

Revision of the geographic distribution and ecology of three species of Arabis L. in continental Portugal

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Abstract

SILVEIRA, P., PAIVA, J. & MARCOS SAMANIEGO, N. 2000. Revision of the geographic distribution and ecology of three species of *Arabis* L. in continental Portugal. *Bot. Complutensis* 24: 65-73.

A revision of the geographic distribution and ecology of *Arabis juressi* Rothm., *Arabis sadina* (Samp.) Cout. and *Arabis stenocarpa* Boiss. & Reut. in continental Portugal is presented. Based on herbarium material and literature records, we have assigned to the three species 41 new UTM co-ordinates and excluded 4, achieving a revised list that includes 56 UTM co-ordinates.

Keywords: *Arabis juressi*, *Arabis sadina*, *Arabis stenocarpa*, chorology.

Resumen

SILVEIRA, P., PAIVA, J. & MARCOS SAMANIEGO, N. 2000. Revisión de la distribución geográfica y la ecología de tres especies de *Arabis* L. en Portugal continental. *Bot. Complutensis* 24: 65-73.

Se ha estudiado la corología y ecología de *Arabis juressi* Rothm., *Arabis sadina* (Samp.) Cout. y *Arabis stenocarpa* Boiss. & Reut. en Portugal continental. Basandonos en la revisión de material de herbárium y citas bibliográficas, se proponen para las tres especies 41 nuevas coordenadas UTM y se excluyen 4, resultando una nueva lista que incluye 56 coordenadas.

Palabras clave: *Arabis juressi*, *Arabis sadina*, *Arabis stenocarpa*, corología.

INTRODUCTION

In the course of a revision of the material of the genus *Arabis* L. kept in the main Portuguese herbaria (COI, LISE, LISI, LISU and PO) some material inco-

rectly identified was found. In most cases the voucher specimens have not been revised by Titz, Talavera, or by any other botanist applying the taxonomic criteria preconized by those authors. Moreover, the distribution maps recently published (Talavera & Velayos, 1994a; 1994b; 1995) were somewhat incomplete and some records incorrectly localised. A few corrections and additions to the ecological information available were also necessary.

METHODS

The UTM co-ordinates of the records were determined using the chorographic dictionary by Costa (1938) and military maps at two different scales: 1:250000 (I.G.E., 1997) and 1:25000 (S.C.E.P., 1965-1968).

Taxonomic and chorological data published by Titz (1976), Talavera (1993) and Talavera & Velayos (1994a, 1994b and 1995) were taken into account.

RESULTS AND DISCUSSION

For each *taxon* we indicate the studied specimens, bibliographic citations and, when appropriate, comments concerning their localization and identification organized by provinces.

When a record was included by Talavera & Velayos (1994a, 1994b or 1995) in a province or UTM co-ordinate different from the ones we consider correct, that information is given using bold characters within the bibliographic reference. We must emphasise that our co-ordinates have been assigned after a careful check, as explained in the methods chapter, and that the corrections that we have made to the work by Talavera & Velayos are mostly due to the more precise scale at which we have worked. As an example, Talavera & Velayos (1994: 166) assigned the «Serra do Gerês» central co-ordinate NG72 to the record «Serra do Gerês, pr. S. Bento da Porta Aberta», 9-7-1948, *P. Silva et al.*, LISE s.n. We have found that the correct co-ordinate for «S. Bento da Porta Aberta» is NG61 and used it, because it is more precise.

