Global conservation translocation perspectives: 2021

Case studies from around the globe

Edited by Pritpal S. Soorae

IUCN SSC Conservation Translocation Specialist Group

Conservation Translocation Specialist Group | SSC Species Survival Commission | Environment Agency – Abu Dhabi | calgaryzoo | Wildlife Reserves Singapore Group | The Aspinall Foundation

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II. Orinoco turtle (*Podocnemis expansa*)
III. Leopard cat (*Prionailurus bengalensis*) © Mei-Ting Chen
IV. White saxaul (*Haloxylon persicum*) © EAD
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Conservation Translocation Specialist Group

The IUCN SSC Conservation Translocation Specialist Group (CTSG) aims to 'empower responsible conservation translocations that save species, strengthen ecosystems, and benefit humanity' for a vision of 'a world where courageous action repairs nature's past damage and secures against threats of the future'. CTSG collaborates with others to plan, conduct, or evaluate any conservation programs that involve translocations in the wild, or releases arising from breeding, propagation, or headstarting. Through science, policy, guidance, training, action, and outreach, CTSG can help enable effective reintroductions, reinforcements, assisted colonization, or ecological replacements spanning all terrestrial, freshwater, or marine ecosystems.

www.iucn-ctsg.org/

Environment Agency - Abu Dhabi

Established in 1996, the Environment Agency - Abu Dhabi (EAD) is committed to protecting and enhancing air quality, groundwater as well as the biodiversity of our desert and marine ecosystem. By partnering with other government entities, the private sector, NGOs and global environmental agencies, we embrace international best practice, innovation and hard work to institute effective policy measures. We seek to raise environmental awareness, facilitate sustainable development and ensure environmental issues remain one of the top priorities of our national agenda.

www.ead.ae/

Calgary Zoo

The Calgary Zoo's vision is to be Canada's leader in wildlife conservation. In close alignment with IUCN, this vision is pursued through a mix of Canadian and global conservation initiatives regarding two strategic pillars: 1) conservation translocations, such as reintroductions, to avert species extinction and strengthen ecosystem function; and 2) community conservation to bring mutual and sustainable benefits for local livelihoods and biodiversity. The Calgary Zoo engages in collaborative partnerships around the world to develop the innovation and application of science-based solutions to achieve long-term benefits for conservation.

www.calgaryzoo.com/

Wildlife Reserves Singapore

Wildlife Reserves Singapore (WRS) is dedicated to the management of world-leading zoological institutions - Jurong Bird Park, Night Safari, River Safari and Singapore Zoo - that aim to inspire people to value and conserve biodiversity by providing meaningful and memorable wildlife experiences. A self-funded organization, WRS focuses on protecting biodiversity in Singapore and Southeast Asia through collaborations with like-minded partners, organizations and institutions. Each year, the four attractions welcome five million visitors.

www.wrs.com.sg/

The Aspinall Foundation

The Aspinall Foundation is a UK-based charity devoted to the conservation of endangered species and returning them to wild protected areas. Major achievements include the reintroduction of gorillas to the Batéké Plateau, the reinforcement of small isolated gibbon and langur populations in Java, the translocation of captive-born Eastern black rhinos and Southern cheetahs from the UK to protected reserves in Africa, and the implementation of a community-based species survival program for the Critically Endangered Greater bamboo lemur in Madagascar.

www.aspinallfoundation.org/

IUCN Species Survival Commission (SSC)

With over 8,000 members, the Species Survival Commission (SSC) is the largest of the six expert commissions of IUCN and enables IUCN to influence, encourage and assist societies to conserve biodiversity by building knowledge on the status and threats to species, providing advice, developing policies and guidelines, facilitating conservation planning, and catalyzing conservation action.

