NEOTROPICAL
BIOLOGY AND CONSERVATION

Neotropical Biology and Conservation
17(4): 253–267 (2022)
doi: 10.3897/neotropical.17.e91332

SHORT COMMUNICATION

Release and follow-up of a rehabilitated two-toed sloth (*Choloepus hoffmanni*) in a tropical dry forest in Ecuador

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Academic editor: Bernardo Urbani | Received 8 August 2022 | Accepted 20 October 2022 | Published 23 November 2022

Citation: Villalba-Briones R, Jiménez ER, Monros JS (2022) Release and follow-up of a rehabilitated two-toed sloth (*Choloepus hoffmanni*) in a tropical dry forest in Ecuador. Neotropical Biology and Conservation 17(4): 253–267. https://doi.org/10.3897/neotropical.17.e91332

Abstract
We present the first records of the post-release follow-up and monitoring of a rehabilitated two-toed sloth (*Choloepus hoffmanni*) as well as freezing behavior and an inferred antagonistic interaction for this species. Two-toed sloths are nocturnal and arboreal mammals whose survival relies on their capability to remain undetected by predators. Nevertheless, in the Guayas province of Ecuador, they are among the most common mammal species in rehabilitation centers. The liberation of animals back to the forest is the main goal of rehabilitation, while the follow-up of post-release human support of animals facilitates their re-establishment in their natural habitat. Follow-up, direct observation, and Bluetooth-based monitoring of the two-toed sloths secured the survival of this species in this part of Ecuador. The range of detectability of the device used indicates its suitability for tracking low-mobility animals. After the first five days, the number of trees used per day increased, and 19 trees within 1152 m^2 were visited. Daylight and movement time range showed a correlation towards detectability. The follow-up effort allowed for keeping the two-toed sloth safe for 10 days after release. Due to the difficulty monitoring nocturnal animals, economic constraints in conservation, accessibility, and safety of the animals, biodegradable Bluetooth-based backpacks are recommended to ease the location of the animal and support its survival in the wild.

Keywords
Bluetooth technology, *Choloepus hoffmanni capitalis*, follow-up, monitoring, *Pilosa*, rehabilitation, release

Introduction

Comparative rescue and wild population abundance modeling predict that the rehabilitation and release of rescued animals can have an important influence on declining wildlife populations, especially in long-living species (Bannister et al. 2020; Paterson et al. 2021). Besides the anthropogenic threat level, certain characteristics of the biology of different species, such as the reproduction rate, determine the vulnerability of these species to local and global extinction (Caughley 1994). The combined efforts of veterinarians, rehabilitators, and ecologists can build strategic interventions to maintain wild populations viable (Paterson et al. 2021) and, consequently, their role in the protection of ecosystems (Caughley 1994; Vizcaíno and Bargo 2014; Superina and Loughry 2015).

Sloths are mammals that rely on their camouflage and slow movements as an adaptive behavior for their survival strategy (Suutari et al. 2010; Spainhower et al. 2021). Apart from coloration, certain animals can use behavior to reduce their detectability improving the camouflage of their body or of resembling objects (Stevens and Ruxton 2019). For this purpose, animals can choose background, body position (e.g. orientation, posture, mind shadows), or perform a specific motion (Stevens and Ruxton 2019). The sloths are known for their slow movements and energy-saving metabolism (Spainhower et al. 2021) but also, due to their associated insect and algae communities that bring color variability and reduce their detectability (Suutari et al. 2010; Kaup et al. 2021). The activity of two-toed sloths *Choloepus hoffmanni* is predominantly nocturnal. They are usually awake from 18:00. to 06:00, with activity peaks between 19:00–21:00 and 04:00–06:00. (Sunquist and Montgomery 1973; Mosquera et al. 2019; Martínez et al. 2020) and have been shown to survive in secondary forests (Plese et al. 2016).

