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FLORISTIC REPORTS FROM THE ISLAND OF LESVOS (GREECE) I. DICOTYLEDONES: *ACERACEAE* TO *GUTTIFERAE*

I. Bazos & A. Yannitsaros

Floristic and phytogeographical information is presented in the first of three papers on the flora of Lesvos (East Aegean, Greece). The taxa included here are dicotyledons and belong to families in alphabetical order from *Aceraceae* to *Guttiferae*. Of the 92 taxa (79 species, 12 subspecies and one variety) presented, two are new for Greece, five are new for the Aegean islands as a whole, four are new for the East Aegean Islands and 13 are new for Lesvos. New distribution localities on the island are also given for some interesting taxa. Furthermore, the presence of 13 taxa, reported by previous authors without specific collection data, is confirmed. Critical comments are made on 22 taxa whose presence needs confirmation or is considered doubtful or wrong. Chorological, ecological and taxonomic comments are made for the more interesting cases and distribution maps for certain taxa in Greece or Lesvos are given. Finally, the threats and conservation status of some rare and interesting taxa are briefly discussed.

Keywords. Aegean, conservation, distribution, floristics, Greece, Lesvos, phytogeography, species protection.

Introduction

A very rich and interesting flora characterizes Lesvos, which is the third largest Greek island, following Kriti and Evvia. Information on the geography, geology and climate of the island is given in Bazos & Yannitsaros (1999). The reasons for its floristic abundance are outlined in previous papers (Yannitsaros, 1979a; Hansen & Nielsen, 1993; Bazos & Yannitsaros, 1999, 2001). Many data regarding the flora and vegetation of Lesvos are included in the contributions of C.A. Candargy (1889, 1890, 1891, 1892), P.C. Candargy (1892, 1897, 1898, 1899), Boissieu (1896), Rechinger (1943), Rauh (1949), Rechinger & Rechinger-Moser (1951), Mavromatis (1974), Gölz & Reinhard (1981, 1989a,b), Edmondson (1982), Hansen & Nielsen (1993) and Biel (1998, 1999, 2002). Other information can be found in the *Flora of Turkey and the East Aegean Islands* (Davis, 1965–1985; Davis *et al.*, 1988; Güner *et al.*, 2000) and the first two volumes of *Flora Hellenica* (Strid & Tan, 1997, 2002). Supplementary data are to be found in the monographic studies and papers of Strid (1970), Stork (1972), Tzanoudakis (1977), Kamari (1982), Georgiou-Karavata (1990), Artelari & Kamari (1991), Dahlgren (1991), Livaniou-Tiniakou (1991),

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Tzanoudakis *et al.* (1991), Artelari (1992), Karavokyrou (1994), Greuter & Zimmer (1996), Panitsa (1997) and elsewhere.

Our own research started about 30 years ago and was intensified from 1991 to 2002, when we visited the island more than 25 times (see also Bazos & Yannitsaros, 2000). Special attention has been given to the investigation of areas unexplored from a floristic point of view as well as to the confirmation of the presence on the island of taxa reported by previous authors without sufficient data. Some of our results have been published during the last few years: Yannitsaros & Economidou (1974), Economidou & Yannitsaros (1975), Yannitsaros (1977, 1979a,b, 1982, 1992), Bazos & Yannitsaros (1992, 1994, 1998, 1999, 2001) and Yannitsaros & Bazos (1993, 2001).

This paper records new taxa for the flora of Lesvos, new localities for taxa rare in Lesvos or in wider geographic areas reported by previous authors, and taxa whose presence needs confirmation because previous reports are very old, unclear or lack sufficient collection data. For the most interesting taxa critical morphological and/or chorological comments are made. Distribution maps, mainly for taxa rare in Greece, are also provided.

This paper is the first of a series on new, rare or otherwise interesting taxa in the flora of Lesvos. All taxa included here are dicotyledons and belong to families in alphabetical order from *Aceraceae* to *Guttiferae*.

Materials and methods

Herbarium specimens were collected by the authors during the years 1974–2002 and are kept in their herbaria at ATHU. Field notes and observations were also accumulated. Numbers in parentheses bearing the initials IB and AY refer respectively to the authors' collections; 'obs.' refers to field observations only. Several specimens collected by other researchers and registered in the *Flora Hellenica* database are also included. Herbaria abbreviations follow Holmgren *et al.* (1990). Nomenclature, apart from a few exceptions, follows Strid & Tan (1997, 2002), Greuter *et al.* (1984, 1986) or Davis (1975). Families, genera and infrageneric taxa are arranged in alphabetical order. Names of species definitely present on Lesvos are in bold type. Transliteration of Greek localities is in accordance with *Flora Hellenica* (Strid & Tan, 1997, 2002) and therefore the islands Corfu, Crete, Euboea, Lesbos and Rhodes are mentioned in this paper as Kerkira, Kriti, Evvia, Lesvos and Rodos, respectively.

List of taxa

Aceraceae

Acer monspessulanum L.

Seraidis (2000) reports *A. monspessulanum* from Mt Olimbos. However, its presence on Lesvos needs confirmation as this record is probably due to confusion with *A. sempervirens*, which occurs in the same area.

Acer sempervirens L.
Mt Olimbos above Agiasos, 750–800m, *Quercus coccifera* L. woodland, 17 vi 1991 (IB 181); ibid., 16 v 1993 (IB 948).

Reported as new for Lesvos (Yannitsaros & Bazos, 1993) without locality or other collection data. Also reported by Biel (2002) from the same area.

Aizoaceae

Mesembryanthemum nodiflorum L.
Podaras, sandy and rocky places near the beach, 1 v 1994 (AY 8680).

Reported by Hansen & Nielsen (1993) as new for Lesvos. Our new finding extends its distribution on the island.

Anacardiaceae

Cotinus coggygria Scop.
Reported from Lesvos by Rauh (1949) as *Rhus cotinus*, without specific locality or other collection data. In the distribution maps given by Browicz (1984) and Boratynski *et al.* (1992) it is shown to occur on the island. Axiotis (1991) reports it under the vernacular name '$\pi\varepsilon\tau\rho\alpha\mu\acute{\eta}\theta\rho\alpha$' (petramithra), which as far as we know is used mainly for *Pistacia terebinthus* L. (C.A. Candargy, 1889) and *P. atlantica* Desf. Greuter *et al.* (1984) do not record it as present in the East Aegean Islands. Its presence on Lesvos is not impossible but needs confirmation due to the lack of herbarium specimens and other collection data. There are no records of *Cotinus coggygria* from Lesvos in the *Flora Hellenica* database (Strid, *in litt.*).

With the exception of northern Evvia, *C. coggygria* is rare, with scattered distribution in the Aegean islands. Chilton & Turland (1997) consider it doubtfully native in Kriti where it was possibly introduced as a dye plant or as a source of tannins.

Pistacia atlantica Desf.
c.3.5km SSE of Mesotopos, Podaras, stony places, field margins, dry stonewalls, 17 x 1981 (AY 6663); ibid., spontaneous on walls, stony places and field margins, 1 v 1994 (AY 8686); ibid., 1 x 1995 (AY obs.). Mesotopos, base of wall in churchyard, 21 x 1981 (AY 6687). Between Mesotopos and Tavari, Agios Ioannis, roadsides and stony places, 5 v 1986 (AY 7685). S side of Molivos, a few tall trees cultivated in field by road, 27 iv 1994 (AY 8613). Tavari, spontaneous in stony fields, stony places, rock crevices, road margins and other semi-natural habitats, 30 iv 1994 (AY 8672); ibid., 2 x 1995 (AY obs.). Along road from Skala Polichnitou to Skamnioudi, just after the saline of Skala Polichnitou, corn fields with scattered trees of *Pistacia* etc., 13 x 1990 (*Christensen et al.* 2559, C). Olive grove just SE of Molivos town, 19 xi 1993 (*Hansen & Nielsen* 8958, B, C). Molivos castle, small trees, partly escaping and naturalizing, 20 xi 1993 (*Hansen & Nielsen* 8963, B, C). Mitilini castle peninsula, calcareous rocks and ruderal habitats, 22 xi 1993 (*Hansen & Nielsen* 9075, B, C), probably cultivated. c.2km NW of Mesotopos, Mallionda, margins of stony fields, dry stonewalls, 30 ix 1995 (AY obs.). Near Polichnitos, road margins, 22 viii 1996 (AY obs.). Between Kalloni and

Parakila, road margins and stony places, spontaneous, 2 x 1995 (AY obs.) and 25 viii 1996 (AY 9216). c.2km SSW of Parakila, stony places, road margins, 9 vii 2000 (AY 9520). Between Vrisa and Polichnitos, a few scattered individuals growing in stony fields and road margins, 16 v 2002 (IB 4275).

Reported as new for Lesvos (Yannitsaros & Bazos, 1993) without collection data. *Pistacia atlantica* is rare and scattered in Greece, being known from a single locality on the Greek mainland in Methana (Rechinger, 1943, as *Pistacia mutica* Fisch. & C.A.Mey.), and on the Aegean islands of Thasos (Stojanov & Kitanov, 1946, as *P. mutica*), Limnos (Browicz, 1991), Chios (Boratynski *et al.*, 1987; Snogerup *et al.*, 2001), Kos (Browicz, 1994), Rodos (Rechinger, 1943; Boratynska *et al.*, 1985 as subsp. *mutica*; Carlström, 1987), Chalki, Simi, Tilos (Carlström, 1987) and Milos (Browicz, 1997). Recently we found this species growing on the islands of Patmos and Kalimnos. According to Browicz (1988) the stands on Rodos are probably the result of ancient domestication while the plants on Chios probably remain from cultivation (Snogerup *et al.*, 2001). In Lesvos there are many spontaneous individuals scattered in semi-natural and natural habitats but in some cases cultivated plants were also observed. Therefore *P. atlantica* should be considered doubtfully native in Lesvos as its status (as elsewhere in the eastern Aegean) is still unclear. Its distribution on Lesvos is given in Fig. 1.

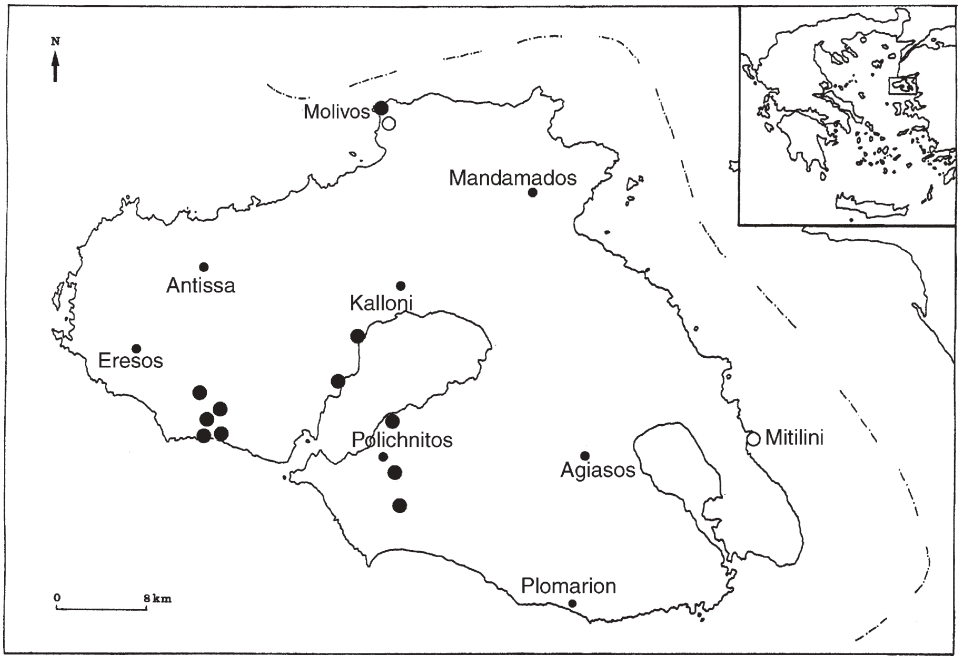

FIG. 1. Distribution of *Pistacia atlantica* Desf. in Lesvos. Localities where cultivated plants were found are shown by open circles.

Aquifoliaceae

Ilex aquifolium L.
Reported by Dinter (1995) from forests near Agiasos. The species can hardly be confused with any other and therefore its presence on Lesvos is probable. However, confirmation is needed due to the lack of specimens and collection data. According to Boratynski *et al.* (1992) *I. aquifolium* is rather rare in Greece, being distributed in C and N parts of the mainland and the islands of Evvia and Thasos.

Asclepiadaceae

Periploca graeca L.
Between Karini and Lampou Mili, in thickets climbing on shrubs, 29 iv 1986 (AY 7584).

Reported by P.C. Candargy (1898) as common, but without locality or other information, and by Seraidis (2000) as rare from the areas of Mesa and Vouvaris river. Our collection confirms its presence on Lesvos, where it seems to be rare.

Berberidaceae

Leontice leontopetalum L. subsp. ***leontopetalum***
NE of Lisvori, Farmakies, cultivated fields, 3 iv 1998 (IB 3090). NW of Lisvori, Skamnioudi, cultivated fields, 3 iv 1998 (IB obs.). Near Lisvori, cultivated fields, 3 iv 1998 (IB obs.).

