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Integrated actions for the conservation of the Central American oncilla

Small wild cats have gone unnoticed by the conservation world for many years. Under the umbrella species concept, most cat conservation programmes around the world have focused on the seven largest generalist species, leaving more than 30 species of small specialists to fend for themselves. The Central American oncilla *Leopardus tigrinus oncilla*, the smallest cat in the region, faces many threats and is classified as endangered by local authorities. The Oncilla Conservation program within the Costa Rica Wildlife Foundation has stepped forward on behalf of its survival and wellbeing for the years to come. By working with local communities, through an interdisciplinary approach, we are taking small wild cat conservation to the next level.

The oncilla or northern tiger-cat *Leopardus tigrinus* is the smallest, rarest and most endangered small wild cat in all Mesoamerica (Fig. 1). In size it is comparable to a domestic cat, 1.5–3 kg, with the particularity of having a typical beautiful spotted coat similar to that of a jaguar, its larger cousin, and a long bushy tail (Fig. 2). In the region few is known about its natural history. As many small cats, it appears to have strong dependence on small mammals as a main part of its diet, although ground-dwelling birds are among its preys too (Gardner 1971). Activity patterns have been studied as well, especially in comparison with melanistic individuals, which are common in the wild (Mooring et al. 2020; Fig. 3). Apart from this, it has been included in mammal inventories or a few new records for

specific areas have been published (e.g., Pacheco et al. 2006, Rogan 2021).

The large information gaps in basic aspects of the oncilla's biology respond to its natural rarity due to an apparent low population density throughout its distribution (Payán & de Oliveira 2016). This, added to the morphological similarity with other sympatric species (e.g., *Leopardus wiedii*, *L. pardalis*), has created much confusion and controversy, especially with camera trap data (Breton & Sanderson 2011). Thus, much of the information generated, supposedly for *L. tigrinus*, has been questioned or disregarded because of a possible misidentification of the species (T. de Oliveira, pers. comm.).

The oncilla is classified as endangered by Costa Rican environmental authorities and as

Vulnerable by the IUCN Red List (Payán & de Oliveira 2016). Although the global distribution of *L. tigrinus sensu lato* ranges from Costa Rica to central Brazil and northern Argentina, recent studies have shown that this taxonomic entity could be up to three distinct species (Trindade et al. 2021). However, the scarcity of biological samples of the Central American subspecies for analysis has made it difficult to clarify this situation. The collection of more samples is needed to determine if the Central American oncilla is really a distinct recognizable species endemic to the region, which would directly affect its conservation status.

Conservation actions on the ground

The threats the oncilla faces all over its distribution is a bulky list: illegal pet ownership, illegal pet trade, habitat loss, fragmentation, diseases, road-kills, retaliatory killing due to conflict with humans, and many more. Latent threats due to sympatric with other species have also been studied recently, for example the ocelot seems to have a negative effect on the oncilla occurrence (de Oliveira et al. 2020), and domestic dogs that range freely in its habitat, or become feral, have been recently stated as a primary threat mainly due to the potential of diseases transmission (de Oliveira et al. 2020).

The Oncilla Conservation program, within the Costa Rica Wildlife Foundation, was born in mid-2019 to work on different aspects that could impact the conservation status of the oncilla and other small cats in Costa Rica. Through an interdisciplinary approach, guided by the axes of education, research and communication, and involving the communities neighbouring the oncilla's habitat, efforts are made to identify, understand and mitigate the threats faced by this endangered species and to monitor its populations.

Since then, we have been working with camera traps to understand the distribution of this endangered species in the country. Through national and international alliances, we have collected 15 biological samples from ex-situ and in-situ individuals which will contribute to the effort made by several authors (e.g., Trigo et al. 2013, Trindade et al. 2021; Supporting Online Material SOM Figure F1) in order to clarify the taxonomic status of the Central American oncilla.