From the five recognized subspecies of two-toed sloth, the subspecies *Cholepus hoffmanni capitalis* is found in the southern Pacific of Colombia and the northern Pacific of Ecuador (Hayssen 2011), and, according to Pleese et al. (2016), it could also be present in southern areas of Ecuador. Various felids and other terrestrial predators that are native to the Ecuadorian coastal region, such as *Puma concolor*, *Leopardus pardalis*, and *Eira barbara*, are potential predators of two-toed sloths (Moreno et al. 2006; Voirin et al. 2009; Pacheco Jaimes et al. 2018). Consequently, they represent possible threats, especially during the first days of release of the studied animal (Bello et al. 2018; Bannister et al. 2020). Several camera trap studies have shown the relative abundance of ocelots (*Leopardus pardalis*) in various areas along the coast of Ecuador (Cervera et al. 2016). On the contrary, the Neotropical cougar (*Puma concolor*) has been elusive, even in the protected areas of Guayas Province (Cervera et al. 2016; Mendoza et al. 2017; Solórzano et al. 2021).

The first weeks or months after release to the wild constitute a stressful and critical period during which animals suffer a high mortality rate due to behavioral deficits, predation, illegal hunting, or accidents (Bello et al. 2018; Pottie et al. 2021). Species are considered for release according to their specific health and ethological characteristics (Choperena-Palencia and Mancera-Rodríguez 2018; Pottie et al. 2021). Nevertheless, the survival of individuals in the wild is not guaranteed. Thus, to increase the likelihood of survival, minimal monitoring of body condition, behavior and important events (mating, death or birth, for example) is implemented to facilitate accident prevention and enable external aid and rescue according to every situation (Bannister et al. 2020; Pottie et al. 2021). Logically, post-release follow-up for the animal increases the likelihood of its survival. In this regard, innovative studies showed that the presence of on-site monitoring teams, as well as follow-up rehabilitators, is an important factor in the introduction process and survival rate for rehabilitated primates (e.g. *Ateles chamek*) or possums (e.g. *Trichosurus vulpecula*) (Bello et al. 2018; Bannister et al. 2020; Pottie et al. 2021), and it is reasonable to think that this scenario could be applied to other species.

Monitoring animal survival after release is essential for recording whether the rehabilitation process has been accomplished, but it is rarely done in practice, given the amount of funds required (Choperena-Palencia and Mancera-Rodríguez 2018). Conservation projects often suffer from a lack of resources for implementing their objectives (Campos-Silva et al. 2018; Choperena-Palencia and Mancera-Rodríguez 2018). In order to monitor *Choloepus hoffmanni*, telemetry (based on satellite and radio signaling) and direct observation are commonly used methodologies (Choperena-Palencia and Mancera-Rodríguez 2018). Today, new tracking technologies that can be helpful for wildlife conservation are appearing on the market. Bluetooth tracking devices are cheap and are extensively used to locate missing objects (Shu and Woo 2021). The location of the tracked object/subject is sent through Bluetooth technology to a smartphone (Shu and Woo 2021).

In this study, we aimed (1) to identify the obstacles and responses that a rehabilitated and released two-toed sloth confronts during their establishment into the wild, (2) to assess the implementation of the follow-up activity for this species, (3) to test the use of movement patterns for detectability purposes, and, (4) to apply new affordable monitoring technology. In doing so, we report on the experience of following up and monitoring the release of a rehabilitated two-toed sloth (*Choloepus hoffmanni*) in the Prosperina protected forest (Bosque Protector Prosperina, BPP), Guayaquil, Ecuador. Additionally, we share our experience of in-situ use of a Tile-brand Bluetooth-based tracker device, attached to a handmade biodegradable backpack, in the re-establishment process for this two-toed sloth.

Methods

Prior to release, health evaluations and behavioral assessments of the studied two-toed sloth individual were conducted by independent veterinaries and institutions. The release site and seasonal appropriateness were analyzed in terms of food availability and structural habitat, and, alternatively, monitoring techniques and tracking devices were tested.

