

An annotated checklist of the flora of the Abruzzo

Fabio Conti

Introduction

The Abruzzo covers 10,794 km² and extends from the Adriatic coast to Apennines. Characteristically, more than 2/3 of the region is a mountainous territory which contains the highest peaks of the Apennines, along with the three highest massifs: Gran Sasso with the peak of Corno Grande reaching 2912 m, Majella with M. Amaro reaching 2794 m, Velino reaching 2486 m (Fig. 1).

A small glacier is present on Gran Sasso, the glacier of Calderone which is the southernmost European glacier. Apart from M.ti della Laga, made up of sandstone, the massifs are calcareous and dolomitic.

The hill belt is made up of clayey and sandy formations. The coast extends along the Adriatic sea between the mouths of the Tronto and Trigno rivers, it is mostly degraded although some interesting natural areas remain, especially in the Chieti province.

As regards the bioclimate, Biondi & Baldoni (1991) point out that, using Rivas-Martinez's ombrothermic index, the Abruzzo can be divided in two regions: one having a temperate bioclimate and the other with a Mediterranean bioclimate. The latter is limited to a narrow coastal and hill belt, south of Pescara where it reaches its northernmost limit along the Adriatic side.

Using other indices, such as the Mediterranean Index, the Mediterranean region can be widened and a Mediterranean island can be identified in the inner depressions of the Abruzzo as well (Tammaro 1983d, Biondi & Baldoni 1991). The position of the Abruzzo on the border between two regions with different bioclimates, positively influences the floristic richness.

A geobotanical subdivision of Italy can be made on the basis of phytosociological features (Pedrotti 1996), the Abruzzo falls into the Eurosiberian and Mediterranean regions after the ombrothermic index. The latter region is limited to the southern coast. A geobotanical subdivision of the Abruzzo, mainly on the basis of floristic data, reached similar conclusions (Conti 1998a).

Floristic investigation started at the beginning of the last century with Gravina, Tenore and Gussone, authors of many fundamental botanical works. For a more detailed historical analysis see Anzalone & al. (1988). Montelucci (1971) reports a wider survey of the phytogeographical characteristics of the Abruzzo.

Despite recently published reports giving surprising and significant results, floristic investigation still needs to be continued. Further important findings are to be expected.

The only previous floristic inventory of the Abruzzo was published by Abbate (1903) but is incomplete.

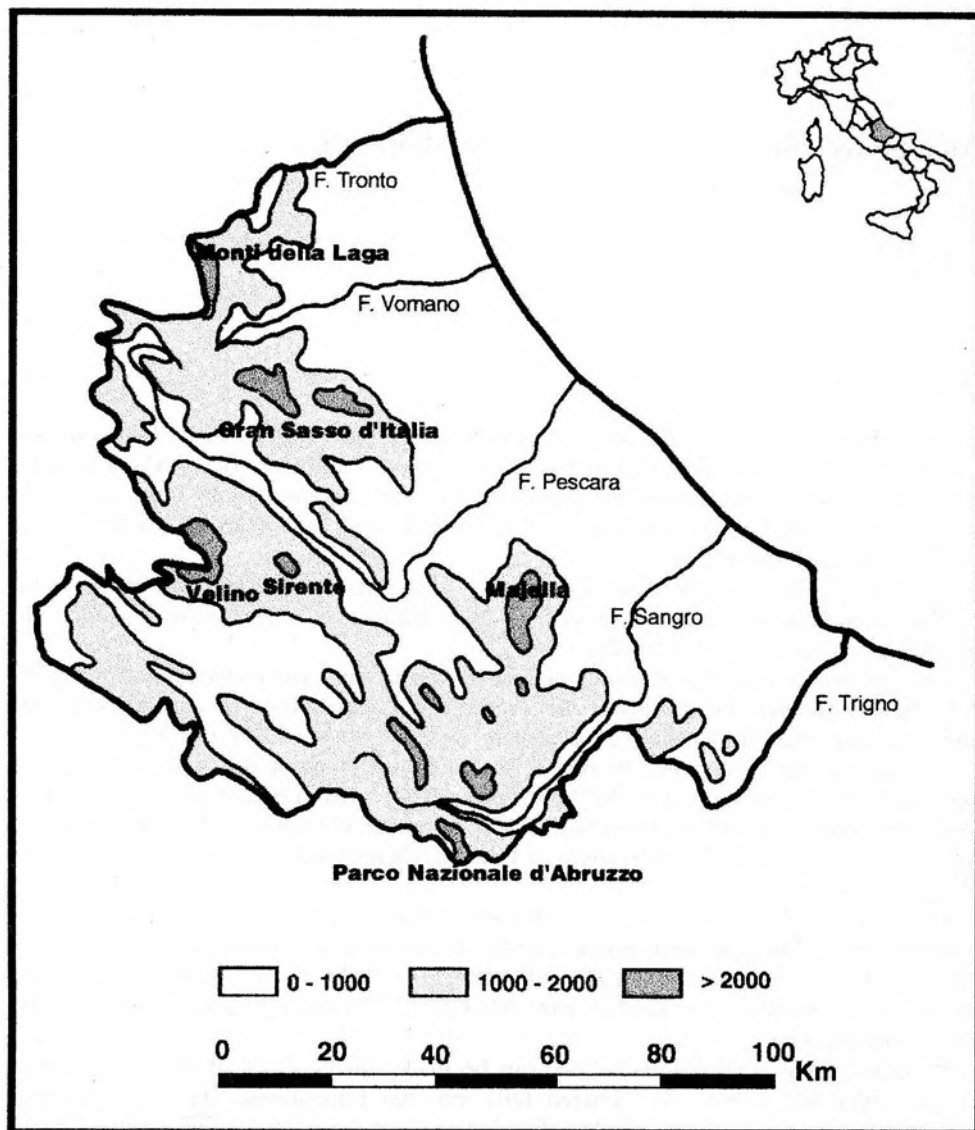


Fig. 1. Map of Parco Nazionale d'Abruzzo.

More recent data can be obtained from *Flora d'Italia* (Pignatti 1982) and from its updated data bank (Pignatti & Pignatti 1992), according to which the Abruzzo, together with Molise, have 2428 species.

According to the present list, the flora of the Abruzzo is made up of 3205 taxa. This number is very close to that of Latium, surely one of the richest regional floras of Italy. In Latium, Anzalone (1994, 1996) listed 3185 taxa in his *Prodromo della Flora Romana*. Among the other recently published regional Floras, two are worth mentioning: *Elenco preliminare della flora spontanea del Molise* (Lucchese 1995) in which 2422 taxa are

listed, and *Atlante corologico delle piante vascolari nel Friuli-Venezia Giulia* (Poldini 1991) with 2780 taxa.

A systematic breakdown of the flora is shown in Table 1.

Table 1. Taxonomic spectrum (3205 taxa).

Divisions	No. taxa	%
Pteridophyta	52	1.62
Gymnospermae	15	0.47
Dicotyledones	2487	77.60
Monocotyledones	651	20.31

Families	No. taxa	%
<i>Compositae</i>	427	13.32
<i>Gramineae</i>	279	8.71
<i>Leguminosae</i>	262	8.17
<i>Caryophyllaceae</i>	145	4.52
<i>Cruciferae</i>	144	4.49
<i>Labiatae</i>	143	4.46
<i>Umbelliferae</i>	139	4.34
<i>Rosaceae</i>	137	4.27
<i>Scrophulariaceae</i>	123	3.84
<i>Ranunculaceae</i>	93	2.90
<i>Cyperaceae</i>	93	2.90
<i>Orchidaceae</i>	75	2.34
<i>Boraginaceae</i>	55	1.72
<i>Rubiaceae</i>	42	1.31
<i>Polygonaceae</i>	41	1.28
<i>Euphorbiaceae</i>	39	1.22
<i>Chenopodiaceae</i>	38	1.19
<i>Campanulaceae</i>	32	1.00
Others	898	28.02

In the list we have also included the doubtful species, 227 (7.08%); those doubtful from a systematic point of view, 27 (0.84%), and those probably extinct, 36 (1.12%). The high percentage of doubtful or erroneous records derives from the level of botanical activity and it increases according to the number of investigations carried out in a particular area (Greuter 1991).

According to cytotaxonomic investigations, the orophyte flora of the Abruzzo is probably an ancient flora differentiated in the Tertiary period, inferred by the high number of diploid and paleopolyploid taxa, as well as by several cases of relatively ancient schizoendemic species, e.g. *Androsace vitaliana* subsp. *praetutiana* and *A. vitaliana* subsp. *pl.* etc. The most characteristic species (endemic or Ital-Balkan) of the flora of the Abruzzo developed during the Tertiary period by gradual speciation in the C. Mediterranean region. In this way it is possible to explain their affinity with the orophyte species of the S. Alps, W. Mediterranean and more often with the Balkan mountains. However, this flora, impoverished because of the local glaciations, received a boost by the alpine species, some of which confirm their allochthonous origin by polyploidy. Within several groups of orophyte taxa common in the Alps and in the Abruzzo, polyploid taxa are found in the Abruzzo (*Sempervivum arachnoideum*,

Cerastium arvense, perhaps *Sedum atratum* (Favarger 1973, Bechi 1998c) and *Aster alpinus* (Favarger 1997).

Endemics

According to geographical criteria, I have divided the endemics into stenoendemic species (C. Apennine endemics) occurring only in a small area (Abruzzo) and euriendemics occurring through the Apennines or also in the Alps. Endemics may be classified according to other criteria. According to the cytotaxonomic criterion, information is also given concerning the relations with the corresponding taxa and the way endemic taxa have evolved (Küpfer 1972, Favarger 1972a, 1972b, 1973).

Considering the orophyte flora only, within which the endemic species are concentrated, in the C. Apennines 13% of the flora are endemics. This percentage, although lower compared with other Mediterranean mountains, is high, making this mountain group one of the richest areas in Europe (Favarger 1972c, 1986).

This paper lists all the Italian endemics. There are 147 (4.59%), and this is surely underestimated because we did not consider the endemic species doubtful from a systematic point of view and the agamospecies of groups not sufficiently investigated such as *Hieracium*, *Alchemilla* and *Ranunculus*.

Endemics restrict to the Central Apennines

Adonis distorta Ten. — Endem. C. Ap.

Alchemilla marsica Buser — Endem. Abr.

Androsace vitaliana (L.) Lapeyr. subsp. *praetutiana* (Sünd) Kress [*Vitaliana primuliflora* Bertol. subsp. *praetutiana* (Sünd) I. K. Ferguson] — Endem. C. Ap.

Anthemis carpatica Willd. subsp. *petraea* (Ten.) R. Fern. — Endem. Abr.

Anthemis cretica L. subsp. *alpina* (L.) R. Fern. — Endem. Abr.

Aquilegia magellensis Huter, Porta e Rigo — Endem. Abr.

Asperula neglecta Guss. — Endem. C. Ap.

Astrantia pauciflora Bertol. subsp. *tenorei* (Mariotti) Bechi & Garbari — Endem. C. Ap.

Bupleurum rollei Montel. — Endem. C. It.

Campanula fragilis Cyr. subsp. *cavolinii* (Ten.) Damboldt (*C. cavolinii* Ten.) — Endem. Abr.

Campanula micrantha Bertol. (*C. apennina* Podl.) — Endem. C. Ap.

Campanula tanfanii Podl. — Endem. C. Ap.

Centaurea ambigua Guss. subsp. *nigra* (Fiori) Pignatti — Endem. C. Ap.

Centaurea rupestris L. subsp. *ceratophylla* (Ten.) Gugler — Endem. C. Ap.

Centaurea scannensis (Anzal.) Pignatti — Endem. Gole del Sagittario.

Centaurea tenoreana Willk — Endem. Abr.

Cymbalaria pallida (Ten.) Wettst. — Endem. Abr. and surrounding areas.

Epipactis helleborine (L.) Crantz subsp. *latina* W. Rossi & Klein [*E. latina* (W. Rossi & Klein) B. & H. Baumann] — Endem. C. Ap.

Euphorbia gasparrini Boiss. subsp. *samnitica* (Fiori) Pignatti — Endem. C. Ap.

