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Session 1D Conservation of the Pygmy sloth, *Bradypus pygmaeus*

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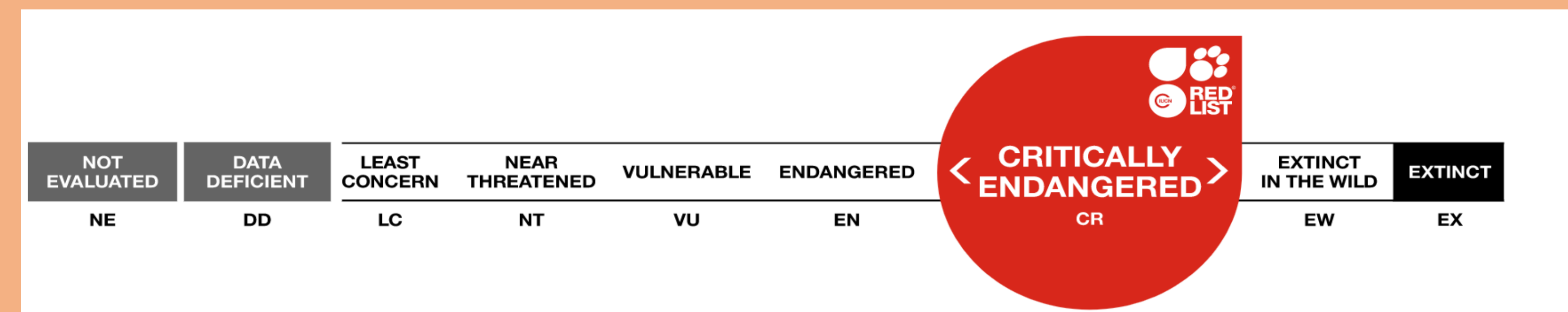
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THE THREE TOED PYGMY SLOTH *BRADYPUS PYGMAEUS* CONSERVATION

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THE PYGMY SLOTH

- Discovered in 2001 (Voinin, 2015), the pygmy three toed sloth *Bradypus pygmaeus* (figure 1) is restricted to the island of Escudo de Veraguas which separated from mainland Panama over 8000 years ago (O'Neill, 2018).
- Being endemic to the island (Superina et al., 2010) has resulted in speciation, bringing about their recognition as distinct from their mainland sibling; the brown throated three toed sloth (*Bradypus variegatus*) (Anderson and Handley, 2001).
- The IUCN classifies the pygmy sloth as critically endangered (CR) (Vorin et al., 2014).
- There are substantial gaps in the research regarding pygmy sloths, their history and ecological requirements. Almost all of the literature differs in terms of population estimates, feeding habits, habitats and home range.
- It is presumed that the pygmy sloths reside predominantly within the mangrove forests although past research identified 9 out of 79 individuals within the interior forests (Kaviar et al 2012). More current literature identified a total of 259 individuals over a three year period both in the mangrove forests and island interior (Owen and Smith, 2016). The inconsistency in research so far can also be observed here.
- Although there is no estimated rate of decline, research does indicate that the population numbers will continue to decrease without subsequent research (Kaviar et al., 2012; Vorin, 2015).
- Minimal conservation efforts have been made in regard to this species as a consequence of insufficient information, the only current conservation comes from ZSL's EDGE of Existence programme who track and monitor individuals on the island whilst working alongside local communities to educate the importance of the island and its wildlife.

Habitat loss and fragmentation (figure 2) The island has seasonal visitors who utilise the mangrove forests for charcoal and building (Superina et al., 2010; Voinin, 2015).

Restricted home range They predominantly inhabit mangroves that represent only 30% of the island (figure 3) (Aguiar, 2004).

REASONS FOR DECLINE

Lack of authority and wildlife protection on the island (Aguiar, 2004).

Proposed tourism infrastructure (Vorin et al., 2014).

PROPOSED CONSERVATION STRATEGIES

Conservation of the pygmy sloth will focus on in situ methods. This critically endangered mammal is too understudied to trial ex situ conservation especially as previous *Bradypus* species have not successfully bred nor survived for long periods of time in captivity (Raines, 2005).

STRATEGY 1

- AIM** - habitat connectivity, joining the current mangrove areas (figure 3) will allow movement between them and hopefully encourage reproduction.
- PROTECT** the mangroves through educating locals into their sustainable usage.
- RESTORE** the mangroves through planting initiatives, involve and pay local communities; benefiting individuals and the island.

STRATEGY 2

- Improving the status of the island, providing government support will help to enhance the island's legal protection, safeguarding its flora and fauna species whilst also allowing the indigenous communities to sustainably use the island (Day et al., 2019).
- Protected sanctuary, under the Ngobe-Bugle indigenous lands, it is therefore governed by the indigenous communities (Owen and Smith, 2016).

STRATEGY 3

- Implementing a tourist fee will increase financial aid for the island (Grilli et al., 2021).
- The funds will then be allocated to help with strategy 1 and also to pay the local communities involved.
- Fee would increase during the busier seasons
- In 2009 a \$2 fee per person visiting in Jamaica was introduced, this generated \$3.4 million, with a visitor decline rate of only 0.2% (Edwards, 2009).