C.A. Candargy (1889) reports it, as *L. leontopetalon* L., from the hill Ouzia ('sur la mont. Ouziá'), near the city of Mitilini, and P.C. Candargy (1898), as *L. Leontopetalum* L., from the locality Argala, which is near Mitilini airport ('In campo Argala reg. Maleae'). A recent map in *Flora Hellenica* (Strid & Tan, 2002) and our findings confirm the presence on Lesvos of this agricultural weed, which is disappearing in many places due to modern cultivation techniques.

Boraginaceae

Asperugo procumbens L.
P.C. Candargy (1897) reports *A. procumbens* from Cape Macheras ('in promontorio Machaera'). Its presence on Lesvos has not been confirmed although we have repeatedly investigated the wider Cape Macheras area.

Asperugo procumbens is a rare weedy species scattered at low and montane levels on the Greek mainland (Strid, 1991), the Saronic Gulf islands Egina and Salamis (Vallianatou & Yannitsaros, 2000) and the island of Kasos (Raus, 1983, 1996a; Turland *et al.*, 1993).

Heliotropium lasiocarpum Fisch. & C.A.Mey.
c.3km SW of Kalloni, field of watermelons, 30m, 10 vii 2000 (*S. & B. Snogerup* 17126, LD).

New to Lesvos. The first Greek records of this species are from the island of Chios (Snogerup *et al.*, 2001). Also reported from Ikaria (Ebene zw. Kampos und dem Meer,

5–15m, 37°38′N, 26°10′E, Mündungsgebiet des Baches Voutsides, 9 vi 1999, leg. *H. Kalheber* 99-1038, herbarium Heinz Kalheber!) by Kalheber in an unpublished list of taxa from his excursion in June 1999 (Strid, *in litt.*). *Heliotropium lasiocarpum* belongs to the *H. europaeum* aggregate and is closely related to *H. ellipticum* Ledeb. (Riedl, 1978). It is distributed in SW and C Asia; the East Aegean islands of Lesvos, Chios and Ikaria are the westernmost limits of its distribution (Fig. 2).

Myosotis litoralis Fisch.
c.3km E of Skala Kallonis, sandy beach near salt-works, 3 iv 1998 (IB 3084).

This seems to be the first record of *M. litoralis* for the East Aegean Islands. It is rare and scattered in Greece, being reported from a few localities on the mainland

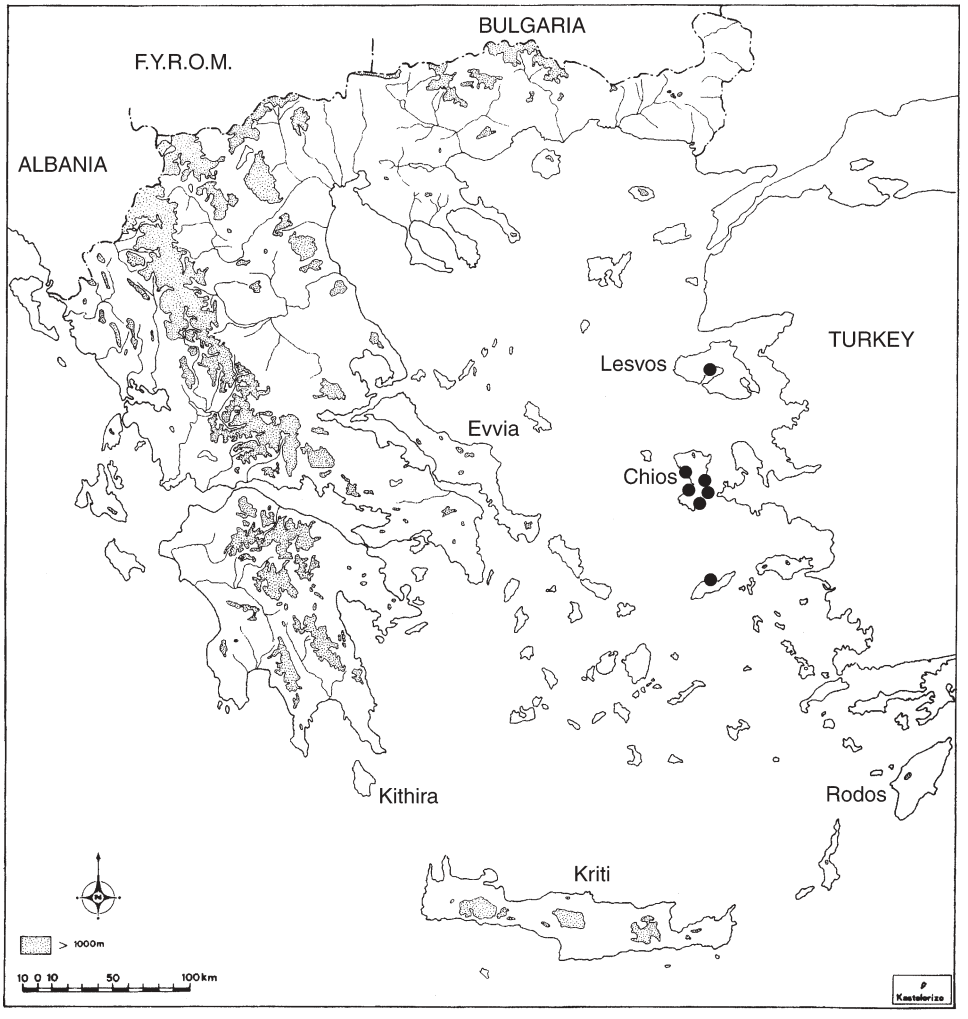

FIG. 2. Distribution of *Heliotropium lasiocarpum* Fisch. & C.A.Mey. in Greece. F.Y.R.O.M. stands for Former Yugoslav Republic of Macedonia.

and the islands of Thasos (Stojanov & Kitanov, 1946), Agios Evstratios (Snogerup & Snogerup, 1991), Kira Panagia (Snogerup *et al.*, 1991), Egina (Halácsy, 1902; Rechinger, 1943), Siros (Rechinger, 1943), Naxos (Böhling, 1995) and Kriti (Böhling, 2000).

Myosotis sicula Guss.
Between Agiasos and Vasilika, Mikri Limni, margins of shallow lake, 25 v 1994 (IB 1748); ibid., 16 v 1995 (IB 2422).

Reported by P.C. Candargy (1897) from Mikri Limni ('Ad Micra Limni'). Our findings from the same locality confirm its presence on the island. *Myosotis sicula* is a species of humid habitats, rare and scattered in mainland Greece and very rare in the Aegean islands, being known only from Samothraki (Strid & Tan, 1998). An old record from Naxos (Halácsy, 1902) has not been recently confirmed.

Callitrichaceae

Callitriche brutia Petagna
SE of Agra, near Apothika, in small pool, 28 xi 1993 (IB 1454). c.2km NE of Achladeri, sandy bay and saltmarsh, 3 iv 1994 (*Nielsen & Skovgaard* 9590, C). 2–3km ENE of Skalochori, 3 iv 1994 (*Nielsen & Skovgaard* 9615, C). c.5km N of Kalloni, vernal pool in a pine forest, 25 iv 1994 (AY 8575, IB 1654). c.3.5km NW of Kalloni very close to Moni Limonos, wet flat places and seasonal pools, 28 iv 1994 (AY 8649). Between Agiasos and Vasilika, Mikri Limni, 25 v 1994 (IB 1761). c.7km NE of crossroads to Palios (ENE of Mandamados), in seasonal pools, 2 vi 1994 (IB 1907). c.2km SSE of Mesotopos, Dergatsidi, in semi-natural pool, 23 viii 1996 (AY 9193).

Reported by P.C. Candargy (1898), as *Callitriche pedunculata* DC., from the river Ligionas of Gera and from the locality Achladia of Mandamados ('Fluvio Ligionas Jerae, aquis stagnantibus Achladia Mandamadi'). Doubtfully recorded for the East Aegean by Schotsman & Mathez (1983) and Greuter *et al.* (1984). Its presence on Lesvos was recently confirmed (Bazos & Yannitsaros, 1994) and recent findings increase its distribution on the island. *Callitriche brutia* is rare in Greece (Fig. 3). In the Aegean it is known so far from the islands of Agios Evstratios (Snogerup & Snogerup, 1991), Psathoura (Snogerup *et al.*, 1980), Naxos (Böhling, 1995) and Rodos (Carlström, 1987), whilst in the *Flora Hellenica* database (Strid, *in litt.*) there are also records from Patmos and Skiros.

Callitriche stagnalis Scop.
Reported by Rechinger (1943), who collected it in May 1934 from lake Megali Limni. It is possible that *C. stagnalis* has become extinct due to the draining of Megali Limni in 1935 and therefore its presence on Lesvos needs confirmation. This species is very rare in the Aegean, being recorded from the islands of Skiathos (Economidou, 1969), Kos (Hansen, 1980) and Ikaria (Christodoulakis, 1996). Schotsman & Mathez (1983) and Greuter *et al.* (1984) query it for the East Aegean

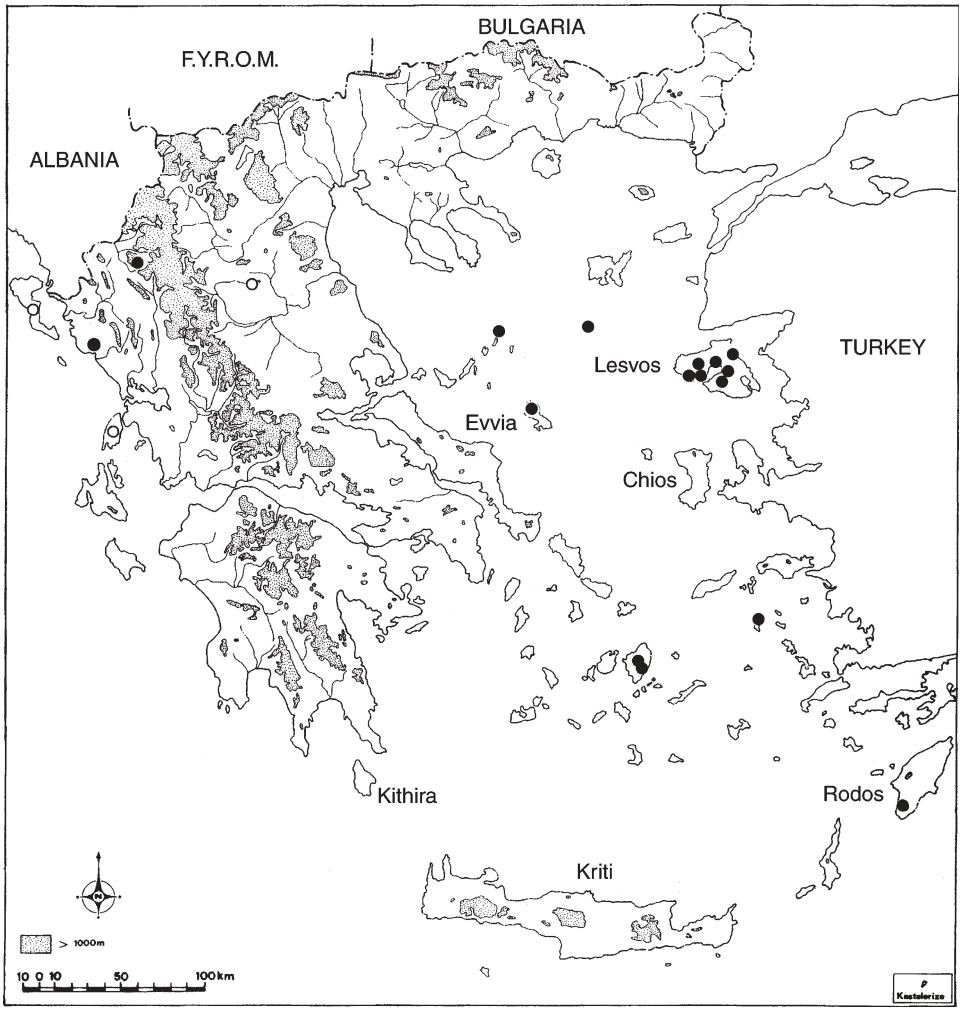

FIG. 3. Distribution of *Callitriche brutia* Petagna in Greece. Old unconfirmed bibliographic records are shown by open circles.

Islands. P.C. Candargy (1897) described from the area of Charamis and the plain of Ippios ('undique in stagnis littoris Charamis Maleae nec non campi Ipios') *C. aeolica* P.Candargy, which according to Greuter *et al.* (1984) is probably a synonym of *C. stagnalis*. Although we have thoroughly investigated the area of Charamis we have not so far collected any *Callitriche* specimens there.

Callitriche truncata Guss. subsp. ***occidentalis*** (Rouy) Schotsman
Between Kapi and Klio, in semi-artificial pond, 5 vi 1994 (IB 1997).

New for Lesvos and the East Aegean Islands. Recently Jahn (1998) confirmed its presence on Kriti.

Callitriche truncata Guss. subsp. ***truncata***
c.5km SW of Kalloni, on the road to Parakila, small wetland, 10 xi 1992 (IB 672).

New for Lesvos. Edmondson (1982) reported it from the islet of Barbalias (Tokmakia islets, near the NE coast of Lesvos) as new for the East Aegean. *Callitriche truncata* subsp. *truncata* is rare in Greece and its localities on Lesvos and Barbalias seem to be the only records for the Aegean area.