Euphrasia italica Wettst. — Endem. C. Ap.

Festuca centro-apenninica (Markgr.-Dann.) Markgr.-Dann. ex Foggi & F. Conti — Endem. C. Ap.

Galium magellense Ten. — Endem. C. Ap.

- Gentiana columnae* Ten. [*Gentianella columnae* (Ten.) Holub.] — Endem. C. Ap.
Goniolimon italicum Tammaro, Frizzi & Pignatti — Endem. Abr.
Herniaria bornmuelleri Chaudhri — Endem. C. Ap.
Iris marsica I. Ricci & Colas. — Endem. C. Ap.
Knautia gussonei Szabó — Endem. Abr.
Leucanthemum tridactylites (Fiori) Bazzich. — Endem. C. Ap.
Ligusticum lucidum Mill. subsp. *cuneifolium* (Guss.) Tammaro — Endem. C. Ap.
Minuartia glomerata (M. Bieb.) Degen. subsp. *trichocalycina* (Ten. & Guss.) F. Conti — Endem. Abr.
Ranunculus magellensis Ten. — Endem. C. Ap.
Ranunculus marsicus Guss. & Ten. — Endem. C. Ap.?
Saxifraga exarata Vill. subsp. *ampullacea* (Ten.) D. A. Webb (*S. ampullacea* Ten.) — Endem. C. Ap.
Saxifraga italica D. A. Webb — Endem. C. Ap.
Saxifraga oppositifolia L. subsp. *speciosa* (Dörfl. & Hayek) Engl. & Irmsch. [*S. speciosa* (Dörfl. & Hayek) Dörfl. & Hayek] — Endem. C. Ap.
Sempervivum italicum I. Ricci — Endem. C. Ap.
Soldanella minima Hoppe subsp. *samnitica* Cristofolini & Pignatti — Endem. Majella.
Stipa martinovski Moraldo — Endem. Conca Aquilana.
Taraxacum glaciale Hand-Mazz. — Endem. C. Ap.
Thlaspi stylosum (Ten.) Mutel — Endem. C. Ap.
Trisetaria villosa (Bertol.) Banfi et Soldano [*Trisetum bertolonii* Jonsell *T. villosum* (Bertol.) Schult.] — Endem. C. Ap.
Viola eugeniae Parl. subsp. *eugeniae* — Endem. C. Ap.
Viola eugeniae Parl. subsp. *levieri* (Parl.) Arcang. — Endem. Abr.
Viola magellensis Porta & Rigo ex Strobl — Endem. C. Ap.

Apennine endemics not restricted to the Central areas

- Astragalus aquilanus* Anzalone — Endem. Abr. and Calabria.
Acer cappadocicum Gled. subsp. *lobelii* (Ten.) Murray (*A. lobelii* Ten.) — Endem. C. S. Ap.
Achillea oxyloba (DC.) Sch. Bip. subsp. *barrelieri* (Ten.) F. Conti — Endem. C. S. Ap.
Achillea oxyloba subsp. *mucronulata* (Bertol.) I. Richardson — Endem. C. S. Ap.
Achillea tenorii Grande — Endem. C. S. Ap.
Ajuga tenorei C. Presl. — Endem. C. S. Ap.-Si.
Alnus cordata (Loisel.) Loisel. — Endem. S. Ap.
Anthemis arvensis subsp. *sphacelata* (C. Presl) R. Fern. — Endem. C. S. Ap.-Si.
Artemisia variabilis Ten. — Endem. C. S. It.
Astragalus sempervirens Lam. subsp. *gussonei* Pignatti — Endem. Ap.
Aubrieta columnae Guss. subsp. *columnae* — Endem. C. S. Ap.
Brachypodium genuense (DC.) Roem. & Schult. — Endem. Ap.
Bunium petraeum Ten. — Endem. C. S. Ap.
Campanula pseudostenocodon Lacaita — Endem. C. S. Ap.
Cardamine amara L. subsp. *grandifolia* Arcang. — Endem?
Cardamine monteluccii Brilli Catt. & Gubellini — Endem? C. S. Ap.-Si.
Carduus affinis Guss. subsp. *affinis* — Endem. C. S. Ap.
Carduus chrysacanthus Ten. subsp. *chrysacanthus* — Endem. C. S. Ap.
Carduus corymbosus Ten. — Endem. C. S. It-Si-Sa.

- Carduus micropterus* (Borbás) Teyber subsp. *perspinosus* (Fiori) Kazmi — Endem. C. S. It.
Centaurea ambigua Guss. subsp. *ambigua* — Endem. Ap.
Centaurea ambigua Guss. subsp. *laciniata* (Guss.) Arcang. — Endem. Ap.
Centaurea nigrescens subsp. *neapolitana* (Boiss.) Dostál — Endem. C. S. It.
Centaurea nigrescens subsp. *pinnatifida* (Fiori) Dostál — Endem. N. C. It.
Centaurea spinosociliata Seenus subsp. *tommasinii* (A. Kern.) Dostál (*C. tommasinii* Kern.) — Endem. of Adriatic coast.
Cerastium tomentosum L. — Endem. C. S. Ap.-Si.
Chaerophyllum hirsutum subsp. *magellense* (Ten.) Pignatti — Endem. Ap.
Cirsium lobelii Ten. — Endem. C. S. Ap.
Cirsium tenoreanum Petr. — Endem. Ap.
Crepis lacera Ten. — Endem. Ap.
Crocus imperati Ten. — Endem. C. S. It.
Cymbalaria pilosa (Jacq.) Bailey (*Linaria pilosa* Lam. & DC.) — Endem. C. S. It.
Cynoglossum apenninum L. [*Solenanthus apenninus* (L.) Fisch. & C.A. Mey.] — Endem. C. S. Ap.
Cynoglossum magellense Ten. — Endem. C. S. Ap.
Dianthus ferrugineus Mill. subsp. *vulturius* (Guss. & Ten.) Tutin (*D. vulturius* Guss. & Ten.) — Endem. C. S. Ap.
Digitalis micrantha Roth — Endem. Ap.-Co.
Echinops sicalus Strobl. — Endem. C. S. Ap.-Si.
Erodium alpinum L'Hér. — Endem. C. S. Ap.
Erysimum majellense Polatschek — Endem. C. S. Ap.
Erysimum pseudorhaeticum Polatschek — Endem. N. C. S. Ap.
Festuca cyrnea (St.-Yves & Litard) Markgr.-Dann. — Endem. Ap.-Sa-Co.
Festuca inops De Not. — Endem. N. C. Ap.
Festuca violacea Gaudin subsp. *italica* Foggi, Graz. Rossi & Signorini — Endem. C. S. Ap.
Galium bernardii Gren. & Godron — Endem. C. S. Ap.-Si-Co.
Geranium austroapenninum Aedo — Endem. C. S. Ap.
Helictotrichon praetutianum (Parl. ex Arcang.) Röser [*Avenula praetutiana* (Parl. ex Arcang.) Pignatti; *H. versicolor* (Vill.) Pilg. subsp. *praetutianum* (Arcang.) Cela Renzoni] — Endem. Ap.
Laserpitium siler L. var. *siculum* (Spreng.) Fiori — Endem. Ap. Si.
Lathyrus odoratus L. — Endem. C. S. It-Si.
Leontodon intermedius Huter, Porta & Rigo — Endem. C. S. It.
Leucanthemum ceratophylloides (All.) Nyman subsp. *tenuifolium* (Guss.) Bazzich. & Marchi — Endem. C. S. Ap.
Linaria purpurea (L.) Mill. — Endem. Ap.-Si.
Lomelosia crenata (Cyr.) Greuter & Burdet subsp. *pseudisetensis* (Lacaita) Greuter & Burdet — Endem. C. S. It.
Melampyrum variegatum Huter, Porta & Rigo — Endem. C. S. Ap.
Myosotis ambigens (Bég.) Grau — Endem. C. S. Ap.
Myosotis decumbens Host subsp. *florentina* Grau — Endem. N. C. Ap.
Ononis oligophylla Ten. — Endem. C. S. It-Si.
Onosma echioides L. — Endem. Ap.
Ophrys crabronifera Mauri subsp. *crabronifera* — Endem? C. S. It.
Ophrys holoserica (Burm.f.) Greuter subsp. *apulica* (O. & E. Danesch) Butler [*O. apulica* (O. & E. Danesch) O. & E. Danesch] — Endem. C. S. It.

- Ophrys promontorii* O. & E. Danesch — Endem. C. S. It.
Ophrys sphegodes Mill. subsp. *garganica* Nelson (*O. garganica* O. & E. Danesch) — Endem. C. S. It.
Pedicularis elegans Ten. (s.l.) — Endem. C. S. Ap.
Phleum ambiguum Ten. — Endem. Ap.-Si.
Polygala flavescens DC. — Endem. Ap.
Potentilla rigoana Wolf — Endem? C. S. Ap.
Rhinanthus personatus (Beherend.) Bég. — Endem. Ap.
Rhinanthus wettsteini (Sterneck) Soó — Endem. C. S. Ap.
Saxifraga porophylla Bertol. subsp. *porophylla* — Endem. C. S. Ap.
Scabiosa uniseta Savi — Endem. Ap.
Senecio apenninus Tausch — Endem. C. S. Ap.
Senecio brachychaetus DC. — Endem. N. C. Ap.
Senecio stabianus Lacaita — Endem? C. S. Ap.
Sesleria nitida Ten. — Endem. C. S. Ap.-Si.
Sideritis italica (Mill.) Greuter & Burdet (*S. sicula* Ucria) — Endem. C. S. Ap.-Si.
Silene roemerii Friv. subsp. *staminea* (Bertol.) Nyman — Endem. C. S. Ap.
Stipa dasyvaginata Martinovsky subsp. *apenninicola* Martinovsky & Moraldo — Endem. C. S. Ap.
Taraxacum apenninum (Ten.) Ten. — Endem? Ap.
Thymus spinulosus Ten. — Endem. C. S. Ap.
Tolpis virgata (Desf.) Bertol. subsp. *grandiflora* (Ten.) Pignatti — Endem. C. S. It-Si.
Trifolium brutium Ten. — Endem. C. S. Ap.-Si.
Trifolium noricum Wulfen subsp. *praetutianum* (Savi) Arcang. — Endem. C. S. Ap.
Trifolium pratense L. subsp. *semipurpureum* (Strobl) Pignatti — Endem. C. S. It.
Verbascum argenteum Ten. — Endem. C. S. Ap.
Verbascum boerhaavei L. var. *magellense* (Ten.) Fiori (*V. magellense* Ten.) — Endem. C. S. Ap.
Verbascum niveum subsp. *garganicum* (Ten.) Murb. — Endem. C. S. It.
Verbascum niveum Ten. subsp. *niveum* — Endem. C. S. It.

Italian endemics

- Arenaria bertolonii* Fiori — Endem. Maritime Alps-Ap.-Si-Sa-Co.
Armeria seticeps Rchb. — Endem. Maritime Alps-N. C. Ap.
Asplenium ruta-muraria L. subsp. *dolomiticum* Lovis & Reichst. — Endem. S. Alps - Ap.?
Bupleurum petraeum L. — Endem. Alps - C. Ap.
Cardamine pratensis L. subsp. *granulosa* (All.) Arcang. (*C. granulosa* All.) — Endem. It.
Carduus defloratus L. subsp. *tridentinus* (Evers) Lad. var. *barrellieri* (Bertol.) Briq. & Cavill. — Endem. Alps -Ap.?
Festuca pseudodura Steud. — Endem. Alps -Ap.
Helleborus bocconeii Ten. — Endem. Maritime Alps-Ap.-Si.
Hieracium virgaurea Coss. — Endem. W-Alps-Ap.
Hypochaeris robertia Fiori [*Robertia taraxacoides* (Loisel) DC.] — Endem. It-Co.
Melampyrum italicum Soó — Endem. It.
Polygonum romanum Jacq. subsp. *romanum* — Endem. C. S. It.
Pulmonaria apennina Cristof. & Puppi — Endem. W-Alps-Ap.