Characteristics of the rehabilitated two toed sloth

Bravo, the released two-toed sloth, an individual that arrived in March 2021 at Guayaquil´s Mansión Mascota veterinary clinic (which is equipped for wildlife treatment and rehabilitation) was intensively monitored, supported individually by a caregiver, and, when needed, treated by veterinarians. The concerned male two-toed sloth was weighing 750 g as an infant at 1–2 months of age. Veterinary surveillance health monitoring consisted of coprology and blood tests when unusual behaviors or decrease in food consumption was noted. Training for release consisted of exposing the individual to an enclosure with complex stick and small trees, to include diverse native tree leaves (and attached phytophagous invertebrates) in his diet, cohabiting with other smaller female two-toed sloth, and observing reactions towards strangers and dogs placed at a safe distance. After 11 months, Bravo showed the usual phenotypical features of the two-toed sloths usually accepted by the clinic: brown fur covering the body with body displaying a marked white-colored pelage in the head, and beige in the ventral portion, (Fig. 3A, B) as described for *Choloepus hoffmanni capitalis* (Plese et al. 2016). Bravo weighed 3.8 kg and exhibited strength, competence in movement on trees and occasionally crawling on the ground, active seeking of food in arboreal and ground conditions, diverse interactions with conspecifics, avoidance attitude towards predators, and aggressive behavior towards humans in general, but significant tolerance towards the caregiver. To be considered for release the two-toed sloth's health and behavior were assessed by veterinaries independently. After the evaluation at the clinic, the two-toed sloth was transported for further evaluations by an external veterinarian from Parque Histórico Zoological Park upon request from the Guayas Province Unit of the Ecuadorian Ministry of the Environment, Water and Ecological Transition (MAATE - acronym in Spanish). All veterinaries involved in the assessments declared the two-toed sloth fit for its release.

Release site assessment

The Bosque Protector Prosperina (BPP) is a 323-ha protected dry tropical forest (2°09'1.28"S, 79°58'04.80"W) which has been under restoration since 1999, located inside the precincts of the Polytechnic University of Guayaquil (ESPOL). On the other hand, it is, also, connected to the 6078-ha Cerro Blanco Protected Forest Reserve (Bosque Protector Cerro Blanco). Due to the drastic pluviometry change from dry to rainy season, leaf density and coverage differ between seasons as the water stress of the dry season diminishes leaf abundance (Espinosa et al. 2011; Haro-Carrión and Southworth 2018). The release of the two-toed sloth was performed in the rainy season to prioritize food availability for the animal. The release point inside the BPP was selected for its connectivity and the presence of key tree species. Various itineraries within the area of the BPP were analyzed through walks covering 11 km, and five different release points were considered. *Choloepus hoffmanni* is present in the BPP, a condition which is favorable for this species to take up suitable habitats, but specific sloth observation points were avoided to prevent territorial conflicts (Pottie et al. 2021). The area selected for release (Fig. 1), was chosen for its abundance of bototillo (*Cochlospermum vitifolium*), ceibo (*Ceiba trichistandra*), saman (*Samanea saman*) and jocote (*Spondias purpurea*). All these species, except the saman, which has possible relevance as resting place (Ramirez et al. 2011), were important in the diet of this two-toed sloth *Choloepus hoffmanni capitalis* during rehabilitation. The sloth was allowed to get to know these and other plant species as leaves and flowers during the rehabilitation process (Choperena-Palencia and Mancera-Rodríguez 2018). In addition, the structure of the habitat was considered: this site presented different habitat levels, at heights ranging from 6 m to 22 m, with connectivity to surrounding patches of taller trees. To transport this two-toed sloth to the release area (located at 11.1 km from the clinic), we used a kennel transportation box with a fixed stick positioned transversally, which the individual could then grapple with inside the cage, thus minimizing the stress of movement.

Sensitization of key actors of the liberation area

ESPOL is protected by a private security company with 80 guards that survey the urban area of the university. Day and night shifts cover buildings and road surveillance which are surrounded by forested recreational areas, forest in the process of restoration, and naturally grown secondary forests. During their working hours, there are incidents in which guards came into contact with urban and wild fauna. Depending on the case rescue or translocation, procedures are accordingly implemented. Due to this, prior to the release, a six-hour course for empathy-based sensitization (Villalba-Briones et al. 2021) and management of wildlife was conducted for the ESPOL guards on charismatic native mammal species. In this course, two-toed sloths received special attention covering a third of the time effort. It is important to mention that around two sloths are rescued or translocated annually by guards of the ESPOL in collaboration with the Biodiversity Unit from the Life Sciences Faculty of the university. Additionally, guards were aware of the activities of this project, and they participated in the actual release, so they were prepared to act in case of locating the released individual.

