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NEW RECORDS AND NOTEWORTHY RANGE EXTENSIONS OF VASCULAR PLANTS FROM THE CANARY ISLANDS AND MADEIRA

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ABSTRACT. The study reports new distributional data of vascular plants from Madeira and the Canary Islands. Range extensions are presented and commented for eight endemic and 10 non-endemic taxa. Among them are three new records for Macaronesia (*Anacyclus clavatus*, *Hypericum tetrapterum*, *Avena longiglumis*) and one for the Canary Islands (*Rosa rubiginosa* agg.).

RESUMO. O presente estudo menciona novos dados de distribuição de plantas vasculares da Madeira e Ilhas Canárias. As variações das extensões são apresentadas e comentadas para oito taxa endêmicos e 10 não-endêmicos. Entre eles estão três novos registos para a Macaronésia (*Anacyclus clavatus*, *Hypericum tetrapterum*, *Avena longiglumis*) e um para as ilhas Canárias (*Rosa rubiginosa* agg.).

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INTRODUCTION

The vascular plants of Macaronesia represent one of the most diverse insular floras of the world. More recently, numerous studies, including the continuous description of new taxa, have contributed significantly to the knowledge on the floristic diversity of the Canaries (e. g. VOGGENREITER, 1974; HANSEN & SUNDING, 1993; HOHENESTER & WELSS, 1993; BRAMWELL & BRAMWELL, 2001) whereas less work has been done for the Madeiran archipelago (PRESS & SHORT, 2001). In the course of several field trips and guided excursions during the past decade, I visited most islands of the Canaries and Madeira, sometimes repeatedly, with the aim of studying the Macaronesian flora and collecting seed material for the Botanical Gardens Bonn, Germany. Here I present new distributional data on endemic, indigenous and introduced plants of both archipelagos, including new records for three species in Macaronesia. Records cited here were obtained during field excursions at several seasons between 2002-2010 on the islands of Fuerteventura, La Palma, Tenerife and Madeira. Plants were either recorded and/or photographed, and in most cases specimens were collected additionally.

RESULTS & DISCUSSION

Range extensions of endemics

CRASSULACEAE

Aeonium smithii (Sims) Webb & Berthelot

28 June 2002, below Los Organos trail, c. 1450 m a. s. l., Aguamansa, Orotava, Tenerife; a few individuals in rocky habitat of a small clearing of transitional *fayal brezal* - pine forest.

Although BURCHARD (1929), without indicating further evidence, mentioned that *A. smithii* is rare on the 'northern slope', VOGGENREITER (1974), in his detailed work about the genus on Tenerife, as well as HOHENESTER & WELSS (1993) and BRAMWELL & BRAMWELL (2001) refer the range of this Tenerife endemic to the southern part of the island, including the southern slopes of the Cañadas. Hence, the new record is the first one for the northern part, showing a remarkable distributional gap to the main range. Despite its proximity to a frequented hiking trail, the fairly remoteness and pristine habitat characteristics of the locality favour considering this extremely small and endangered population as indigenous rather than introduced by man. Moreover, a similar north-south distribution pattern can also be observed in another Tenerife endemic, *Pericallis lanata* (*pers. obs.*; BRAMWELL & BRAMWELL, 2001). Among all Macaronesian *Aeonium* spp., *A. smithii* has the most extended altitudinal range comprising more than 2300 m (VOGGENREITER, 1974). The species is included in the Libro Rojo of Canarian vascular plants (GÓMEZ-CAMPO, 1996) and categorized as "Vulnerable"

according to IUCN criteria (IUCN, 2001). It is suggested to search along the Los Organos trail and the numerous adjacent cliffs and barrancos for further individuals.

FABACEAE

Lotus macranthus Lowe

9 August 2008, Ribeira do Paúl, above Paúl do Mar, ca. 200 m a. s. l., Madeira; ca. five individuals growing in debris and rock crevices at steep, partly shady cliffs in xerothermic (succulent) shrub.