- Pulmonaria picta* Rouy — S. W. Alps-N. C. Ap.
Salix apennina A.K. Skvortsov — Endem. (from Canton Ticino to Sicily)
Scabiosa pyrenaica All. (*S. vestita* Jord.) — Endem. W. Alps-C. Ap.?
Teucrium siculum Guss. — Endem. It.

Regional Red List

Conti & al. (1992) and Conti & al (1997) give details of the threatened taxa in the Abruzzo. New data enables a list of the extinct species, modifying the published inventory. These indicate environmental problems, concentrated mostly along the coast and in the marshy environments, as in other Adriatic regions. Among the 36 extinct species (1.12%), 21 occurred along the coast, eight in the Campotosto peat-bog and three along the Fucino margins. It is worth mentioning that there are no floristic papers about Fucino but only few records dating back to the period when the lake still existed, therefore the list should perhaps be much longer. It is important to point out that the most dangerously threatened species (CR), subject to serious risk of extinction in nature in the near future, are placed along the coast, e.g. *Orchis palustris*, *Cladium mariscus*, *Baldellia ranunculoides*. Only a few plants occur, concentrated in a few square metres at S. Salvo Marina; *Euphorbia palustris* at Vasto Marina, as well as many others.

Extinct taxa

- Aeluropus litoralis* (Gouan) Parl. — sandy coastal habitats.
Arthrocnemum macrostachyum (Moric.) C. Koch [*A. glaucum* (Delile) Ung.-Sternb.] — saline environments of the coast.
Bassia laniflora (S. G. Gmel.) A. J. Scott [*Kochia arenaria* (P. Gaertn., B. Mey. & Scherb.) Roth] — Silvi near the mouth of T. Piomba and Tortoreto (Zodda 1953).
Bupleurum semicompositum L. — Giulianova as "*B. glaucum* Ten." (Tenore 1831-42) and mouth of F. Saline (Pirone 1987c).
Carex elongata L. — Campotosto peat-bog (Cecchettani 1907, Marchetti 1936).
Carex lasiocarpa Ehrh. — Campotosto peat-bog (Cecchettani 1907, Marchetti 1936).
Centaurea spinosociliata Seenus subsp. *tommasinii* (A. Kern.) Dostál (*C. tommasinii* Kern.) — Endem. of Adriatic coast, coast of Roseto (Zodda 1953 from Di Giuseppe as "*C. paniculata*") but according to Zodda erroneously reported, Giulianova [Chiosi 1975 from a specimen collected by Marchesetti as "*C. paniculata* L. var. *maculosa* (Lam.)"]. The report from Roseto could be referred to *C. tommasinii* (Pignatti 1982).
Crypsis aculeata (L.) Aiton — Paleosubtrop. - Adv. nat. - near F. Tronto (Zodda 1967 from Brilli-Cattarini) and coast of Pescara (Mauri & al. 1830, Tenore 1831, Bertoloni 1833-54, Rigo 1877, Abbate 1903).
Crypsis alopecuroides (Pill. & Mitt.) Schrad. [*Heleochoa alopecuroides* (Pill. & Mitt.) Host ex Roem.] — Fucino (Mauri & al. 1830, Tenore 1831-42, Bertoloni 1833-54), and generally from the Abruzzo (Parlatore 1848-96).
Crypsis schoenoides (L.) Lam. [*Heleochoa schoenoides* (L.) Host] — Pescara (Mauri & al. 1830, Bertoloni 1833-54).
Cutandia divaricata (Desf.) Benth. — Giulianova (Tenore 1831-42 as "*Festuca divaricata* Desf.").
Fimbristylis dichotoma (L.) Vahl. — humid sands - Tortoreto (Bertoloni 1833-54 as "*F. dichotomus* Bert.", Zodda 1953 from Marcantonio).

- Gentiana pneumonanthe* L. — Piano delle Cinquemiglia (Tenore 1831-42, Tomei & al. 1986 from a specimen collected by Pellegrini dating back to 1911).
- Juncus conglomeratus* L. — Campotosto peat-bog (Cecchettani 1907, Marchetti 1936).
- Juncus subulatus* Forssk. — mouth of F. Sangro (Tenore 1831-42 as "*J. multiflorus*").
- Limonium narbonense* Mill. [*L. serotinum* (Rchb.) Pignatti] — retrodune clayey soils, mouth of F. Tronto, Fosso di Castiglione della Valle towards the mouth, as "*Statice limonium* L. var. *serotina* (Rchb.)" (Crugnola 1900, Zodda 1953 from a specimen collected by Petrilli, 1962).
- Maresia nana* (DC.) Batt. — sandy coastal habitats, Pineto (Zodda 1967 as "*Malcolmia confusa* Bss.").
- Oenanthe globulosa* L. subsp. *globulosa* — "Osteria di Salino" (Mauri & al. 1830), ditches near Silvi (Bertoloni 1833-54 as *Phellandrium globulosum*), Silvi at Saganata Wood, near Castelli (Zodda 1953, 1965a, 1965b, 1967), ditches along the coast of Pescara and Silvi (Tenore 1831, Parlato, 1848-96).
- Ophrys ciliata* Biv. (*O. speculum* Link; *O. vernix* Brot.) — Pescara at Pineta d'Avalos, where it is already extinct because of the violation of the garigue where it occurred (Conti 1990b). Zodda (1962, 1967) reports it from Intermesoli where it is to be confirmed.
- Otanthus maritimus* (L.) Hoffm. & Link — sandy coastal habitats, coast of Pescara (Mauri & al. 1830 as "*Santolina maritima* Willd.", Tenore 1831), at Vibrata below Tortoreto (Bertoloni 1833-54 as "*Diotis candidissima*" Desf.), Giulianova and Roseto (Zodda 1953 as "*Diotis maritima*").
- Phleum echinatum* Host — sandy coastal habitats - Francavilla al mare (Parlato 1848-96).
- Plantago cornuti* Gouan — Castiglione della Valle and Arapietra (Crugnola 1900, Zodda 1953).
- Polygala serpyllifolia* J. A. C. Rose — Campotosto (Cecchettani 1907 as "*P. depressa* Wend.").
- Potentilla palustris* (L.) Scop. — Campotosto peat-bog at Valle di Mascioni near Ponte delle Stecche (Cecchettani 1907 as "*Comarum palustre* L.", Marchetti 1936).
- Potentilla supina* L. — Avezzano, Fucino (Mauri & al. 1830, Tenore 1831-42, Bertoloni 1833-54 from Gussone).
- Puccinellia festuciformis* (Host) Parl. [*Puccinellia palustris* (Seen.) Hayek] — Giulianova (Mauri & al. 1830 as "*Poa festucaeformis*").
- Rostraria hispida* (Savi) Dogan [*Lophochloa hispida* (Savi) Pignatti] — Francavilla (Bertoloni 1833-54 as "*Festuca hispida*").
- Rumex palustris* Sm. — Fucino, Sangro (Mauri & al. 1830 as "*R. maritimus* Huds.", Bertoloni 1833-54 from Gussone) and Caramanico (Cesati 1873).
- Salix repens* L. — Campotosto (Cecchettani 1907).
- Schoenoplectus litoralis* (Schr.) Palla — bed of F. Tronto, Tortoreto marina [Zodda 1953, 1967 as "*Scirpus litoralis* Schr."].
- Schoenoplectus triquetus* (L.) Palla — mouth of F. Tronto (Zodda 1967 as "*Scirpus triquetus* L.").
- Sparganium emersum* Rehm. (*S. simplex* Huds.) — Campotosto peat-bog as "*S. simplex*" (Cecchettani 1907, Marchetti 1936).
- Spirodela polyrrhiza* (L.) Schleid. — Sirente, probably along F. Aterno (Groves 1880).
- Thymelaea hirsuta* (L.) Endl. — mouth of Mavone from a specimen collected by Petrilli (Crugnola 1900, Zodda 1953).
- Trifolium squamosum* L. (*T. maritimum* Huds.) — arid pastures - Giulianova, Roseto

(Zodda 1953).

Utricularia minor L. — Campotosto (Cecchettani 1907, Marchetti 1936).

New nomenclatural combinations

Achillea oxyloba (DC.) Sch. Bip. subsp. *barrelieri* (Ten.) F. Conti comb. & stat. nov.
+ basion.: *Anthemis barrelieri* Ten., Prodr. Fl. Napol.: 50. 1811 + *Achillea barrelieri*
(Ten.) Sch. Bip., Flora 38: 15. 1855.

Festuca centro-apenninica (Markgr.-Dann.) Markgr.-Dann. ex Foggi, F. Conti & Pignatti
sp. nova + basion.: *F. ovina* L. var. *centro-apenninica* Markgr.-Dann., Arch. Bot.
Biogeogr. Ital., 48 (1-2): 25 (1972) — Typus: Pian Grande, 9 Jul 1970, leg.
F. Pedrotti & A. Palotta. Holotypus in Z! + *F. centro-apenninica* (Markgr.-Dann.)
Markgr.-Dann. ex Pignatti in Pignatti, Fl. Ital., 3: 498 (1982) invalid name Art. 33.2,
Tokyo-Code.

Trisetaria michelii (Savi) Banfi & F. Conti comb. nov. + basion.: *Bromus michelii* Savi,
Bot. etrusc., 1: 78 (1808) + *Avellinia michelii* (Savi) Parl.

Systematic inventory

All the known vascular plants growing wild or naturalized in the Abruzzo are listed.

The inventory has been based on the literature and on personal observations. I think it is useful to give an up-to-date outline of the floristics of the Abruzzo to encourage further investigation of this area. Discrepancies among the earlier floristic records have been resolved.

The inventory mainly follows the systematic order of *Flora Europaea*. As regards the nomenclature, the publications listed have been followed: Pignatti (1982), Tutin & al. (1964-80, 1993), Greuter & al. (1984-89) and Brummitt (1992).

The abbreviations of the authors names follow Brummitt & Powell (1992).

For each taxon, except for some of *Hieracium* for which there are insufficient data, mention is made of the habitat and the frequency of occurrence in the Abruzzo according to the following code:

- CC Very common
- C Common
- NC Not common

When the species is regarded as rare, all the references known are given. Sometimes all the stations known for the uncommon plants are reported as well, when having a phytogeographical importance outside of the Abruzzo. Endemics and near endemics are indicated and the origins naturalized taxa.

PTERIDOPHYTA

Lycopodiaceae

Lycopodium clavatum L. — M. dei Fiori (Zodda 1953 after Sanguinetti). There are no

specimens in FI!; to be confirmed.

Lycopodium complanatum L. [*Diphasiastrum complanatum* (L.) Holub; *Diphasium complanatum* (L.) Rothm.] — *Fagus sylvatica* wood - Bosco Martese as "*L. complanatum* L. var. *anceps* Asch." (Zodda 1947, 1967). Two Zodda's specimens have been observed in FI! for Bosco Martese in the area of Rocca S. Maria and beyond Ceppo below Pozzoni.

Selaginellaceae

Selaginella denticulata (L.) Spring — humid cliffs; surroundings of Scanno (Gravina 1812 as "*Lycopodium denticulatum*"), Montorio al Vomano, Isola del Gran Sasso, Castelli (Crugnola 1900, Zodda 1967).

Equisetaceae

Equisetum ramosissimum Desf. — humid uncultivated land, ditches - CC.

Equisetum hyemale L. — humid woods and meadows - NC.

Equisetum fluviatile L. — humid meadows, rivers, "sponde della Pescara allo Scafone di S. Valentino" (Tenore 1831-42), along the road L'Aquila-Teramo at 1200 m, Cellino Attanasio on T. Piomba, Valle S. Giovanni (Porcinaro) [Zodda 1953 as "*E. limosum*", 1962, 1964, 1967 as "*E. limosum* L. var. *fluviatile* (L.)"], Quarto Grande! and Quarto di S. Chiara!, Fonte di Pantano (Conti & al. 1990, Buchwald 1995), Parco Nazionale d'Abruzzo! (Conti 1995), Val d'Arano (Pirone 1997b).

Equisetum palustre L. — humid meadows and marshy environments - NC.

Equisetum arvense L. — humid environments - C.

Equisetum telmateja Ehrh. — humid environments - CC.