Following up the establishment of the two-toed sloth

To promote the establishment of the rehabilitated two-toed sloth in its habitat, follow-up monitoring was conducted. The release was performed on February 11th, during the rainy season, in order to secure an abundance of leaves, mindful as we were of the diet of the two-toed sloth. Thus, we conducted a follow-up every day after release, from 17:30–18:00 to 04:00–06:00. A focal sampling technique was applied, recording the sloth's movements, interactions and vocalizations through continuous direct observation without a light torch, and, in addition, annotations were done with a light torch at a sampling interval of 30 min (Martin and Bateson 1993; Martínez et al. 2020). When, due to detection difficulties, the subject was out of sight, searching was performed, and when visible again, a change in position was registered with the GPS numbering the tree, and species (Martin and Bateson 1993; Martínez et al. 2020). In addition, each day, once the animal was detected, behavior, feeding, movements, posture, and physical appearance were observed in order to detect any unusual detail and to identify any need of support that could imply problems in the establishment process (Pottie et al. 2021). Due to the follow-up prioritization, night conditions and the need of a lite torch for monitoring, only movements and specific events were recorded instead of the more detailed data collection (10 min intervals) needed to build an ample activity budget (Urbani and Bosque 2007). So, lite torch use was limited to standardized 30 min intervals, searches, and events of interest (triggered by sounds) due to the possible impact on the behaviors of the two-toed sloth and other wildlife (Stone et al. 2012). At the same time, because of the prevailing importance of follow-up over monitoring in this work, loss of sight episodes were followed by intense searches of up to seven hours implemented under daylight and night conditions in the dense tropical forest. On three occasions the search was abandoned due to physical constraints and, consequently, resting time was needed. Resting, when needed, was scheduled during less active time gaps for two-toed sloths (21:30 to 01:00) according to the literature (Sunquist and Montgomery 1973; Martínez et al. 2020) without abandoning the location to support the two-toed sloth with the caregivers' presence and follow-up. The monitoring activity was reduced on such days from the usual eleven hours to seven, eight and ten hours per day respectively.

Additionally, in order to track the released sloth individual, a handmade biodegradable backpack with Bluetooth signal transmission capacity was fitted to his body (Fig. 3A). The sloth individual had five habituation events with the use of the backpack prior to its release. On three occasions, the two-toed sloth was able to detach it himself after one to four days. Posteriorly, the backpack remained 54 days on the two-toed sloth till the backpack was degraded by humidity, and, after that, it was successfully attached 14 days prior to liberation. The backpack produced slight but continuous scratching on the first night, but afterwards no unusual behavior was noticed. The 34-g backpack was manually designed, cut in flexible semi-leather and zipped with Velcro to facilitate release. The central area contained a cardboard slide with four Velcro junctions positioned to seal the backpack, so it was biodegradable and would decay without human manipulation. The model of the tracking device was Tile Pro which, in plain terrain, exhibits a reach of 120 m (Tile Inc., San Mateo, CA, USA. www.thetileapp.com/en-us/). In addition, each position was correlated with the location of the tree with the highest intensity of the signal. To record the animal's position more precisely, a Garmin GPS eTrex 10 (+/- 3 m) was used.

In order to test the correlation between the movement of the animal and its detectability, an R-studio platform (RStudio Team 2020) and R commander package (version 2.7) were used to analyze the data (Fox 2005, 2017). Both variables were under the same measurement interval. Shapiro-Wilk test in R (Shapiro and Wilk

1965) was performed to explore the normality of the data accorded to the mobility of the sloth, and, to the visual detection of the sloth during monitoring. Posteriorly, Pearson´s linear correlation test was implemented to evaluate the correlation between movement and detectability, according to the data (Elischer et al. 2013).