One of the few red-flowering tree-foils and endemic to the Madeiran archipelago, the species has been reported from Madeira as very rare, found so far only at Cabo Garajau (east of Funchal), being more common on Porto Santo and on the Desertas (PRESS & SHORT, 2001). Thus, the tiny population at Ribeira do Paúl represents only the second record for Madeira, extending the range ca. 35 km westward to the southwestern part of the island. It was discovered by the author in August 2008 and confirmed during two later visits on 25 May 2009 and 22 January 2010. All plants grow on semi-shaded cliffs in westward exposition in the transition zone between coastal succulent to thermophilic shrub, including the endemic *Euphorbia piscatoria*, *Olea europaea* ssp. *maderensis*, *Saxifraga maderensis* var. *maderensis*, *Aeonium glandulosum*, *Crambe fruticosa* and *Satureja varia* ssp. *thymoides*. Due to the unstable oreographical situation and the extremely low number of individuals, the population must be considered highly endangered by erosive processes.

SCROPHULARIACEAE

Scrophularia lowei Dalgaard

25 May 2009, Ribeira do Paúl, Madeira, ca. 200 m a. s. l.; one individual growing in xerophytic shrub along trail to Prazeres.

This figwort species is confined to Madeira, Porto Santo and the Desertas. On Madeira, it has been so far recorded only from the central southern (ribeiras near Funchal) and the northwestern coast (Porto Moniz) (PRESS & SHORT, 2001). This record extends the known Madeiran range to the southwestern part of island, somewhat bridging the present distributional gap of *S. lowei* which may have been overlooked elsewhere due to its annual cycle.

LAMIACEAE

Teucrium heterophyllum L'Héron

25 Mai 2009, Ribeira do Paúl, above Paúl do Mar, ca. 350-400 m a. s. l., Madeira; ca. one dozen individuals growing mainly on steep, inaccessible cliffs in thermophilic shrub.

An endemic shrub of Macaronesia, with most records from the western Canaries (Gran Canaria to El Hierro) where the species is uncommon in *Euphorbia* communities of the upper xerothermic shrub (GAISBERG, 2000; BRAMWELL & BRAMWELL, 2001). It is rare in the Madeiran archipelago, confined only to the main island and Ilhéu Chão (Desertas) (GAISBERG, 2000; PRESS & SHORT, 2001). On Madeira, at present only two populations are known from Cabo Girão and Ponta do Garajau (below Cristo Redentor), both situated on inaccessible coastal cliffs (PRESS & SHORT, 2001; *pers. obs.*). The discovery of *T. heterophyllum* at Ribeira do Paúl is somewhat surprising, given the fact that this area holds one of the most impressive relic stands of thermophilic shrub along the southwestern coast, and is passed by a frequently used hiking trail from which the individuals were first located. Unlike to both other localities that are under immediate maritime influence, the species is growing here somewhat distant from the coast and sheltered by the steep slopes of the ribeira. It is associated with typical representatives of the upper xerophytic shrub, such as *Crambe fruticosa*, *Euphorbia piscatoria*, *Maytenus umbellata*, *Olea europaea* var. *maderensis* and the introduced *Rhus coriaria* as well as *laurisilva* elements (e. g. *Apollonias barbujana*, *Laurus novocanariensis*, *Sideroxylon mirmulans*). The population size likely exceeds not more than one dozen individuals, estimated by identifying plants growing on rocky, inaccessible slopes with binoculars based on their conspicuous silvery-grey habit; however, there may be further (less prominently grown or juvenile) individuals that were overlooked. Recently, GAISBERG (2000) described two new subspecies from the Canaries discriminated by the length of calyx and trichomes, with the Madeiran plants assigned to the nominotypical form. Based on a specimen collected, the population at Ribeira do Paúl is referable to ssp. *heterophyllum*, exhibiting medium - long trichosomes around the calyx and upper leaves.

Sideritis canariensis L.

12 September 2009, Barranco del Jorado, Tijarafe, La Palma, c. 650 m a. s. l.; a single individual growing in a rock crevice in upper xerothermic shrub.