Ophioglossaceae

Ophioglossum vulgatum L. — humid meadows, Abruzzo (Tenore 1831-42 as "*O. vulgare*"). Dubtfully reported from the Abruzzo in Ferrarini & al. (1986), Parco Nazionale d'Abruzzo in the area called "Il Lagozzo" near Alfedena! (Conti 1992c) and at Padura between Pescasseroli and Bisegna! (Conti & Minuttillo 1996), Piano delle Cinquemiglia (Buchwald 1995), M.ti Pizzi at Lago Battista! (Conti & Manzi 1997c).

Botrychium lunaria (L.) Sw. — high meadows, main mountain ranges - NC.

Botrychium matricariifolium (Retz.) A. Braun ex W. Koch — high meadows, M.ti della Laga, high Valle del Rio Castellano (Brilli-Cattarini & Gubellini 1986b).

Osmundaceae

Osmunda regalis L. — surroundings of Scanno (Gravina 1812), M. Corno, Aschiera beyond Pietracamela (Crugnola 1900, Abbate 1903, Zodda 1967). There are no specimens in FI!; not found recently and worthy of confirmation.

Adiantaceae

Adiantum capillus-veneris L. — humid and wet cliffs - C.

Pteridaceae

Pteris cretica L. — low region of M. Corno (Crugnola 1900, Zodda 1953, 1967 from Petrilli's herbarium). There are no specimens in FI!, not found recently and worthy of confirmation.

Blechnaceae

Blechnum spicant (L.) Roth — shady woods, M.ti della Laga at Valle del T. Castellano near "Cascata Le Moricane"!

Polypodiaceae

Polypodium cambricum L. subsp. *serrulatum* (Schinz ex Arcang.) Pic. Serm. — walls, shady cliffs and woods, to 900 m - C.

Polypodium vulgare L. — shady cliffs and woods to altitudes even higher than the previous species - C.

Polypodium interjectum Shivas — shady cliffs and woods - NC or not much found.

Hypolepidaceae

Pteridium aquilinum (L.) Kuhn subsp. *aquilinum* (*Pteris aquilina* L.) — clearings and abandoned cultivated land - CC.

Thelypteridaceae

Oreopteris limbosperma (Bellardi ex All.) Holub [*Thelypteris limbosperma* (Bellardi ex All.) H. P. Fuchs; *Lastrea limbosperma* (Bellardi ex All.) Holub & Pouzar] — Gran Sasso (Bertoloni 1833-54 as "*Aspidium oreopteris*" from Orsini, Zodda 1953 as "*Dryopteris oreopteris* Maxon", Zodda 1967 from Orsini, Marchesetti). There are no specimens in FI!; not found recently and worthy of confirmation.

Thelypteris palustris Schott — marshy environments, Lago La Croce near Castiglione Messer Marino (Pedrotti 1983b).

Aspleniaceae

Asplenium trichomanes L. subsp. *quadrivalens* D.E. Mey. emend. Lovis — woods, shady

cliffs - CC.

Asplenium trichomanes L. subsp. *inexpectans* Lovis — shady cliffs, Rocca Calascio (Fascetti & Veri 1983).

Asplenium viride Huds. — shady cliffs, most frequent over 1500 m, main mountain ranges.

Asplenium fontanum (L.) Bernh. — shady cliffs, Majella (Tenore 1831-42 as "*Aspidium fontanum*", Tammaro 1986a), Sirente (Groves 1880 as "*A. halleri* DC.", Ferrarini & al. 1986).

Asplenium obovatum Viv. — shady cliffs, M. Corno, Campopericoli [Mauri & al. 1830, Jatta 1877, Zodda 1953, 1967 as "*A. fontanum* Bernh. var. *obovatum* (Viv.)"]. In Ferrarini & al. (1986) it is not reported from the Abruzzo and it seems unlikely from its known ecology and distribution in Italy.

Asplenium adiantum-nigrum L. — woods, shady cliffs - NC - often confused with *A. onopteris* and therefore its distribution has to be studied.

Asplenium onopteris L. — woods, shady cliffs - C.

Asplenium cuneifolium Viv. — Pietracamela along Rio Arno as "*A. adiantum-nigrum* var. *cuneifolium* Pollini" (Zodda 1953, 1967). Not found recently and worthy of confirmation.

Asplenium ruta-muraria L. subsp. *ruta-muraria* — cliffs - CC.

Asplenium ruta-muraria L. subsp. *dolomiticum* Lovis & Reichst. — Endem. S. Alps-Ap.? - cliffs, Marsica and Majella (Ferrarini & al. 1986).

Asplenium lepidum C. Presl. subsp. *lepidum* — cliffs, Tagliacozzo, Gole di Celano, Molina Aterno, Majella (Nardi 1979, Feoli-Chiapella 1979-80, Tammaro 1986a).

Asplenium fissum Kit. ex Willd. — high cliffs, main mountain ranges.

Ceterach officinarum DC. subsp. *officinarum* (*Asplenium ceterach* L.) — walls and cliffs to 2000 m - CC.

Phyllitis scolopendrium (L.) Newman subsp. *scolopendrium* [*A. scolopendrium* L.] — woods, shady cliffs - C.

Woodsiaceae

Athyrium filix-foemina (L.) Roth — shady woods - C.

Cystopteris fragilis (L.) Bernh. — humid cliffs - C - Guarrera & Tammaro (1993) reported *C. montana* (Lam.) Desv. from Bosco Martese near Colle dell'Orso

probably based on Zodda (1953), but later Zodda (1967) excluded and referred it to "*C. fragilis* v. *pontederiae*".

Cystopteris alpina (Lam.) Desv. — humid cliffs - NC.

Woodsia alpina (Bolton) Gray — cliffs, Velino (Pichi-Sermolli 1956, Montelucci 1958).

Gymnocarpium dryopteris (L.) Newman — cool *Fagus sylvatica* woods, main mountain ranges.

Gymnocarpium robertianum (Hoffm.) Newman — cool *Fagus sylvatica* woods, Majella! (Fiori 1943, Feoli-Chiapella 1979-80, Tammaro 1986a), Parco Nazionale d'Abruzzo! (Grande 1904, Anzalone & Bazzichelli 1960), M. Corno (Bertoloni 1833-54 as "*Polypodium dryopteris*", Fiori 1943), Velino (Lucchese & Lattanzi 1991), Vallone Fossaceca!

Dryopteridaceae

Polystichum lonchitis (L.) Roth — cool *Fagus sylvatica* woods and shady cliffs, usually over 1500 m - C.

Polystichum aculeatum (L.) Roth — woods - C.

Polystichum setiferum (Forssk.) T. Moore ex Woyn. — woods - C.

Dryopteris filix-mas (L.) Schott — woods - C.

Dryopteris affinis (Lowe) Fraser-Jenk. subsp. *borreri* (Newman) Fraser-Jenk. — Bosco Martese (Zodda 1953 as "*D. filix-mas* var. *borreri* Newm.").

Dryopteris submontana (Fraser-Jenk. & Jermy) Fraser-Jenk. — Majella (Nardi 1979).

Dryopteris villarii (Bellardi) Woyn. ex Thell. — screes, cool montane stony slopes - NC.

Dryopteris pallida (Bory) C. Chr. ex Maire & Petitm. subsp. *pallida* — shady cliffs, usually to 1000 m, Gole del Sagittario! (Fraser-Jenkins & al. 1975, Nardi 1976), between Ortucchio and Trasacco!, Valle dell'Orta!, Pizzo Deta near Rendinara!

Dryopteris dilatata (Hoffm.) A. Gray — Majella in Valle di S. Spirito (Gussone 1826 as "*Aspidium dilatatum* Will.") and generally from the Abruzzo (Pignatti 1982).

Salviniaceae

Salvinia natans (L.) All. — Teramo province at Tossicia (Crugnola 1900). There are no specimens in FI!; not found recently and worthy of confirmation.

GYMNOSPERMAE

Pinaceae

Abies alba Mill. — *Fagus sylvatica* woods and at the limit between *Quercus cerris* plantations and *Fagus sylvatica* woods, M.ti della Laga at Cortino!, Rocca S. Maria and Valle Castellana! (Furrer 1928, Banti 1939, Lüdi 1943, Zodda 1953, 1967, Longhitano & Ronsisvalle 1974, Pedrotti 1981, 1982a), Gran Sasso at the northern feet of M. Corvo, at Selva di Ornano at the feet of Colle Pelato!, Valle dell'Abete (Isola del Gran Sasso)!, near Pietracamela (Banti 1939, Zodda 1953, 1967, Barbagallo & Guglielmo 1975, Ronsisvalle 1979, Tammaro 1980, Barbagallo & al. 1986, Rovelli 1994), in the southern part of Chieti province at the boundaries with Molise (Rosello!, Castiglione Messer Marino! and in the surroundings!) (Banti 1942, Giacobbe 1950, Guidi 1971).

Pinus pinaster Aiton — generally cultivated along the coast.

Pinus nigra Arnold subsp. *nigra* — cultivated on lower montane slopes in woods and rocky places. In the Parco Nazionale d'Abruzzo var. *italica* Hochst. occurs spontaneously! [Fiori 1923-29, Giacobbe 1933, Lusina 1953 as "*P. austriaca*", Vaccari & Wilczek 1940 as "*P. austriaca* Hoess. Var. *Villetta Barrea*", Anzalone & Bazzichelli 1960 as "*P. nigra* Arnold *austriaca* (Hoess)", Bruno & Bazzichelli 1966, Gellini 1968]. Another autochthonous population has been observed in the Natural Reserve of Zompo lo Schioppo, on the stony slopes not far from the waterfall!

Pinus nigra Arnold cfr. subsp. *laricio* Maire — Endem. S. Ap.-Co - Majella (Parlatore 1848-96, Tammaro & Ferri 1982, Pellegrini 1984). These reports should be referred to the previous species.

Pinus mugo Turra — scrub and rocky slopes in the subalpine belt, Parco Nazionale d'Abruzzo! [Falqui 1899 as "*P. montana* Duroi", Fiori 1923-29, 27 as "*P. pumilio*", Società Botanica Italiana 1953 as "*P. mugo* Turra *pumilio* (Haenke)", Anzalone & Bazzichelli 1960 as "*P. mugo* Turra *pumilio* (Haenke)", Bruno & Bazzichelli 1966, Bazzichelli & Furnari 1970], Majella! (Tenore 1831-42 as "*P. pumilio* Hännk", Tenore & Gussone 1842 as "*P. rotundata*", Bertoloni 1833-54 as "*P. magellensis*", Cesati 1873 as "*P. pumilio* var. *rotundata* Ten.", Migliaccio 1966, 1970; Petriccione 1988), Morrone and Pizzalto (Lastoria 1981). Crugnola's report (1894 as "*P. montana* Duroi") from the Gran Sasso and Colle Pelato has never been confirmed and those from Morrone and Pizzalto should also be confirmed.

Pinus halepensis Mill. subsp. *halepensis* — mostly cultivated along the coast and in the Mediterranean-arid hill belt - C.

Pinus pinea L. — cultivated along the coast and in the hill belt.

Cupressaceae

Cupressus sempervirens L. — cultivated along the coast and in the hill belt.

Juniperus communis L. subsp. *communis* — pastures and open woods, mostly in the middle mountains - CC.

Juniperus communis L. subsp. *nana* (Willd.) Syme [*J. communis* subsp. *alpina* (S. F. Gray) Neilr ex Celak.] — scrub in the subalpine belt - CC.

Juniperus oxycedrus L. subsp. *oxycedrus* — maquis and garigue in Mediterranean and supramediterranean environments - CC.

Juniperus oxycedrus L. subsp. *macrocarpa* (Sm.) Ball — maquis and garigue in thermophilous stony slopes of the hill belt, Colle Barone near Casoli! and Valle del Rio Secco on Colle S. Reparata!, near Altino! (Conti & Pellegrini 1987), lower Valle del Trigno at Fresagrandinara on gypsum outcrops and hill slopes!, near Tufillo on marly limestone!