Results

The follow-up lasted for 13 days, during which the animal's wellbeing was not apparently compromised for at least 10 days. The sloth's movement was recorded through an area of approximately 0.12 ha during the first 10 days of monitoring using a total of 19 trees (Fig. 1). Feeding behavior was registered in bototillo leaves, saman (unknown material, leaves or insects) and lianas leaves. On the 8th day, (Fig. 1) feeding support was offered at tree 18th (T18), leaving it at 1 m from its resting location up in the tree but it was ignored by the sloth. All the monitoring starting at 17:30–18:00 revealed that the two-toed sloth was sleeping. On the first two days, the sloth's first movement along the tree was recorded at 20:00 and 21:00, but on the rest of the days its movements started at 19:00–19:30 (75% of the records).

In this work, from 167 hours of direct observation of monitoring, 62 hours were successful in sloths' visual detection. Considering the nocturnal behavior of the species, monitoring was performed at night in 89.7% of the cases (sunset in Guayaquil

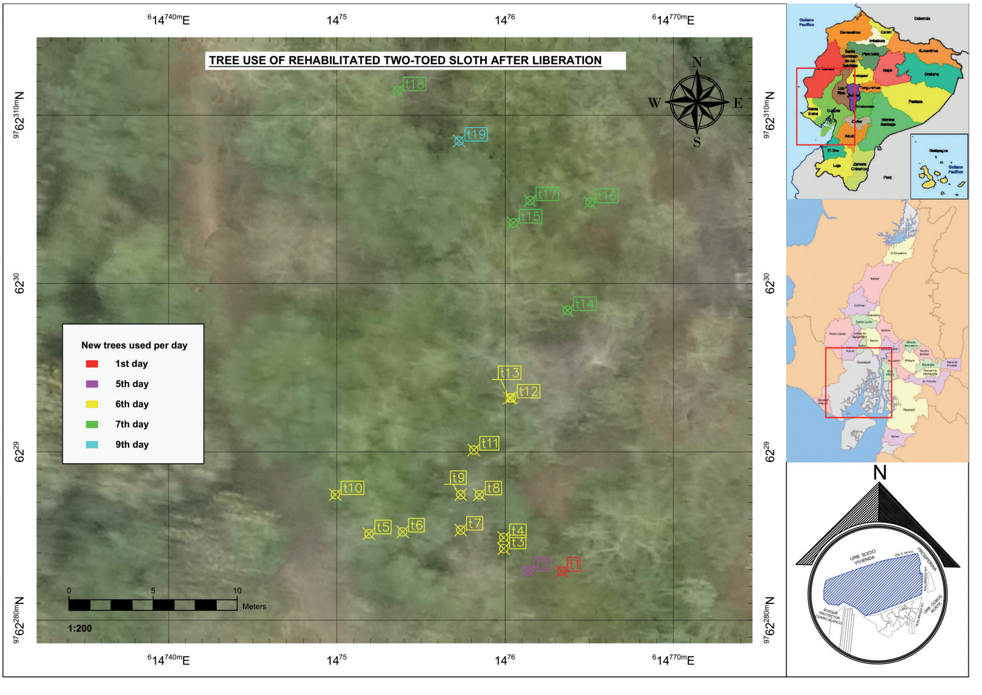

Figure 1. Map showing the movements and tree use of the rehabilitated two-toed sloth (*Choloepus hoffmanni*) in a dry tropical forest in the coastal region of Ecuador.