Arabis juressi Rothm. in Agron. Lusit. 2: 79 (1940)

Minho (Mi): 29TNG55: «Valadares (Velinha), Ínsua de D. Thomaria», 6-1885, *A. R. Cunha*, LISU 15559; «Penso, margem do Rio Minho», 6-1885, *A. R. da Cunha*, LISU 15561 (Talavera & Velayos, 1994: 166); «Ponte do Mouro, margem do Rio do Mouro», 6-1885, *A. R. Cunha*, LISU 15558. **29TNG45:** «Monção», 21-5-1923, PO 12058. **29TNG72:** «Serra do Gerês», 5-1907, *Silva Tavares*, COI (Talavera & Velayos, 1994: 166); *idem*, «Torgo», 6-1884, *Moller* COI (Talavera & Velayos, 1994: 166; *idem*, «Portela do Homem, taludes da estrada», 11-4-1949, *Rui Sobrinho*, LISU 846. **29TNG62:** «Serra do Gerês, próximo das Caldas», 7-4-1949, *Rui Sobrinho*, LISU 845; «Terras de Bouro, Covide,

prox. ao ribeiro, no monte», 9-6-1970, *A. Rozeira, D. Barreto, G. Costa & A. Serra*, PO 12066. **29TNG61**: «Serra do Gerês, entre S. Bento da Porta Aberta e Covide», 9-7-1948, *R. Fernandes & Sousa* 2635, COI; *idem*, «S. Bento da Porta Aberta, nas bermas da estrada», 8-4-1949, *Rui Sobrinho*, LISU 1060; *idem*, «pr. S. Bento da Porta Aberta», 9-7-1948, *P. Silva, Fontes, Palhinha & M. Silva*, LISE s.n. (Talavera & Velayos, 1994: 166-NG72); «Terras de Bouro, Covide, Freitas, na beira da estrada», 12-4-1970, *A. Rozeira, D. Barreto, G. Costa & A. Serra*, PO 12065.

Both the co-ordinates of the *Silva Tavares* collection («Serra do Gerês») and of the place «Torgo» of *Moller's* record could not be precisely determined, therefore we have chosen, instead, the co-ordinate of the central area of «Serra do Gerês» (29TNG72).

Trás-os-Montes e Alto Douro (TM): 29TPG83: «Bragança», 1884, *M. Paulino*, COI; *idem*, «Penacal, arrelvado em solo calcário», 700m, 21-6-1959, *A. Teles & B. Rainha* 803, LISE 64015. **29TNF87**: «Vila Real, Serra do Marão, pedreiras calcárias de Campanhó, paredes de um fosso pr. de Cotos, alt. 750 m, solo sem carbonatos», 27-5-1955, *P. Silva, Rozeira, A. N. Teles & B. Rainha* 5636, LISE 48268, PO 8688 (Talavera & Velayos, 1994: 166-PF04). **29TNF96**: «Vila Real, entre Vila Real e o alto do Marão, em Arrabães, regos de água e muros graníticos», 12-4-1953, *Mendes & C. Romariz* 1467, LISU 65374 (Talavera & Velayos, 1994: 166 - PF04). **29TPF06**: «Vila Real, Abaças», 3-1910, *A. Pavão*, COI. **29TPF05**: «Entre Lamego e Balsemão, margem direita do Rio Balsemão, exp. NW, num matagal em xisto», 9-6-1943, *F. Garcia & M. Myre*, LISI.

We could not determine the exact location of «Penacal», but since this place is located on a limestone outcrop, as stated in the voucher specimen (*A. Teles & B. Rainha* 803), and «Bragança» is placed over schist, it is probable that «Penacal» is located on a limestone outcrop situated about 1 Km to NE from Bragança and the co-ordinate that we have chosen may not be the best one.

No records were assigned to the PF04 co-ordinate (used by Talavera & Velayos, 1994: 166) so it must be discarded from the distribution map of *A. juressi*.