Juniperus sabina L. — montane stony slopes, Gran Sasso!, M.ti Pizzi! (Tenore 1831-42, Parlatore 1848-96, D'Amato 1888, Jatta 1877, Zodda 1953, 1967, Pirone 1995d, Conti & Manzi 1997c), Morrone (Tenore & Gussone 1842), Majella! (Tenore 1831-42, Bertoloni 1833-54 from Orsini, Rigo 1877, Conti & al. 1986, Conti 1987, Pellegrini 1993), Parco Nazionale d'Abruzzo! (Anzalone & Bazzichelli 1960, Conti & al. 1986, Conti 1987).

Taxaceae

Taxus baccata L. — cool *Fagus sylvatica* woods in rocky environments to 1800 m, sporadic in all the mountain massifs.

Ephedraceae

Ephedra nebrodensis Tineo ex Guss. subsp. *nebrodensis* — cliffs and stony slopes between 400 and 1200 m, Pescara! and Ortona in the Marsica area (Gussone 1826, Conti & Manzi 1996), Gole del Sagittario!, Gole di S. Venanzio! (Anzalone 1960, 1962), Majella in Valle dell'Orfento (Feoli-Chiapella 1979-80 as "*E. major* Host.", Gole del Salinello (Manzi 1992a), Valle dell'Orta!, Gole di Celano!, Pietra Rossa near Carpineto della Nora! (Conti & Manzi 1996), M. Alto – M. Picca (from a specimen collected by Arduini). Tammaro (1986a) reports *E. campylopoda* from Majella, on the basis of Feoli-Chiapella's record (1979-80). Tammaro (op. cit.) puts *E. major* in synonymy with *E. campylopoda* which is probably reported erroneously and thus it has to be excluded.

ANGIOSPERMAE

Salicaceae

Salix fragilis L. — riversides of F. Vezzola, F. Tronto and F. Vomano (Zodda 1953, 1967). According to Martini & Paiero (1988), in Italy this species occurs spontaneously only in the province of Bolzano although it is cultivated in Val d'Aosta and in Friuli Venezia-Giulia.

Salix alba L. — watercourses from the sea level to the mountains - CC - var. *alba*, var. *coerulea* (Sm.) Sm. and var. *vitellina* (L.) Ser. have been reported.

Salix babylonica L. — China - cultivated - C.

Salix triandra L. subsp. *triandra* — humid places, watercourses mostly on the plains and in the hill areas - NC.

Salix triandra L. subsp. *discolor* (Koch) Arcang. — humid places, watercourses - NC.

Salix herbacea L. — snowbed meadows, M.ti della Laga!, Gran Sasso! (Parlatore 1848-96, Matteucci & Martelli 1894, Lüdi 1943, Bazzichelli 1960, Furrer & Furnari 1960, Zodda 1953, 1967, Pedrotti 1981, 1982a), M. Focalone (Dinter 1996, 1997).

Salix retusa L. — cool and cliff environments at high altitude, main mountain ranges.

Salix breviserrata Flod. — humid grassy slopes of alpine and subalpine belt, Le Moricane at sources of T. Castellano (Bertoloni 1833-54 from Orsini as "*S. myrsinites*"), M. Corno, at Lama Bianca, as "*S. myrsinites* L." (Tenore 1831-42, Crugnola 1894), Majella (Tammaro 1986 quotes Paiero), Marsicano! (Rovelli & Conti 1995).

Salix apennina A. K. Skvortsov — Endem. (from Canton Ticino to Sicily) - watercourses, marshy environments from the hill to the montane belt - C - According to Martini & Paiero (1988) "le rare segnalazioni per l'Appennino di *S. appendiculata* Vill. andrebbero verosimilmente riferite a *S. apennina*".

Salix cinerea L. — watercourses, marshy environments from the plains to 1300 m, M.ti della Laga, Gran Sasso (Zodda 1959b, 1967 as "*S. capraea* var. *cinerea* L."; Basile & al. 1970, Tammaro 1983c), F. Tirino!, Vetoio, Villareia near Pescara (Corbetta & Pirone 1989, Buchwald 1995), Lagozzo! (Conti 1992b), Velino, Gole di Celano (Petriccione 1993, Guarrera & Tammaro 1994), Capo Pescara!, Pineta di Pescara!, M.ti Pizzi!, F. Aterno, Raiale (Pirone 1995d), Bosco di Oricola!

Salix aurita L. — Pizzo di Sevo (Tenore 1831-42) and Simbruini at Castellafiume and Tagliacozzo (Veri 1988). The reports from the peninsula have to be confirmed and are probably to be attributed to other taxa (Martini & Paiero 1988).

Salix caprea L. — borders of woods and glades to 1800 m - C.

Salix repens L. — Campotosto (Cecchettani 1907) where it is probably extinct.

Salix foetida Schleich. — alluvions of the subalpine belt, M.ti della Laga (Martini & Paiero 1988 from a specimen collected by Orsini, Gubellini pers. comm.), Valle del T. Castellano near "Cascata Le Moricane"!

Salix eleagnos Scop. subsp. *eleagnos* — watercourses of the hill and montane belt - CC - The record of *S. viminalis* L. from Sangro (Tenore 1831-42) has to be referred to *S. eleagnos* (Grande 1925).

Salix eleagnos Scop. subsp. *angustifolia* (Cariot) Rech.f. — Majella (Tammaro 1986a).
According to Martini & Paiero (1988) it is reported only from Ventimiglia.

Salix purpurea L. subsp. *purpurea* — mostly spread in the watercourses and in the humid environments of the montane areas - C.

Salix purpurea subsp. *lambertiana* (Sm.) Neumann ex Rech. f. — watercourses and humid environments of the plains and the hill areas - C.

Salix purpurea subsp. *amplexicaulis* (Bory & Chaub.) Boiss. — watercourses and humid environments of the submediterranean and montane belt (Martini & Paiero 1988 as "*S. amplexicaulis* Bory").

Populus alba L. — watercourses and clayey uncultivated land mostly on the plains and the hills - C.

Populus × *canescens* (Aiton) Sm. — near Pescara, Vomano and Sangro (Parlatore 1848-96). Taxon not found recently and worthy of confirmation.

Populus tremula L. — glades and edges of cool woods mostly in the montane belt - C.

Populus nigra L. s.l. — watercourses from the sea level to 1500 m - C - also cultivated, when mostly '*italica*'.

Populus × *canadensis* Moench — naturalized - C.

Juglandaceae

Juglans regia L. — S. E. Europ.-C. Asiat. - naturalized - C.

Betulaceae

Betula pendula Roth — cool and stony glades generally in the *Fagus sylvatica* woods, but occurring in the mixed *Quercus* woods as well (Cagnano Amiterno) or at the upper limit of the tree vegetation, M.ti della Laga at Cortino, Gran Sasso at Arsita, Isola del Gran Sasso at Bosco di S. Nicola and Val Venacquaro (Crugnola 1894, Abbate 1903, Zodda 1967 from Crugnola, Rovelli 1986), Majella in Vallone di Fara S. Martino! (Bortolotti & Pierantoni 1984), Parco Nazionale d'Abruzzo in Valle Iannanghera at Coppo Oscuro! (Bortolotti 1965), M. Giano (Macchia Lunga di Cagnano Amiterno) (Masturzi & al. 1976), Campotosto! (Marchetti 1936, Gruppo Lavoro Conservazione Natura S.B.I. 1979), Velino!, Sirente! (Allavena 1981, Rovelli 1985, Penteriani & Pinchera 1986, Petriccione 1993, Rovelli & Conti 1995, Pirone 1995d), M. Cristo, Val Chiarino, Bosco Martese (Valfré in litt.).

Alnus glutinosa (L.) Gaertn. — watercourses - NC.

Alnus cordata (Loisel.) Loisel. — Endem. S. Ap. - cool woods, watercourses, probably introduced by man, Majella at Pretoro (Pignatti 1982, Tammaro 1986a),

Camosciara! (Conti 1995), F. Aventino (Pirone 1995d after Manzi).

Corylaceae

Carpinus betulus L. — cool woods from the sea level to 1500 m - NC.

Carpinus orientalis Mill. — mixed woods from the sea level to 1100 m - NC.

Ostrya carpinifolia Scop. — woods from the sea level to 1200 m - CC.

Corylus avellana L. — woods from the sea level to 1700 m - CC.

Fagaceae

Fagus sylvatica L. subsp. *sylvatica* — woods of the montane belt - CC - var. *quercoides* Pers. was reported (Fiori 1923-29, Lastoria 1980), but according to D'Errico (1978) it does not occur either in the Abruzzo or even in Italy.

Castanea sativa Mill. — acidophil woods of the montane belt, M.ti della Laga!, Gran Sasso! (Zodda 1967, Pedrotti 1982a), Simbruini! (Veri 1988) and other localities of L'Aquila province (Pirone 1995d).

Quercus ilex L. subsp. *ilex* — woods and maquis on thermophilous stony slopes from the coast to the hill and low montane belt - CC.

Quercus cerris L. — woods from the sea level to 1200 m - CC.

Quercus crenata Lam. — Valle del Sangro near Torino di Sangro and Pratelle di Fagnano near L'Aquila (Tammaro 1983a), Caramanico near S. Nicola, Casoli (Pirone 1995d).

Quercus petraea (Matt.) Liebl. — mesophyll woods to 1000 m - NC - *Q. dalechampii* Ten. has also been reported, but is considered as a doubtful species for the variability of the characters observed (Bussotti & Grossoni 1997).

Quercus robur L. subsp. *robur* — plain-growing and sporadically mesophyll hill woods, surroundings of Scanno (Gravina 1812), Majella! (Cesati 1873, Conti 1987), Bosco di Don Venanzio! (Pedrotti 1970), T. Feltrino near Lanciano!, Promontorio Dannunziano!, Valle del Sangro near its mouth at Bosco Marcantonio! (Conti 1987, Manzi 1988), T. Gogna!, F. Osento!, at the confluence of Rio Secco and F. Aventino, Fosso Fontanelle!, S. Vito Chietino! (Manzi 1992b, Pirone 1995d), Bosco di Oricola!

Quercus pubescens Willd. subsp. *pubescens* [incl. *Q. virgiliana* (Ten.) Ten.] — heliophilous and thermophilous woods to 900-1000 m (rarely to 1200-1500 m) - CC - *Q. virgiliana* (Ten.) Ten. has been reported as well, regarded as doubtful species and not distinguishable from *Q. pubescens*, at least on the basis of its micromorphological characters (Bussotti & Grossoni 1997).

Quercus frainetto Ten. — thermo-mesophilous woods, Velino from Bocca di Teve to Passo le Forche and Pié di Sevice (Lucchese & Lattanzi 1991), Val Roveto not far from Morino (Abbate & Scagliusi 1993).

Ulmaceae

Ulmus glabra Huds. — montane mesophyl woods - NC.

Ulmus minor Mill. subsp. *minor* — plain-growing and thermophilous woods of *Quercus pubescens*, *Q. ilex*, *Q. cerris* plantations and *Orno-ostryetum* formations, hedges, uncultivated land - CC.

Ulmus laevis Pall. — cultivated and subsponteous - NC.

Celtis australis L. — stony slopes and thermophilous woods to 800 m. According to Viegi & al. (1990) it is a cultivated species now naturalized - NC.

Moraceae

Broussonetia papyrifera (L.) Vent. — E. Asia - naturalized in ruderal environments (Viegi & al. 1990) - NC.

Morus alba L. — China - cultivated along the borders of the roads, hedges - NC.

Morus nigra L. — C. Asia - naturalized, along the borders of the roads, hedges - NC.

Maclura pomifera (Raf.) C. K. Schneid. — N. Amer. — thermophilous slopes, Ortona! and between Castel di Sangro and S. Pietro Avellana (Pirone 1995d).

Ficus carica L. — cultivated, it occurs also with the wild variety called var. *caprificus* Risso; cliffs, walls, cool thermophilous woods of deep coastal valleys - C.

Cannabaceae

Humulus lupulus L. — watercourses - C.

Cannabis sativa L. — Asia - naturalized (Viegi & al. 1990), uncultivated land - NC.

Urticaceae

Urtica dioica L. — ruderal environments - CC.

