Lessons learned from the tiger translocation and release in Tambling, Lampung, Indonesia

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Abstract

Tiger translocation and release is considered an option to resolve human-tiger conflicts. This paper describes the process of translocation of Sumatran tigers (*Panthera tigris sumatrensis*) from Banda Aceh to Bandar Lampung and release in Tambling Wildlife Nature Reserve, Bukit Barisan Selatan National Park. Following a rehabilitation process, five tigers were translocated of which two males were equipped with radio-collared transmitters. All five tigers were successfully released into their new habitat. From this study, we learned that (1) a strong collaboration of various stakeholders is crucial, (2) translocation and release program required a huge amount of funding, (3) experienced tiger handlers during transport and rehabilitation are extremely important, (4) support in scientific research for practical application in the field is essential (5) tiger release need to be accompanied by an awareness program to the surrounding community, (6) guidelines and protocols of transportation, rehabilitation, release, and post-release must be in place before release.

Abstrak

Salah satu opsi untuk mengatasi konflik manusia dan harimau adalah dengan memindahkan (translokasi) harimau bermasalah dan melepasliarkannya ke lokasi lain. Tujuan makalah ini adalah untuk mencatat proses pemindahan harimau Sumatra (dari Banda Aceh ke Bandar Lampung) dan pelepasliaran (di Tambling Wildlife Nature Reserve, Taman Nasional Bukit Barisan Selatan), serta menarik pembelajaran dari studi kasus tersebut. Setelah melalui rehabilitasi, dari lima ekor harimau yang dipindahkan, dua ekor harimau jantan yang dilengkapi dengan radio-collared transmitter telah berhasil dilepasliarkan. Beberapa pembelajaran penting dari studi kasus ini adalah: (1) diperlukan kolaborasi yang kuat antar pada pemangku-kepentingan, (2) proses pemindahan dan pelepasliaran harimau memerlukan dana yang besar, (3) dibutuhkan sumberdaya manusia terlatih dalam proses pemindahan dan rehabilitasi, (4) sangat diperlukan dukungan penelitian ilmiah untuk diterapkan secara praktis di lapangan, (5) pelepasliaran harimau perlu didampingi dengan program penyadar-tahuan kepada masyarakat sekitar, (6) panduan dan protokol untuk transportasi, rehabilitasi, pelepasliaran dan pasca pelepasliaran perlu segera diadakan.

Keywords: *Bukit Barisan Selatan National Park, human-tiger conflict, relocation, Sumatran tiger, Tambling Wildlife Nature Conservation*

Introduction

Wildlife translocation is defined as the deliberate human-mediated movement of wildlife between populations (Tenhumberg et al., 2004). Translocation is a common management intervention used to mitigate carnivore-human conflicts (Griffith et al., 1989; Linnell et al., 1997; Massei et al., 2010). Translocation of large carnivores can also help conservation by reducing mortality, supplement small vulnerable populations and re-establish wild populations (Griffith et al., 1989; Wolf et al., 1997).

The reasons for conducting translocations have changed over time (Massei et al., 2010). In the late 1980s, 90% of wildlife translocations were carried out for hunting purposes and only 7% for conservation (Griffith et al., 1989). in 2000 Fischer and Lindenmayer (2000) reviewed 180 studies on wildlife translocations and concluded that 57% were undertaken specifically for conservation, whereas 5% was conducted to resolve human–wildlife conflicts.

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In Indonesia, Sumatran tigers that are considered "problem tigers" are translocated from conflict areas to areas with suitable habitat, such as certain national parks like Bukit Barisan Selatan and Leuser. Unfortunately, translocation actions and lessons learnt are rarely recorded systematically and in many cases not reported at all.

This paper describes the process of translocation and release of Sumatran tigers and the lessons learned from rehabilitation processes and long-distance transportation

Methods

The case study

In June 2008, five tigers (4 males, 1 female) were translocated from Banda Aceh to Bandar Lampung, from where they were brought to and released into the Tambling zone, part of Bukit Barisan Selatan National Park (BBSNP). Tambling is currently privately managed and collaborate with the national park's authorities in boosting ecotourism. The private organisation funded the entire translocation process that was initiated and coordinated by the Ministry of Environment and Forestry (MEF).

After a successful rehabilitation, two male tigers were released into selected sites. Of the remaining three tigers, two were kept for release at a later date, after assessing the results of the first two releases, whereas the fifth tiger, a known man-eater, was deemed too risky and kept in captivity for breeding purposes.

