



# First record of *Helichrysum foetidum* (L.) Moench. (Asteraceae, Gnaphalieae) for South America

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## Abstract

We provide the first record of *Helichrysum foetidum* (Asteraceae, Gnaphalieae) for South America, based on new collections made in the state of Rio Grande do Sul, southern Brazil. This species is native from Africa and cultivated in Europe, where it is used as an ornamental or medicinal herb. *Helichrysum foetidum* is recognized by the discolorous leaves with adaxial surface dark green, tomentose and abaxial surface grey, lanose tomentose margins, large heads organized in a corymbiform capitulescence and bright yellow bracts and flowers. Description, a map of distribution in South America and images of the collected specimens are provided.

## Key words

Alien species; Brazil; Gnaphaliinae; Pampas; Rio Grande do Sul.

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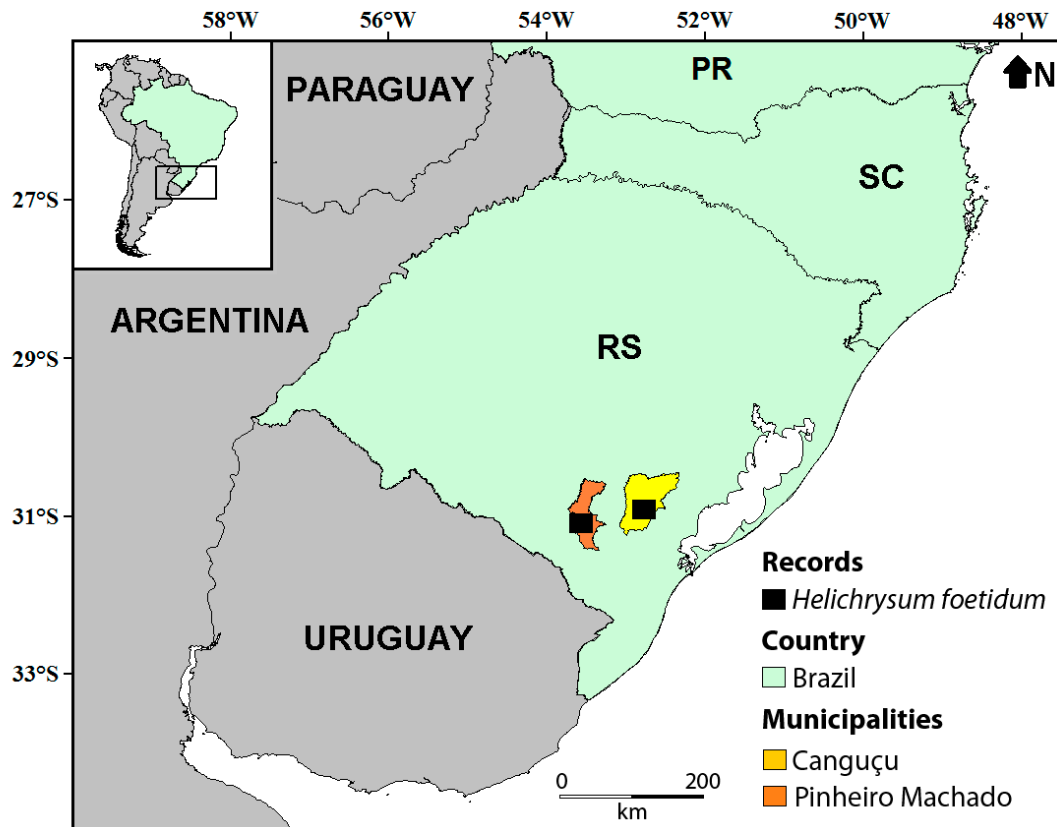
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## Introduction

Gnaphalieae (Asteraceae), with ca 180–190 genera and about 1240 species, occurs mostly in the southern hemisphere and is especially diverse in Australia and southern Africa (Ward et al. 2009). Although southern Africa is one of the centers of taxonomic diversity in Gnaphalieae and one of the most active areas of taxonomic research, the circumscription of *Helichrysum* in relation to other large genera such as *Pseudognaphalium*, *Achyrocline*, and *Anaphalis* remains a problem (Ward et al. 2009). Currently, the infratribal classification recognizes *Helichrysum* in subtribe Gnaphaliinae (Merxmüller et al. 1977, Hilliard and Burt 1981, Anderberg 1991, Ward et al. 2009).

