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BROWN CAPUCHIN (*SAPAJUS APELLA*) IN FRENCH GUIANA REPEATEDLY INSERTS *IN-SITU* PALM-TRUNK SPINES BETWEEN TEETH

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Abstract

Capuchin monkeys are known for their dexterity, risk-taking, and object manipulation skills, including tool use. Animal populations on islands often produce novel behaviors, especially when the location is absent of key predators. On Île Royale in French Guiana, predators such as large felids are absent, and introduced robust capuchin monkeys (*Sapajus apella*) are abundant and fed both directly and indirectly by tourists. Here we provide a photo sequence of a juvenile robust capuchin monkey using the in-situ spines on a palm tree trunk as toothpicks. The capuchin interacted with stationary, dangerous and delicate objects, the sharp and numerous in-situ palm spines, and positioned the mouth three times consecutively so that a spine entered between two of the teeth. While observations of dental cleaning, probing or flossing in other primate species, including *S. libidinosus*, are considered tool use as they involve the use of movable objects to manipulate the environment, here careful body orientation to utilize a potentially harmful stationary object is not considered tool use, but expands previous findings that capuchins are cognitively skilled, dexterous, highly exploratory and willing to risk pain in foraging and other activities. We hope this observation stimulates further research on capuchin behavior within the Guianas and throughout the Amazon biome, where robust capuchins are abundant but relatively little studied in regards to tool use behavior and object manipulation.

Keywords: Cebidae, cognition, dexterity, Guianas, island behavior, object manipulation

Résumé

Les singes capucins sont réputés pour leur dextérité, leur goût du risque et leur capacité à manipuler des objets, notamment des outils. Les populations animales insulaires développent souvent des comportements inédits, surtout en l'absence de prédateurs importants. L'Île Royale, en Guyane française, connait une absence de prédateurs, tels les grands félins, et les capucins bruns (*Sapajus apella*), introduits sur l'île, y sont nombreux et nourris, directement et indirectement, par les touristes. Nous présentons ici une séquence de photos d'un jeune singe capucin brun utilisant les épines d'un tronc de palmier comme cure-dents. Le capucin a interagi avec des objets immobiles, dangereux et fragiles, les nombreuses épines acérées du palmier, et a positionné sa bouche à trois reprises dans le but de glisser une épine entre deux dents. Alors que les observations de nettoyage dentaire, de sondage dentaire ou d'utilisation de fil dentaire chez d'autres espèces de primates, y compris *S. libidinosus*, sont considérées comme une utilisation d'outils car elles impliquent l'utilisation d'objets mobiles pour manipuler l'environnement, ici l'orientation corporelle soignée pour utiliser un objet stationnaire potentiellement dangereux n'est pas considérée comme une utilisation d'outils, mais élargit les conclusions précédentes selon lesquelles les capucins sont cognitivement doués, habiles, très explorateurs et prêts à risquer la douleur lors de la recherche de nourriture et d'autres activités. Nous espérons que cette observation encouragera de nouvelles recherches sur le comportement des capucins dans les Guyanes et dans tout le biome amazonien, où les capucins robustes sont abondants mais relativement peu étudiés vis-àvis de l'utilisation d'outils et de la manipulation d'objets.

Mots-clés: Cebidae, cognition, comportement insulaire, dextérité, Guyanes, manipulation d'objets

Introduction

Capuchin monkeys are known for their dexterity, risk-taking, and object manipulation skills, including tool use (Fragaszy et al., 2004). Animal populations on islands may become bolder (Gavriilidi et al., 2022) and capuchins on islands may produce novel behaviors, especially when the location is absent of key predators (Phillips, 1998; Goldsborough et al., 2025). Here we describe a novel behavior for brown capuchin monkeys (*Sapajus apella*) on Île Royale, of the Îles du Salut (Salvation Islands), French Guiana. These islands were formerly a French penal colony and are now a tourist destination for learning about the brutal regional colonial history. The capuchins likely were introduced to the islands but are native to mainland French Guiana. On Île Royale, predators such as large felids are absent, and the robust capuchin monkeys are abundant (Guyane la 1ére, 2021; The Lazy Nomad, 2022; ParoDeeJay, 2025). They are hand fed directly by tourists (Les Aventures de Fishou, 2019) and eat human-made foods from garbage cans near the restaurant-guesthouse on the island (The Lazy Nomad, 2022; ParoDeeJay, 2025), or take food directly from the restaurant (Guyane la 1ére, 2021).

We provide a photo sequence of a juvenile robust capuchin monkey (*Sapajus apella*) using the in-situ spines on the trunk of a Macaw or Mouyaca palm tree (*Acrocomia aculeata*) (or possibly an Awara palm tree, *Astrocaryum vulgare*) as toothpicks (Figure 1, panels A-N). The photo series was taken from 9:54.51 a.m. to 9:55.23 a.m. October

2, 2022 at Île Royale (5.286581, -52.588167), French Guiana. While standing on the palm fronds from another palm tree, the capuchin touched several palm-trunk spines with its fingers while visually assessing them. Over the course of the observation, the capuchin positioned its head three times consecutively so that an *in-situ* palm spine entered between its teeth, then held the spine in place with its lips closed before releasing it (see Figure 2 for close up). While capuchins frequently bite and hold attached objects with their teeth to pull them out (Tiago Falótico, pers. obs.), in this case we did not observe the juvenile pulling or twisting the thorn. However juvenile capuchins often exhibit exploratory behaviors that do not have a clear function.