Long-distance air transportation

The five tigers that need to be translocated had been kept in small cages in Banda Aceh for 20 months (June 2007-October 2009) under poor husbandry standards. Due to the compromised health conditions, the MEF concluded that land transportation would pose an elevated mortality risk for the tigers. Instead, MEF decided that to reduce mortality risk during transportation direct air-transfer from Banda Aceh to Tambling was the best option. This necessitated plane charter, because there is no direct commercial flight service between the two cities. Previous tiger translocation activities, for example Goodrich and Miquelle (2005) and Basak et al. (2015) did not mention the mode of transportation, but tigers were most likely transported by land.

In our project, the Indonesian airforce agreed to make available a Lockheed Hercules C-130 to transport the tigers approximately 2000km from Banda Aceh to Bandar Lampung, while the Indonesian navy contributed with a smaller Casa NC-212 aircraft from Lampung to Tambling. Experienced staff from Indonesian zoos familiar with transporting various wild species, including tigers offered expert advice and zoo standards were followed concerning transport cages (2x0.6x1m) protocols for transporting animals.

The entire exercise involved a range of stakeholders e.g. MEF, the private sector, Indonesian air force and navy, head of national park, Banda Aceh and Bandar Lampung airport authorities, Regional Office of the Ministry of Forestry (Balai Konservasi Sumber Daya Alam) of Lampung Province and Aceh Province (Nangroe Aceh Darussalam), safari park manager – along with a veterinarian and tiger keeper. Many other stakeholders were involved in enclosure design, tiger handling, researchers, NGOs with a special attention to tiger, GIS specialist, habitat surveyor, community awareness specialist, farmer who provide 'prey' food for tigers during rehabilitation process to mention some of the key players.

Enclosure design and construction

Before the tigers were transported from Banda Aceh to Bandar Lampung, a rehabilitation enclosure was constructed at the release site in Tambling. All tigers needed rehabilitation to be at full health and to revive as much of their natural hunting instinct that may have dwindled during the 20 months in captivity in Banda Aceh. Designing and constructing the Tambling release enclosure was the first and - until now - the only one in Indonesia. Taman Safari Indonesia designed the enclosure, which essentially consisted of

four standard cages (6x6x3 m) connected to 1ha "natural" area for roaming exercise. Goodrich and Miquelle (2005) also used 1ha enclosures at Utes Wildlife Rehabilitation Center in Khabarovski Krai Province, Russian Far East, to rehabilitate Amur tigers.

Following Forman et al (2001), enclosures were built to simulate as closely as possible tigers' natural habitat to reinvigorate natural instincts and abilities as much as possible before release. It took ten people four months complete the enclosures.

Tiger rehabilitation

In Indonesia, rehabilitation experiences arise mainly from work with orangutan, gibbons and birds of prey. Many zoos and safari parks have tigers in their species collection and many are involved in international breeding programmes to help develop a secure *ex-situ* population. Rehabilitating and rewilding tigers is new in Indonesia and guidelines were unavailable.

Rehabilitation was necessary to improve the tigers' health and fitness and to restore as much of their natural instinct as possible. Veterinarians, tiger keepers and tiger experts worked together to device exercise regimes and challenges to maximise the chances of successful rehabilitation. Therefore, live prey were provided during rehabilitation to maintain hunting skills and regular health checks were undertaken along with monitoring for unusual and/or abnormal behaviour.

Based on the assessment of the team's tiger experts, two male tigers recovered to full health within 27 days, whereas for the remaining three, the recovery was longer than the observation period, and thus the data was not reported here. Goodrich and Miquelle (2005) reported 388 and 162 days used for two Amur tigers in the Russian Far East.

The entire exercise from designing transport cages, tiger handling en route and managing the rehabilitation process requires dedication and expertise that is currently only represented in a few Indonesian staff. It is therefore important that Indonesia ensure more training on tiger handling for translocation and rehabilitation in the future.

Surveying and identifying suitable habitat

The IUCN guidelines for reintroduction was completed and published in 2013 (IUCN/SSC 2013). This provide guidance to the process rather than a specific species. The species specific adjustments need to be carried out in a case by case situation. For example, "matching habitat suitability and availability to the needs of candidate species is central to feasibility and design" is a reminder of the importance of proper planning. In our case study, detailed information about tiger habitat requirement relied entirely on literature review concerning habitats in BBSNP and other parts of Sumatra. Furthermore, information about practical application of tiger release is essential and, consequently, there is a need for more dedicated publishing of experience and lessons learned in Indonesia, when such activities take place. Information about tiger habitat requirement and preference, options for prey, home-range requirements for males and females, male and female interaction in the wild, possible interaction between resident tiger(s) and tigers to be released, is essential to maximise the chances of successful release.

