

1 **Record of Baird's Tapir *Tapirus bairdii* at the La Suerte**
2 **Biological Field Station in the Caribbean Lowlands of Costa**
3 **Rica.**

4 LaRoy Stanley Edward Brandt¹, Maggie Singleton²

5 ¹ Department of Biology, Lincoln Memorial University, Harrogate, Tennessee, USA

6 ² Department of Biology, Lincoln Memorial University, Harrogate, Tennessee, USA

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8 Corresponding Author:

9 LaRoy Brandt¹

10 6965 Cumberland Gap Parkway, Harrogate, Tennessee, 37752, USA

11 Email address: laroy.brandt@lmunet.edu

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19 Widely recognized as the largest terrestrial mammal in the Neotropics, the globally
20 endangered, IUCN Red-listed (Garcia *et al*, 2018), Baird's tapir *Tapirus bairdii* has been in a
21 continual decline due to habitat loss, localized hunting, and their low reproductive rates (Torres,
22 *et al*, 2006; Naranjo, 2009; Garcia *et al*, 2016). Because of its ecological role, the loss of this
23 species is likely to have a cascading effect on a number of species that are important to the
24 ecological functioning of the remaining fragments of tropical forests across Central America
25 (Cove *et al*, 2015; Ripple *et al.*, 2015; Schank *et al*, 2017). As efforts continue to identify
26 regions where this species still persists throughout its known range, we report here a new record
27 of *T. bairdii* in the Caribbean lowlands of northeast Costa Rica. Although *T. bairdii* may have
28 historical existed in the region surrounding the field station, they were believed to be extirpated
29 with only anecdotal reports suggesting their continued existence.

30 This record of *T. bairdii* originated as part of a larger project monitoring the mammal
31 diversity at the La Suerte Biological Field Station (LBFS). With increasing shifts to more
32 agricultural land use in the Caribbean lowlands, anecdotal evidence suggests that mammalian
33 biodiversity at LBFS may be increasing as many animals are forced into smaller forested areas
34 due to habitat loss. Such anecdotal evidence included increased regional sightings of tapirs, as
35 well as many other animals. In an attempt to evaluate these reports, trail cameras were deployed
36 across LBFS habitats from May through December 2017.

37 Managed by the Maderas Rainforest Conservancy (MRC), LBFS lies within the Meso-
38 American Biological Corridor (MABC). The LBFS is a prime example of the diverse habitats
39 that exist across the MABC in Costa Rica and is located on Rio Suerte (N10°26'52.707",
40 W83°46'44.277"). The site (see figure 1) consists of ~400 hectares of a variety of habitats that
41 include secondary forests, swamps, marshes, and pastures surrounded by various types of

42 agriculture and connected to larger forested areas directly, and through a number of corridors.
43 The forested areas have relatively no human activity with some areas historically having been
44 clear-cut and used to graze cattle. Over the past 7 years, some LBFS areas have been replanted
45 with over fifty-thousand trees (*Gmelina arborea* and *Tectona grandis*). Even with these efforts,
46 LBFS is clearly part of the fragmented landscape in an area that is dominated by large-scale
47 agricultural lands bisected by narrow forest corridors.

48 Although LBFS property has a long history of lumber harvest and cattle ranching, the
49 habitat management has developed the location into a thriving and growing tropical forest
50 (Garber *et al*, 2010). As it is connected to larger forest fragments, as well as national parks,
51 through a network of corridors, the site has become a refuge and home to many tropical bird,
52 reptile, amphibian, and mammal species. Numerous anecdotal reports from the staff managing
53 LBFS have indicated that individual *T. bairdii* have existed on the property for a number of years
54 with recent reports suggesting that their numbers might be increasing (personal communication
55 Renee Molina – MRC Director; Palomo Flores and Rosy Flores LBFS staff).

56 With the permission of the Maderas Rainforest Conservancy and under the permitting
57 agreement within the memorandum of understanding between the University of Costa Rica and
58 Lincoln Memorial University, a total of eight Reconyx cameras were placed within four habitat
59 types: 1) three cameras in older secondary forests (>30 years old with minimal lumber harvest),
60 2) two cameras in younger secondary forests (< 10-30 years of regrowth after clear cut and cattle
61 ranching), 3) two cameras in a replanted *T. grandis* plantation (post clear-cut, <5 years old), and
62 4) one camera in a replanted *G. arborea* plantation (Lincoln Memorial University IACUC
63 Protocol 1705-BIO-09).. Cameras were deployed from 20 May to 27 December 2018. Camera
64 locations were chosen based on advice by LBFS staff to minimize the potential for camera theft.

65 The area surrounding each camera location was evaluated for evidence of mammal presence
66 (e.g., animal tracks) on the first day of camera deployment and on the day of camera removal.

67 Overall, *T. bairdii* were captured on four cameras in two habitat types (see table 1), while
68 *T. bairdii* tracks were identified within 30 meters of all cameras locations in both the old and
69 young secondary forests. Adult male tapirs were detected at two locations, while an adult female
70 with a juvenile was captured on camera at one location, and two other individuals whose sex
71 could not be determined were detected at different locations. Representative images of *T. bairdii*
72 are also presented in Figure 2.