Members of SSC belong to one or more of the 140 Specialist Groups, Red List Authorities and Task Forces, each focusing on a taxonomic group (plants, fungi, mammals, birds, reptiles, amphibians, fishes and invertebrates), or a disciplinary issue, such as sustainable use and livelihoods, reintroduction of species, wildlife health, climate change and conservation planning.

www.iucn.org/theme/species/about/species-survival-commission

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Resetting-translocation to the release point promotes reinforcement success in the Hermann's tortoise

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Introduction

The Hermann's tortoise (*Testudo hermanni*, Gmelin, 1789) is exposed to multiple threats in Europe (Nikolić *et al.*, 2018). Populations of both western (*T. h. hermanni*) and eastern sub-species (*T. h. boettgerri*) are fading throughout their geographic range (Livoreil, 2009). Listed on the Appendix II (A) of CITES, it is classified as "Near Threatened" on the IUCN World Red List, but the western sub-species is considered "Vulnerable" on the French National Red List. The situation of the western sub-species is particularly worrying. Continuous declines since the beginning of the 20th century in Italy, France and Spain resulted in strongly fragmented and reduced populations. In continental France, only one population located in and nearby the Maures Mountains (Var district, South east) persists. Classified as "Endangered" (IUCN regional status) this population is particularly vulnerable due to habitat loss, forest fire, and illegal harvesting.

Conservation projects involve sensitization, habitat management and translocation. We tested the efficiency of using rescued individuals to re-enforce the most weakened populations. Following preliminary experiments, we present the results from a second monitoring of successful translocation.

Hermann's tortoise © Franck Bonin

Goals

- Checking sanitary and genetic profiles of the rescued candidates.
- Selecting suitable releasing sites and monitoring resident host populations.
- Releasing adults, sub-adults and juveniles from a pool of rescued animals.
- Radio-tracking of translocated and

resident tortoises during two years to assess survival, settling rate and body condition.

- Testing resetting-translocation to the release point in case of over dispersal.

Overview of release site © Sébastien Caron

Success Indicators

- Obtaining official agreements and permits.
- Accurate monitoring of juveniles, sub-adults and adults of both translocated and resident tortoises.
- High survival rate (>80%) and stable body condition of translocated individuals.
- High settlement rate (>50%) of translocated tortoises following initial release and possible resetting-translocation to the release point.
- Evidence of reinforcements, e.g. sexual behaviors between translocated and resident tortoises.

Project Summary

Feasibility: The Hermann's tortoise exemplifies the worrying impact of habitat loss in the Mediterranean areas that threatens many endemic species. Thanks to strict protection, wild specimens must be displaced before habitat destruction under the framework of the Avoid-Reduce-Compensate plan (ERC). This strategy aims at ensuring that economical development does not result in any net loss of biodiversity. Rescued specimens collected over time represent excellent candidates for population restoration (i.e. reinforcement translocation). Nevertheless, translocation of reptiles requires robust feedback before being generalized. For example, homing or persistent dispersal may compromise the establishment and the survival of the released tortoises.

A project to build a college planned on a site where an isolated population of tortoises prompted ERC mitigation procedures. The SOPTOM was mandated to conduct a rescue operation, and to perform translocations and scientific monitoring of released individuals.

Within the framework of a conservation Life+ program (2010 - 2014), a global feasibility study was undertaken. Then, tortoises were hard-released in spring and autumn. A three year monitoring of translocated tortoises provided encouraging results (~70% survival) and suggested that this approach is a suitable tool to

Post-release monitoring © Magalie Aferiat

reinforce eroded populations. Yet, high dispersal of several individuals compromised their survival while effective settlement sometimes required two years, and thus occurred far away from the release point. Moreover, only adults were involved, other age-classes were neglected. Here, we paid attention to the origin of individuals (e.g. discarding hybrids), site selection, and we included different age classes in the program. To minimize possible negative effect of persistent dispersal we used resetting-translocation to the release point: over-dispersing individuals were put back to the initial point of release. Expectedly, individuals prone to over dispersal may surrender and eventually decide to settle into the targeted area.

Implementation: In fall 2015 and spring 2016, tortoises rescued and maintained temporarily in the SOPTOM center were selected. This sample includes four adults (>11 years old), four sub-adults (6 - 11 years old), and five juveniles (3 - 5 years old). To our knowledge, this study is the first to involve the monitoring of young individuals. It is often assumed that the survival of juveniles is low; based on this criterion they are usually discarded from translocation projects. Robust field data are required to test this assumption. A translocated plan was granted in 2016. The wild native origin of candidates was assessed with genetic analyses. Because *Mycoplasma agassizii* and tortoise herpesvirus are important emerging pathogens, candidates underwent a strict health screening program to ensure that the selected tortoises were clean.

