Conservation news

Catastrophe and hope for the saiga

In May 2015 a catastrophic die-off hit the only large population of the Critically Endangered saiga antelope *Saiga tatarica*, in Central Kazakhstan. The latest official statement from the Ministry of Agriculture (5 June) gave a death toll of 134,252 individuals, equivalent to 62% of the 2014 estimate for this population, and more than half of the global saiga population. However, the death toll is expected to rise once follow-up surveys are completed. The deaths have been attributed to the *Pasteurella* bacterium, but this is only part of the story, as this is an opportunistic pathogen that is fatal only when other factors have weakened the immune system. It seems likely that environmental factors were involved. An international team has been put together to investigate the deaths.

The rapid collapse of this large population over 3 weeks reminds us that species such as the saiga live on the edge ecologically: prone to dramatic declines and able to bounce back quickly. This type of species needs to be present in very large numbers if it is to weather these crashes, and so the fact that a population is abundant is not a guarantee of its security. There are only five populations of saigas; this means the species is of conservation concern even if individual populations appear to be secure.

Unfortunately, two of the other saiga populations are currently also in a grave state, as highlighted in articles in the recently published *Saiga News* issue 19 (http://www.saigaresourcecentre.com/saiga-news). The north-west pre-Caspian population, in Russia, and the Ustyurt population, shared between Kazakhstan and Uzbekistan, have both suffered substantial population decreases over the last 2 years, on top of an ongoing trend of decline. In the case of the Ustyurt population, this is a result of heavy poaching and the erection of a border fence blocking its migration route in 2011–2012. In Russia heavy poaching is also implicated; a comparison of the number of saiga observations in the Stepnoi Reserve in 2014 with the numbers seen 10 years previously points to very large declines, and a survey using indirect questioning suggests that 34% of the people interviewed in Kalmykia had eaten saiga meat in the preceding 12 months.

Faced with these setbacks it is hard to continue to be positive about the future of the saiga. However, issue 19 of *Saiga News* also brings hope. A new and scientifically robust population estimate for Mongolia suggests that this subspecies now consists of c. 15,000 individuals. Although the estimate is not comparable to previous estimates made using different methods, it seems possible that the population is growing, and that rigorous conservation efforts are beginning to pay off.

For the rest of our hope, we turn to people. *Saiga News 19* contains several articles highlighting the enthusiasm with which children are committing to conserving the saiga and its steppe habitat, and the dedication of their teachers and group leaders in helping them learn about the species. The worldwide media concern about the saiga deaths in Kazakhstan shows that people care about the fate of the saiga. NGOs, including the Saiga Conservation Alliance and the Association for the Conservation of Biodiversity in Kazakhstan, are working hard to conserve the species, supported by large international NGOs such as Fauna & Flora International, the Frankfurt Zoological Society, BirdLife, the People's Trust for Endangered Species, and the Wildlife Conservation Network. Governments are also playing their part; the commitment of the Kazakhstan government to protecting the environment is demonstrated by their designation of ecological corridors for migratory species and their commitment to fund research on saiga disease in the light of the die-off, the Republic of Kalmykia (Russia) has listed saigas in their Red Data Book, and Mongolia is strengthening law enforcement cooperation.

The saiga is a success story in international institutional terms; there is a well-supported Memorandum of Understanding on its conservation under the Convention on Migratory Species. The next meeting of the signatories to the Memorandum will be in October 2015. Governments, NGOs and researchers will work together to draw up a new plan of conservation action, recognizing the urgency of the situation and the need to work together to safeguard the saiga's future.

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Confirming the occurrence of the Endangered yellow-footed tortoise in flooded forests of the Amazon

Forests flooded by Amazonian white-water rivers, referred to as *várzea*, cover c. 400,000 km² in Amazonia. This unique type of wetland is mostly underwater for 4–5 months per year, and even its highest areas are flooded for at least 1 month per year. As a result of this intense flooding, land animals such as the tapir *Tapirus terrestris*, lowland paca *Cuniculus paca*, and deer (*Mazama* spp.), although they can swim, are not present.

During our research, funded by the Mamirauá Sustainable Development Institute, Brazil, in c. 7,000 km² of *várzea* within the confluence of two large rivers, the Japurá and Amazon, we have unexpectedly found the threatened yellow-footed tortoise *Chelonoidis denticulata*. This

area lies within the Mamirauá and Amanã Sustainable Development Reserves, which are part of the Amazon Biosphere Reserve.