CONSERVATION IMPORTANCE

Understanding the requirements of this elusive species is essential for its survival, conservation will only succeed if done correctly where it meets the needs of the species and the island as well as working alongside those who use the island throughout the year to build a positive relationship between humans and nature. The proposed conservation strategies aim to mitigate future threats and slowly reduce and reverse the current issues the pygmy sloths are facing to prevent their extinction.

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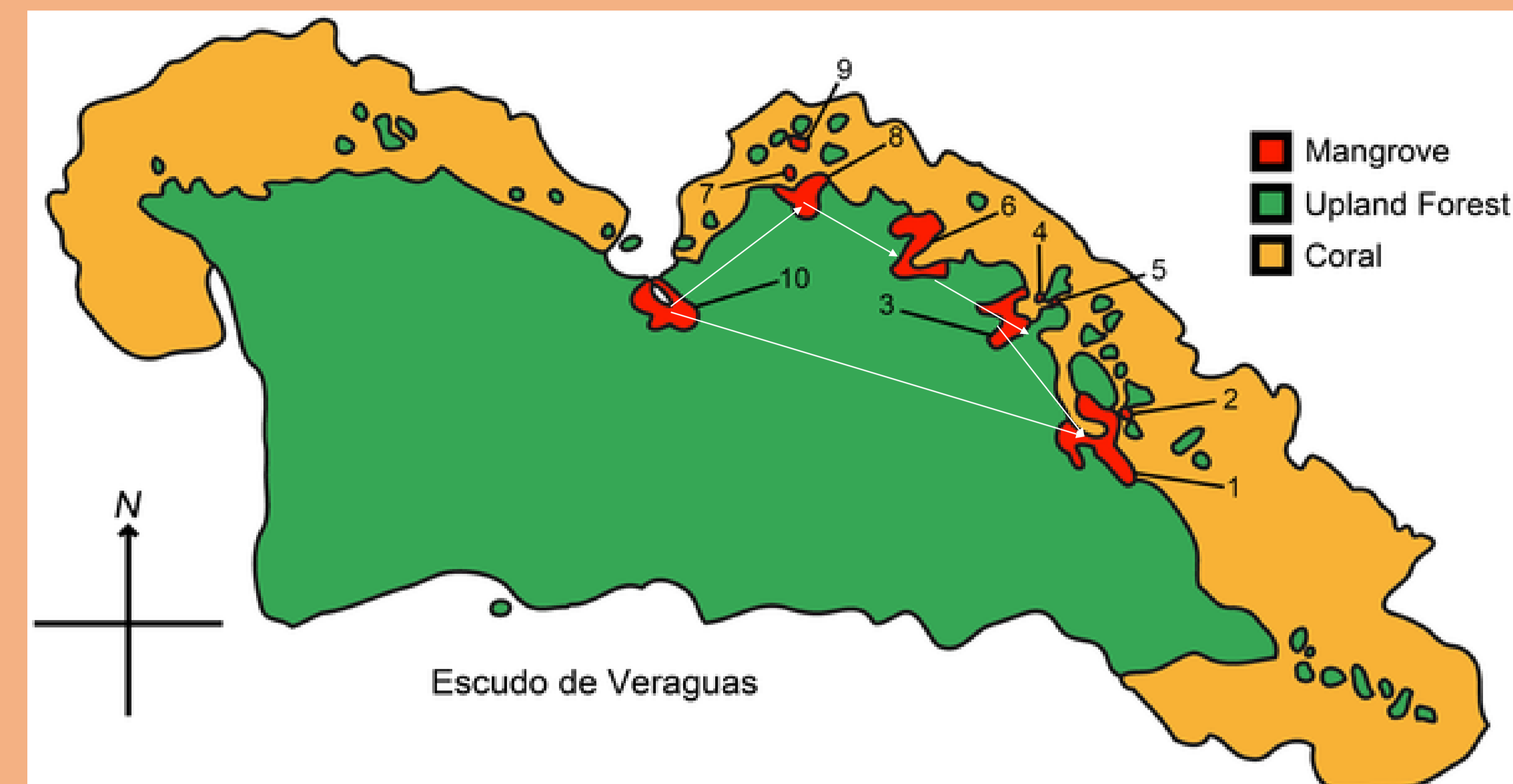


Figure 3 A map of the mangrove forest locations on the island. White arrows indicate plans for connecting the mangroves via planting to provide connectivity between areas. Source: Kaviar et al., (2012).

FEASIBILITY OF THE PROPOSED STRATEGIES

All strategies are feasible as long as research is done prior and that the strategy is customised to fit the needs of the island (wildlife and local communities) and a one size fits all approach is avoided.