The release site was large (>40 ha), located in the historical range of the species but 30 km away from the SOPTOM center and from the native site of tortoises to prevent homing. Habitats were favorable (e.g. mosaic of open and forest patches) while land management was under control. Previous census of the resident host population indicated that density was low (<1 individual/ha), probably due to the impact of recurrent forestry work over years. We hard released individuals in spring 2017, a technique already validated in this species.

In addition to the translocated individuals, four resident adults from the host population and six from a nearby control population were also radio-tracked. Each tortoise was located 3 - 5 times per week during 15 months after release enabling us to precisely describe movement patterns, notably the timing and location of settlement.

Post-release monitoring: Most (85%) of the released individuals did not settle, showing over dispersal and moving beyond that limit of 1 km targeted in this project. Therefore they did not remain within the boundaries of the protected host area. Our previous studies showed that tortoises are more likely to experience mortality during prolonged dispersal, especially when they cross unfavorable habitats or dangerous obstacles. Only two juveniles settled under the 1 km limit the first year. Therefore, we put over-dispersing individuals back to the initial release point. A single resetting-translocation was successful for 50% of the over dispersing tortoises; further resetting-translocations (1 - 2) were successful for 21% more tortoises. Overall, following (1 - 3) resetting-translocations, only ~25% of the released individuals did not settle in the targeted area.

After 15 months, high survival rate (100%) and stable body condition of the individuals suggested that translocation procedures were successful. Importantly, this included supposedly highly vulnerable juveniles. Our results show that individuals adapted well to their novel environment, finding enough trophic resources to maintain their body condition within a normal range (i.e. not different compared to resident host tortoises). Resident individuals did not display any sign of perturbation due to the introduction of exogenous individuals. Resetting-translocation to the release point were essential to promote settlement into the targeted area, and thus likely to enhance survival of the released individuals.

Major difficulties faced

- Reaching a consensus on site selection amongst French authorities, land owner and site manager.
- Finding a releasing site as large as possible to limit the problems associated with over-dispersal.
- Limiting over-dispersal of released tortoises via intensive radio-tracking and resetting-translocations.

Major lessons learned

- Post-release dispersal was inevitable; many individuals did not stay in the (small) favorable host site.
- Resetting-translocation to the release point promoted settlement into the targeted area, and represent a valuable alternative to expensive acclimation pens.
- Monitoring and possible resetting-translocation must be conducted on the long term; at least more than 1 year.
- Juveniles (2 - 5 years old) are suitable candidates for translocation.

Success of project

Highly Successful	Successful	Partially Successful	Failure

Reason(s) for success:

- Candidates were correctly selected (high body condition, genetic and health profiles).
- The host area selected provided diverse and favorable microhabitats, notably abundant refuges for the young tortoises.
- Tenacity to perform radio-tracking and resetting-translocations payed off.

References

Ballouard, J-M., Caron, S. & Bonnet, X. (In press) Successful translocations of the Hermann's tortoise (*Testudo hermanni hermanni*) offer encouraging perspectives to restore populations after fire. Submitted for a brief in "Strategies for Conservation Success in Herpetology", Susan C. Walls and Katherine M. O'Donnell (editors), Society for the Study of Amphibians and Reptiles, Herpetological Conservation Series, Vol. 4.

Lepeigneul, O., Ballouard, J-M., Beck, E., Barbier, M., Buisson, E., Bonnet, X. & Caron, S. (2014) Immediate response to translocation without acclimation from captivity to the wild in Hermann's tortoise. European Journal of Wildlife Research 60(6): 897-907.

Livoreil, B. (2009) Distribution of the endangered Hermann's tortoise *Testudo hermanni hermanni* in Var, France, and recommendations for its conservation. Oryx 43(2): 299-305.

Nikolić, S., Golubović, A., Bonnet, X., Arsovski, D., Ballouard, J-M., Ajtić, R., Sterijovski, B., Iković, V., Vujović, A. & Tomović, L. (2018) Why an Apparently Prosperous Subspecies Needs Strict Protection: The Case of *Testudo hermanni boettgeri* from the Central Balkans. Herpetological Conservation and Biology 13 (3): 673-690.

Pille, F., Caron, S., Bonnet, X., Deleuze, S., Busson, D., Etien, T., Girard, F. & Ballouard, J-M. (2018) Settlement pattern of tortoises translocated into the wild: a key to evaluate population reinforcement success. Biodiversity and Conservation 7(2): 437-457.