In the last year, we have been performing surveys and educational workshops to identify the main threats for this small cat and how to mitigate them in the communities of San Jerónimo and Herradura de Rivas, and La Es-

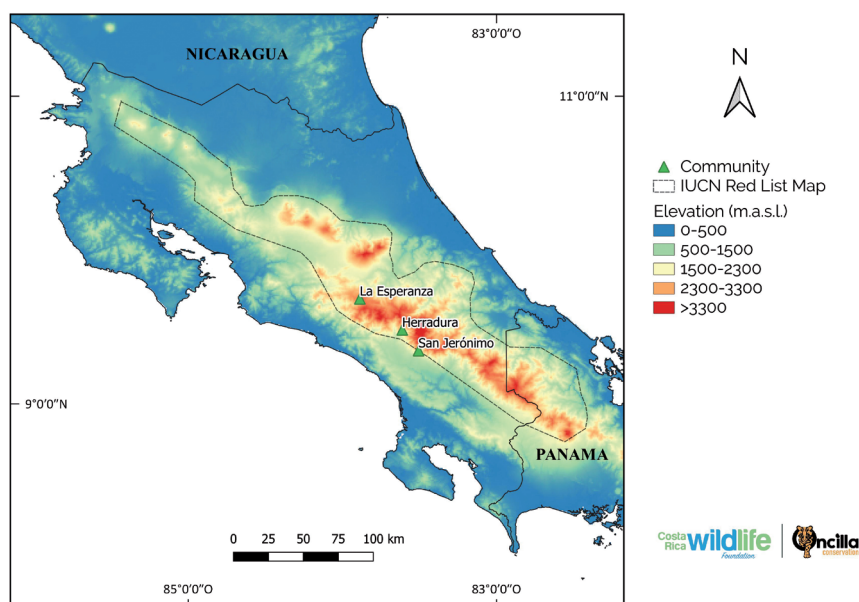


Fig. 1. Map showing the distribution of the Central American oncilla according to the IUCN Red List and the communities where conservation actions are being implemented.



Fig. 2. Central American oncilla resting up in a tree in the highlands of Costa Rica (Photo H. Barrantes / CRWildlife Foundation).



Fig. 3. Melanistic oncillas are common in the wild (Photo CRWildlife Foundation).



Fig. 4. Educational workshops have sensitized community members around the oncilla situation (Photo S. Pastor / CRWildlife Foundation).



Fig. 5. Feral dogs with breeding populations are one of the main threats for the oncilla in the study area (Photo CRWildlife Foundation).

peranza del Guarco, within the Talamanca Mountain Range, Costa Rica (Fig. 1, SOM F2). Community members have been sensitized to the particular case of the oncilla, its natural habitat and its main prey (Fig. 4). People have highlighted the importance of conserving the habitat of the oncilla to maintain the presence of this species in the neighbourhood, which is presented as a development opportunity from the creation of products and activities, such as tourism, that can bring economic incomes, using the oncilla as a flagship.

Main threats in these communities have been identified, with conservation conflicts related to poultry or fish predation and irresponsible ownership of domestic animals with a tendency to become feral being the main threats (Fig. 5). Interestingly, these two threats are directly related since a large number of people keep dogs to guard their insets from wildlife. Each dog means economic losses for their owners due to expenses in veterinary services and food, so in a next stage of the project we will work on the design of wildlife-safe chicken coops, which will indirectly attack the threat posed by feral dogs since their owners would no longer have the need to keep them, as people in the communities themselves have told us.

We and our many collaborators continue to work to ensure the persistence of this unique species in the cloud forests and highlands of Costa Rica. Prioritizing conservation action for the welfare of both communities and wildlife to achieve coexistence. For this, working with the communities, an action plan is being developed to seek solutions to the different threats faced by the oncilla locally in order to achieve coexistence with humans.

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Small Grant Report

Oncilla Conservation: education and awareness on an endangered endemic small-cat in the highlands of Costa Rica

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Supporting Online Material Figure F1-F2 available at www.catsg.org.

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SOM F1. Oncilla biological samples have been collected from ex-situ and in-situ specimens (Photo: V. Aspinall / CRWildlife).



SOM F2. The Oncilla Conservation team has performed surveys to understand and identify oncilla threats in the communities (Photo G. Mossoll / CRWildlife Foundation).