Douro Litoral (DL): 29TNF86: «Amarante, entre Candemil e Baceiros», 5-1906, *G. Sampaio*, PO 3214; *idem*, «Serra do Marão, pedreiras de Solerido, alt. 500 m, solo sem carbonatos», 26-5-1955, *P. Silva, Rozeira, A. N. Teles & B. Rainha* 5624, LISE 48259 (Talavera & Velayos, 1995: 151 - *A. stenocarpa*-DL-without UTM). **29TNF54**: «Pedorido, pr. Paiva, in schistosis humosis, pH 6.1», 6-7-1960, *P. Silva, B. Rainha & M. Silva* 6 773, LISE 88661. **29TNF35**: «Vila Nova de Gaia, S. do Pilar», 14-4-1877, *Manoel d'Albuquerque*, PO 3210 (Talavera & Velayos, 1994: 166); *idem*, «Avintes», 26-4-1878, *Manoel d'Albuquerque*, PO 3211; *idem*, «Fonte da Vinha», 5-1898, *G. Sampaio*, PO 3212 (Talavera & Velayos, 1994: 166); *idem*, «Espinhaço, na margem do rio Douro», 5-1901, *G. Sampaio*, PO 3213; «Areinho de Quebrantões, margem esquerda do Douro», 5-1912, *A. Ricardo Jorge*, LISU 15555; «Gondomar, Abóinha, valdos do rio Douro», 31-7-1959, *G. Costa & A. Alves*, PO 8689 (Talavera & Velayos, 1994: 166).

Talavera & Velayos (1995: 151) did not assign any UTM co-ordinate to the record «Amarante, Serra do Marão, pedreiras de Solerido», *P. Silva et al.* 5624, LISE 48259. Moreover, they have included it in the map of *A. stenocarpa*. We do not agree with that because all the three plants mounted in this voucher specimen have completely glabrous inflorescences and white flowers. Furthermore, their stems show a more or less long woody basis, which is, in some cases, a characteristic of *A. juressi*, but never of *A. stenocarpa* (Titz, 1976).

Beira Alta (BA): 29TNF50: «Extremo limite entre os distritos de Aveiro e Viseu», 4-5-1953, A. Fernandes, R. Fernandes & F. Sousa 4349, COI. **29TPE16:** «Serra da Estrela, Paradás», 5-1883, Fonseca, COI.

The correct UTM co-ordinate for the record by Fonseca from «Serra da Estrela, Paradás» could not be found so the co-ordinate of the central area of «Serra da Estrela» was used instead.

Beira Litoral (BL): 29SNE45: «Arredores de Coimbra (Penedo da Meditação)», 3-1881, Bruno T. Carneiro, 426, LISU 15566, COI; «Coimbra, Penedo da Meditação», 9-4-1949, Matos, MA 268574 (Talavera & Velayos, 1994: 166); «Coimbra, Sta Clara», 5-1894, G. Sampaio, PO 3215 (Talavera & Velayos, 1994: 166). **29TNE55:** «Coimbra, Sto Antonio dos Olivais (Calçada do Gato)», 17-4-1936, M. Silva, COI; *idem*, 4-1887, A. Moller 390, COI. «Sete Fontes, Quinta do Espinheiro», 19-5-1931, Sousa, COI (Talavera & Velayos, 1994: 166 - R-without UTM). **29TNE86:** «Barril do Alva, alt. 200 m, sob *Q. pyrenaica*», 7-5-1999, P. Silveira & N. Marcos 2490, COI. **29TNE85:** «Entre Salgueiro e Monte Redondo, alt. 500 m, exp. S-SW», 15-5-1996, P. Silveira 585, COI.

Distribution in Portugal:

Titz (1976) cited this species for the provinces Mi, TM, DL, BA and BL. Talavera (1993) included also Ribatejo (R), probably, based on Sousa's record from «Sete Fontes, Quinta do Espinheiro» cited by Talavera & Velayos (1994: 166) for R without UTM. In fact this place is located in BL, not in R, so we have found specimens from the same provinces (fig. 1 a) referred by Titz (1976).

Ecology:

Woods, scrubs slopes, walls upon schists, granite and other silicate in mountainous areas (Titz, 1976). Between the rocks, clearings in the woods, heaths, in mountainous acid soils, 200-1000m (Talavera, 1993). We agree with both authors, adding decarbonated limestone soils.