Evidence of successful mangrove restoration can be seen in countries such as Florida specifically pine island where the island state has now reached that of a self-sufficient forest (Anon, 2019). Conversely, failures can occur as with the large-scale planting effort seen in Sri Lanka whereby 54% of planting attempts failed, 7 out of the remaining 14 sites considered successful only had a 10% survival rate (Kodikara et al., 2017). It is essential an action plan is created to consider topographic and spatial scales, species, planting method and design, island use (Lewis, 2005; Kodikara et al., 2017) to allow for a successful strategy.

Lack of funding may limit strategy 1 but the aim is to aid this initiative with strategy 3.

Conflict may occur if indigenous communities are not involved in the processes and decisions on the island which may halt the conservation or lead to rebellion against it (Shreya Dasgupta, 2016)

Governments may not see the benefits of the proposals and limit their involvement or deny any support meaning tourism infrastructure etc will go ahead as planned.

These are long term conservation plans. There are minimal quick fix options available without denying the local communities the right to their island and its resources. Alongside these proposed ideas, education will be the quickest in regard to time frame and effectiveness therefore it is important to work alongside those who use the island from the beginning and educate them on the importance of sustainable use of the materials on the island.

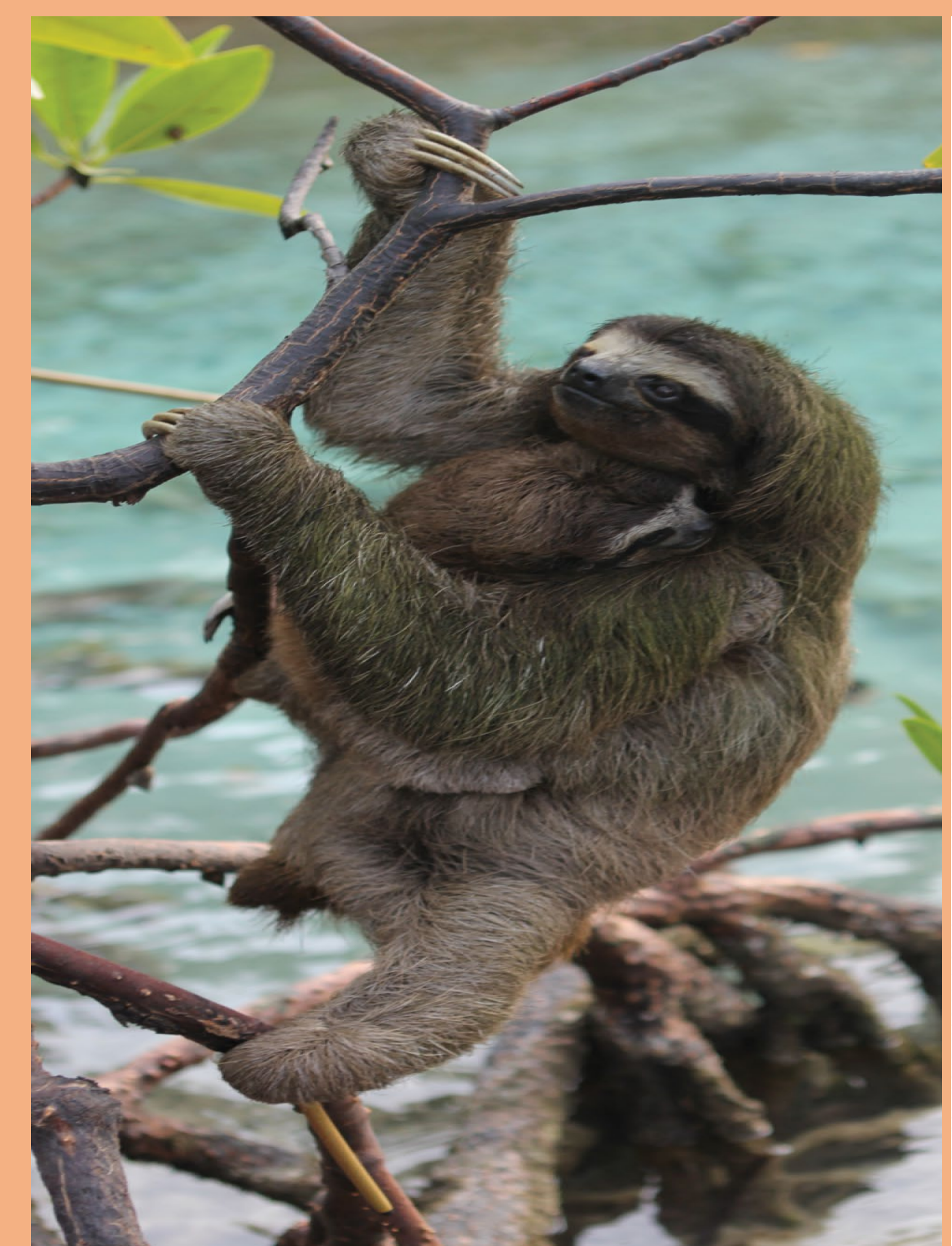


Figure 1 A female pygmy sloth with its young in the mangrove trees on the Island of Escudo de Veraguas. Source: Vorin (2015).

Figure 2 Mangrove cuttings that occur regularly on the island. Source: Owen and Smith, (2016).