*Helichrysum* consists of perennial or annual herbs or sometimes shrublets, with alternate leaves, generally flat

with entire margins and often tomentose. The capitula is solitary or in corymbiform capitulescences. The involucral bracts are papery, brown, yellow, pink or white, with stereome divided or undivided. The receptacle is flat, epaleate or rarely paleate. The outer pistillate filiform flowers are yellow or may be absent and the central bisexual flowers are yellow. The stamens have anthers with flat apical appendages and the pistil have style branches truncate, with hairs apically. The cypselae are oblong, glabrous or with elongated or short clavate twin hairs. The pappus bristles are capillary, barbellate or subplumose, connate or free at the base (Bayer et al. 2007). *Helichrysum* derives its name from the Greek words *helios* (sun) and *chrysos* (gold), due to many species presenting showy heads of bright yellow flowers (Lourens et



**Figure 1.** First records of *Helichrysum foetidum*, in South America at the municipalities of Canguçu (*G. Heiden* 1143; 1735) and Pinheiro Machado (*G. Heiden* 1775), Rio Grande do Sul, Brazil.

al. 2008). The genus comprises approximately 600 species and Africa is the region of occurrence with highest diversity, where *Helichrysum foetidum* (L.) Moench is native from (Beentje et al. 2005).

This work provides the first record of the species for South America, by recording *Helichrysum foetidum* at 2 localities in the state of Rio Grande do Sul, southern Brazil.

## Methods

The species was identified by consulting specialized literature (protologue and specific references on the studied genus), analysis of herbaria specimens, as well as consulting type specimen images. The collected and examined specimens were deposited in the herbaria ECT, RB, and SPF. A map of the occurrence in South America was generated using the software DIVA-GIS version 7.5 (Hijmans et al. 2012), based on collection data.

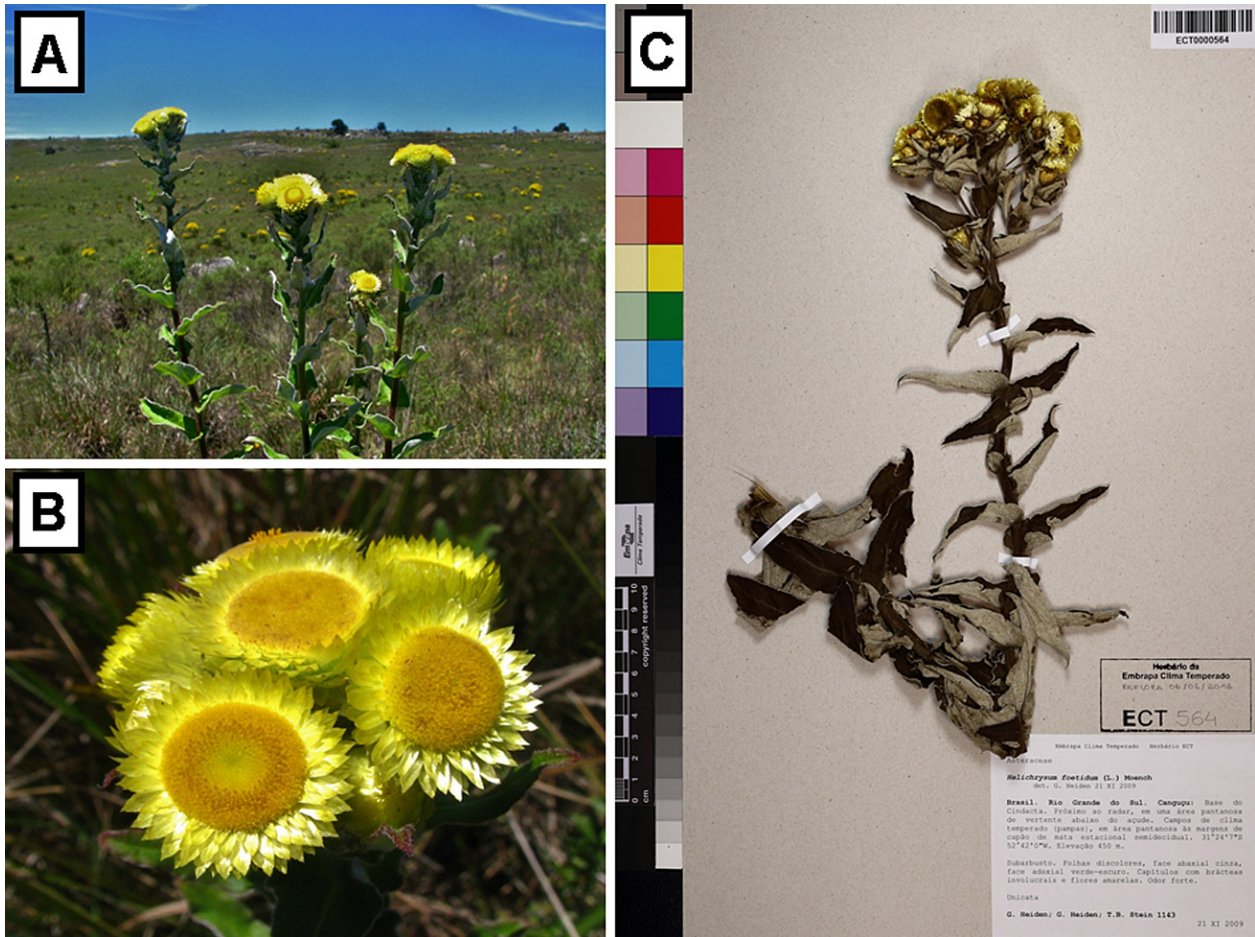
## Results

*Helichrysum foetidum* is easily distinguished in the field by its discoloured leaves, with lanose indument on the abaxial surface and bright yellow inflorescence in a corymbose panicle, as opposed to *Xerochrysum bracteatum* (Vent.) Tzvelev, another similar species with adventitious occurrence in Southern Brazil, but with leaves tomentose on both surfaces and solitary and terminal inflorescence. The genus *Helichrysum* can be easily distinguished by