Arabis sadina (Samp.) Cout., Fl. Portugal: 253 (1913)

BL: 29SNE04: «Figueira da Foz, Serra da Boa Viagem, escarpa do Mirante», 28-6-1979, Resende, Alexandre, A. Serra & Bernardino, PO 44678 (Talavera & Velayos, 1994: 166 - NE24); «Cabo Mondego, Bandeira, no monte», 8-4-1961, A. Rozeira, K. Koepf & G. Costa, PO 12051. **29SNE41:** «Marquinhos, entre Ancião e Ramalhais», 12-5-1969, J. Matos & A. Dinis & M. C. Alves 10866, COI, AVE. **29SND28:** «Fátima, Aljustrel em ter. áridos, cultivado no Jard. Bot.», 31-3-1965, G. Costa, PO 12056 (Talavera & Velayos, 1994: 168 - R-ND38). **29SND38:** «Vila Nova de Ourém, Boleiros, Corõesinhos», 15-4-1955, A. M. C. Lopes, LISI.

No record could be assigned to the NE24 co-ordinate so it must be discarded from the distribution map of *A. sadina*. The ND38 co-ordinate must also be discarded as it has been assigned by Talavera & Velayos (1994: 168) to a record that is, in fact, located in ND28.

R: 29SND27: «Alcanena, Minde, Covão do Coelho, em ter. incultos», 22-3-1961, A. Rozeira, K. Koepf & G. Costa, PO 12053; «Torres Novas, in *rupibus calcareis prope* Casais Robustos c. Minde, 200 m», 21-3-1939, Rothmaler & P. Silva, LISE 5334 (Talavera & Velayos,

1994: 168 - **ND37**). **29SND37**: «Torres Novas, Pedrógão, junto ao ponto culminante da Serra de Aire, alt. 678 m», 18-6-1980, *M. Lousã & M. D. Espírito Santo*, LISI. **29SND05**: «Alto da Serra, na estrada Batalha-Rio Maior, terreno calcáreo inculto», 23-4-1970, *A. Fernandes, R. Fernandes & Matos*, COI (Talavera & Velayos, 1994: 166 - **BL-without UTM**). **29SND04**: «Serra de Montejunto, entre Quinta do Cercal e Alcoentre, nas fendas das rochas calcáreas», 18-5-1962, *Paiva, Matos & Abreu*, COI (Talavera & Velayos, 1994: 168-**E-MD93**).

Estremadura (E): **29SND17**: «Porto de Mós, Serro Ventoso, Machadais, alt. 400 m», 24-4-1980, *J. A. Franco, M. Lousã & M. D. Espírito Santo*, LISI. **29SMD94**: «Serra de Montejunto, Rocha Forte, entre Cercal e Montejunto, entre as rochas calcáreas, mata de *Quercus* sp.», 1-4-1963, *Paiva, Matos & Marques*, COI (Talavera & Velayos, 1994: 166 - **MD93**). **29SMD93**: «Alenquer, Cabanas de Torres, S. das Neves», 16-3-1974, *M. T. Vasconcellos*, LISI. **29SMC96**: «Serra da Arrábida, estrada para Azeitão, Km 14, entre as fragas», 27-4-1962, *A. Rozeira, K. Koepf & G. Costa*, PO 12054. **29SNC06**: «Serra de São Luis», 3-1879, *J. Daveau*, PO 3216; *idem*, «clareiras do mato», 7-3-1943, *Gomes*, COI, LISE 39664 (Talavera & Velayos, 1994: 168); «Serra da Arrábida», 3-1879, *J. Daveau*, COI, G (Talavera & Velayos, 1994: 168); *idem*, 9-4-1952, *Silva*, LISE 40562; *idem*, *Chodat*, G (Talavera & Velayos, 1994: 168); *idem*, «nos muros», 8-4-1957, *Beliz, Abreu & Guerra*, COI (Talavera & Velayos, 1994: 168); *idem*, «rocas calizas», 17-4-1968, *Segura Zubizarreta*, MA 300276; *idem*, «no monte», 1-4-1964, *A. Rozeira, K. Koepf & G. Costa*, PO 12055; «*in montosis* Serra da Cintra a at Arrábida», 1838, *Guthnisch*, G (Talavera & Velayos, 1994: 168). **29SNC05**: «Serra da Arrábida, na mata junto ao Portinho da Arrábida, terreno humoso, calcáreo sombrio», 24-4-1959, *Matos & Cardoso*, COI, AVE 178 (Talavera & Velayos, 1994: 168 - **NC06**). **29SMC95**: «Serra da Arrábida, Mata do Solitário», 17-4-1968, *Nogueira*, AVE179 (Talavera & Velayos, 1994: 168 - **NC06**); *idem*, «no monte», 17-4-1968, *A. Rozeira, J. Alte, G. Costa & A. Serra*, PO 10414.