Urtica urens L. — ruderal environments and places where animals gather - C.

Urtica membranacea Poir. — ruderal environments - NC.

Urtica pilulifera L. — ruderal environments - NC.

Parietaria officinalis L. — nitrophilous shady environments - C.

Parietaria judaica L. (*P. diffusa* Mert. & Koch) — cliffs and sunny ruderal environments - CC.

Santalaceae

Osyris alba L. — maquis, garigue and thermophilous woods to 800-1000 m - CC.

Thesium ebracteatum Hayne — M. Corno [Grande 1912 as "*Th. monophyllum* Gilib. var. *ebracteatum* (Hayne)"] from a specimen collected by Orsini in FI!]. Pignatti (1982) does not report it from Italy, nevertheless a specimen has been observed in Florence and its determination has been confirmed; it should be looked for in order to obtain its distribution.

Thesium alpinum L. — Simbruini at Civitella Roveto (Veri 1988).

Thesium pyrenaicum Pourr. subsp. *pyrenaicum* — subalpine pastures - NC.

Thesium parnassi A. DC. — subalpine pastures - C.

Thesium linophyllum L. subsp. *linophyllum* — stony pastures and cliffs - CC.

Thesium linophyllum subsp. *montanum* (Ehrh. ex Schrad.) Celak. (*Th. bavarum* Schrank) — margins of woods and glades - NC.

Thesium divaricatum Jan ex Mert. & Koch — arid meadows - CC.

Thesium humile Vahl — arid meadows, Gole di Popoli (Tammaro 1971a), Lentella in the area called Fontanelle! (Conti & al. in press).

Loranthaceae

Loranthus europaeus Jacq. — hemiparasite on *Quercus pubescens* and occasionally on *Q. cerris* and *Castanea sativa*, to 1000 m - C.

Viscum album L. subsp. *album* — hemiparasite on different tree species to 1200 m - C.

Aristolochiaceae

Asarum europaeum L. subsp. *italicum* Kukkonen & Uotila — cool woods, Abetina di Rosello! (Conti 1990b) and as "*A. europaeum* L. (s.l.)" for the area of Scanno (Gravina 1812), Gran Sasso (Zodda 1953), Majella (Tenore 1811-15, Feoli-Chiapella 1979-80 as "*A. europaeum* subsp. *europaeum*"), Parco Nazionale d'Abruzzo (Rovesti & Rovesti 1934, Bazzichelli & Furnari 1970), Simbruini near Rocca di Botte (Veri 1988). According to the distribution of the subspecies given by Kukkonen & Uotila (1977), probably these reports are to be referred to *Asarum europaeum* subsp. *italicum*.

Aristolochia lutea Desf. — *Orno-ostrietum* formations, open woods - NC (Nardi 1984, Tammaro 1986a, Guarrera & Tammaro 1994).

Aristolochia rotunda L. subsp. *rotunda* — arid uncultivated land, open woods, Teramo (Nardi 1984), Majella! (Conti & Pellegrini 1988).

Aristolochia clematitis L. — hedges and uncultivated land, Giulianova, Majella, Morrone (Tenore 1831-38, Nardi 1984). Anzalone & Bazzichelli (1959-60) consider the record from the Parco Nazionale d'Abruzzo (Rovesti & Rovesti 1934) to be incorrect.

Cactaceae

Opuntia ficus-barbarica A. Berger - Amer. trop. — naturalized (Pirone 1995d).

Polygonaceae

Polygonum romanum Jacq. subsp. *romanum* — Endem. C.S. It - arid uncultivated land, Capistrello, Tagliacozzo, Torricella, Magliano dei Marsi, Scurcola, near Cese (Avezzano) (Gussone 1826, Mauri & al. 1830, Raffaelli 1979a).

Polygonum maritimum L. — sandy coastal habitats and among the pebbles of the wharf in F. Tronto, coast of Pescara (Tenore 1831-42) and Teramo! (Bertoloni 1833-54 from Orsini, Zodda 1953, 1962a, 1965b, 1967, Raffaelli 1982, Pirone 1995b, Conti & Manzi 1996), Vasto (Rigo 1877). The species is not confirmed for the coast of Pescara where it is to be extinct because of the tourist development (Tammaro & Pirone 1979) this has probably happened for the station near Giulianova. The population of Piomba has also not been confirmed (Pirone 1988, Pirone 1991).

Polygonum bellardii All. — fields - C (Raffaelli 1979b).

Polygonum arenarium Waldst. & Kit. subsp. *pulchellum* (Loisel.) Thell. — Teramo near Colle Castrogno and Giulianova as "*P. aviculare* var. *pulchellum* (Loisel)" (Zodda 1965d, 1967). Raffaelli (1982) does not report this taxon from the Abruzzo and it has to be confirmed.

Polygonum aviculare L. subsp. *aviculare* — abandoned fields, ruderal environments - CC - *P. equisetiforme* has been reported (Catanzaro 1971 from specimens in FI!) but according to Raffaelli (1982) the reports of this species from C. Italy, as well as almost all the Italian reports, are to be referred to *P. aviculare* and *P. bellardi*.

Polygonum aviculare subsp. *depressum* (Meissner) Arcang. (*P. arenastrum* Boreau) — trampled uncultivated land, Passo della Fontecchia near Villavallelonga, near Scurcola, between Avezzano and Capistrello near the pass of M. Salviano (Raffaelli 1982).

Polygonum aviculare subsp. *rurivagum* (Boreau) Berher (*P. rurivagum* Boreau) — fields, ruderal environments, pastures, Piano delle Cinquemiglia (Raffaelli 1982)

from a specimen collected by Groves in FI), near Caramanico (Tammaro 1986a from a specimen collected by Levier in FI), Sirente (Guarrera & Tammaro 1994).

Fallopia convolvulus (L.) A. Löve — cultivated land - C.

Fallopia dumetorum (L.) Holub — edges of the woods - C.

Fallopia aubertii (Louis Henry) Holub — C. Asiat. - naturalized along F. Saline (Pirone 1991), hills of Pescara at Spoltore, Chieti, L'Aquila, etc. (Pirone 1995d).

Persicaria bistorta (L.) Samp. (*Polygonum bistorta* L.) — cool montane meadows - NC.

Persicaria amphibia (L.) S. F. Gray (*Polygonum amphibium* L.) — sheets of water - NC.

Persicaria lapathifolia (L.) S.F. Gray subsp. *lapathifolia* (*Polygonum lapathifolium* L.) — humid ruderal environments - CC.

Persicaria maculosa S. F. Gray (*Polygonum persicaria* L.) — irrigated cultivated land, ruderal environments - C - Tammaro (1986a) reports also *Polygonum mite* from a specimen collected by Gussone, nevertheless Grande (1925) refers this record to *P. persicaria*.

Persicaria hydropiper (L.) Spach (*Polygonum hydropiper* L.) — humid environments, Campotosto peat-bog (Cecchettani 1907), Teramo province from specimens collected by Petrilli (Crugnola 1900, Zodda 1953), Gole di Popoli (Tammaro 1971a), Laghetto di Vetoio (Del Grosso & Pogliani 1976), F. Saline, F. Pescara at its mouth (Pirone 1983, 1991), Capistrello (Veri 1988), F. Tirino (Corbetta & Pirone 1989, Buchwald 1995), Gole di Celano (Guarrera & Tammaro 1994), Fucino (Tammaro & al. 1992, Tammaro & al. 1995).

Persicaria salicifolia (Willd.) Asenov (*Polygonum salicifolium* Brouss.) — humid environments, Lago di Campotosto!, F. Vomano near Villa Vomano! (Conti & al. in press).

Persicaria orientalis (L.) Spach — watercourses, E.-S. E. Asia, naturalized along the F. Saline (Pirone 1991).

Persicaria vivipara (L.) Ronse Decraene (*Polygonum viviparum* L.) — terraces and high meadows - NC.

Rumex acetosella L. (s.l.) — pastures - C.

Rumex acetosella subsp. *angiocarpus* (Murb.) Murb. — pastures, arid uncultivated land, between Celano and Ovindoli, between Rovere and Ovindoli (Guarrera & Tammaro 1994), Pantano di Scanno!, Macchia della Rocca-Pescasseroli! (Conti & Minutillo 1996).

Rumex acetosella subsp. *multifidus* (L.) Schübler & Martens. — pastures, southern Gran

Sasso (Tammaro 1995).

Rumex scutatus L. — screes - C.

Rumex tuberosus L. subsp. *tuberosus* — Abruzzo (Tenore 1831-42). No longer found and to be confirmed.

Rumex alpestris Jacq. — glades of the *Fagus sylvatica* wood and cool and fertilized meadows - C - *R. amplexicaulis* Lapeyr., reported from Majella at S. Nicola (Tenore 1831-42), Morrone at Mala cupa (Tenore & Gussone 1842) and Pescocostanzo (Pirone 1986), is considered as synonym of *R. alpestris* (Tutin & al. 1993).

Rumex acetosa L. subsp. *acetosa* — pastures - C.

Rumex nebroides Campd. — stony pastures - NC.

Rumex bucephalophorus L. subsp. *bucephalophorus* — fields and ruderal environments - C.

Rumex intermedius DC. — uncultivated land - Majella, Velino, Pizzoli (Mauri & al. 1830, Tenore 1831-42). Not confirmed from Majella (Tammaro 1986a).

Rumex pseudoalpinus Höfft. — humid places where animals gather - C.

Rumex confertus Willd. — montane meadows, near Villetta Barrea and in the territory of Villavallelonga [Grande 1913, Anzalone & Bazzichelli 1960 as "*R. alpinus* L. var. *confertus* (Willd.) Fiori"].

Rumex patientia L. subsp. *patientia* — pastures, Parco Nazionale d'Abruzzo (Anzalone & Bazzichelli 1960), F. Saline (Pirone 1991), Campo Felice (Lucchese & Lattanzi 1991). In the Abruzzo it is regarded as a cultivated species which has become a volunteer (Viegi & al. 1990), but according to Brilli-Cattarini & Gubellini (1987b) it is probably a native taxon of Marche and this would confirm its nativeness in the Abruzzo as well.

Rumex crispus L. — ruderal environments - C.

Rumex conglomeratus Murray — humid environments - C.

Rumex sanguineus L. — cool woods, humid meadows - C.

Rumex nepalensis Spreng. — Endem.? - uncultivated land, territory of Villavallelonga (Grande 1913 as "*R. nepalensis*"), Marsica (Chiovenda 1912 as "*R. nepalensis* var. *grandeanus* Chiov.") and Bosco Martese (Zodda 1953 as "*R. nepalensis* var. *grandeanus* Chiov."). According to Pignatti (1982) and Grande (Anzalone & Bazzichelli 1960) var. *grandeanus* Chiov. is doubtfully autonomous. In Tutin & al. (1993) it is not considered.

Rumex obtusifolius L. subsp. *obtusifolius* — humid environments - C.

Rumex obtusifolius L. subsp. *sylvestris* (Wallr.) Celak. — humid meadows, Parco Nazionale d'Abruzzo (Prati d'Angro and Barrea) [Anzalone & Bazzichelli 1960 as "*R. obtusifolius* subsp. *silvester* (Wallr.)"], Poggio Ginolfi (Tenore 1831-42 as "*R. sylvestris* Valhr. & Ten."), Gran Sasso, M.ti della Laga, Teramo [Zodda 1967 as "*R. obtusifolius* var. *silvester* (Wallr.)"], Barbagallo & Guglielmo 1975a as "*R. obtusifolius* subsp. *sylvestris* (Wallr.) Rech."].

Rumex hydrolapathum Huds. — humid environments, Majella at Fonte Tettoni (Tammaro 1986a), Capo Pescara (Tammaro & al. 1987). The records from the Abruzzo (Mauri & al. 1830) and for the area of Scanno (Gravina 1812) as "*R. aquaticus*" are to be referred to *R. crispus* (Grande 1924b).

Rumex pulcher L. subsp. *pulcher* — fields - C.

Rumex pulcher subsp. *woodsii* (De Not.) Arcang. [*R. pulcher* subsp. *divaricatus* (L.) Murb.] — uncultivated land, Teramo province along the riversides of F. Mavone [Zodda 1967 as "*R. pulcher* var. *divaricatum* (L.)"].