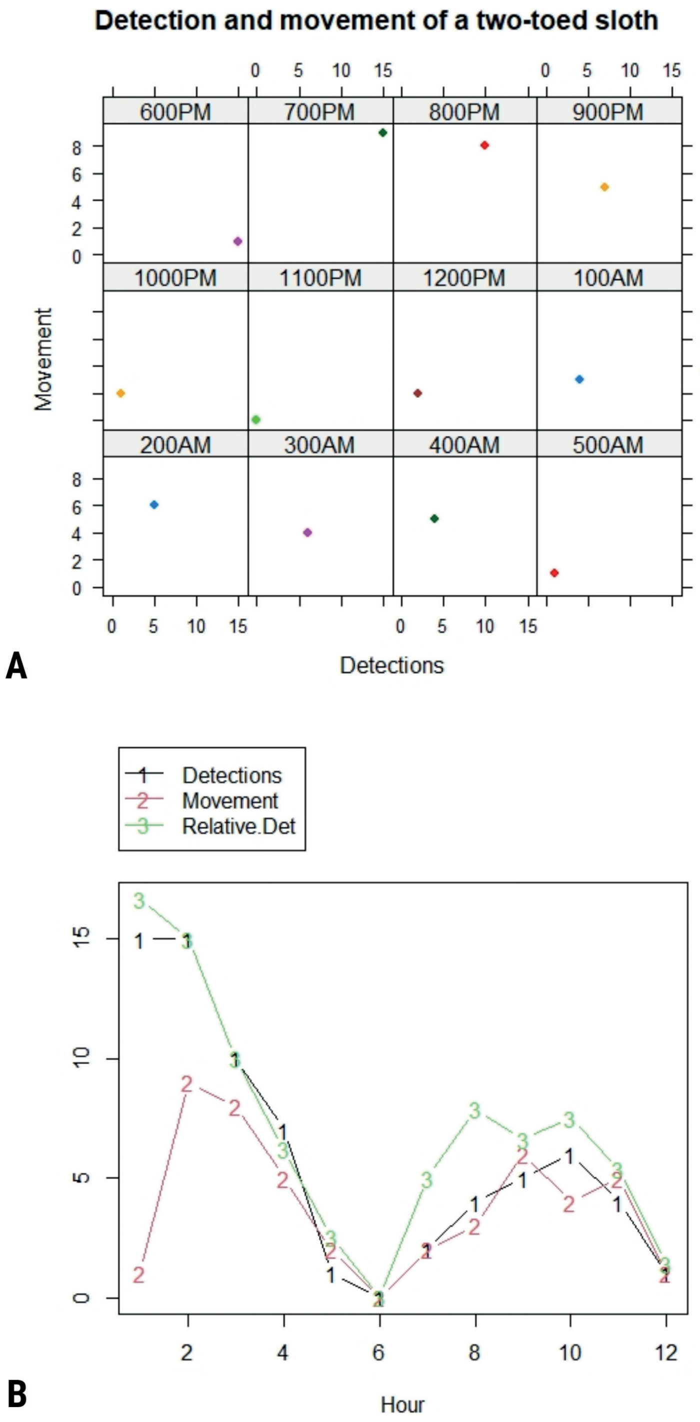

Figure 2. Follow-up and monitoring of the rehabilitated two-toed sloth (*Choloepus hoffmanni*). (**A**) XY graph showing evaluation of the combination of detections and movement. (**B**) Graph showing the movement observations, total detections, and the relative detections during night monitoring (9 nights).

is around 18:40 in February). The tracking backpack was found released from the two-toed sloth in Day 6 due to the degradation of its cardboard-made junctions. Total detection and detection of the animal relative to the monitoring effort showed similar results; with two peaks that concurred with the observed movement of the animal (Fig. 2B). The combination of detections and movement observation was highest at 19:00. (Fig. 2A). Regarding the analysis of movement and detectability correlation in follow-up activities, Shapiro-Wilk test in R revealed that the detection and movement data were normally distributed (with p values of 0.08 and 0.58, respectively). In addition, the Pearson test was applied, and results indicated a slight correlation between the two parameters ($p < 0.1$; $p = 0.06$).

From day one and onwards, movement at higher canopy levels was recorded. New interactions and behaviors were recorded during the monitoring. It includes an agonistic interaction with owls (*Pulsatrix perspicillata*) (Fig. 3B), a consequent fall from a tree (Suppl. material 1), and previous motionless defensive behavior (Fig. 2B) on T6 (Fig. 1). Ground feeding behavior was recorded on Night 6 (Fig. 3C). On the 9th Night, monitoring was concluded due to a nearby vocalization at approximately 30 m from a felid. Subsequently, on days 10th, 11th, 12th, and 15th after the release, daytime searches were performed, having just one detection of the two-toed sloth on Day 10 (Fig. 3D). Another vocal threat in form of snarl from a felid at less than 10 m finalized daytime searching activities (Suppl. material 1).