Caprifoliaceae

Lonicera caprifolium L.
Reported by Arianoutsou-Faraggitaki (1985) as observed on Lesvos in June 1983 without exact locality. Its presence there seems unlikely and needs confirmation due to the lack of herbarium specimens.

Viburnum tinus L.
Recorded by P.C. Candargy (1897) from river Tinegias and near the village of Pigi ('In fluvio Tinegias et circa pagum Pigi; nec non cultum'), localities which we have investigated without finding any wild plants of this species. Apparently those that Candargy observed were casual garden escapes, which did not manage to survive; its presence on Lesvos needs confirmation. Reported by Greuter *et al.* (1984) as doubtfully native in Kriti and the East Aegean. According to Browicz (1988) it is known from Greece, in its wild state, from only a few localities on the islands of Lesvos and Kerkira. However, as far as we know, Browicz never visited Lesvos and he apparently based his remarks on older bibliographic records. Recently it was reported from the Ionian island of Othoni (Boratynski & Browicz, 1996). In Greece, *V. tinus* is probably native only in Kerkira and adjacent regions of the western mainland (Strid, *in litt.*).

Caryophyllaceae

Agrostemma githago L. subsp. ***githago***
c.0.5km WSW of Agii Anargiri near Asomatos, cultivated fields, 24 v 1994 (IB 1724).

Both C.A. Candargy (1889) and P.C. Candargy (1898) report *A. githago* s.l. under the name *Githago segetum* Desf. without exact locality. Recently *A. githago* s.l. has been reported by Axiotis (1991), without any collection data, and by Seraidis (2000) from cultivated fields in Lisvori. *Agrostemma githago* subsp. *githago* is an agricultural weed occurring throughout Greece, but disappearing in many places due to changes in agricultural practice (Greuter, 1997). It is not shown for Lesvos on the map in *Flora Hellenica* (Strid & Tan, 1997). The recent findings confirm that small populations of this taxon continue to grow on Lesvos.

Arenaria guicciardii Heldr. ex Boiss.

NW of Skopelos, summit area of Mt Petrovouni, 750m, stony places on limestone, 11 v 1995 (IB 2291). Mt Olimbos, just below the summit of Profitis Ilias, 950m, stony places on limestone, 11 v 1999 (IB 3805).

New for Lesvos. A Greek endemic which is rare and scattered in the mountains of the Ionian islands, Sterea Ellas, Peloponnisos, Kriti, and the East Aegean Islands. The distribution map presented here (Fig. 4) combines Constantinidis (1997), Strid & Tan (1997) and our findings. The Lesvos localities are the northeasternmost limits of its distribution.

Dianthus anatolicus Boiss.

3km E of Vassilika, pine forest with clay soil, 16 iv 1992 (*Hansen & Nielsen* 6467, C). 3km SW of Ambelikon, dry pasture on serpentine, 8 vi 1992 (*Hansen & Nielsen* 7891, B, C). Just SW of

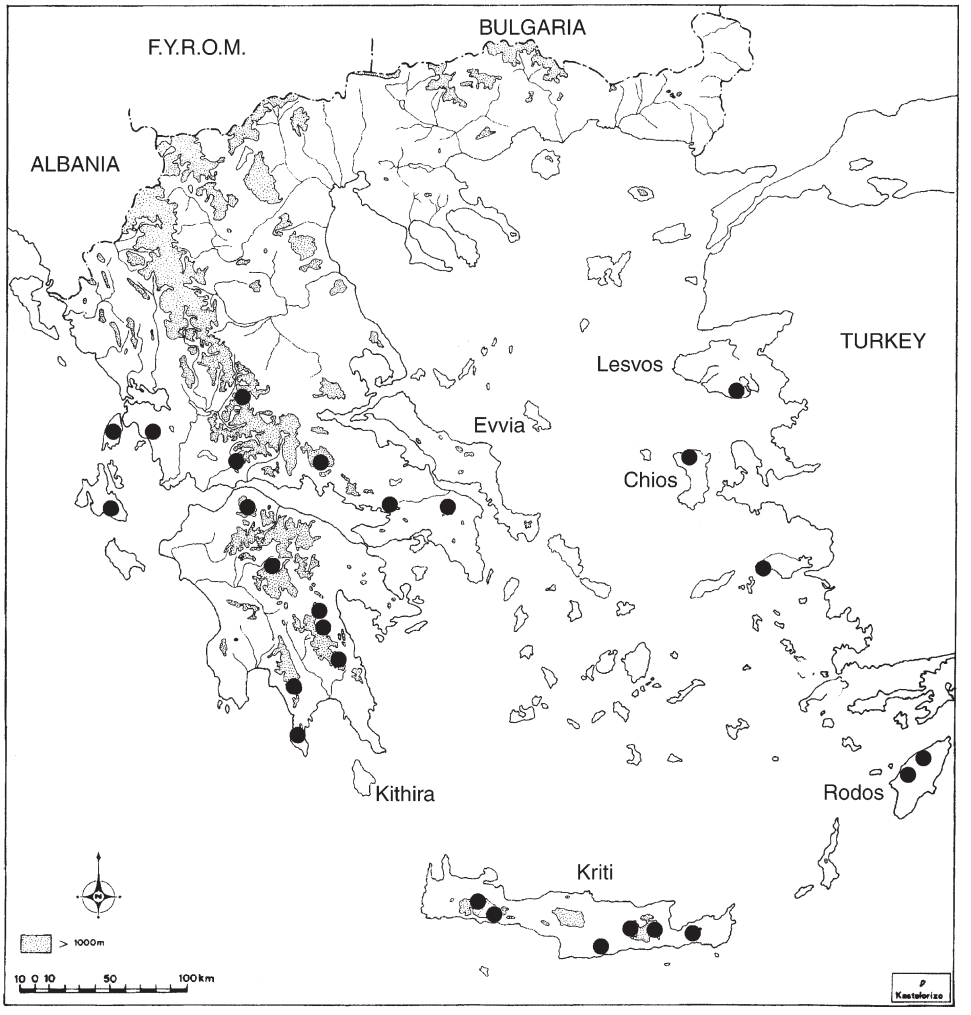

FIG. 4. Total distribution of *Arenaria guicciardii* Heldr. ex Boiss.

Ambelikon, pine woodland on serpentine, 25 xi 1993 (*Hansen & Nielsen* 9177, B, C). 2–3km E of Pigi, limestone scree and olive grove, 30 iii 1994 (*Nielsen & Skovgaard* 9379, C), not in flower. Near Vrisa, stony fallow fields, 26 v 1994 (IB 1779). Between Mikri and Megali Limni, openings of *Pinus brutia* Ten. forest, 10 vi 1998 (IB 3222). SW of Loutropoli Thermis, 1 vi 2000 (*Biel* s.n.).

Reported by Hansen & Nielsen (1993) as new for Greece from two localities on Lesvos (SW of Ambelikon and near the delta of river Vourkos). Seraidis (2000) reports it from Mt Olimbos but the record is wrong as the photograph cited is of another species, probably *Asyneuma limonifolium* (L.) Janchen. Subsequently it was found in Chios (Strid & Tan, 1997; Snogerup *et al.*, 2001). Its broader distribution includes Turkey in Europe and W and C Anatolia. *Dianthus anatolicus* grows in dry stony places, macchie vegetation and open pine forests.

Herniaria glabra L.
Parakila, sandy and gravelly places, 8 v 1997 (IB 2901).

New for Lesvos and the Aegean area as a whole.

Herniaria micrantha A.K.Jackson & Turrill
Parakila, stony and sandy places of a streambank, 21 x 1996 (IB 2778).

Reported by Hansen & Nielsen (1993) as new for Lesvos from a single locality near Pterounda. Also mapped in *Flora Hellenica* (Strid & Tan, 1997). Our new finding extends its distribution on the island.

Paronychia echinulata Chater
Between Petra and Molivos, flat pebbly places, 29 iv 1994 (AY 8669). ENE of Mandamados, near Palios, dry places in phrygana, 31 v 1994 (IB 1861). SE of Skopelos, c.2km from cross-roads to Tarti, pine forest openings, 6 v 1997 (IB 2814). Between Skopelos and Perama, Malacopetra, dry places with phrygana, 11 vi 1998 (IB 3245). c.1km S of Sigri, stony places with *Sarcopoterium spinosum* (L.) Spach phrygana, 7 v 1999 (IB 3774).

Reported by Hansen & Nielsen (1993) as new for Lesvos from a single locality. *Paronychia echinulata* is a calcifuge plant of dry, sandy or stony places (Chater & Akeroyd, 1993) distributed in Eastern Peloponnisos, Kithira, Egina, Evvia, Kriti, Kiklades and the East Aegean Islands (see Strid & Tan, 1997). In Lesvos it always grows on schists and volcanic rocks.

Silene urvillei Schott ex d'Urv.
Between Eresos and Mesotopos, Tsam-Deresi, stony places with phrygana vegetation and some scattered *Pinus brutia* trees in a torrent, 8 xii 1974 (AY 5731). NE of Achladeri, lower valley of river Vouvaris, 1 v 1986 (*Hansen & Nielsen* 1888, C). Summit area of Profitis Ilias (Olimbos) by Agiasos, 8 vi 1988 (*Hansen & Nielsen* 5070, C); ibid., 940m, 11 v 1999 (IB obs.). E of the summit of Olimbos near Agiasos, rocks and macchie on limestone, 800–900m, 21 xi 1993 (*Hansen & Nielsen* 8988, B, C). c.1km E of Eresos, by the road to Moni Pithariou, limestone hill with phrygana, 19 x 1994 (*Nielsen* 9989, C), few old bushes to 40cm tall. SE of Agiasos, Mt Petrovouni summit area, rocky places, 750m, 5 vii 1995 (IB 2603). SW of the

summit of Mt Olimbos, rocky places, 850m, 8 vi 1998 (IB 3162). SW of Loutropoli Thermis, 1 vi 2000 (*Biel* s.n.).

P.C. Candargy (1898) reports it from the areas of Amali and Olimbos without any other collection data. Rechinger (1943) also reports it from the summit of Mt Olimbos (Profitis Ilias) of Agiasos. *Silene urvillei* is a taxonomically isolated species growing on limestone in open stony and rocky places. It is also distributed in SW Anatolia and the East Aegean islands of Chios (Meikle, 1954; Snogerup *et al.*, 2001), Samos (Rechinger, 1943; Christodoulakis, 1986), Kalimnos (Zervou & Yannitsaros, in press) and Kos (Rechinger, 1943; Hansen, 1980). Its distribution in Greece (Fig. 5) is from the map in Strid & Tan (1997), our own collections, and more recent information extracted from the *Flora Hellenica* database (Strid, *in litt.*).

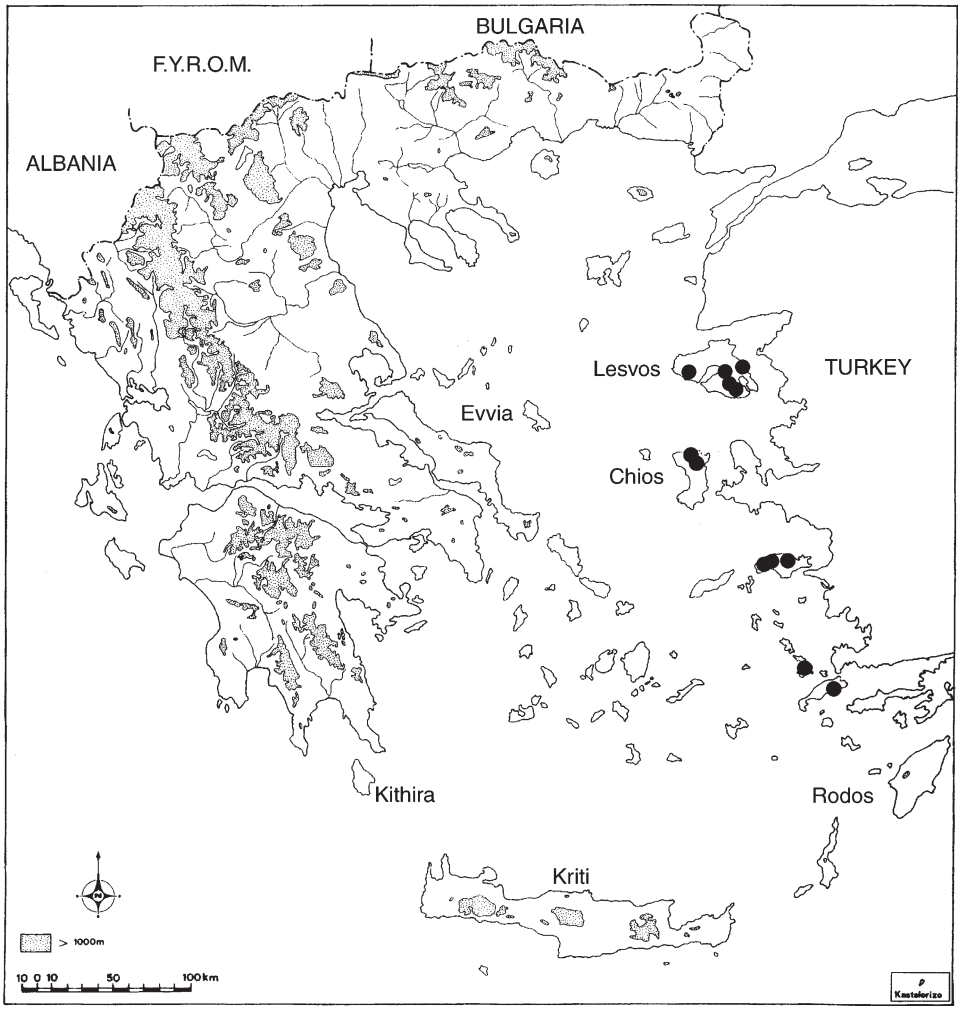

FIG. 5. Distribution of *Silene urvillei* Schott ex d'Urv. in Greece.