Rumex palustris Sm. — Fucino, Sangro (Gussone 1826 as "*R. uliginosus* Guss.", Mauri & al. 1830 as "*R. maritimus* Huds.", Bertoloni 1833-54 da Gussone) and Caramanico (Cesati 1873) where it is probably extinct.

Chenopodiaceae

Polycnemum arvense L. — uncultivated land, trampled areas - NC.

Polycnemum majus A. Braun — Caramanico (Cesati 1873). To be confirmed.

Beta vulgaris L. subsp. *vulgaris* — uncultivated land - C.

Beta vulgaris subsp. *maritima* (L.) Arcang. — uncultivated land along the coast - NC.

Chenopodium multifidum L. — C. S. Amer. - ruderal environments, naturalized at Torre dei Passeri! (Conti & Manzi 1997c).

Chenopodium bonus-henricus L. — places where animals gather, montane nitrophilous environments - C.

Chenopodium rubrum L. — ruderal environments, Fucino (Tammaro 1985c).

Chenopodium urbicum L. — ruderal environments - NC.

Chenopodium polyspermum L. — fields - C.

Chenopodium murale L. — walls and ruderal environments - NC.

Chenopodium hybridum L. — ruderal environments - NC.

Chenopodium vulvaria L. — ruderal environments - C.

Chenopodium album L. — fields and ruderal environments - CC.

Chenopodium strictum Roth - [*Ch. album* subsp. *striatum* (Krasan) Murr] — Reported from Teramo province (Zodda 1953, 1967 as "*Ch. album* var. *striatum* Kras.") and from the coast of Pescara (Tammaro & Pirone 1979), but to be confirmed according to Pignatti (1982).

Chenopodium suecicum Murr [*Ch. album* L. subsp. *viride* (auct. fl. ital.)] — According to Pignatti (1982 as "*Ch. album* subsp. *viride*") it does not extend south of the Alps and it is erroneously reported.

Chenopodium giganteum D. Don — N. Indiana become Pantrop. - coast of Roseto (Zodda 1953 as "*Ch. album* var. *amaranticolor* Coste & Reyn.").

Chenopodium opulifolium Schrad. ex Koch & Ziz — ruderal environments - NC.

Chenopodium ambrosioides L. — Trop. and Subtrop. Amer. - naturalized (Zodda 1953a, Viegi & al. 1990) - NC.

Chenopodium botrys L. — uncultivated land - NC.

Spinacia oleracea L. — S. W. Asia (?) - naturalized.

Atriplex halimus L. — sandy coastal habitats and first clayey hill slopes in the areas of Pescara!, Chieti! and Vasto! (Pirone 1995d).

Atriplex hortensis L. — Asia - naturalized (Viegi & al. 1990).

Atriplex rosea L. — arid uncultivated land, Pescara, Turrialignani and Chieti (Tenore 1831-42 as "*A. roseum* and *A. polyspermum*"), Teramo near Vezzola, Tortoreto (Abbate 1903), mouth of Mavone (Crugnola 1900 as "*A. laciniatum* var. *roseum* L." from a specimen collected by Petrilli). According to Tammaro & Pirone (1979) this species has probably disappeared from the coast of Pescara.

Atriplex tatarica L. — uncultivated land of the coast, not reported probably because confused with *A. rosea* (Pignatti 1982). It is to be checked.

Atriplex patula L. — ruderal environments - C - Var. *angustifolia* (Sm.) Lange is also reported as well as var. *patula*.

Atriplex prostrata Boucher ex DC. [*A. prostrata* subsp. *triangularis* (Willd.) Rauschert] — ruderal environments, Teramo province [Zodda 1967 as "*A. hastatum* var. *oppositifolium* (Sm.)", as "*A. hastatum* var. *platysepalum* (Guss.)" and as "*A. hastatum* var. *triangulare* (W.)"].

Atriplex elongata Guss. — Tortoreto, mouth of F. Vomano [Zodda 1967 as "*A. hastatum* var. *elongatum* (Guss.)"]. This taxon is of doubtful taxonomic status (Greuter & al. 1984-89).

Halimione portulacoides (L.) Aellen (*Atriplex portulacoides* L.) — humid saline environments, right bank of F. Tronto! (Zodda 1967 from Brilli-Cattarini, Conti & al. in press) and mouth of F. Saline and T. Piomba (Pirone & Tammaro 1981, Pirone 1983, 1987c, 1988).

Camphorosma monspeliaca L. — Atri (Gussone 1826) where it has not been confirmed since.

Bassia laniflora (S. G. Gmel.) A. J. Scott [*Kochia arenaria* (P. Gaertn., B. Mey. & Scherb.) Roth] — Silvi at the mouth of T. Piomba and Tortoreto (Zodda 1953) where it now seems extinct (Pirone & Conti 1996).

Bassia scoparia (L.) A. J. Scott [*Kochia scoparia* (L.) Schrad.] — C. Asiat. - naturalized - Roseto, mouth of F. Vomano (Zodda 1953). Var. *trichophila* (Voss.) Schinz & Thell. is known for Teramo province and the coast of Pescara (Zodda 1967, Tammaro & Pirone 1979 as "*K. scoparia* var. *trycophylla* Voss", Viegi & al. 1990).

Arthrocnemum macrostachyum (Moric.) C. Koch [*A. glaucum* (Delile) Ung.-Sternb.] — Pignatti (1982) reports it from the Abruzzo in general as "*A. glaucum*". At present it seems extinct from the coasts of Abruzzo (Pirone & Conti 1996).

Sarcocornia fruticosa (L.) A. J. Scott — humid saline environments, mouth of T. Piomba [Pirone 1987c as "*S. perennis*", 1995b as "*S. alpini* (Lag.) Castroviejo"]. According to Géhu & Biondi (1994), *S. alpini* is to be referred to the complex of *S. fruticosa*.

Salicornia patula Duval-Jouve [*S. europaea* L.; *S. herbacea* (L.) L.] — humid saline environments, Silvi at the mouth of T. Piomba and neighbouring fields (Zodda 1953), mouth of F. Saline (Pirone 1981c, 1988, 1991), coasts between Riccio and Ortona! (Conti & Pirone 1991), mouth of F. Sangro! (Manzi 1992a, Pirone 1995b) and Pescara (Anzalone 1955 as "*S. herbacea* subsp. *stricta* (Willd.) Feckes") where it is now extinct (Tammaro & Pirone 1979).

Suaeda vera J. F. Gmel. [*S. fruticosa* (L.) Forssk.] — clayey slopes near the sea, Pescara (Anzalone 1955) where it is now extinct (Tammaro & Pirone 1979), Ortona! (Conti 1990b), Punta Aderci! (Conti & Manzi 1997c).

Suaeda maritima (L.) Dumort. — saline nitrophilous soils of the coast, mouth of F. Tronto! and F. Vomano!, between the mouth of T. Piomba and F. Saline (Zodda 1953, 1957, 1967, Pirone & Tammaro 1981, Pirone 1983, 1991, 1995b).

Salsola soda L. — halo-nitrophilous soils of the coast, mouth of F. Saline and T. Piomba (Tammaro & Pirone 1979) where it is no longer found and mouth of F. Sangro (Pirone in press).

Salsola kali L. — saline nitrophilous soils of the coast - C.

Amaranthaceae

Amaranthus caudatus L. — Trop. - naturalized, L'Aquila (Viegi & al. 1990 from a specimen collected by Bravi).

Amaranthus cruentus L. — Trop. and N. Amer. - fields, Teramo province [Zodda 1953, 1967 as "*A. hybridus* var. *paniculatus* (L.)" and as "*A. hybridus* var. *patulus* (Bert.)"]. Naturalized (Viegi & al. 1990).

Amaranthus hybridus L. (*A. chlorostachys* Willd.) — Trop. and N. Amer. - naturalized, uncultivated land - C (Viegi & al. 1990 as "*A. chlorostachys*").

Amaranthus hypocondriacus L. — Trop. and N. Amer. - naturalized, Alba Adriatica, Roseto, Scerne di Pineto [Zodda 1953, 1967 as "*A. hybridus* var. *hypocondriacus* (L.)"].

Amaranthus retroflexus L. — Trop. and N. Amer. - naturalized in adventitious, ruderal environments - C (Viegi & al. 1990). Var. *delilei* (Richt. & Loret) Thell. is also reported.

Amaranthus albus L. — N. Amer. - ruderal environments, naturalized - C (Viegi & al. 1990).

Amaranthus blitoides S. Watson — N. Amer. (Adv.) - ruderal environments, Roseto (Zodda 1953a, 1957) and Pescara (Anzalone 1955). Naturalized (Viegi & al. 1990).

Amaranthus graecizans L. — fields - C.

Amaranthus blitum L. (*A. lividus* L.; *A. ascendens* Loisel.) — ruderal environments - C.

Amaranthus deflexus L. — S. Amer. (Adv.) - ruderal environments, naturalized adventitious - C (Viegi & al. 1990).

Nyctaginaceae

Mirabilis jalapa L. — S. Amer. - ruderal environments, cultivated, and now occur as a volunteer - NC (Viegi & al. 1990).

Phytolaccaceae

Phytolacca americana L. (*Ph. decandra* L.) — N. Amer. - naturalized - NC (Zodda 1953a, Viegi & al. 1990, Pirone & al. in press).

Aizoaceae

Carpobrotus acinaciformis (L.) L. Bolus — S. Afr. - naturalized - naturalized at Silvi near the T. Piomba (Zodda 1967 as "*Mesembrianthemum acinaciforme* L.").

Carpobrotus edulis (L.) N. E. Br. — S. Afr. - escaped from cultivation along the coast of Pescara (Tammaro & Pirone 1979).

Portulacaceae

Portulaca oleracea L. subsp. *oleracea* — fields and ruderal environments - CC.

Montia arvensis Wallr. [*M. fontana* L. subsp. *chondrosperma* (Fenzl) Walters"] — humid environments, Orfento (Tammaro 1986a).

Caryophyllaceae

Arenaria grandiflora L. subsp. *grandiflora* — meadows at high altitude - NC - var. *incrassata* (Lange) Coss. is also reported.

Arenaria bertolonii Fiori — Endem. Maritime Alps-Ap.-Si-Sa-Co - screes - C.

Arenaria biflora L. — surroundings of Scanno (Gravina 1812), M. Corno (Tenore 1831-42). It is probably to be excluded (Crugnola 1894). There are no specimens in FI!

Arenaria serpyllifolia L. subsp. *serpyllifolia* — uncultivated land, arid and stony meadows - C.

Arenaria serpyllifolia subsp. *leptoclados* (Rchb.) Nyman — arid meadows and cliffs - NC.

Moehringia trinervia (L.) Clairv. — cool woods - C.

Moehringia pentandra Gay — cool woods, Teramo province with no reference to the locality [Zodda 1945 from a specimen collected by Quartapelle as "*M. trinervia* var. *pentandra* (I. Gay)"].

Moehringia muscosa L. — cool woods - C.

Minuartia hybrida (Vill.) Schischk. — arid meadows - C.

Minuartia mediterranea (Link) K. Maly — arid meadows, Majella (Tenore 1831-42 as "*Arenaria mucronata*"), Poggio Valle di Torricella Sicura [Zodda 1953 as "*Alsine tenuifolia* var. *arvatica* (Guss.)"], Val Roveto (Lucchese 1990b), near Lentella!

Minuartia rubra (Scop.) McNeill — Monte Bello (from a specimen probably collected by Trabalza in 1929 in RO!). Probably the record is to be referred to the Monte Bello near Civitella Roveto, in the group of *M. Cornacchia*.

