Neotropical Biology and Conservation
12(2):150-153, may-august 2017
Unisinos - doi: 10.4013/nbc.2017.122.08

SHORT COMMUNICATION

Plantago trinitatis Rahn (Plantaginaceae): New sites of occurrence and altitudinal variation at Trindade Island, Brazil

Plantago trinitatis Rahn (Plantaginaceae): novos locais de ocorrência e variação altitudinal na Ilha da Trindade, Brasil

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Abstract

Plantago trinitatis, endemic plant of Trindade Island, a small oceanic island (9.28 km^2) apart about 1,140 km from the coast of the city of Vitória (Espírito Santo, southeastern Brazil), until now had only been located on the island at altitudes greater than 500 meters, in a dry environment and rocky soil. In April 2013, we observed several individuals of the species at altitudes varying from 80 to 240 meters, along a small watercourse in the northeast portion of the island. This record, in addition to confirming the occurrence of the species at lower altitudes than 500 meters, also confirms the recovery of the species, which, until 1998, was considered extinct.

Keywords: endemism, oceanic island, Plantaginaceae, altitudinal variation.

Resumo

Plantago trinitatis, planta endêmica da Ilha da Trindade, uma pequena ilha oceânica (9,28 km^2) distante aproximadamente 1.140 km da costa da cidade de Vitória (Espírito Santo, sudeste do Brasil), até o momento só havia sido localizada na ilha em altitudes superiores a 500 metros, em ambiente seco e solo rochoso. Em abril de 2013, observamos diversos indivíduos da espécie em altitudes variando de 80 a 240 metros, ao longo de um pequeno curso de água, na porção nordeste da ilha. Esse registro, além de confirmar a ocorrência da espécie em altitudes menores do que 500 metros, também confirma a recuperação da espécie, que, até 1998, era considerada extinta.

Palavras-chave: endemismo, ilha oceânica, Plantaginaceae, variação altitudinal.

The genus *Plantago* Linnaeus is cosmopolitan, with over 250 species concentrated in temperate or tropical regions. In general, the species of this genus are presented as herbs or, less commonly, as subshrubs and can be perennial or annual. Some species have a wide distribution, others with a more restricted distribution are habitat specialists; many of the latter occur only in small oceanic islands (Rahn, 1996; Rønsted *et al*., 2002; Dunbar-Co *et al*., 2008; Tay *et al*., 2010; Hefler *et al*., 2011; Meudt, 2012).

In Brazil, according to Hassemer *et al*. (2016), there are 15 species of *Plantago*, 12 of these are native and three are exotic originating from European regions. The species *P. catharinea* Decne., *P. corvensis* Hassemer, *P. guilleminiana* Decne., *P. rahniana* Hassemer & R. Trevis., *P. trinitatis* Rahn, and *P. turficola* Rahn, occur exclusively in Brazil.

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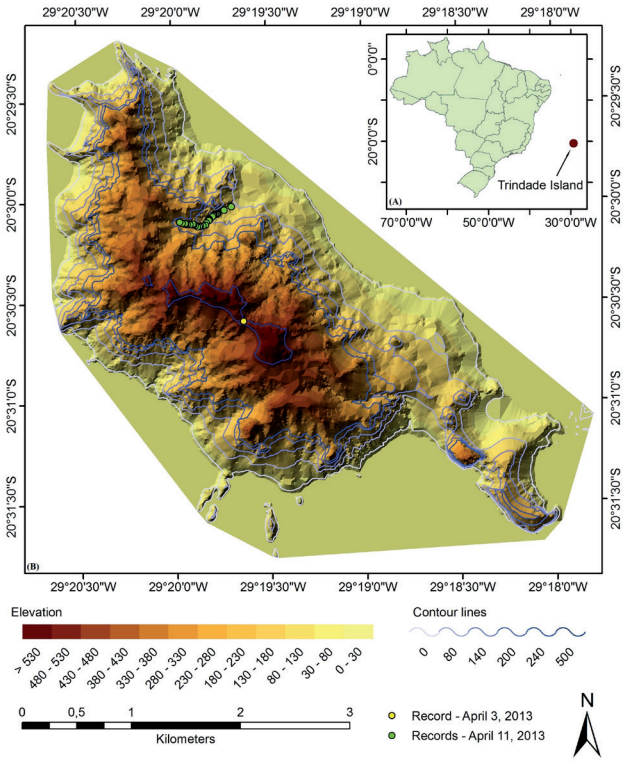

Figure 1. (A) Location of the Trindade Island (island size unscaled) and (B) records of *Plantago trinitatis* in the island.

The species *P. trinitatis* is endemic to the Trindade Island (Hassemer *et al*., 2016), a small oceanic island (9.28 km^2) apart about 1,140 km from the coast of the city of Vitória (Espírito Santo, southeastern Brazil, Figure 1). Its onshore portion reaches 620 meters above sea level and the ocean depths around the island reach 5,500 m (Alves, 1998; Castro, 2009). Since 1984, the administration of the island is under the jurisdiction of the Brazilian Navy (1st Naval District) that maintains an Oceanographic Station with a weather station in the area (Brasil, 1984; Alves, 1998). Access to the island is restricted, and scientific researches in the region are supported by PROTRINDADE program, linked to the Secretariat of the Inter-ministerial Commission for Sea Resources (Mohr *et al*., 2009).