73 Our camera trap photos clearly indicate the presence of multiple tapir individuals
74 currently inhabit the various habitats at LBFS. It's important to note that the presence of males,
75 females, and a juvenile suggests that a small population may be in the early stages of
76 establishment at, or in the region around LBFS. Although the presence of *T. bairdii* has been
77 suspect for some time, personal observations (L. Brandt) and anecdotal information shared by
78 LBFS staff indicated that *T. bairdii* were not common until recently. Specifically, over the past
79 5-7 years, and especially, in the last 3 years, tracks were becoming more common and visual
80 sightings have been increasing. This could be due to an increased interest in seeing a wild tapir
81 by LBFS visitors and researchers resulting in greater "survey effort." However, we propose that
82 this increase in anecdotal tapir presence is at least in part due to increased habitat loss resulting
83 from increased agricultural land use in the region around LBFS. In actuality, it could very well
84 be a combination of both explanations. At present, it may be impossible to determine which
85 explanation is more likely, but with future monitoring and evaluation of agricultural practices,
86 better management decisions could be made to ensure the survival of any tapirs that may inhabit
87 LBFS in the future.

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Figure 1. Location and habitats of the La Suerte Biological Field Station (LBFS). A) LBFS is located in the northern portion of the Limon province of Costa Rica central to numerous national parks, B) LBFS is comprised of various stages of secondary growth forests as well as replanted tree plantations along *Rio Suerte*.

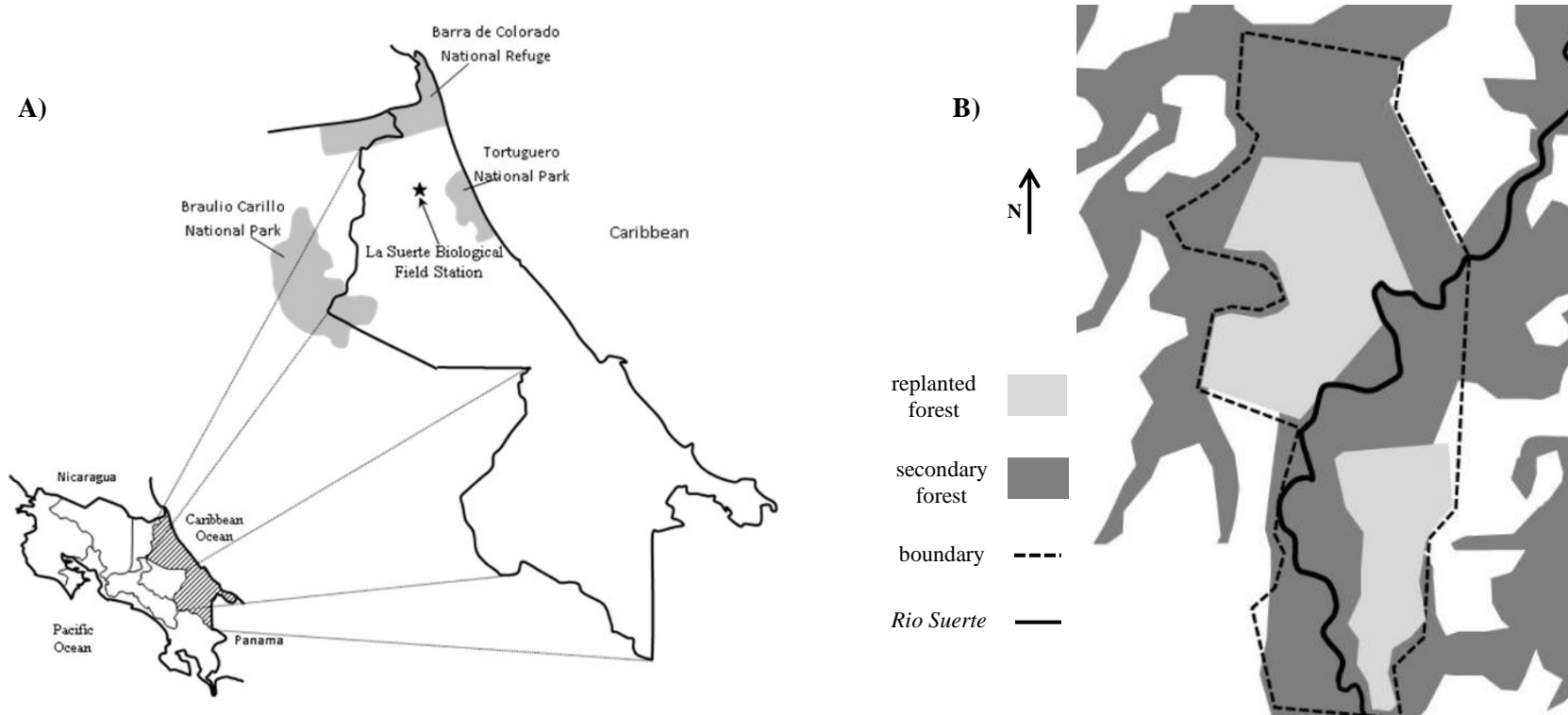


Figure 2. *Tapirus Bairdii* at La Suerte Biological Field Station in various habitat types A) core of older secondary forest, B) older secondary forest along *Rio Suerte*, and C) *Tectona grandis* plantation.



Table 1. Occurrences of *Tapirus Bairdii* in the habitats of the La Suerte Biological Field Station.

Habitat Type	Camera Trap Effort	Camera Detections
older secondary forest	483 camera/days	19
younger secondary forest	389 camera/days	0; tracks observed
<i>Tectona grandis</i> plantation	410 camera/days	10
<i>Gmelina arborea</i> plantation	342 camera/days	0; no tracks