Silene squamigera Boiss. subsp. ***squamigera***
N side of Mesotopos, Plakia, stony places with phrygana vegetation, 2 vi 1985 (AY 7353). Mt Ordimnos, on the road from Antissa to Sigri, crossroads to the Petrified Forest, dry grazed area with phrygana vegetation (mainly of *Sarcopoterium spinosum*), 27 iv 1986 (AY 7487). Mesotopos, Kokkino Vounari, stony places, 3 v 1986 (AY 7631). c.2km SW of Ambeliko, dry habitats (pasture, macchie, pine forests), 3 vi 1988 (*Hansen & Nielsen* 4343, C). c.2km NNW of Vrisa, dry stony places and road margins, 26 v 1994 (IB 1778). Between Antissa and Eresos, phrygana vegetation on dry stony places, 14 v 1995 (IB 2354).

Silene squamigera s.l. was first reported from Lesvos by P.C. Candargy (1898) from Messa, Kalloni, Kalo niro, Pigi, and by Rechinger (1943) from Antissa. It is a rare species, protected by Greek law (Presidential Decree 67/1981), scattered on the Greek mainland and the islands of Evvia and Lesvos. Recently mapped for Greece (Strid & Tan, 1997); our findings increase its distribution in Lesvos.

Spergula arvensis L.
SSE of Mesotopos, Katiforos, stony places with phrygana vegetation, 3 vi 1985 (AY 7365). 10km NW of Plomari, areas around Akrasi, pine forest, fallow field, 30 iv 1986 (*Hansen & Nielsen* 1728, C). 8km SE of Kalloni, delta area of the river Kalami, 1 v 1986 (*Hansen & Nielsen* 1837, C). c.3km NNE of Parakila, damp meadows and salines, 24 iv 1987 (*Strid et al.* 26033, C, G, UPA). c.6km E of Sigri by the road to the petrified forest, dry grazed area W of Moni Ipsilou, 5 v 1987 (*Hansen & Nielsen* 3340a, C) mixed with *S. pentandra* L. S of Sigri, sandy field, 6 v 1987 (*Hansen & Nielsen* 3419, B, C). c.4km SW of Parakila, pasture with pond, moist slope with saltmarsh, 6 v 1987 (*Hansen & Nielsen* 3484, C). Mt Routfas c.5km N of Agra, 500–700m, 11 vi 1988 (*Hansen & Nielsen* 5398, C). Parakila, orange orchards, 10 xi 1992 (IB 681). SE of Agiasos, Kala Perivolia, orchards and fields, 26 iv 1994 (IB 1695a) mixed with *S. pentandra*. NW of Kalloni, near Moni Limonos, damp places, 28 iv 1994 (AY 8642). c.2.5km SE of Mesotopos, Kastania, grazed mixed forest of *Quercus* spp., 1 v 1994 (AY 8691). Between Revma and Chidira, banks of the river Voulgaris, damp places, 1 vi 1994 (IB 1895). NW of Kalloni, Moni Limonos, uncultivated fields, 25 ii 1995 (IB 2067a) mixed with *S. pentandra*.

Reported as new for Lesvos (Yannitsaros & Bazos, 1993) without exact locality or other collection data. Also mapped in *Flora Hellenica* (Strid & Tan, 1997) though the Lesvos localities listed above are published for the first time.

Spergula pentandra L.
E of Stipsi, meadow and rivulet, 400–600m, 3 v 1987 (*Hansen & Nielsen* 2970, C). SW of Agiasos, western slope of Mt Olimbos (Profitis Ilias), 4 v 1987 (*Hansen & Nielsen* 3074, C). c.2km E of Filia, rocky outcrop by Oxia Petra, 500m, 5 v 1987 (*Hansen & Nielsen* 3263, C). c.6km E of Sigri by road to petrified forest, dry grazed area W of Moni Ipsilou, 5 v 1987 (*Hansen & Nielsen* 3340, C) mixed with *S. arvensis*. S of Sigri, sandy field, 6 v 1987 (*Hansen & Nielsen* 3419a, C) mixed with *S. arvensis*. c.4km S of Achladeri, pine forest on serpentine, 3 iv 1994 (*Nielsen & Skovgaard* 9571, herbarium Skovgaard). c.1km E of Filia, dry stony places, 5 iv 1993 (IB 738a). SE of Agiasos, Kala Perivolia, orchards and fields, 26 iv 1994 (IB 1695b) mixed with *S. arvensis*; ibid., 26 iv 1994 (AY 8606). NW of Kalloni, Moni Limonos, uncultivated fields, 25 ii 1995 (IB 2067b) mixed with *S. arvensis*.

Recently mapped for Lesvos (Strid & Tan, 1997) but the localities listed above are the first published for the island. *Spergula pentandra* is scattered in the Aegean area and eastern parts of the Greek mainland. It often grows with *S. arvensis*.

Ceratophyllaceae

Ceratophyllum demersum L.
Bay of Gera, Dipi, 11 vi 1998 (IB 3263).

Recently mapped for Lesvos (Strid & Tan, 2002) though the locality listed above is the first published for the island. The species is very rare in the Aegean area, where it is so far reported only from the islands of Samos (Christodoulakis, 1984) and Kriti (Turland *et al.*, 1993).

Ceratophyllum submersum L.
P.C. Candargy's (1897) record of *C. submersum* without locality or any other collection data needs confirmation as it could be due to confusion with *C. demersum*.

Chenopodiaceae

Halocnemum strobilaceum (Pallas) M.Bieb.
Skala Polichnitou, saltmarsh and waste places, 3 v 1986 (*Hansen & Nielsen* 2146, B, C); ibid., around the salines, 13 x 1990 (*Hansen & Nielsen* 6109, C). E of Arisvi by Kalloni, saltmarshes, 9 vi 1988 (*Hansen & Nielsen* 5166, B, C). c.3km E of Kalloni, saltmarsh, 11 vi 1988 (*Hansen & Nielsen* 5304, B, C). c.1km W of Skala Kallonis, by the long bridge, saltmarsh, 12 ix 1992 (*Hansen & Nielsen* 8104, B, C). 3–5km SE of Kalloni, large salines, 24 xi 1993 (*Hansen & Nielsen* 9158, B, C, LD). Nifida, saltmarsh, 19 x 1996 (IB 2759); ibid., 20 v 1999 (IB obs.).

First reported from Lesvos by Arianoutsou-Faraggitaki (1985) without exact locality. Recently mapped for Lesvos (Strid & Tan, 1997) though the localities listed above are the first published for the island. *Halocnemum strobilaceum* is scattered along the coasts of the N and W part of the Greek mainland, the Ionian island of Kerkira and the Aegean islands of Limnos, Samos, Dilos and Naxos.

Noaea mucronata (Forsskål) Asch. & Schweinf.
Between Eresos and Mesotopos, by the bridge of the torrent Chalandra, pebbly places, 10 xii 1974 (AY 5758). Summit of Mt Olimbos (Profitis Ilias), 8 vi 1988 (*Hansen & Nielsen* 5069, B, C). East side of Mesotopos, stony and pebbly places, 6 xi 1989 (AY 8072). Near Agra, summit of Mt Routfas, calcareous rocks, 600–700m, 17 v 1993 (*Hansen & Nielsen* 8542, C); ibid., limestone rocks and mixed woodland, 600–650m, 26 xi 1993 (*Hansen & Nielsen* 9202, B, C). c.1km E of Eresos, by road to Moni Pithariou, limestone hill, 200m, 19 x 1994 (*Nielsen* obs.). SE of Eresos, by bridge on road to Mesotopos, 50m, 19 x 1994 (*Nielsen* 9991, B, C). S of Mesotopos, Tavari, grazed bare rocks near chapel at coast, 19 x 1994 (*Nielsen* s.n.). c.2km NNW of Agra, phrygana, eroded rocks, 17 xi 1997 (IB 3021). E of Sigri, petrified forest, dry places with phrygana vegetation, 28 viii 2002 (IB obs.).

Reported by Rechinger (1943) from Mt Olimbos near Agiasos and between Vatousa and Antissa. *Noaea mucronata* is a rather rare species in Greece, restricted to dry habitats. For more information on the distribution of the species see Strid & Tan (1997).

Cistaceae

Cistus monspeliensis L.
Rauh (1949) reports this species from Lesvos without specific collection data. Not reported by Greuter *et al.* (1984) for the East Aegean. According to Davis *et al.* (1988) *C. monspeliensis* is apparently absent from the East Aegean Islands. However, Browicz (1988) and Boratynski *et al.* (1992) consider it to be present in Lesvos. Recently, Seraidis (2000) published a photograph of *C. salviifolius* L. stating wrongly that it portrayed *C. monspeliensis*. Therefore the occurrence of the latter in Lesvos is very doubtful and needs confirmation.

Helianthemum aegyptiacum (L.) Miller
Between Megali and Mikri Limni, openings of *Pinus brutia* forest, 29 iv 1986 (AY 7581). SW of Agiasos, Mt Olimbos, path to Profitis Ilias summit, openings of *Quercus coccifera* woodland, 16 v 1993 (IB 943).

Reported from Lesvos by P.C. Candargy (1898) without locality or other collection data. Our findings confirm its presence on the island. This species has rather rare and scattered localities on the Greek mainland (Halácsy, 1901; Rechinger, 1939; Pavlides, 1982), the Kiklades (Raus, 1991, 1996b; Böhling, 1995), Karpathos (Rechinger, 1943; Turland *et al.*, 1993; Raus, 1996a) and Kriti (Turland *et al.*, 1993).

Helianthemum nummularium (L.) Miller
Arianoutsou-Faraggitaki (1985) reports '*Helianthemum numularum*' (obviously in error for *H. nummularium*) as observed on Lesvos in June 1983 without exact locality. Its presence needs confirmation due to the lack of herbarium specimens.

Compositae

Anthemis wiedemanniana Fisch. & C.A.Mey.
Between Scalochori and Filia, stony places by road, 6 v 1986 (AY 7715). SE of Mesa Sanctuary, pine forest clearings, 24 iv 1994 (IB 1643). c.3km NNW of Agra, dry stony places with phrygana, 17 v 1995 (IB 2460).

First reported from Lesvos by Rechinger (1943) from a single locality near Ipsilometopo. *Anthemis wiedemanniana* is widespread in Anatolia and is also known from a few localities on the East Aegean islands of Lesvos and Kos, and a single locality in mainland Greece (Strid & Tan, 1999).

Artemisia maritima L.
Reported by P.C. Candargy (1897) from Larsos ('Paludibus Larissae'). The occurrence of this species in Lesvos is unlikely, as Candargy may have confused it with *Artemisia santonicum* L., which is present in the same locality (Strid, *in litt.*).

Artemisia santonicum L.
Bay of Gera, saltmarsh in Larsos, 23 xi 1993 (*Hansen & Nielsen* 9089).

Apparently new for Lesvos unless Candargy's record for *A. maritima* refers to this species.

Aster tripolium L.
Between Perama and Evriaki, saltmarsh, 17 xi 1994 (IB 2019). Between Parakila and Skala Kallonis, marshy areas near seashore NE of Parakila, 21 v 1999 (IB obs.).

Reported by P.C. Candargy (1897) as *Tripolium vulgare* Nees without exact locality. It is rare in the Aegean having been reported from the islands of Thasos, Limnos, Evvia, Kos and Kriti; records from the islands of Poros, Rodos and a group of islets between Evvia and Attiki have not been recently confirmed (see also Carlström, 1987; Yannitsaros *et al.*, 2000). *Aster tripolium* is a species of marshy areas probably more common than indicated by the records mentioned above; it can easily be overlooked due to its late flowering period.

Bidens tripartita L.
Between Agiasos and Vasilika, Megali Limni, muddy places and borders of irrigation ditches, 10 vi 1998 (IB 3197).

New for Lesvos and the Aegean islands as a whole. There are scattered records throughout the Greek mainland but none previously from the Aegean islands (Strid, *in litt.*).

Centaurea raphanina Sm. subsp. *mixta* (DC.) Runemark
Reported by Routsi (1993) from the Agiasos area. Also reported by Axiotis (1991), with the vernacular name '*σαλιβάρβαρο*' (salivarvaro) without any collection data. In the rest of the East Aegean it is known from the islands of Psara (Greuter, 1976) and Ikaria (Runemark, 1967; Routsi, 1993; Christodoulakis, 1996). According to Runemark (1967) *C. raphanina* s.l. is similar to *C. urvillei* DC., which is replacing it in the East Aegean area. Its presence in Lesvos is somewhat unlikely and it may have been confused with *C. urvillei*, which is widespread on the island.