Distribution in Portugal:

Titz (1976) cited this species for the provinces E and BL. Talavera (1993) cited Baixo Alentejo (BAI), BL, E and R, but Talavera & Velayos (1994b) did not present any record for BAI. We have found records from BL, R and E, and consider this as the correct distribution area for this species (fig. 1 – b).

Ecology:

Dry calcareous rocks, garigues, scrubs of colline areas (Titz, 1976). Clearings in basophilic woods and heaths, in hills near to the sea; 100-400m (Talavera, 1993). We agree with both authors, but set the higher altitude to 678m (see the record by *M. Lousã & M. D. Espírito Santo* - R: 29SND37).

Arabis stenocarpa Boiss. & Reut., Diagn. Pl. Nov. Hispan.: 4 (1842)

Mi: **29TNG62**: «Gerês, Chalet das matas, nas Caldas», 17-5-1909, *G. Sampaio*, PO 3208 (Talavera & Velayos, 1995: 151 - **NG72**). **29TNG72**: «Serra do Gerês», 6-1818, *G. Felgueiras*, COI (Talavera & Velayos, 1995: 151); *idem*, «Lage, 5-1909», *G. Sampaio*, PO 3209; *idem*, Torgo, 6-1884, *M. Moller*, COI (Talavera & Velayos, 1995: 151).

Both the co-ordinates of the *G. Felgueiras*'s record («Serra do Gerês») and of the place «Lage» and «Torgo» of the *G. Sampaio* (PO3209) and *Moller*'s records, respectively, could

not be precisely determined so we have assigned them the co-ordinate of the central area of «Serra do Gerês» (29TNG72).