The use of loose sticks as probe tools for teeth cleaning or brushing has been reported for ape species in the wild, including a bonobo (*Pan paniscus*: Ingmanson, 1996) and orangutans (*Pongo abelii*: van Schaik et al., 2008; Meulman and van Schaik, 2013). An urban population of long-tailed macaques (*Macaca fascicularis*: Watanabe et al., 2007) used human hair and coconut shell fiber as dental floss, and other wild long-tailed macaque populations were reported to brush their teeth with twigs (Watanabe et al., 2007) or to pick their teeth with strings from nylon or coconut fiber rope (Mazumder and Kaburu, 2020). Bonnet macaques (*M. radiata*: Pal and Sinha, 2022) used twigs or sticks for dental probing. A wild adult female bearded capuchin (*Sapajus libidinosus*: Haslam and Falótico, 2015) used sticks as toothpick tools to repeatedly target the same gum area; this behavior was considered by the authors to be directed at relieving discomfort or dislodging an irritant.

These observations of dental cleaning, probing or flossing in other primate species are considered a type of tool use because they involve the use of movable objects to manipulate the environment—in this context, self-directed tool use to the body (Pal and Sinha, 2022). Beck's (1980) definition of tool use requires the use of an unattached environmental object to alter another object, another organism or the user itself. Shumaker et al. (2024) modifies this definition to include "manipulable attached environmental" objects as potential tools. However, in the case presented here the capuchin repeatedly interacted with stationary, dangerous and delicate objects, the sharp and numerous in-situ palm spines attached to the trunk of a palm tree, in order to position the mouth so that one of the spines entered between two of the teeth (Figure 2). This selection of a spine for use, and subsequent

Figure 1(A-D). A brown capuchin (*Sapajus apella*) repeatedly positions its head so *in-situ* palm spines enter between its teeth. A) The capuchin touches several spines with fingers while visually assessing them, while standing on the palm fronds from another palm tree. B) Placement of the open mouth to position spine between teeth. C) Closure of mouth around the inserted spine. D) Holding still with spine in closed mouth. Photographs by Carlos Navarro.

Figure 1 (E-H). E) Capuchin touches and visually examines the same spines again. F) Visual examination of shorter spines lower on the trunk. G) Turning of head for further observation of spines. H) Approaching a second spine with mouth open. Photographs by Carlos Navarro.

Figure 1 (I-L). I) Placement of spine between teeth. J) Movement of head to side and closer to insert spine farther into mouth. K) Holding still with spine in mouth. L) Release of spine. Photographs by Carlos Navarro.

Figure 1 (M-N). M) New approach so that a third spine enters mouth. N) Holding still with spine in mouth. Photographs by Carlos Navarro.

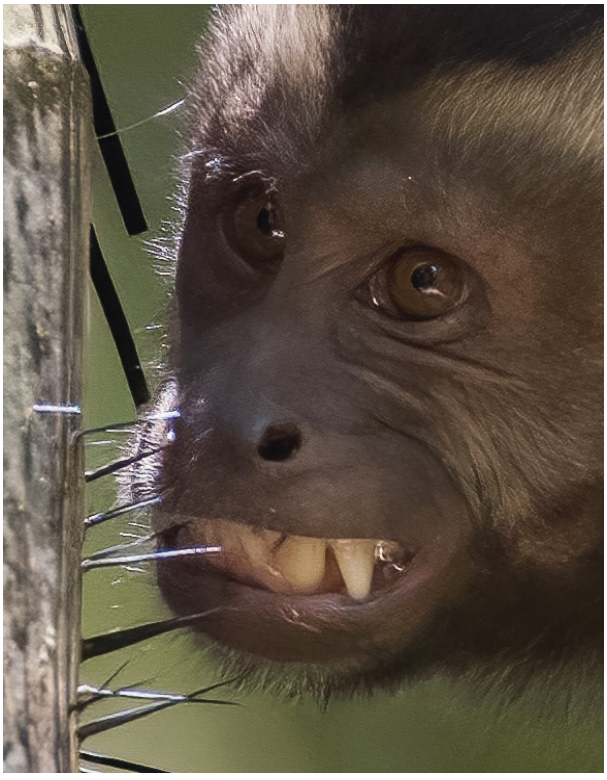

Figure 2. Close-up of palm spine in mouth, between teeth. Photograph by Carlos Navarro.

positioning of the head and mouth in order for a single spine to enter between the teeth, occurred three times consecutively during our observations. All this while the capuchin was balancing on palm fronds. Although this type of interaction with a stationary immobile object is not considered tool use (St. Amant and Horton, 2008; Steinberg et al., 2022), it certainly illuminates capuchin cognitive abilities and dexterity. It also reinforces diverse findings that describe capuchins as highly exploratory and willing to risk pain in foraging and other activities (Fragaszy et al., 2004). We hope this observation stimulates further research on capuchin behavior within the Guianas and throughout the Amazon biome, where robust capuchins are abundant but relatively little studied (Lynch Alfaro et al., 2014), especially in regard to tool use behavior and object manipulation.

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