Centaurea reuterana Boiss. var. ***reuterana***
NNW of Ambeliko, pine forests near road to Mt Olimbos (Profitis Ilias summit), 13 v 1999 (IB 3822).

P.C. Candargy (1897) reports '*C. Reuteriana* Boiss.' as rare in pine forests between Mikri and Megali Limni ('In pinetis inter Micra et Megali Limni'). Our finding confirms its presence on Lesvos and the small area where it is found seems to be the only one for this species in Greece.

Centaurea urvillei DC. subsp. ***urvillei***
S and SE of Mesotopos, stony places, 18 vi 1984 (AY 7185). Between Mesotopos and the locality called Karaspilios, stony places, 2 vi 1985 (AY 7342). Mesotopos, NE side, stony places, 30 iv 1986 (AY obs.). WNW of Agiasos, Kastelli, stony places and rock crevices, 15 vi 1991 (IB 72). Above the village of Agra, stony and rocky places, 6 vii 1995 (IB obs.). Mt Olimbos summit area, rocky places, 950m, 11 v 1999 (IB obs.). SE of Agiasos, Mt Petrovouni summit area, rocky places, 750m, 12 v 1999 (IB obs.). SW of Agiasos, Mt Olimbos slopes, rocky places, 850m, 13 v 1999 (IB obs.).

Reported by P.C. Candargy (1897), as *Aegialophila longispina* Cand., without specific localities or other collection data, as very common from 0 to 1000m. Also reported by Rechinger (1943) from Mitilini, Agia Marina, Mt Olimbos and Ipsilometopo. A record of *Aegialophila cretica* Boiss. & Heldr. from Lesvos (C.A. Candargy, 1889) probably refers to this taxon. *Centaurea urvillei* is a very polymorphic species related to the Turkish endemic *C. lydia* Boiss. and the Greek endemic *C. raphanina* s.l. (Wagenitz, 1975). It replaces *C. raphanina* s.l. in the East Aegean area (Runemark, 1967) with the exception of the islands of Psara (Greuter, 1976) and Ikaria (Christodoulakis, 1996), where only *C. raphanina* subsp. *mixta* occurs. *Centaurea urvillei* subsp. *urvillei* is distributed in Anatolia and the East Aegean islands of Chios (Rechinger, 1943; Meikle, 1954; Snogerup *et al*., 2001), Samos (Rechinger, 1943; Christodoulakis, 1986), Telendos and Kos (Hansen, 1980). There are also old records of *C. urvillei* s.l. from Kalimnos (Rechinger, 1943) where its presence has been recently confirmed (Zervou, pers. comm.).

Cirsium creticum (Lam.) d'Urv. subsp. ***creticum***
c.2km NW of Agiasos, Tsingos, humid and shady places, 7 vii 1995 (IB 2658). Bay of Gera, Dipi, humid places, 11 vi 1998 (IB obs.).

Axiotis (1991) reports *C. creticum* s.l. with the vernacular name '*ασπράγκαθο*' (aspragatho) without exact locality or other collection data. Otherwise the taxon is new for Lesvos.

Crepis setosa Hall.f.
Mandamados, yard of the church of Taxiarchis, in flowerbed, 6 v 1986 (AY 7724). SE of Mandamados, Aspropotamos, fields, 17 v 1993 (IB 996).

New for Lesvos and the East Aegean Islands. Widespread on the Greek mainland and also known from the Aegean islands of Thasos, Samothraki (in Rechinger, 1943) and Andros (Strid, *in litt.*).

Eupatorium cannabinum L.
c.2km NW of Agiasos, Tsingos, humid and shady places, 7 vii 1995 (IB 2664). c.1km SW of Michou, humid places near stream, 18 xi 1997 (IB obs.).

Reported by P.C. Candargy (1897) from humid places in Asomatos ('Humidis ad Asomatos'). Our findings confirm its presence on the island. Very rare in the Aegean, but also reported from the islands of Evvia (Rechinger, 1961) and Thasos (Stojanov & Kitanov, 1946).

Inula candida (L.) Cass.
Reported by Arianoutsou-Faraggitaki (1985) as observed on Lesvos in June 1983 without exact locality. *Inula candida* is a polymorphic Greek endemic distributed on Kriti, Kithira and the mainland. The record of this species from Lesvos is obviously an error for the closely related *I. heterolepis* Boiss., which occurs there.

Otanthus maritimus (L.) Hoffmans. & Link
NNE of Antissa, Ovriokastro, beach with gravel, 12 vi 1998 (IB 3273). NNE of Sigri, Faneromeni, sandy beach, 5 v 1999 (IB obs.).

Reported by C.A. Candargy (1889), as *Diotis maritima* Sm., from sandy shores of Moria and Mandamados ('rivages sablonneux de Moria et de Madamade') but probably extinct from these areas as P.C. Candargy does not repeat his father's records. Our findings confirm its presence on Lesvos. This species is very rare on the island, having only a few individuals in each locality, and it is seriously endangered by human activities.

Phagnalon rupestre (L.) DC.
Reported by C.A. Candargy (1889), as *Phagnalum rupestre* DC., and P.C. Candargy (1898) without specific collection data. Its presence on Lesvos needs confirmation as it is very likely to be confused with *P. graecum* Boiss., which is present and fairly common.

Pilosella hoppeana (Schultes) C.H. & F.W.Schultz
(Syn.: *Hieracium hoppeanum* Schultes)
Between Pterounda and Agra (c.5.5km SE of Pterounda), mixed *Pinus brutia* and *P. nigra* Arnold forest, 13 vi 1998 (IB 3281).

New for Lesvos and apparently for the Aegean islands as a whole. *Pilosella hoppeana* is a very variable species with six subspecies distinguished by Sell & West (1975). It is distributed in C Europe (from E Alps eastwards), Italy, Sicily, the Balkan Peninsula, Anatolia, Caucasia, Syria and Iran. The material from Lesvos seems to belong to subsp. *troica* (Zahn) Sell & West although according to Buttler (1991), who includes *Pilosella* in *Hieracium*, the taxonomic subdivision of *H. hoppeanum* is problematic, especially if it overvalues morphological characters. The recognition of four subspecies (two in Greece) seems reasonable and any further splitting would be arbitrary.

Pulicaria vulgaris Gaertner
c.8km NE of crossroads to Palios (ENE of Mandamados), margins of seasonal pool, 31 v 1994 (IB 1868). c.7km NE of crossroads to Palios (ENE of Mandamados), margins of seasonal pool, 2 vi 1994 (IB 1904). c.6km SE of Mandamados, crossroads to Palios, margins of seasonal pool, 5 vi 1994 (IB 1977). Between Agiasos and Vasilika, Mikri Limni, wet muddy ground, 7 vii 1995 (IB 2650).

Reported by Hansen & Nielsen (1993) as new for the East Aegean. Our findings increase its known distribution in Lesvos. *Pulicaria vulgaris* is rare in the Aegean, being reported from the islands of Thasos, Samothraki (Rechinger, 1943) and Kriti where its occurrence has been recently confirmed (Böhling, 2000). It is doubtfully present in Paros (Raus, 1996b), whilst older records from Mikonos (in Rechinger, 1943) and Poros (Halácsy, 1902; Zaganiaris, 1940b) have not been recently confirmed.

Senecio lividus L.
Pterounda, stony places, 27 iv 1994 (AY 8625). c.2.5km SE of Mesotopos, Kastania, 1 v 1994 (AY 8699). c.3km NW of Parakila, stony places, 11 iv 1995 (IB 2094). SSE of Perama, Ftelia, dry stony places with phrygana, 14 iv 1995 (IB 2188).

Reported by Hansen & Nielsen (1993) as new for the East Aegean. Our findings increase its distribution in Lesvos. It is a rather rare species with scattered distribution on the Greek mainland and the Aegean islands. According to Turland *et al.* (1993) it is doubtfully present in Kriti.

Taraxacum aleppicum Dahlst.
WNW of Mesagros, Mt Petrovouni summit area, 750m, stony places on limestone, 5 iv 1998 (IB 3119).

New for Lesvos.

Taraxacum apollinis Dahlst.
c.2.5km S of Pigi, olive groves, 1 iv 1998 (IB 3066).

New for the East Aegean Islands.

Taraxacum hellenicum Dahlst.
Tavari, pebbly places, 30 iv 1986 (AY 7607). Mitilini, on gravel in Epano Skala, 6 iv 1998 (IB 3127).

New for Lesvos. Panitsa (1997) reports it from the islet of Barbalias (Tokmakia islets), near the NE coast of Lesvos.

Taraxacum minimum (Briganti ex Guss.) Terrac.
c.2km SE of Eresos, E of the bridge of Chalandra torrent, 8 xii 1974 (AY 5733). c.4.5km E of Sigri, petrified forest, stony places with phrygana vegetation, 8 xii 1974 (AY 5745). N of Mesotopos, Paliouras, fallow fields with *Quercus ithaburensis* Decaisne subsp. *macrolepis* (Kotschy) Hedge & Yalt., 9 xii 1974 (AY 5749). c.2.5km SE of Mesotopos, Kastania, mixed *Quercus* spp. forest, 3 xi 1989 (AY 8059). Mt Lepetimnos, above Pelopi, 17 x 1991 (IB 271). Mt Lepetimnos, above Argenos, 17 x 1991 (IB 289). Between Sikamia and Skala Sikamias, stony places, 17 x 1991 (IB 294). NW of Nees Kidonies, 1km NW of Xambelia, stony places with phrygana, 16 xi 1997 (IB 3004). c.2km NE of Klio, overgrazed *Sarcopoterium spinosum* phrygana, 16 xi 1991 (IB 3010). 3.5km NEE of Molivos, Eftalou, stony places and gravel near road, 16 xi 1997 (IB 3015).

New for Lesvos.

Taraxacum cf. ***molybdocephalum*** Sonck
ESE of Asomatos, Agii Anargiri, shady places in olive groves, 7 iv 1993 (IB 779).

New for Lesvos and the Aegean area as a whole. *Taraxacum molybdocephalum* is endemic to C and N Greece, growing in rocky and grassy places up to 2350m (Richards, 1991). According to Richards (*in litt.*) the taxonomy of the *Erythrosperma* group, to which *T. molybdocephalum* belongs, is not yet fully worked

out. However, the material from Lesvos does not match any known Turkish species and it is very possible that it represents an introduction to Lesvos from the northern Greek mainland. The material from Lesvos has black stigmas and very rugose, dark red achenes and it does not notably differ from *T. molybdocephalum* described from Makedonia.

Taraxacum scolopendrinum (Heldr. ex Halácsy) Dahlst.
c.4.5km E of Sigri, Petrified forest, stony places with phrygana vegetation, 8 xii 1974 (AY 5737).

New for Lesvos.

Tripleurospermum conoclinium (Boiss. & Bal.) Hayek
Tavari, dry stony fields, 25 iv 1994 (IB 1676b).

New for Greece. *Tripleurospermum conoclinium* was considered until now as endemic to Turkey, known from very few scattered localities in Anatolia and a single locality in European Turkey. It is closely allied to *T. tenuifolium* (Kit.) Freyn (Enayet Hossain, 1975), which has broader distribution. The only known Greek locality is shown in Fig. 6.

Convolvulaceae

Calystegia soldanella (L.) Roemer & Schultes
Gavathas, sandy beach, 14 v 1995 (IB 2362); ibid., 30 ix 1995 (AY 9094).

New for Lesvos. The species is very rare on the island and its only known population is endangered due to human activities such as road construction and tourist exploitation of habitats.

Cressa cretica L.
Near Skala Kallonis, saltmarshes, 31 viii 1992 (IB 617). Skala Polichnitou, muddy places in dry saltpans, 20 v 1999 (IB obs.). NE of Achladeri, muddy places near Vouvaris river estuary, 22 v 1999 (IB obs.).

Reported as new for Lesvos (Yannitsaros & Bazos, 1993) without specific collection data. *Cressa cretica* is scattered in saltmarshes and other halobiotopes almost throughout Greece.

