the tiger's umbrella, other biodiversity erodes too. If we let this continue, we will have failed to leave the legacy of magnificent tigerness to our children. Who among us want to be remembered for that?

In our deliberations here on the Amur tiger, we are positioned to provide guidance and a model to others on how to stabilize and recover a tiger population. That is the outcome and the legacy for which we strive.

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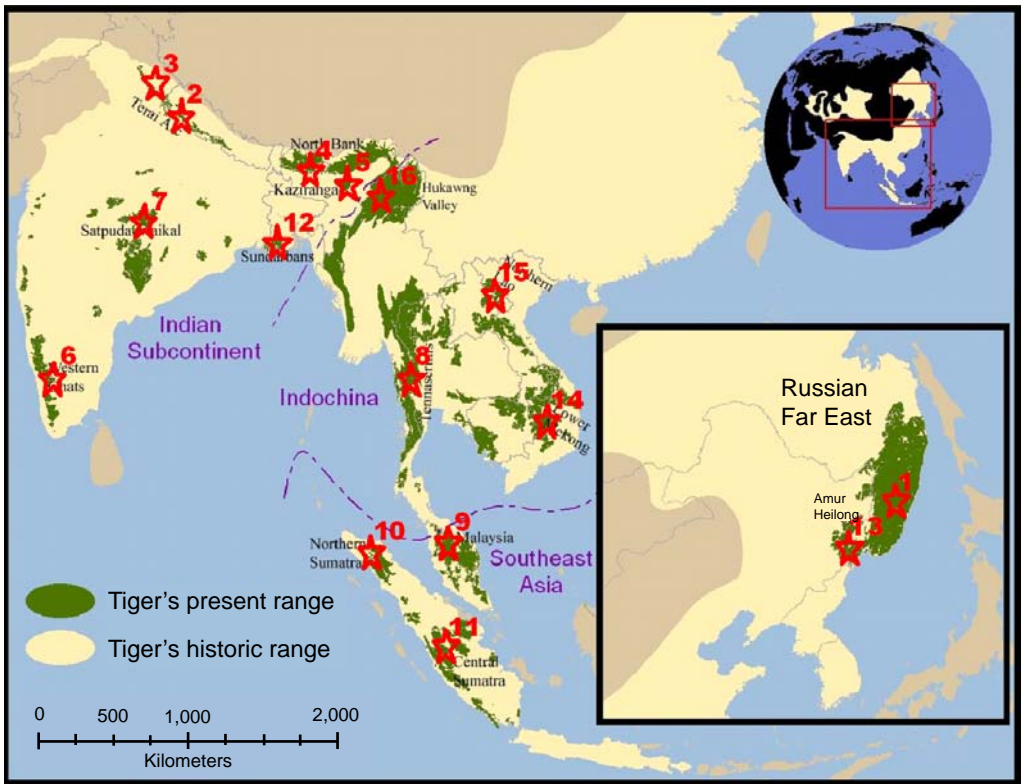


Рисунок к статье Сайденстикер и др. «Статус и восстановление Амурских тигров в сравнении с другими подвидами тигра»

Figure to article by Seidensticker et al. «The status and recovery of Amur tigers, in comparison to other tiger subspecies»