the anthers with flat apical appendages and style branches truncate, with hairs apically, while *Xerochrysum* has anthers with concave apical appendages and style branches acute, with hairs dorsally (Bayer et al. 2007).

***Helichrysum foetidum* (L.) Moench (Moench 1794: 575) Figures 1, 2**

Shrublet ca 0.3–0.7 m tall. Branches cylindrical, striated, stem simple or sparingly branched from the base, tomentose. Leaves alternate, 1-veined in both surfaces, leaf blade 2.1–6.4 × 0.5–2.2 cm, lanceolate, apex acuminate, base amplexicaulis, chartaceous, discolor, adaxial surface dark green, tomentose and abaxial surface gray, lanose, margin tomentose. Heads disciform in corymbiform capitulescence, peduncle 2.5–5 cm long; heads 0.4–0.8 × 0.6–2 cm; 3 types of phyllaries in 8–9 series, graded, imbricate, innermost series 4–5.9 × 0.8–1.2 mm, much longer than the flowers, mid series 5.9–6.1 × 1.2–2 mm, outermost series 2–3 × 2–3 mm, phyllaries spatulate to ovate, apex acute, surface glossy, creamy to pale yellow, stereome divided. Receptacle flat, foveolate. Flowers yellow, 395–836. Outer pistillate flowers in several series, tube filiform ca 1.5–2.8 mm long, lobes 0.2 mm long, style 2.8 mm long. Central flowers in several series, greater than the outer flowers, tube cylindrical, ca 1.5–3 mm long, lobes ca 0.2 mm long, anthers ca 1 mm long, style ca 3 mm long. Anthers ca 1 mm long, translucent, connective appendage ca 0.2 mm long, obtuse, calcarate. Style ca 3 mm long, style branches ca 1 mm long. Cypsela 0.75–1 mm long, oblong with 4 thickened



**Figure 2.** *Helichrysum foetidum*. **A.** Habit. **B.** Heads in corymbiform capitulescence. **C.** Discolorous leaves in herbaria exsiccate (ECT).

ribs, sparsely pubescent on the ribs, blackened. Pappus uniseriate, bristles many, barbellate, slightly longer than the corolla.

**Specimens examined.** BRAZIL. Rio Grande do Sul: Canguçu, 31°24'7" S, 52°42'00" W, 450 m above sea level, 21 November 2009, *G. Heiden et al.* 1143 (ECT0000564); 27 October 2011, *G. Heiden et al.* 1735 (ECT0003421, SPF 208477). Pinheiro Machado, 31°32'06" S, 53°30'00" W, 431 m above sea level, 11 November 2011, *G. Heiden et al.* 1775 (ECT0003422, RB00944203, SPF00208463).

## Discussion

*Helichrysum foetidum* is native to Africa (Beentje et al. 2005), but has been introduced in other parts of the world, such as Portugal (Almeida and Freitas 2006) and Spain (Buján 2007). Asteraceae is one of the large global plant families that have a weedy tendency and have undergone major radiations in temperate regions (Lambdon et al. 2008). The fact that *H. foetidum* has been recorded as invasive in other countries and the habitat where the species was found indicates high risk to the species becoming invasive in southern Brazil.

According to Rivera et al. (1988), *H. foetidum* has clear acidophilic preferences and easily colonizes more or less nitrified sandy soils. The disturbed environment

where the species was recorded, in the municipality of Pinheiro Machado, in the temperate climate grasslands (Pampas), is characterized by Distrophyic Ultisols, what indicates superficial sandy soils with low fertility and acidophilic conditions, ideal to the spread of the species.

*Helichrysum foetidum* has been used as a medicinal herb in sacred rituals of traditional communities in Africa, due to its anti-inflammatory and hallucinatory effects (Lourens et al. 2008). The species is known to be used to treat influenza, infected wounds, herpes, eye problems, menstrual pains and to induce trance, besides possessing antifungal properties (Malolo et al. 2015). Records of medicinal or ornamental uses in Brazil were not found yet. The introduction of the species in the country may have been intentional, due to its potential use as medicinal and/or ornamental plant, or it may have been accidentally introduced for currently unknown reasons.

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## Authors' Contributions

LB and GH identified the species and wrote the manuscript.

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