Between December 2013 and January 2015 we captured and returned 31 yellow-footed tortoises in this area. Eight tortoises were found at the peak of the flood, a period with a minimum water depth of 2 m, during which searches are only possible by canoe. Five of these tortoises were sheltering under branches and trunks and three were floating in the flooded forest. In monitoring this area during 2003–2014 we also recorded the hunting of at least 200 yellow-footed tortoises by local people.

Our findings suggest that the tortoises recorded are members of a population inhabiting the Amazonian *várzea*. The yellow-footed tortoise is one of the most hunted and traded species in Amazonia, highly prized as game meat and as a pet, and is consequently declining in several areas. As the only strictly terrestrial animal in the *várzea*, this tortoise is important for the subsistence and income of residents.

Our monitoring has shown that hunting of the yellow-footed tortoise in the *várzea* is most intense during the flooding season because the tortoises are more detectable when the water is high. The ease of detecting tortoises during this time also results in the capture of young tortoises, an age class normally protected in non-flooded forests because of the difficulty of detecting them.

Although categorized as Vulnerable on the IUCN Red List and included on Appendix II of CITES, the yellow-footed tortoise has rarely been considered in conservation projects, mainly because of the difficulty of detecting this species. Strengthening our knowledge of the major threats faced by tortoises in the *várzea* is the first step towards developing conservation and sustainable use strategies for this threatened species in this particular Amazonian wetland.

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Long-distance dispersal of an Amur tiger indicates potential to restore the North-east China/Russian Tiger Landscape

Dispersal plays a key role in spatial structuring of populations and has implications for managing top predators, especially those that are elusive and live at naturally low densities. The Amur tiger *Panthera tigris altaica* occurs in two populations. The Sikhote-Alin population in Russia lies north-east of a highway and train corridor running north and north-west of Vladivostok. The second population, Hunchun–Southwest Primorsky, is south-west of this corridor, in the c. 3,500 km² Land of the Leopard National Park, Russia, and the 1,500 km² Hunchun Reserve, China. Given the low density of tigers in the region (one breeding female per 250 km²) this second population is at a viability threshold. To address the threat of small population size the Chinese government has proposed a multi-stage expansion of habitat for this population to create a North-east China/Russian Tiger Landscape. This landscape comprises a complex of intact, healthy forests and forests with intensive livestock grazing and timber harvest, interspersed with rural villages, agricultural lands and medium and large urban centres.

The extent to which this patchwork of land uses can support a viable population of tigers is unknown. Can more intensive regional management create a tiger-permeable landscape that will increase population size, genetic connectivity and viability? Nine years of data from a grid of > 500 camera-traps covering c. 6,000 km² in Hunchun, Wangqing and Huangnihe, China, provide insights into the natural history of tigers that suggest potential exists for creating a second viable population of tigers in North-east China and neighbouring habitat in Russia. This camera-trap monitoring network has produced a photo/video database of >1,000 images of 30+ distinct individual tigers. Here we report a long-distance natal dispersal event that indicates the current land-use matrix may serve as the basis for the long-term recovery of tigers in North-east China if management is improved to favour a tiger-permeable landscape.

Male T16 was first camera-trapped as a subadult (>18 months old) on 10 July 2014 in Laoyeling Nature Reserve, Heilongjiang Province, China, 10 km from the Russian border. On 1 September 2014 he travelled east to Tianqiaoling village, Jilin Province, 120 km from Laoyeling, where he was photographed and video-captured at several sites. Over a period of c. 15 days he killed four cattle. By 30 September 2014 he had dispersed 135 km further west. From October 2014 to June 2015 he killed 10 livestock in this new area 255 km from Laoyeling Nature Reserve. His dispersal route required moving through narrow habitat corridors and areas of intensely used forest. He has remained in the same area for the past 9 months and may be attempting to establish a breeding territory or a temporary home range in Huannihe Reserve.

Telemetry and camera trap studies have shown that young tigers have the ability to disperse long distances from their natal areas at 19–28 months old as they search for vacant territories (*Behaviour*, 124, 165–195). Male T16 moved through a series of large forest patches and habitat corridors to c. 270 km from where he was first trapped. The quality of habitat in this landscape could be improved by reducing livestock grazing and other forest practices such as forest frog farming. Further studies are needed to understand the nature and extent of the forest corridors required for dispersal of tigers at a landscape scale, but this example