Discussion

This is the first record of follow-up of a rehabilitated *Choloepus hoffmanni* and the detectability analysis offers valuable information for future release and follow-up of individuals belonging to the genus *Choloepus*, and sloths in general. The movement observations on this two-toed sloth showed that the highest peak was between 19:00 and 20:00 (8 movement observations), with a less defined peak between 02:00 and 04:00 (6, 4, and 5 movement observations, respectively) (Fig. 2B), which concurs with previous studies on the activity pattern ranges for this and other species of the genus *Choloepus* (Sunquist and Montgomery 1973; Mosquera et al. 2019). Through implementing direct observation methodology, the first peak of movement was confirmed by Martínez et al. (2020). Subsequent camera trap studies on *Choloepus didactylus* in humid rain forest ecosystems showed higher ground activity (salt licking) with a peak of seven observations at 19:00–20:00, and less pronounced peaks at 22:00 and 03:30. Considering the nocturnal habits of two-toed sloths, and the importance of detectability in follow-up activities, bearing in mind movement patterns can lead to an increase in the success of detection. In our study, detectability and movement correlations showed higher values at 19:00 and 03:00 (Fig. 2A), which were significantly related, thus indicating that the sloth's movements favored the probability of finding sloths and that these were the proper times for searching for two-toed sloths. The discrepancy between detectability and movement over the first hour, at 18:00., was due to the higher detectability of sloths under daylight

Figure 3. Images showing relevant events of the two-toed sloth release and follow-up. (**A**) Bravo, the two-toed sloth moving through the trees on the day of release with a biodegradable backpack that supported the Bluetooth detection device (Day 1). (**B**) Motionless defensive behavior of Bravo, the two-toed sloth, under threat from an owl (Night 6). (**C**) Movement during ground feeding behavior. (**D**) Example of low detectability of the two-toed sloth during search (Day 10). Source: R. Villalba-Briones.

conditions (Fig. 2B). In addition, the studied sloth was always found sleeping at 18:00, so it was easier to spot due to the previous night's monitoring observations and the daylight condition. Relative analysis between number of monitoring days and visibility showed consistency with the raw data (Fig. 1B). Alternatively, heavy downpours in the rainy season could affect the visibility and possibility to persist in the area, but in our study we could remain near the two-toed sloth during monitoring and the number of detections was not affected. Only an electric storm during the second day affected the monitoring and ceased our activity. It is important to highlight that we prioritized follow-up over monitoring, that food source availability is essential for release purposes (Bello et al. 2018; Pottie et al. 2021), and abundant leaf coverage in tropical dry forests is found during the rainy season.

In this study, it is inferred that a masked owl (*Pulsatrix perspicillata*) showed antagonistic behavior towards *Choloepus hoffmanni*, given its continuous vocalizations when coming closer to the sloth (estimated at less than 10 m distance) and the sloth's subsequent fall. Additionally, previous nearby vocalizations by a masked owl provoked motionless behavior by the sloth (Fig. 3D), which is a common strategy among prey animals (Stevens and Ruxton 2019) but had not previously been reported in relation to *Choloepus hoffmanni*. Masked owl predation of sloths has previously been recorded in Panama. In that particular case, a *Bradypus* sloth (1.25 kg) was found partially eaten and presenting the marks of a masked owl, after a dramatic fall from a tree (Voirin et al. 2009). In the Panamanian event, the *Bradypus* individual weighed 3.5–4.5 kg (Voirin et al. 2009), and, similarly, our two-toed sloth weighed 3.8 kg. However, in our study site, when the rehabilitated sloth fell from the tree, he was quickly found by the author-caregiver (R.V.-B.). After resting for a minute, the sloth showed hyperactivity, moved fast and towards the direction of the initial owl calls. After this incident, it seems that the masked owls moved to another area. We can suspect that the sloth showed aggressive displays towards the masked owl in its nest or resting area, given that after this event, no more nearby calls were registered, but remained uncertain (Suppl. material 1).