Cornaceae

Cornus mas L.
Both C.A. Candargy (1889) and P.C. Candargy (1898) reported this species from the Mt Olimbos region. Also reported by Axiotis (1991) with the common name '*κρανιά*' (krania) without specific collection data. According to Boratynski *et al.* (1992) it is distributed in C and N Greece, Peloponnisos and the islands of Evvia, Lesvos and Thasos. *Cornus mas* is quite rare on the islands and since it has not

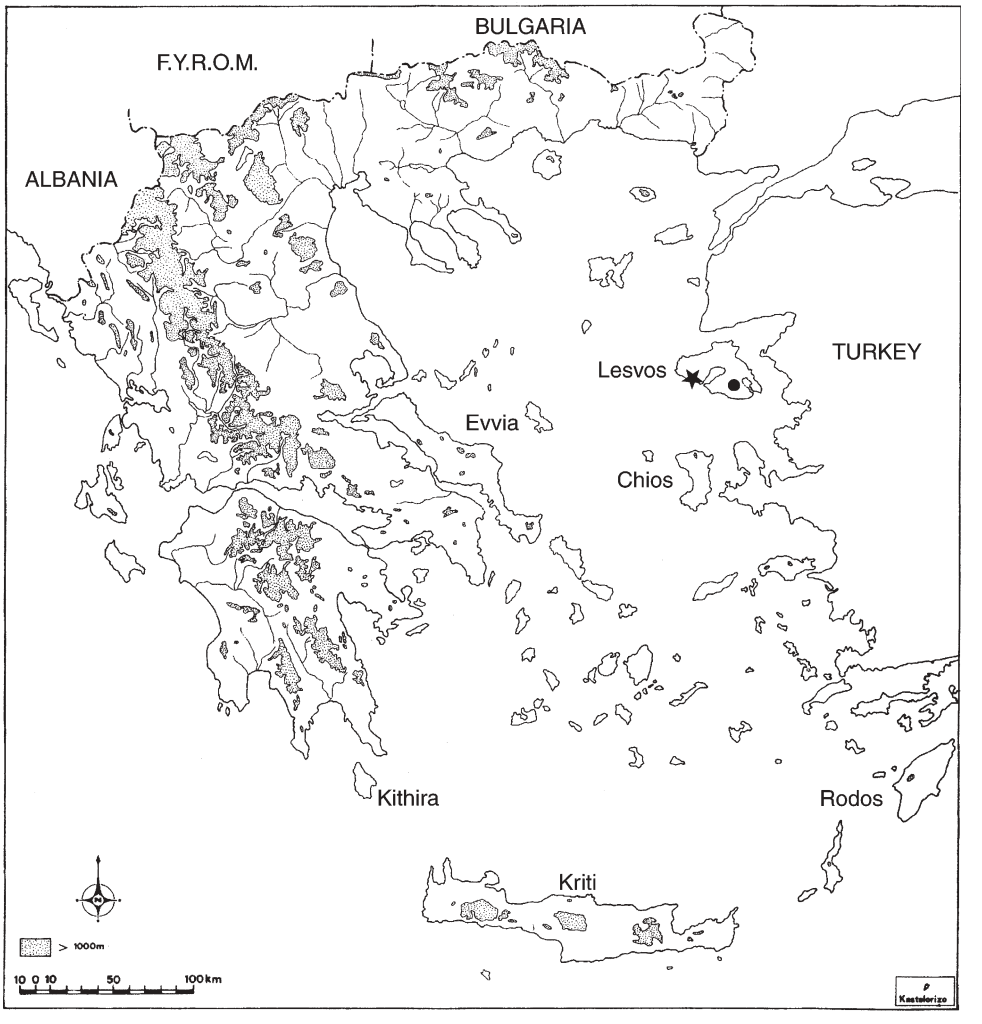

FIG. 6. Distribution of *Tripleurospermum conoclinium* (Boiss. & Bal.) Hayek (star) and *Hypericum avicullariifolium* Jaub. & Spach subsp. *byzantinum* (Azn.) N.K.B.Robson (circle) in Greece.

been found recently in Lesvos its presence there, though not impossible, needs confirmation.

Crassulaceae

Crassula tillaea Lester-Garland

c.3km N of Kalloni, humid places in phrygana, 17 iv 1995 (IB 2225). c.9km SSE of Agra, Makara, humid places in phrygana, 2 iv 1998 (IB 3074).

Recently mapped for Lesvos (Strid & Tan, 2002) though the localities listed above are the first published for the island.

Umbilicus luteus (Hudson) Webb & Berthel.
(Syn.: *Umbilicus erectus* DC.)
Mt Lepetimnos, above Pelopi, rock crevices in shady places, 17 v 1993 (IB 1024).

Recently mapped for Lesvos (Strid & Tan, 2002) though the locality given above is the first published for the island. Snogerup & Snogerup (1993) first reported it for the East Aegean from the island of Samos. Scattered throughout mainland Greece and on the larger Aegean islands.

Cruciferae

Alyssum foliosum Bory & Chaub.
0.7km W of Scalochori, fields and open ground with phrygana, 350m, 3 iv 1992 (IB 385). Summit area of Mt Petrovouni, stony places, 750m, 12 iv 1995 (IB 2130); ibid., 5 iv 1998 (IB 3116).

Recently mapped for Lesvos (Strid & Tan, 2002) though the localities listed above are the first published for the island.

Alyssum lesbiacum (P.Candargy) Rech.f.
Achladeri, 12 xii 1974 (AY s.n.). Between Polichnitos and Vrisa, c.3km NNW of Vrisa, roadsides and stony places, abundant, 29 iv 1986 (AY 7576). Between Vasilika and the crossroads to Agiasos, roadsides, 29 iv 1986 (AY obs.). On road to Mt Olimbos (Profitis Ilias) summit, E of road junction to Ambeliko and Megali Limni, 600m, pine forest openings, 19 v 1993 (IB 1119). S of Loutra, very common along road from Loutra to Charamida, in fields, olive groves and pine forests, 16 xi 1993 (IB 1461); ibid., 22 iv 1994 (IB 1595). S of Loutra, fields near Agios Ermogenis, 22 vi 1994 (IB obs.). Between Charamida and Kratigos, pine forest openings, 22 iv 1994 (IB obs.). ENE of Vasilika, Mikri Limni, pine forests and forest clearings, 16 v 1995 (IB obs.). W of Agiasos, crossroads to Ambeliko and Mt Olimbos summit, 400m, pine forests and road margins, 13 v 1999 (IB obs.). Between Vrisa and Polichnitos, 0.2km NNW of Vrisa, road margins and fields, 16 v 2002 (IB obs.).

Endemic to Lesvos, always growing on serpentine. First described by P.C. Candargy (1897) under the name *Odontarrhena lesbiaca* from the regions of Amali and Olimbos ('in reg. inf. et sup. micaschistica et ophitica Maleae Olympiaeque'). Also reported by Rechinger (1943) and Edmondson (1982). The total distribution of the species is given in Fig. 7.

Alyssum murale Waldst. & Kit.
Above the village of Agra, stony and rocky places, 17 v 1995 (IB 2439); ibid., 6 vii 1995 (IB 2629).

Recently mapped for Lesvos (Strid & Tan, 2002) though the locality given above is the first published for the island. Although there is an old record from Samos (Stefani *et al.*, 1891) repeated by Rechinger (1943) and Christodoulakis (1986), Greuter *et al.* (1986) mark it as absent from the East Aegean Islands. Our findings confirm its presence in this area. The material from Lesvos belongs to *A. murale* s.str. (Hartvig, *in litt.*). Lesvos is the only Aegean island where this species occurs.

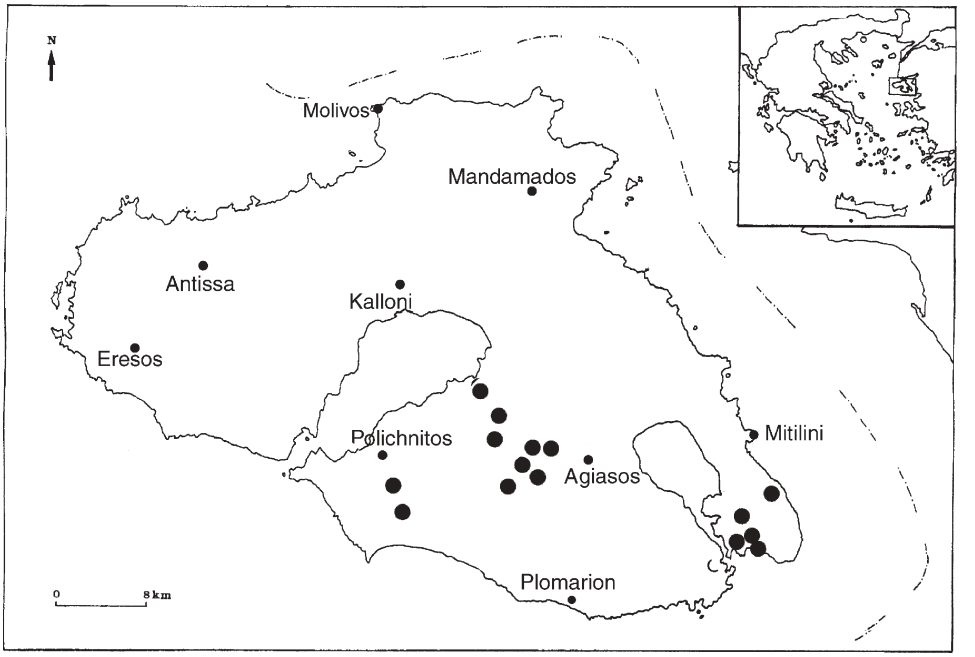

FIG. 7. Total distribution of *Alyssum lesbiacum* (P.Candargy) Rech.f.

Alyssum xiphocarpum P.Candargy

Near Agiasos, Kastelli, olive groves, 16 v 1993 (IB 871). Mt Olimbos, rocky places in Profitis Ilias summit area, 950m, 18 v 1993 (IB 926). Between Agiasos and Vasilika, Karkavoura, fields and road margins, 250–300m, 21 iv 1994 (IB 1547). Mt Petrovouni summit area, stony places, open ground with phyrgana, 750m, 11 v 1995 (IB 2289).

Described by P.C. Candargy (1897) from Mts Olimbos, Petrovouni, Oros and the hills Avlona and Phkel ('Montibus Olympos, Petrovuni, Oros, collibus Avlona, Phkel'). Phkel is apparently a misspelling of the correct name Fteli, a locality SSE of Perama. Although Rechinger (1943), Dudley (1965) and Greuter *et al.* (1986) consider it a synonym of *A. umbellatum* Desv., we consider *A. xiphocarpum* to be a very distinct species morphologically. It differs from *A. umbellatum* in its long style and much longer petals (Hartvig, *in litt.*). The total distribution of the species, which is endemic to Lesvos, is given in Fig. 8.

Arabis montbretiana Boiss.

Reported by P.C. Candargy (1898) without specific collection data. Its presence on Lesvos is very doubtful as it is distributed in E Anatolia, W Syria, C and N Iran, Afghanistan and Turkestan (Cullen, 1965). Although Rechinger (1943) suggests that Candargy's record might belong to *A. auriculata* Lam., the only species of *Arabis* so far confirmed for Lesvos is *A. verna* (L.) R.Br.

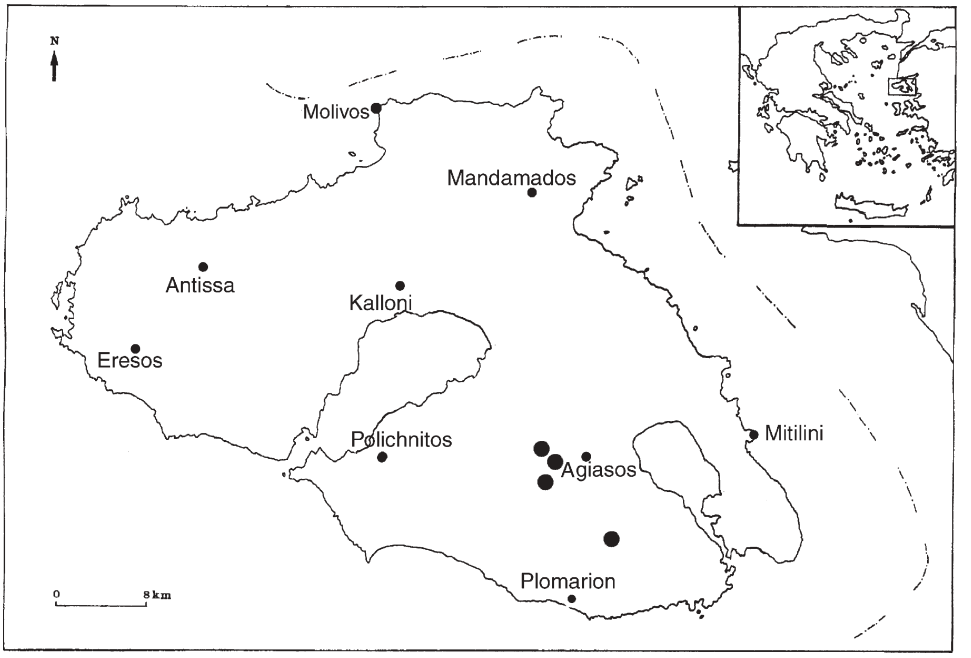

FIG. 8. Total distribution of *Alyssum xiphocarpum* P.Candargy. Candargy's localities are shown by open circles.

Erisymum repandum L.
Mesotopos, on old walls, rocks and in cobbled streets, 28 iv 1986 (AY 7506). Pterounda, ruderal, 27 iv 1994 (AY 8618).

New for Lesvos and the Aegean islands as a whole.

Neslia apiculata Fisch., C.A.Mey. & Avé-Lall.
Mt Petrovouni summit area, 750m, dry rocky and stony places probably cultivated in the past, 1 v 1995 (IB 2278).

Recently mapped for Lesvos (Strid & Tan, 2002) though the locality given above is the first published for the island. A weed of cereal fields which is fairly common on the mainland but rare on the islands (Strid, *in litt.*).

Neslia paniculata (L.) Desv.
Reported from Lesvos by C.A. Candargy (1889), growing on road margins of Mitilini and in cereal fields near the city. Also reported by P.C. Candargy (1898) without locality or any other data. Its presence on the island needs confirmation as these records are almost certainly due to confusion with *N. apiculata*. Greuter *et al.* (1986) mark *N. paniculata* as absent from Kriti and the East Aegean Islands and as doubtful for the rest of Greece.