The first sample of *P. trinitatis* was collected by Johann Becker on December 13, 1965, who found only "a dozen individuals" on the rocky slopes of the locality known as "Fazenda". The species was considered extinct until 1998, when one relictual population was rediscovered in the "Pico Trindade" at 590 meters of altitude (Alves, 1998; Alves *et al*., 2011; Clemente *et al*., 2011). All records of *P. trinitatis*, until now, occurred at elevations ≥ 500 m, in a dry environment and rocky soil (Alves, 1998; Alves *et al*., 2011; Hassemer, 2013).

On April 3, 2013, we also recorded individuals of *P. trinitatis* near the area known as "Fazendinha"

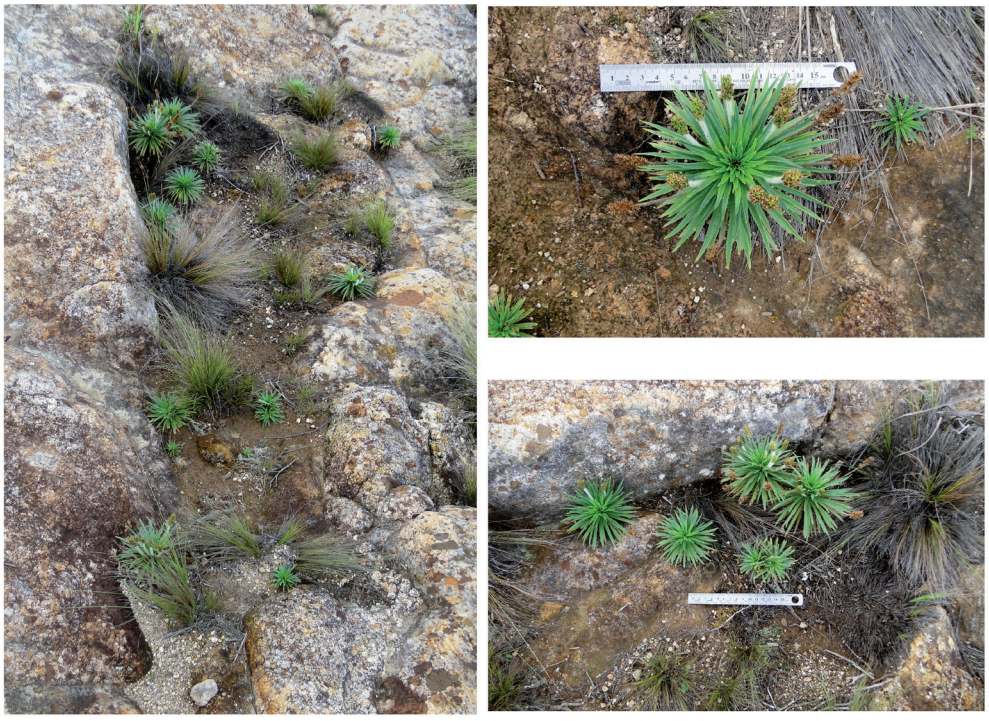

Figure 2. Individuals of *Plantago trinitatis* registered near the area known as "Fazendinha" (altitude ≥ 500 m) in a dry environment and rocky soil.

Figure 3. Individuals of *Plantago trinitatis* registered in the northeast portion of the Trindade Island (altitude <500 m) along a small watercourse.

(29°19'37.999''W; 20°30'36.000''S; altitude ≥ 500 m). The collected samples (Figure 2) have been deposited in the Herbarium of the Botany Department of the Federal University of Santa Catarina under number FLOR 49242 (Hassemer, 2013; Hassemer *et al*., 2015; Hassemer *et al*., 2016).

On April 11, 2013 we recorded the first specimens of *P. trinitatis* in altitude less than 500 m along a small watercourse, in the northeastern portion of the island (Figure 3), this being the first record for the species less than 500 meters of altitude. The specimens registered on this occasion were located between 80 and 240 meters above sea level (Figure 1).

Both records (03 and 11 April 2013) are extremely important as they demonstrate the recovery of the species, which after being considered extinct was rediscovered in 1998 and currently is expanding, occupying environments where previously there had been registered (below 500 m asl). The eradication of feral goats on the Trindade Island, completed in 2004 (Alves *et al*., 2011) was crucial to the recovery of the species, which in nine years managed to establish new populations on the island. Despite the recovery of the *P. trinitatis* populations on Trindade Island, according to Hassemer *et al*. (2016) this species should be classified as "critically endangered" by the IUCN criteria. However the species is not yet in the Red List of the Flora of Brazil (MMA, 2008).

Thus, we recommend more studies of this endemic species, which had its population reduced in the period they suffered pressure from feral goats, almost reaching extinction. The current population of the species must be accompanied and monitored, because a new threat may come to harm its expansion, as is the case of invasive plants such as *Guilandina bonduc* L. (Fabaceae), which is already colonizing the Trindade Island (Carvalho-Silva *et al*., 2013).

Acknowledgements

The authors are grateful to Brazilian Navy (1st Naval District – Oceanographic Station of Trindade Island), to Secretariat of the Inter-ministerial Commission for the Resources of the Sea (SECIRM), to Subsecretary for the Sectorial Plan for the Resources of the Sea (PSRM) and to Scientific Research Program on the Trindade Island (PROTRINDADE), by the transport and logistical support for

the activities on the island. We also thank the anonymous reviewers and editors for their valuable contributions.

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Submitted on September 19, 2016
Accepted on March 10, 2017