The first days or weeks following the release are the most critical periods for released animals (Bello et al. 2018; Pottie et al. 2021) but, taking into account the length of the follow-up, we cannot assure the correct establishment of the individual into the new habitat. Records of feeding from different tree species, the capability of movement across the forest, the record of feces, the capability to recover from the fall and get back alone to the tree canopy are complying details of aptitudes (Suppl. material 1). However, one follow-up month and a three-month monitoring with tracking devices would likely be more desirable to confirm the establishment of the individual, as this was the estimated successful time in previous works with other arboreal mammals: primates (Pottie et al. 2021). An extensive study in survival of released two-toed sloths would be very useful to estimate the optimal time-period to determine the average establishment time in this species.

Placing collars and backpacks on animals can be stressful for them (Dennis and Shah 2012), especially when they are still growing. This may therefore be detrimental to their survival in the wild. To avoid unnecessary prolongation of presence of the tracking device on the animal, satellite-controlled gadgets for automatic release are usually added, which significantly increases the total price of the product. Thus, it is important to mention that to avoid invasive extraction of monitoring devices, use of biodegradable material is a useful strategy. The lightweight Tile Bluetooth device did not pose any harm to the sloth, and heavy rains degraded the cardboard-made attachment, thus releasing the device. While functioning, it helped to locate the two-toed sloth even when the animal was out of sight. Therefore, this device shows potential for use on low-mobility species in future monitoring projects, especially in rehabilitation evaluation and post-release follow-up.

Conclusion

The follow-up, or, post-release support of animals, involves a set of actions implemented in situ, ahead of the time of their release, to support their reestablishment in their natural habitats. Successful rehabilitation is demonstrated through their establishment in the wild, which can only be verified through monitoring. The relationship between movement patterns and detectability is an important result to consider in the case of two-toed sloths, regarding monitoring through direct observation and follow-up activities. Daylight and knowledge of movement time ranges facilitate detection of two-toed sloths; thus, the best time for detection was found to be 19:00. Species interactions are part of the process of how biological communities function, as shown in the possible antagonistic behavior between *Pulsatrix perspicillata* and *Choloepus hoffmanni*. Because of the dangers involved in constant exploration of the forests, especially at night, and because of the influence of human presence on wildlife, we suggest using monitoring devices to locate released animals during the follow-up. For this, a biodegradable backpack with Bluetooth technology is a valuable option to consider, given its accessibility and effectiveness for locating subjects that belong to species with low mobility. Further evaluation of Bluetooth-based monitoring is needed in order to measure its capabilities. The length of the follow-up and monitoring proved to be useful during the time of implementation but, in this particular case, was insufficient to assume that the two-toed sloth had become established in its new habitat. The successful release of animals offers a second chance for these animals and can help in sustaining their populations and ecosystem. Therefore, we recommend that investment in post-release follow-up should be promoted among conservation agents and the use of low-cost tracking technology seems to be an affordable option.

Ethical compliance

The release of the two-toed sloth individual was under surveillance and management of the Ministry of Environment Water and Ecological Transition of Ecuador and under MAAE-ARSFC-2022-2174 research permit.

Acknowledgements

Thanks to Mansion Mascota for their work and support during the rehabilitation process, and to Eliana B. Molineros for her care and veterinary perspective that was instrumental in the success of this research. We appreciate the cooperation of the volunteers María Alberdi and Itsaso Zugadi for their work during rehabilitation procedures, and Daniela Cedeño and Nicol Casals for their assistance in the field. Last but not least, we especially thank Bravo for its courage.

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Supplementary material 1

Record of observations during follow-up of the released two-toed sloth (*Choloepus hoffmanni*)

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Data type: table (docx file)

Link: https://doi.org/10.3897/neotropical.17.e91332.suppl1