TM: 29TPG84: «Arredores de França, na estrada Bragança - Portelo», 25-6-1955, *A. Fernandes, J. Matos & A. Matos* 5574, COI. **29TPG83:** «Bragança, muros, rochedos», 5-1878, *A. X. Pereira Coutinho* 2065, LISU 15557 (Talavera & Velayos, 1995: 151); «Arredores de Bragança, rio Sabor, xistos», 25-6-1955, *A. Fernandes & J. Matos*, COI (Talavera & Velayos, 1995: 151); «Bragança, prop. as Cruces, terreno xistoso», 19-6-1932, *Carrissa & Mendonça*, COI (Talavera & Velayos, 1995: 151). **29TPG82:** «Bragança in pascuis montanis I. Serra de Nogueira pr. de Rebordãos, alt. 1000 m», 1-6-1939, *W. Rothmaler & P. Silva*, LISE 15815 (Talavera & Velayos, 1995: 151); «Rebordãos», 4-1909, *G. Sampaio*, PO 3207 (Talavera & Velayos, 1995: 151); «Bragança, Monte de S. Bartolomeu, em restos de *Q. pyrenaica*», 24-4-1955, *M. Beliz et al.*, MA 268573 (Talavera & Velayos, 1995: 151 - **PG83**). **29TPG72:** «Serra de Rebordãos», 6-1884, *A. Moller* 2067, LISU 15562 (Talavera & Velayos, 1995: 151 - **PG82**); *idem*, «Senhora da Serra», 9-9-1967, *A. Rozeira & G. Costa*, PO 12064; «Bragança, Serra da Nogueira, no monte», 28-7-1977 *A. Serra, Bernardino & Victor*, PO 27714. **29TPF46:** «Carrizada de Ansião, Amedo, na beira de um caminho», 10-6-1942, *A. Rozeira*, PO 3488. **29TPG40:** «Valpaços», 6-1910, *Palhinha, H. Navel & F. Mendes*, LISU 15560. **29TQG02:** «Bragança, Quintanilha, vertente do Cabeço da Assureira s/a E.N.218-1, alt. 590m, exp. NW, solo xistoso», 5-7-1980, *Franco & M. Lousã*, LISI. **29TQG00:** «Vimioso, entre a Quinta e Vale de Frades, no monte Felgueiras», 1918, *J. M. Miranda Lopes* 42a, LISE 85441. **29TPF16:** «Sabrosa, Covas do Douro», 10-5-1940, *A. Rozeira*, PO 3058. **29TPF05:** «Lamego, Senhora de Fontelo, terrenos incultos», 7-5-1967, *A. Rozeira, G. Costa & J. Araújo*, PO 12063; «Lamego, Senhora do Fontelo, em terrenos incultos», 7-5-1967, *A. Rozeira, G. Costa & J. Araújo*, LISE 73536. **29TPF75:** «Moncorvo, Reborêdo», 25-5-1925, *Santos Júnior*, PO 12059. **29TPF07:** «Estrada Régua - Vila Real, Rio Sordo, Souto do Botelho, pr. Parada de Cunhos», 12-6-1958, *A. Fernandes, R. Fernandes & J. Matos*, COI (Talavera & Velayos, 1995: 151 - **PF05**).

DL: 29TNF62: «Serra da Freita, ao fundo da encosta na parte virada para Arouca», 8-7-1966, *J. Matos & A. Dinis* 9719, COI.

BA: 29TPE49: «Guarda, in graminosis humidis umbrosis I. dicto Chafariz do Souto do Bispo, alt. 650 m, solo siliceo», 25-5-1951, *P. Silva, F. Fontes & N. Silva* 4944, LISE 45721; «Carris de Famalicão (Guarda), nos lugares húmidos», 3-7-1951, *A. Fernandes & J. Matos* 3750, COI; «Guarda, Souto do Bispo», 29-5-1972, *M. Beliz*, MA 268578, (Talavera & Velayos, 1995: 150 - **PE48**); *idem*, 23-4-1952, *A. Fernandes, F. Sousa & A. Matos*, COI, (Talavera & Velayos, 1995: 150 - **PE48**); «in castaneto dicto do Bispo, circa Guarda», 17-6-1949, *R. Fernandes & F. Sousa*, COI, (Talavera & Velayos, 1995: 150 - **PE48**). **29TPE48:** «Arredores de Guarda, Pêro Soares», 7-1885, *M. Ferreira*, COI, (Talavera & Velayos, 1995: 150); «Guarda, lugares húmidos», 3-7-1951, *A. Fernandes, F. Sousa & A. Matos*, COI, (Talavera & Velayos, 1995: 150). **29TPE27:** «S. Estrela, entre Penhas Douradas e Manteigas, alt. 1260 m», 21-5-1949, *Br. Blanquet et al* 3144, PO 12060, LISE 24957 (Talavera & Velayos, 1995: 150 - **PE16**). **29TPE16:** «Serra da Estrela, Paradas», 5-1883, *M. Ferreira*, COI (Talavera & Velayos, 1995: 150).