Sinapis alba L. subsp. ***mairei*** (H.Lindb.) Maire
Near Skala Pamfilon, weed in olive groves, 24 iv 1994 (IB 1639).

New for Lesvos.

Thlaspi ochroleucum Boiss. & Heldr.
c.6km SSW of the crossroads to Mt Olimbos summit, near the locality Dede Kambos, pine forest on serpentine, 8 vi 1998 (IB 3167).

Recently mapped for Lesvos (Strid & Tan, 2002) though the locality given above is the first published for the island. The species is very rare in the Aegean where it is also reported from the islands of Thasos (Franzén, 1986) and Evvia (Strid & Tan, 2002).

Datiscaceae

Datisca cannabina L.
c.2km NW of Parakila, streambank, 17 v 1995 (IB 2464). Parakila, humid and shady places in stream, 21 x 1996 (IB 2776); ibid., 2 x 1995 (AY obs.).

Hansen & Nielsen (1993) first reported this species from Lesvos. Reported also by Seraidis (2000) from the areas of Megalochorion and Parakila without other collection data. Our findings add new data for its distribution on the island. According to Turland (1995) *D. cannabina* is vulnerable in Greece. It is also reported from the islands of Samos (Christodoulakis, 1984, 1986) and Kriti (Halácsy, 1901; Rechinger, 1943; Turland *et al.*, 1993) (Fig. 9). Outside Europe it is distributed from W Turkey to the Himalaya.

Dipsacaceae

Cephalaria transylvanica (L.) Roemer & Schultes
Between Vasilika and Polichnitos, roadsides, 22 viii 1996 (AY 9183). Near Polichnitos, abundant in road margins and olive groves, 22 viii 1996 (AY obs.). Near Pamfila, road margins, abundant, 25 viii 1996 (AY obs.).

Reported by P.C. Candargy (1897) from Mandamados, Kalloni and elsewhere ('Ad pagum Mandamados, colle Kalloni etc.'). Our findings confirm its presence on the island. According to Strid (*in litt.*) the species is scattered and fairly rare on the Greek mainland. There are a few old and unconfirmed records from the Aegean islands of Ikaria (Rechinger, 1943, based on a collection by Forsyth Major in 1887) and Samothraki (Katsikopoulos, 1936).

Dipsacus laciniatus L.
Reported by Seraidis (2000) from Dipi in the bay of Gera (photograph!). Although we have investigated the area repeatedly, no plants of this species have been found and its presence on Lesvos needs confirmation.

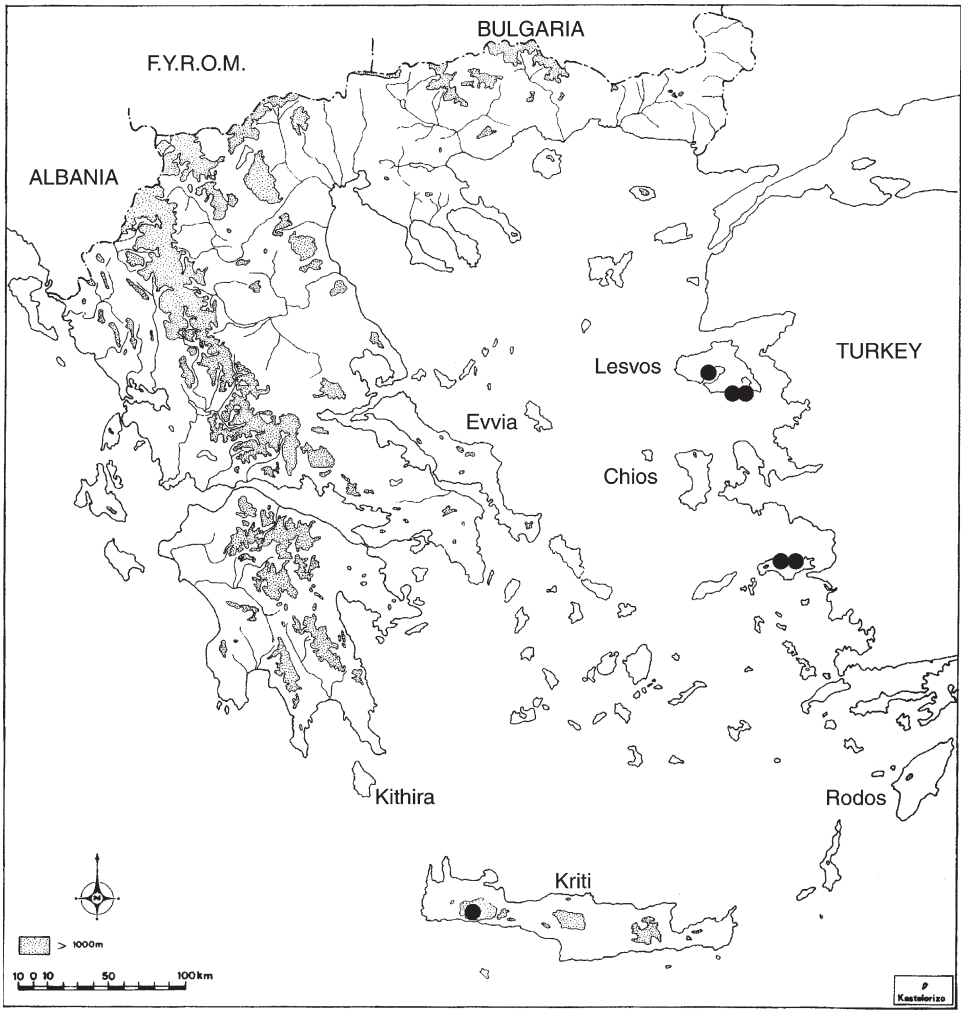

FIG. 9. Distribution of *Datisca cannabina* L. in Greece.

Lomelosia divaricata (Jacq.) Greuter & Burdet
Mt Petrovouni summit area, rocky places, 750m, 11 v 1995 (IB 2280).

Reported by P.C. Candargy (1897), as *Scabiosa sicula*, without exact locality ('reg. inf. sup. saxis'). Its presence on Lesvos is confirmed.

Sixalix atropurpurea (L.) Greuter & Burdet subsp. ***maritima*** (L.) Greuter & Burdet (Syn.: *Scabiosa atropurpurea* L. subsp. *maritima* (L.) Arcangeli)
c.1km NNW of Agiasos, road margins, 24 v 1994 (IB 1726).

C.A. Candargy (1889) reports *Scabiosa atropurpurea* L. s.l. as cultivated for ornament in Mitilini. Axiotis (1991) also reports *S. atropurpurea* s.l. from Lesvos without locality or any other information. Otherwise the taxon is new for Lesvos.

Elatinaceae

Elatine alsinastrum L.

Mikri Limni, margins of shallow lake, 16 v 1995 (IB 2418). Megali Limni, muddy places, 7 v 1997 (IB 2847); ibid., 10 vi 1998 (IB 3204). ESE of Mandamados, 3.5km NE of crossroads to Palios near Agios Stefanos, temporary pool not very far from the road, 15 v 2002 (IB 4274).

Reported by P.C. Candargy (1898): 'Megali Limni in lacu'. Recently Hansen & Nielsen (1993) confirmed its presence on Lesvos. However, their comment that *E. alsinastrum* is probably extinct from Megali Limni is incorrect since a large population still exists there. It is rare in Greece, scattered on the mainland and the islands of Kerkira, Samothraki, Evvia, Lesvos and Kriti (Fig. 10).

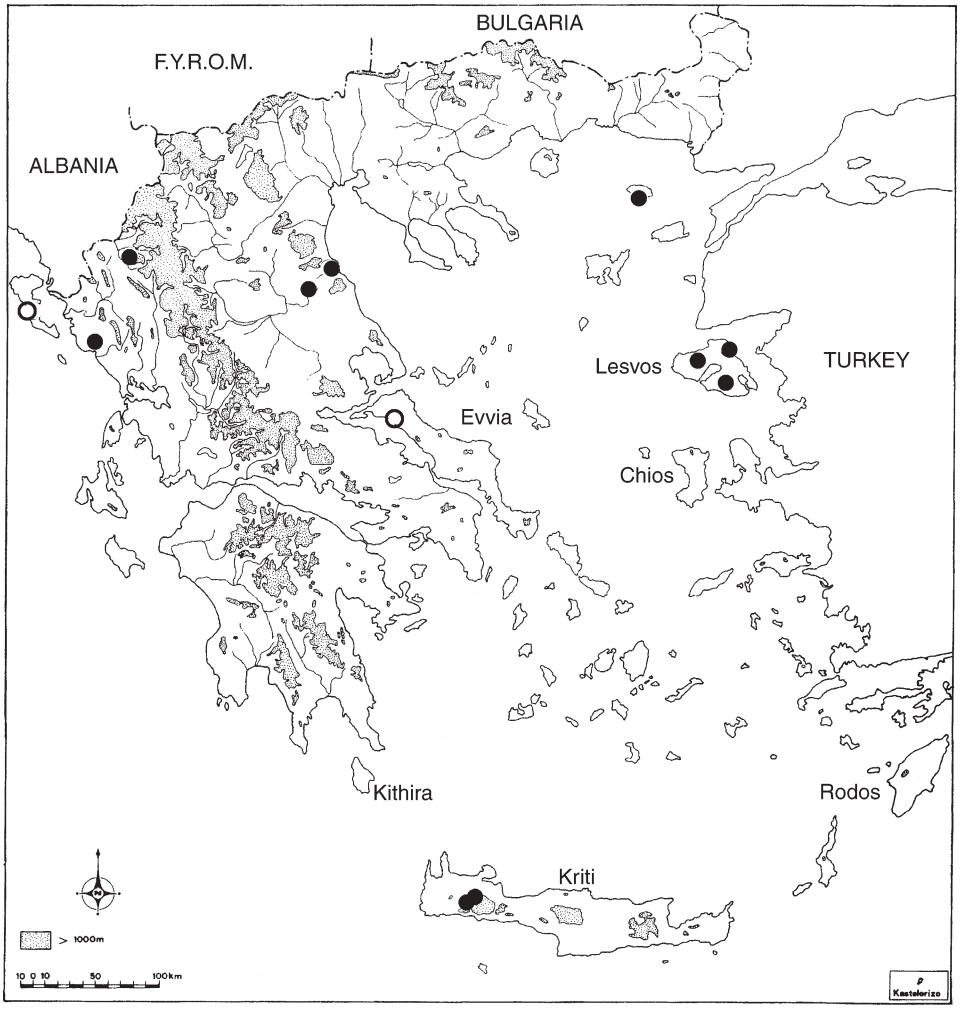

FIG. 10. Distribution of *Elatine alsinastrum* L. in Greece. Old unconfirmed bibliographic records are shown by open circles.

Elatine macropoda Guss.

Between Moni Ipsilou and Sigri, c.2km ESE of crossroads to Petrified forest park, temporary pools in phrygana vegetation, 6 v 1999 (IB 3758). SSE of Agra, crossroads to Apothika, muddy edges of temporary pool, 21 v 1999 (IB obs.). c.3km ENE of Skala Kallonis, wet muddy places near Kallonis saltworks, 22 v 1999 (IB 3858). c.2.5km NE of Achladeri, wet temporarily flooded places, 22 v 1999 (IB obs.).

Recently reported for the first time from the East Aegean Islands (Bazos & Yannitsaros, 1998, 2001). Our new findings increase its distribution in Lesvos (see Bazos & Yannitsaros, 2001). This species is very rare with scattered distribution in Greece (Fig. 11) but it is probably overlooked and undercollected due to its small size and particular habitat.