Prior to release, field surveys were conducted to select the best release sites within and around Tambling. We focused on the availability of prey, as well as the possible existence of resident tigers, because these parameters are critical to tiger survival and/or staying within the release area. The field surveys were conducted on foot, by motorcycles, by 4x4 car, as well as from a helicopter in the mountainous areas and other difficult-to-reach sites.

Sumatran tiger habitat is generally considered as forested areas with high densities of large ungulate prey, with a minimum of human disturbance (Mitchell and Hebblewhite, 2012; Wikramanayake et al., 2004). When prey density is too low, tigers will resort to attacking livestock and, in rare cases, humans (Reza et al., 2002). In Tambling, forested areas and ungulates were abundant, such as sambar deer, *Cervus unicolor*, Greater mouse deer, *Tragulus napu*, and mouse deer, *Tragulus*

javanicus and in the periphery Asian water buffalo, *Bubalis bubalis*.

After potential release sites were identified, Tambling's manager, the head of BBSNP, tiger researchers, NGOs and MEF staff assessed the review and selected the most appropriate release site. An awareness program was conducted for the local community to inform them about the decision to release tigers in Tambling and how to prepare mitigation activities for livestock and safety, especially during the early release period.

Release and post-release planning

Next stage was related to release and post-release. It was necessary to decide:

(1) which of the five tigers and how many individuals should be released?
(2) were the identified individuals indeed ready for release and what criteria are used to determine release readiness?
(3) how to maximise the probability that the released tiger will survive?
(4) how to ensure that released tigers will not become problem tigers (i.e. attack livestock and human)?
(5) what will happen to the tigers that are unfit for release?
(6) what would be the plan to utilize the expensively-made enclosure?

None of these questions were readily answered at the time of the project and the choice of individuals for release, the number and area were made based on the team's combined expertise from the field and in captivity. There are not yet any guidelines and protocols ready to guide managers and practitioners through the process and decisions remain on an ad hoc basis, when needed and relevant. At the moment, there are too many tigers in *ex-situ* facilities to readily absorb addition wild tigers into breeding programmes. Furthermore, many of these are wild and not ready to be introduced to captive bred individuals, because the risk of severe injury resulting from fighting is too high.

In one case, our field surveys revealed the presence of one female tiger with a cub near the release site. This was a very positive observation that confirms the presences of both males and females in the area. Against normal practice, we decided to release two males (Male 1: 8 years old, 119 kg / Male 2: 4 years old, 74 kg) for phase 1. This was a very risky decision, due to the males' habit of infanticide and their poor contribution to overall breeding capacity. The risk that these two male tigers pose, either by being displaced by a resident male or by killing the female's cub, is very high. Had the option been available, the team would have preferred to release two females or, at least, one additional male only. The two released tigers were equipped with radio-transmitters (Sirtrack "Argos" and FollowIt "Tellus GPS").

Of the three unreleased tigers, one male (9 year) was kept in captivity, because of a history as a man-eater. The two remaining tigers (3-year old female and 6-year old male) were kept temporarily in Tambling for release at a later date, if the first release was successful.

After the release, the movement of two male tigers were monitored along with their feeding habits. Considering their movements combined with lack of human/livestock conflict (e.g. home-range did not overlap human settlements), the release was considerably a success.

Conclusion

Based on study by Fischer and Lindenmayer (2000), of 116 reintroductions cases of various wildlife species, 30 cases (26%) were classified as successful, 31 cases (27%) failed, while the rest of 55 cases (47%) was classified as unknown. For tigers, a reintroduction is considered a success if it leads to a self-sustaining population (Griffith et al. 1989). For translocations of problem tigers, criteria such as level of conflicts with people and domestic animals are also important (Goodrich and Miquelle, 2005). Not all translocated tigers in Indonesia are equipped with radio transmitter, mainly due to the

prohibitive high cost of transmitters combined with the bureaucratic difficulties in importing transmitters and permits to use it. The experience gained in this study considered tiger translocation monitored with radio transmitters. Unfortunately, the translocated tigers described in this study could only be monitored for one month after release , due to battery failure. Extended battery-life for long-term monitoring will be essential in future translocation projects (Fischer and Lindenmayer, 2000), which will also provide information about the long-term survival of the released tigers.

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