The correct UTM co-ordinate for the record by *Fonseca* from «Serra da Estrela, Paradas» could not be found, so the co-ordinate of the central area of «Serra da Estrela» was used instead.

Beira Baixa (BB): 29TPE24: «Serra da Gardunha, arredores de Alcongosta», 21-6-1953, A. Fernandes, R. Fernandes & F. Sousa, COI, (Talavera & Velayos, 1995: 150). **29TPE34:** «Fundão, versus Alpedrinha, alt. 650m, in *Quercetis pyrenaicae*, solo schistosossilíceo», 24-5-1952, P. Silva, F. Fontes & M. Silva 4867b, LISE 45672. **29TPD29:** «Castelo Branco, Monte Fidalgo, Maio e Junho de 1882», A. Cunha, LISU 15564, (Talavera & Velayos, 1995: 150).

Talavera & Velayos (1994: 166) included the voucher specimen: «Penamacor, Serra da Malcata, Meimão, encosta a NW, próximo de Valdedra», 12-5-1970, M. Beliz & J. A. Guerra 8171, MA 268579, in their map of *A. stenocarpa*, but that material is a somewhat young specimen of a new species (Silveira, Paiva & Marcos Samaniego, 2000). They have assigned it to the PE66 co-ordinate but since it is not a *A. stenocarpa* specimen this co-ordinate must be discarded from the distribution map of this species.

Distribution in Portugal:

Titz (1976) cited this species for the provinces Mi, TM, DL, BA and BB. Talavera (1993) cited all those provinces except DL. Later, Talavera & Velayos (1995) included the specimen: «Amarante, Serra do Marão», 26-V-1955, P. Silva & al., LISE 48259, in DL. However, as explained above, this specimen is not of *A. stenocarpa*, but of *A. juressi*. We have found specimens collected in all the provinces (fig. 1-c) cited by Titz (1976).

Ecology:

Woods, scrubs, rocks, walls, road sides upon schists, granite and other silicate in the montane and subalpine belt (Titz, 1976). Clearings in acidophilic woods and

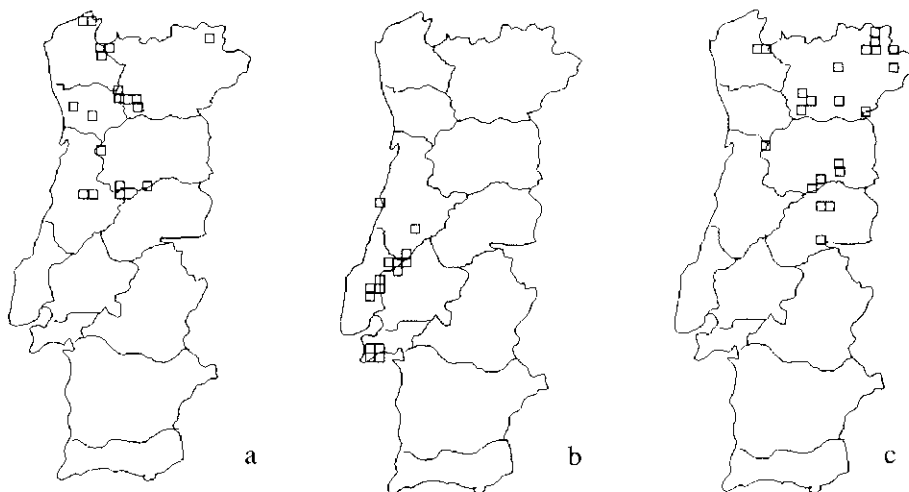


Figure 1.—Geographic distribution maps of *Arabis juressi* (a), *Arabis sadina* (b) and *Arabis stenocarpa* (c) in Portugal.

heaths, over granite, schist, quartzite, or decarbonated limestone; 850-1500m (Talavera, 1993). We agree with both authors, but specially with Talavera which includes decarbonated limestone, besides silicate-derived soils.

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