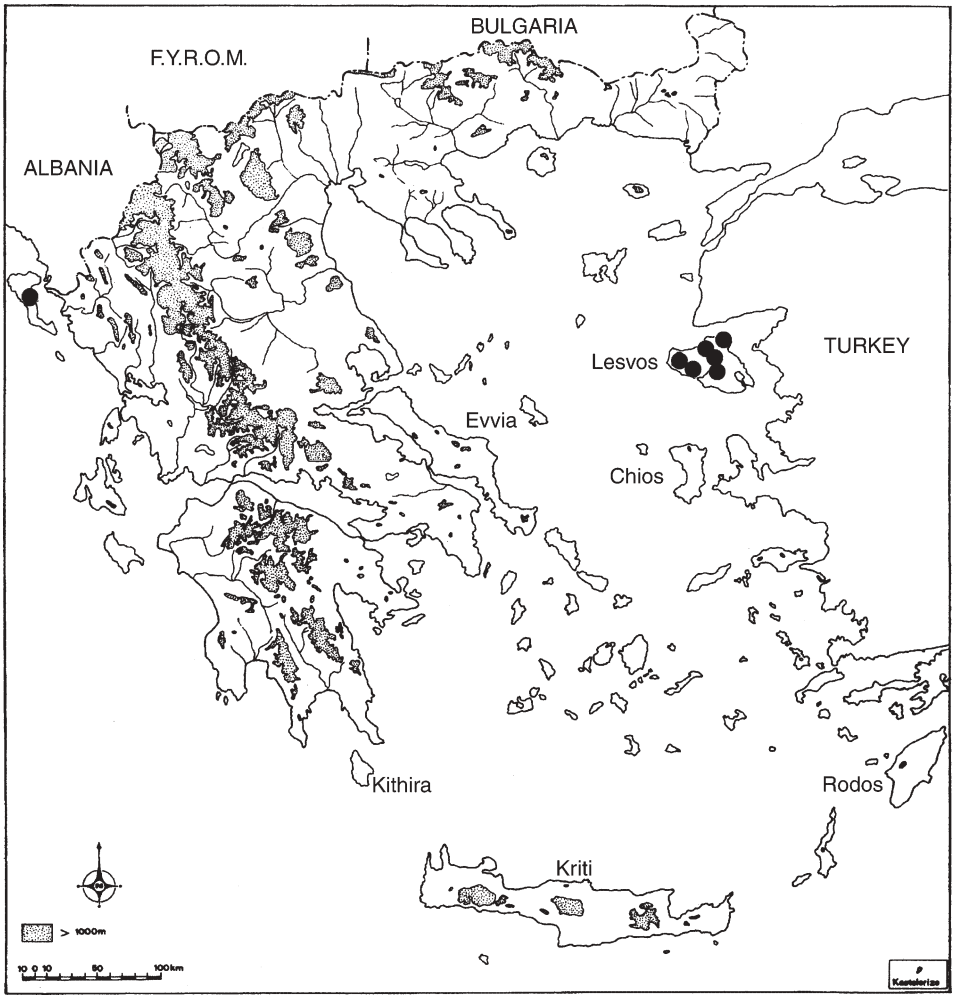

FIG. 11. Distribution of *Elatine macropoda* Guss. in Greece.

Ericaceae

Rhododendron luteum Sweet
c.2km E of Chidira, sides and bed of dried stream, 29 viii 1979 (AY 6376). Pterounda, streambanks, streambed and stony places, 27 iv 1994 (AY 8624 and IB 1708); ibid., 10 v 1999 (IB obs.). c.3km NW of Parakila, Zoodochos Pigi, streamsides, 11 iv 1995 (IB 2093). c.2km NW of Parakila, streambanks, 17 v 1995 (IB obs.). WNW of Parakila, locality called Boursouk Spiliades, streambanks, humid places in *Pinus brutia* forest, 17 xi 1997 (IB obs.). E of Pterounda, unsurfaced road to Agra, 350–400m, streambanks, 10 v 1999 (IB obs.). ESE of Pterounda, unsurfaced road to Agra, 700m, streambanks and humid places, 10 v 1999 (IB obs.). ESE of Pterounda, near Mt Profitis Ilias summit, 750m, *Pinus nigra* forest, 10 v 1999 (IB obs.).

Reported by P.C. Candargy (1898), as *R. flavum* Don, from river Burgas of Chidira, Mt Chalika of Vatousa and Mt Bordonas ('Ad fluvium Burgas pagi Chydaerae, in monte Chalika pagi Batussae 500 metr. et in monte Bordonas 900 metr.'). According to Papaioannou (1948–1949, 1951) *R. luteum* is distributed between the villages of Pterounda, Vatousa, Chidira, Parakila and Anemotia, and this is the only Greek area where the species definitely occurs. Axiotis (1991) reports *R. luteum* from the mountains between the bay of Gera and Agiasos but this record is erroneous (Axiotis, pers. comm.).

Vaccinium myrtillus L.
Recorded from Lesvos by Snogerup (1986). According to Boratynski *et al.* (1992) this species is distributed in the northern part of continental Greece and the island of Lesvos. The record from Lesvos is probably based on a mistake (Snogerup, *in litt.*). *Vaccinium myrtillus* is a widespread boreal forest species occurring in the mountains of northern Greece and scattered southwards to Pilion and Athos and therefore its occurrence on Lesvos is unlikely for ecological and phytogeographical reasons.

Euphorbiaceae

Andrachne telephioides L.
Reported by P.C. Candargy (1898) as very rare from a single locality: 'in colle Vunarion, 40 cm. ad Mitylenem, legimus 24.7.1887' ('40 cm.' is obviously an error for 40m). This rather inconspicuous species is scattered in the Aegean area and eastern mainland Greece. Its presence on Lesvos is not unlikely but requires confirmation since the locality mentioned by Candargy is nowadays part of the city of Mitilini and the plant is probably extinct there.

Euphorbia falcata L. subsp. ***macrostegia*** (Bornm.) O.Schwartz
c.2km NNW of Vrisa, road margins and fields, 26 v 1994 (IB 1775).

P.C. Candargy (1898) described *E. falcata* L. var. *aeolica*, which is probably a synonym of *E. falcata* subsp. *macrostegia* (Radcliffe-Smith, 1982). Greuter *et al.* (1986) mark it as doubtful for the East Aegean Islands. Our finding confirms its presence in this area.

Fagaceae

Fagus sp.
Reported by Arianoutsou-Faraggitaki (1985) as observed on Lesvos in June 1983 without exact locality. The record needs confirmation due to the lack of herbarium specimens. The genus *Fagus* is not known to occur on Lesvos and its presence there seems very unlikely.

Quercus ilex L.
Reported from Lesvos by Dinter (1995) from forests above Agiasos, and by Seraidis (2000) from three localities where the very few individuals are confined to humid places on limestone. Although there is no herbarium specimen or any other collection data, the photograph cited in Seraidis (2000) apparently belongs to this species.

Gentianaceae

Blackstonia acuminata (Koch & Ziz) Domin
ENE of Pamfila, Niselia, olive groves, 27 v 1994 (IB 1793).

New for Lesvos.

Cicendia filiformis (L.) Delarbre
c.5.5km from crossroads to Palios, vernal pool, 2 vi 1994 (IB 1914); ibid., 15 v 1995 (IB 2393). c.1.5km from crossroads to Palios, 5 vi 1994 (IB 1974). c.2.5km NE of Achladeri, wet temporarily flooded places, 22 v 1999 (IB obs.).

Recently reported for the first time from Lesvos (Bazos & Yannitsaros, 1994). Our new findings increase its distribution on the island. *Cicendia filiformis* grows in humid places (especially temporary pools) and has rare and scattered localities on the Greek mainland (NW Peloponnisos, Sithonia peninsula) and the islands of Kerkira, Milos and Skiathos (Fig. 12). An old record from Mt Grammos (Zaganiaris, 1940a) has not been recently confirmed.

Gentiana lutea L.
Reported by P.C. Candargy (1897) as very rare ('In Olympo'). Not recorded as present in the East Aegean by Greuter *et al.* (1986). *Gentiana lutea* is a large and showy plant of mountain meadows at 1500–2000m not easily confused with other species. Although its presence on Lesvos has not been confirmed recently it is possible that it could exist there in small populations. It is certain that C.A. Candargy, as a physician, would have known the pharmaceutical value of *G. lutea*, although he does not report its presence on Lesvos. P.C. Candargy on the other hand notes that *G. lutea* is very rare in the Olimbos area. Therefore it is not unlikely that this species was formerly present at lower altitudes, such as Olimbos of Agiasos (968m), and became depleted or even disappeared from certain areas because of overcollection for medicinal purposes.

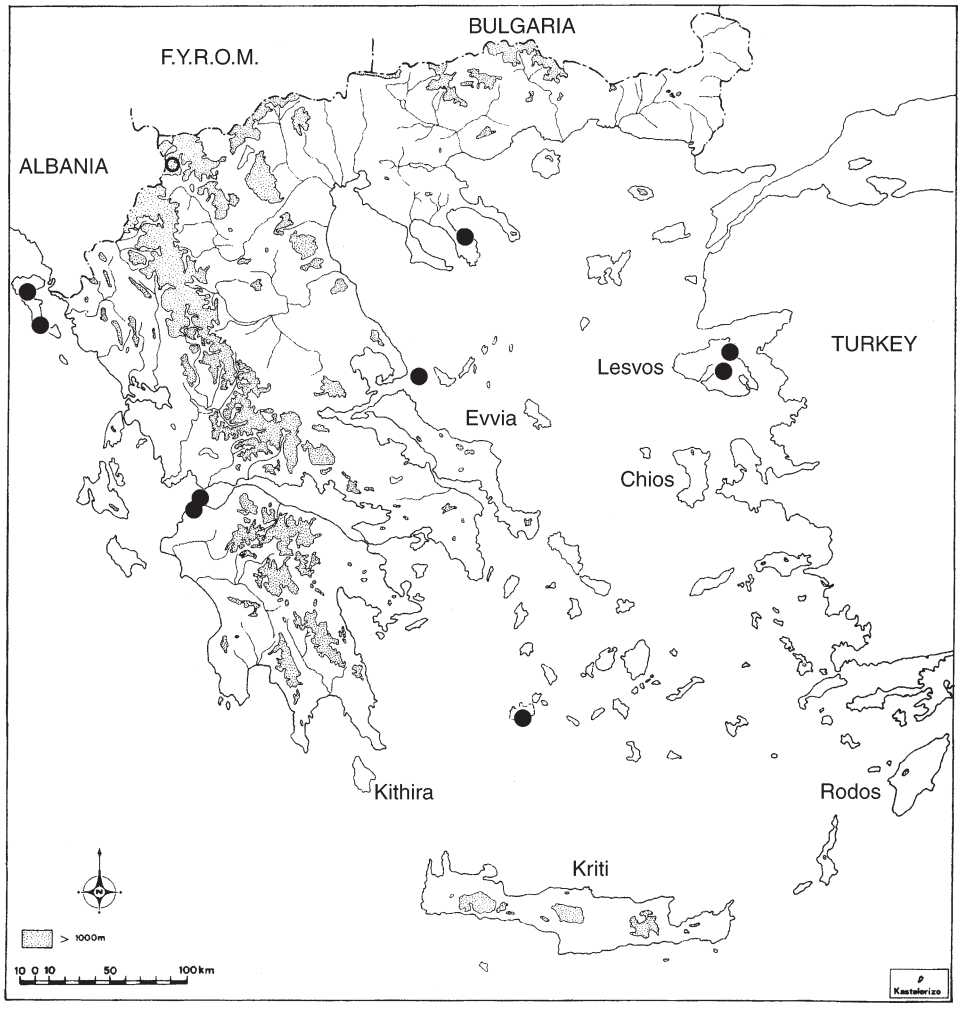

FIG. 12. Distribution of *Cicendia filiformis* (L.) Delarbre in Greece. An old unconfirmed bibliographic record is shown by an open circle.

Guttiferae

Hypericum aviculariifolium Jaub. & Spach subsp. ***byzantinum*** (Azn.) N.K.B.Robson Mt Olimbos, NW of the summit, at a well in *Platanus* forest, 800m, 11 vii 2000 (*S. & B. Snogerup* 17142, LD).

Both the species and the subspecies are new for Greece (Fig. 6). *Hypericum avicularii folium* is very polymorphic and is closely allied to *H. origanifolium* Willd. Subspecies *byzantinum* was up to now considered endemic to a very few localities in Turkey in Europe and NW Anatolia. Three other subspecies of *H. avicularii folium* are endemic to Anatolia (Robson, 1966).

Hypericum empetrifolium Willd.
Between Mitilini and Loutra, macchie, 7 vii 1995 (IB 2646).

Reported by Arianoutsou-Faraggitaki (1985) as observed on Lesvos in June 1983 without exact locality. Our finding confirms its presence on the island.

Discussion

Of the taxa included here, eight are protected under Presidential Decree 67/1981 (*Alyssum lesbiacum*, *Datisca cannabina*, *Elatine alsinastrum*, *Helianthemum aegyptiacum*, *Noaea mucronata*, *Rhododendron luteum*, *Silene squamigera* subsp. *squamigera* and *S. urvillei*), while *Datisca cannabina* is included as Vulnerable in *The Red Data Book of Rare and Threatened Plants of Greece* (Phitos *et al*., 1995). There are also taxa not included in any list of threatened species, nor protected by any international or Greek law, whose populations have been remarkably reduced during the last years. Some such taxa are agricultural weeds, for example *Agrostemma githago* subsp. *githago* and *Leontice leontopetalum* subsp. *leontopetalum*, which are threatened in many areas due to the use of modern agricultural methods. In the same category belongs *Asperugo procumbens*, reported in the past from Lesvos; in spite of recent thorough investigations this has not been re-found and it seems to have disappeared from the island. Furthermore, plants of sandy beaches such as *Calystegia soldanella*, *Myosotis litoralis* and *Otanthus maritimus* are threatened because of tourist activity and extreme exploitation of their fragile habitats. There are several factors threatening plants of wetlands or small periodically flooded habitats such as *Callitriche truncata* subsp. *occidentalis*, *Callitriche truncata* subsp. *truncata*, *Cicendia filiformis* and *Elatine macropoda*. These include drainage, expansion of holiday residences, road cuttings, prolonged dryness and deposition of litter. Temporary pools and their flora are threatened throughout Greece and the wider Mediterranean region.

Finally, the need for monitoring and protection of taxa that have their only Greek station in some very small areas of Lesvos should not be neglected. Such taxa are *Centaurea reuterana* var. *reuterana*, *Hypericum aviculariifolium* subsp. *byzantinum* and *Tripleurospermum conoclinium*.

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