One of only two Macaronesian members of the genus, this species is endemic to more than one island of the Canaries, Tenerife and La Palma. On the latter, it is allopatric with the only other congener, *S. barbellata*, which is confined to the pine forests in the southern part of the island. *Sideritis canariensis* has been recorded by SANTOS (1983) and BRAMWELL & BRAMWELL (2001) only from northern and eastern La Palma at altitudes between 650-1000 m a. s. l., where it is chiefly associated with forest (*pinar* and *laurisilva*; *pers. obs.*), e. g. in the Cumbre Vieja region. The new locality is isolated from the nearest populations by the Caldera de Taburiente and represents the westernmost record for the species. Possibly more individuals grow on the inaccessible vertical cliffs near Tirajafe, home of numerous local and Canarian endemics, such as *Aeonium palmense*, *A. sedifolium*, *Greenovia diplocycla*, *Micromeria herpyllomorpha* and *Cheirolophus sventenii*, and part of Barranco del Jorado Natural Monument.

ASTERACEAE

“*Phagnalon bennettii*” Lowe

14 August 2008, Ribeira da Madalena, Madalena do Mar, Madeira, ca. 350 m a. s. l., in coastal succulent shrub; 25 May 2009, Ribeira do Paúl, above Paúl do Mar, ca. 300-400 m a. s. l., Madeira, in thermophilic shrub together with endemic elements, *e. g.* *Maytenus umbellata* and *Teucrium heterophyllum* ssp. *heterophyllum*.

Both localities extend the range of this poorly studied, uncommon Madeiran endemic to the western part of the island. It has been reported only from a few valleys in the southeast and Ponta de São Lourenço (PRESS & SHORT, 2001). The specimens taken from Ribeira do Paúl are considerably larger than those from other localities (incl. Madalena, Ponta de São Lourenço, Madeira; Pico do Castelo, Porto Santo) examined in this study and mentioned in the literature (PRESS & SHORT, 2001: rhachis up to 50 mm in length and 5 mm in width), with larger heads and leaves of up to 85 mm × 10 mm. The species is separable from *P. rupestre*, the only other congener occurring on Madeira, by broader, more rounded outer involucral bracts. During my three visits (2008-2010) I found both species sympatrically associated only at Ponta de São Lourenço.

The taxonomy is still insufficient and both names previously suggested, *P. bennettii* Lowe and *P. hanseni* Quaiser & Lack, nom. nud. are inconsistent with the nomenclature rules (PRESS & SHORT, 2001) due to the lack of any formal description yet which, however, this is currently in preparation (Lack, *pers. comm.*).

Phagnalon umbelliforme DC.

12 September 2009, Barranco Fagundo, La Palma, c. 50 m a. s. l.; a few individuals growing in rocky crevices at the ground of the dry barranco.

According to SANTOS (1983) and BRAMWELL & BRAMWELL (2001), this Canarian endemic is unknown from the northern part of La Palma, being recorded only in some southern valleys where it is uncommon. Barranco Fagundo is a hotspot of endemics (*e. g.* *Lotus eremiticus*, *Echium bethencourtii*, *Cheirolophus sventenii*) and included in the Special Nature Reserve Guelguén.

Range extensions of non-endemic species

1. Records new for Macaronesia

HYPERICACEAE

Hypericum tetrapterum Fries

13 August 2008, Ribeira do Paúl, south of Prazeres, ca. 400 m a. s. l., Madeira; a few individuals at the bank of a small permanent creek in *Salix* riverine shrub.

Until present, the species has remained unrecorded from Macaronesia (*e. g.* HANSEN & SUNDING, 1993; PRESS & SHORT, 2001; SILVA *et al.*, 2005). The main range of *H. tetrapterum* comprises central Europe and western Asia while it is found only sporadically in the Mediterranean (TUTIN *et al.*, 1993). The species requires moist conditions and eutrophic soil as present along streams and in marshes. The new locality provides such habitat requirements, being associated with open riverine woodland composed of, *e. g.* *Salix canariensis*, *Laurus novocanariensis* and herbs, such as *Lotus uliginosus* and *Epilobium* spp., and sourgrass (*Juncus* spp.). The immediate vicinity has been widely cleared of the original laurel forest vegetation for field terraces but still hosts scattered laurisilva remainders, such as *Laurus novocanariensis*, *Myrica faya* and *Ilex perado* ssp. *perado*. Due to its location in a fairly remote and isolated habitat and valley, the species might be considered as indigeneous on Madeira.

POACEAE

Avena longiglumis Durieu

4 July 2002, Monte de las Mercedes, view point above Anaga road, Tenerife, ca. 800 m a. s. l. (*det.* H. Kutzelnigg); a few plants in crevices of rocky outcrops in the upper laurel forest zone.

This species is mainly distributed in the southwestern Mediterranean (Spain, Portugal) and has been recorded from sandy and rocky habitats (TUTIN *et al.*, 1993). The small population at Anaga grows in rock crevices of basalt outcrops where it is associated with endemics, such as *Monanthes laxiflora*, *M. anagensis* and *Polycarphaea divaricata*. *Avena longiglumis* might possibly have been overlooked so far on Tenerife; however, given the habitat along a roadside it has been likely introduced.

ASTERACEAE

Anacyclus clavatus (Desfontaine) Persoon fo. *discoidea*

30 April 2005, above Vinamar, Macizo de Jandía, Fuerteventura, c. 250 m a. s. l. (*det.* K. Lewejohann); a few individuals in rocky pasture with low coastal shrub.

In Macaronesia, this Mediterranean species (as the typical form) has been reported only from Lanzarote (HOHENESTER & WELLS, 1993), and the record of fo. *discoidea* represents the first for the Canaries and for Macaronesia as well. The typical form has white ligules while fo. *discoidea* lacks these, showing only yellow tubular florets. Although located within the southern limits of Parque Natural Pico de la Zarza, the ongoing construction of new houses and hotel complexes in the immediate surroundings and extreme pressure from grazing stock (cattle, goats and sheep) make the small population vulnerable to decrease or even extinction in near future. Indeed, during a recent visit on 26 May 2011, no individuals were observed at the same place.

2. Records new for the Canary Islands

ROSACEAE

Rosa rubiginosa L. agg.

12 September 2003, Pista Hilera de la Cumbre, ca. 900 m a. s. l., La Palma (*det.* D. Korneck); a stand of more than a dozen individuals growing in clearing of fayal-brezal.

Since SANTOS (1983) mentions no *Rosa* sp. for La Palma and HOHENESTER & WELLS (1993) cite only *R. canina* for the Canaries (incl. var. *tomentella* doubtfully for La Palma), this is the first record for *R. rubiginosa* agg. for the Canaries. However, the taxon has been found on Madeira (PRESS & SHORT, 2001), so far the only Macaronesian island housing more than one genus member (altogether three if the specific distinctness of *Rosa mandonii* Desegl. is accepted; e. g. JARDIM & FRANCISCO, 2000; but see PRESS & SHORT, 2001).

Along the Pista Hilera, located in the southern part of Cumbre Vieja of La Palma, I became aware of a stand of this species that is not uncommon in calcareous and rocky habitats of Central Europe. *Rosa rubiginosa* is associated here in open *fayal-brezal* with endemic herbs, such as *Bystropogon origanifolius* and *Sideritis canariensis*. As is typical for *Rosa rubiginosa* agg. that also includes *R. micrantha*, the leaves are wedge-shaped, glandular and not as leathery as in *R. canina*, producing a light smell of wine or ripe apples in freshly collected specimens. The plants themselves have stems covered by many shorter and longer prickles. The persistence of the sepals on ripe fruits separates *R. rubiginosa* from the very similar *R. micrantha* but unfortunately the absence of flowering individuals prevented a determination of this character. However, according to the xerotherm flora specialist D. Korneck, the specimen taken from La Palma more closely resembles *R. rubiginosa* than *R. micrantha*.

Other range extensions

CARYOPHYLLACEAE

Cerastium diffusum Pers.

26 May 2009, northern slope of Pico do Arieiro, c. 1750 m a. s. l., and western slope of Pico das Torres, c. 1600 m a. s. l., Madeira; each subpopulation consisting of only a few flowering plants growing in rocky crevices of subalpine dwarf shrub (P. Arieiro) and in uppermost *fayal-brezal* (P. Torres).

This continental species is uncommon in Central Europe, usually being confined to coastal dunes (for example, around North Sea) (e. g. AICHLE & SCHWEGLER, 2000; SCHMEIL & FITSCHEN, 2009; *pers. obs.*). It has been recorded on Madeira only from Paúl da Serra, in the western part of the island, and from the fairly isolated Pico Grande but “its current status

(is) unknown” (PRESS & SHORT, 2001: 87). The record from P. Arieiro extends the altitudinal limit for the species on Madeira by ca. 150 m.

Petrorhagia nanteuilii (Burnat) P. W. Ball & Heywood

13 August 2008, western slope of Pico das Torres, c. 1600 m a. s. l., Madeira; 26 May 2009, northern slope of Pico do Arieiro, c. 1750 m a. s. l., Madeira; in same habitat as *Cerastium diffusum*.

Usually found at lower altitudes (from sea level to 250 m) in southeastern Madeira (PRESS & SHORT, 2001), e. g. on grassy slopes around Cabo Garajau (*pers. obs.*). The second locality (P. Arieiro) represents the uppermost altitudinal record for Macaronesia.

FABACEAE

Ononis dentata Sol. ex Lowe

24 May 2009, São Vicente, Ribeira Grande, near mouth of same-named river, ca. 10 m a. s. l., Madeira; in ruderal vegetation along the foot of humid coastal rocks with succulent shrub.

This Mediterranean species is rare on Madeira and so far known only from Ponta de São Lourenço, in the extreme southeast, and its surrounding islets (PRESS & SHORT, 2001; PAULO *et al.*, 2008). The present record is the first one for the central north coast.

Lathyrus angulatus L.

26 May 2009, western slope of Pico das Torres, c. 1550 m a. s. l., Madeira; small population along rocky, grassy slope in upper *fayal-brezal* / subalpine zone.

A Mediterranean weed that occurs in some of the western Canary islands (HOHENESTER & WELSS, 1996) but has been found only once on Madeira at Fajã da Nogueira, in a valley on the eastern slope of Pico do Arieiro, being the only record for the whole archipelago (PRESS & SHORT, 2001). The new locality is separated from the former by the high mountains of Pico do Gato and Pico das Torres, respectively.

SOLANACEAE

Solanum chenopodioides Lam.

27 May 2009, Ribeira de Santa, Alegria, c. 400 m a. s. l., Madeira (*det.* S. Knapp); c. 15 individuals in waste, ruderal vegetation of a clearing along a ribeira in the *laurisilva* zone.

To date, this native of South America has been known only from a single record from Funchal “but without further data” (PRESS & SHORT, 2001: 299). As Alegria is a northern suburb of Funchal it is unclear whether the present record is referable to the former.

ORCHIDACEAE

Neotinea maculata (Desf.) Stearn

26 May 2009, northeastern slope of Pico do Cidrão, c. 1650 m a. s. l., Madeira; three individuals on a rock-ledge in subalpine dwarf-shrub.

This fairly inconspicuous orchid occurs mainly throughout southern Europe and Asia Minor, with an isolated population on the British Isles (Ireland) (DUFFY *et al.*, 2009). On Madeira, it has been only recorded from the *laurisilva* region of the eastern part, growing usually in shaded, humid places along levadas and in ravines (PRESS & SHORT, 2001). At Pico Cidrão, central high mountains, it is associated with rupicole elements of the high mountain flora (*Ericetum cinerae*), among them the endemic *Anthyllis lemnniana*, *Viola paradoxa*, *Armeria maderensis*, *Odontites holliana* and *Orchis scopulorum*. In Macaronesia, it has been also reported from most western islands of the Canaries (including Gran Canaria) associated with the *Cisto symphytifolii* - *Pinion canariensis*. HOHENESTER & WELSS (1993) provided an altitudinal range of 800-1400 m a. s. l. for Tenerife. Given the moist conditions the species usually requires, the record probably represents the uppermost limit for the species in Macaronesia.

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