Minuartia glomerata (M. Bieb.) Degen. subsp. *trichocalycina* (Ten. & Guss.) F. Conti — Endem. Abr. - arid and stony slopes from 850 to 1300 m - Piano delle Cinquemiglia! (Tenore 1831-42 as "*Arenaria trichocalycina*"), Bazzano near l'Aquila, in the area of Marsica near Collelongo, Ortucchio!, Venere, Pescina!, Avezzano (Grande 1912),

meadows of Sirente, Ocre!, M. Canale (Tammaro & al. 1974, Guarrera & Tammaro 1994, Conti 1995), Velino beyond Forme near Camartino (Lucchese & Lattanzi 1991), Morrone near Sulmona (Favarger 1975), Ortona dei Marsi!, Gioia Vecchio!, near Gioia dei Marsi!, near Calascio!, Campo Imperatore!, Voltigno!, Majella near Lama dei Peligni! (Conti 1995), surroundings of Barisciano and Conca di Capestrano (Tammaro 1995). Crugnola's report from Gran Sasso (1894) is to be considered erroneous (Grande 1912). For its systematic affinities with other taxa and for the new nomenclatural combination see Conti (1997b).

Minuartia capillacea (All.) Graebn. [*Alsine laricifolia* Crantz var. *liniflora* (Hegetschw.) Fiori; *Minuartia liniflora* (Murr.) Schinz & Thell.] — cliffs, stony slopes, Majella [Tenore 1831-42 as "*A. laricifolia* L. var. *striata* DC.", Grande 1914 as "*M. liniflora* (Murr.) Schinz & Thell.", Feoli-Chiapella 1979-80 as "*M. capillacea* (All.) Graebn.", Tammaro 1986a], Colle Lungo beyond Bosco Martese [Zodda 1957 as "*Alsine laricifolia* Crantz var. *liniflora* (Heg.)"], Cavata di Bosco Martese (Guarrera & Tammaro 1993), M. Giano, M. Argatone!, M. Terrata near Scanno! [Grande 1914 as "*M. liniflora* (Murr.) Schinz & Thell."], Gole di Celano (Guarrera & Tammaro 1994), Velino (Lucchese & Lattanzi 1991, Petriccione 1993), Porrara (Galetti pers. comm.). "E' probabile che la segnalazione per il Velino di *M. laricifolia* (L.) Schinz et Th. (Avena & Blasi 1974) vada riferita a *M. capillacea*" (Feoli-Chiapella 1979-80).

Minuartia verna (L.) Hiern. subsp. ***verna*** — stony slopes, high cliffs - NC.

Minuartia verna subsp. ***collina*** (Neilr.) Domin — stony pastures - NC.

Minuartia verna subsp. ***attica*** (Boiss. & Spruner) Graebn. — stony slopes - NC.

Minuartia recurva (All.) Schinz & Thell. subsp. ***recurva*** — montane cliffs - NC.

Minuartia recurva subsp. ***condensata*** (C. Presl) Greuter & Burdet — montane cliffs - NC.

Minuartia graminifolia (Ard.) Jáv. subsp. ***graminifolia*** — cliffs - NC.

Minuartia graminifolia (Ard.) Jáv. subsp. ***clandestina*** (Port.) Mattf. — Teramo province, Campiglione, Majella (Zodda 1953), Portella (Bazzichelli 1960), meadows of Sirente (Tammaro & al. 1974), M. Genzana!, M. Camicia!

Bufonia paniculata Dubois ex Delarbre — pebbly arid uncultivated land, Villavallelonga!, Trasacco and Collelongo! (Anzalone & Bazzichelli 1960 from specimens collected by Grande, Conti 1995 from a specimen collected by Rosati in herb. PNA!).

Stellaria nemorum L. subsp. ***nemorum*** — cool woods, Sirente (Guarrera & Tammaro 1994), southern Gran Sasso (Tammaro 1995).

Stellaria nemorum L. subsp. ***montana*** (Pierrat) Behrer (*St. nemorum* subsp.

glochidosperma Murb.; *St. montana* Pierrat) — cool woods - C.

Stellaria media (L.) Vill. subsp. *media* — ruderal environments - CC.

Stellaria media subsp. *cupaniana* (Jord. & Fourr.) Nyman — ruderal environments - NC.

Stellaria neglecta Weihe — ruderal environments - NC.

Stellaria pallida (Dumort.) Piré — uncultivated land - NC.

Stellaria holostea L. — scrub - C.

Stellaria graminea L. — humid meadows, near l'Aquila (Furrer 1928), Pietracamela at Bosco delle Mandorle (Zodda 1953), Simbruini (Montelucci 1961, Tammaro & al. 1974 as "*St. graminifolia* L.", Veri 1988), Piano delle Cinquemiglia! (Conti & Manzi 1996), La Cicerana!, Passo Godi!, Piano Aremogna! (Conti & Minutillo 1996), Altopiano delle Rocche in Val d'Arano!, Secine in the area called Polledrara!, Voltigno!, Campotosto!

Stellaria aquatica (L.) Scop. [*Myosoton aquaticum* (L.) Moench] — humid meadows, Fonte delle Figliole (Bertoloni 1833-54 from Orsini as "*Cerastium aquaticum*", Fucino, Popoli on F. Pescara (Tenore & Gussone 1842 as "*Cerastium aquaticum*", Parlato 1848-96 as "*Malachium aquaticum* Fries", Tammaro 1971a, Tammaro & al. 1995), Parco Nazionale d'Abruzzo "lungo la Forma" (Grande 1904 as "*Malachium aquaticum* Fries"), Marcolano, La Meta, Gole di Celano, Bocca di Valle (Dinter 1996, 1997).

Holosteum umbellatum L. subsp. *umbellatum* — uncultivated land - NC.

Cerastium cerastoides (L.) Britton (*Stellaria cerastoides* L.) — snowbed meadows, Majella! (Mauri & al. 1830, Tenore 1831-42 as "*Stellaria cerastoides*", Gussone 1826 as "*Stellaria cerastoides* Guss.", Bertoloni 1833-54 after Gussone as "*St. cerastoides*", Grande 1912 as "*C. lapponicum* Crantz", Feoli-Chiapella 1979-80), Morrone, Parco Nazionale d'Abruzzo! (Tenore & Gussone 1842, Tenore 1831-42 as "*St. cerastoides*", Fiori 1923-29, Conti 1995), Gran Sasso! (Crugnola 1894, Zodda 1953 da Gussone), Velino (Abbate 1903, Fiori 1923-29) and Simbruini! (Veri 1988).

Cerastium tomentosum L. — Endem. C. S. Ap.-Si - stony pastures, screes - C - var. *elatum* (Ten.) Fiori and var. *columnae* (Ten.) Fiori are reported. The most ancient populations of this species seem to occur in the central Apennines (Sibillini, Gran Sasso, Morrone) where Favarger (1972b) found diploid cytotypes.

Cerastium arvense L. subsp. *arvense* — arid meadows, exact area to be located.

Cerastium arvense subsp. *strictum* (Koch) Schinz & Keller — montane stony slopes, many records exist but its real presence is to be verified.

Cerastium arvense subsp. *suffruticosum* (L.) Hegi — stony meadows and pastures - C.

Cerastium thomasi Ten. — Endem. C. Ap. - high cliff meadows, Gran Sasso!, Majella [Mauri & al. 1830, Tenore 1831-42, Cesati 1873, Porta 1879, Crugnola 1894, Matteucci & Martelli 1894, Bazzichelli 1960 as "*C. arvense* L. var. *thomasi* (Ten.)", Furrer & Furnari 1960, Zodda 1953, Tammaro 1986a, Tammaro 1995], M.ti della Laga [Zodda 1967 as "*C. arvense* L. var. *thomasi* (Ten.)"], Sirente (Veri & Tammaro 1980 as "*C. arvense* subsp. *thomasi*") and Parco Nazionale d'Abruzzo (Petriccione 1986). In many localities its presence is doubtful (Bechi pers. comm.). *C. arvense* L. s.l. was investigated from a karyological point of view and, within the same taxon, different ploidy levels have been recognized; all the group need further systematic study (Bechi 1998c).

Cerastium scaranii Ten. — Endem. C. S. Ap. - arid stony slopes, M. Ocre (Guarrera & Tammaro 1994), Salviano, Collelongo (Tammaro & al. 1995).

Cerastium latifolium L. — surroundings of Scanno (Gravina 1812), Gran Sasso (Chiosi 1975 from a specimen collected by Marchesetti as "*C. alpinum* var. *latifolium* L."), Civitella Roveto (Veri 1988). According to Pignatti (1982) only in C. W. Alps.

Cerastium sylvaticum Waldst. & Kit. — humid environments - NC.

Cerastium fontanum Baumg. subsp. *vulgare* (Hartm.) Greuter & Burdet [*C. triviale* Link; *C. holosteoides* Fries subsp. *triviale* (Link) Möschl] — humid meadows - NC.

Cerastium brachypetalum Pers. subsp. *luridum* (Boiss.) Nyman [*C. brachypetalum* subsp. *tauricum* (Spreng.) Murb.; *C. luridum* Guss.] — arid environments - NC.

Cerastium tenoreanum Ser. [*C. brachypetalum* Pers. subsp. *tenoreanum* (Ser.) Soó] — arid environments - NC.

Cerastium glomeratum Thuill. — ruderal environments, grassy areas - C.

Cerastium ligusticum Viv. subsp. *ligusticum* — stony pastures - C.

Cerastium semidecandrum L. — stony pastures - C.

Cerastium pumilum Curtis subsp. *pumilum* — arid pastures - C.

Cerastium pumilum subsp. *glutinosum* (Fr.) J alas — pastures, stony slopes - C.

Cerastium diffusum Pers. subsp. *diffusum* — arid environments, Simbruini near Oricola (Veri 1988).

Cerastium siculum Guss. — fields, arid pastures, near Teramo and Roseto as "*C. semidecandrum* var. *siculum* (Guss.)" (Zodda 1953).

Moenchia erecta (L.) P. Gaertn., B. Mey. & Scherb. subsp. *erecta* — humid soils, M.ti

della Laga at Paranesi on M. la Spillara as "*C. manticum* L. var. *erectum* (Coss. & Germ.)" (Zodda 1967).

Moenchia mantica (L.) Bartl. subsp. *mantica* — humid areas, Pignatti (1982).

Sagina glabra (Willd.) Fenzl — meadows and upland plains at high altitude, Majella! (Cesati 1873, Feoli-Chiapella 1979-80), Gran Sasso!, Morrone, M.ti della Laga, M. dei Fiori [Jatta 1877 as "*Spergula saginoides*", Parlatore 1848-96 as "*S. saginoides* var. *glabra* (Fenzl)", Bazzichelli 1960 as "*S. saginoides*", Zodda 1953, 1957, 1967 as "*S. saginoides* var. *glabra* (Fenzl)"], Parco Nazionale d'Abruzzo! (Tenore & Gussone 1842 as "*Spergula saginoides*", Anzalone & Bazzichelli 1960, Bazzichelli & Furnari 1970), Velino (Montelucci 1958, Lucchese & Lattanzi 1991, Petriccione 1993) and Simbruini (Veri 1988).

Sagina subulata (Sw.) C. Presl. — humid meadows, M. Corno, M. Bilanciere [Tenore 1831-42 as "*Spergula subulata*", Zodda 1953 as "*S. saginoides* var. *subulata* (Presl)"], Giaccio Porcelli (Lüdi 1943), near Pescasseroli [Anzalone & Bazzichelli 1960 as "*S. saginoides* D. Torre *subulata* (Presl)" from a specimen collected by Grande], Capistrello (Veri 1988), Prati del Sirente (Guarrera & Tammaro 1994).

Sagina saginoides (L.) Karsten subsp. *saginoides* — high pastures, its real presence is to be checked.

Sagina procumbens L. subsp. *procumbens* — trampled areas - NC.

Sagina apetala Ard. subsp. *apetala* — stony pastures, trampled areas - NC.

Sagina apetala subsp. *erecta* (Hornem.) F. Herm. (*S. micropetala* Rauschert) — arid uncultivated land - NC.

Sagina maritima G. Don — coastal sands, Ortona near the harbour! (Conti 1990b), Marina di Vasto! (Conti & al. in press).

Scleranthus perennis L. subsp. *perennis* — humid meadows, Pignatti (1982).

Scleranthus annuus L. subsp. *annuus* — sterile soils in stony pastures - C.

Scleranthus annuus subsp. *polycarpus* (L.) Thell. — sterile soils, Bosco Martese, Coppo dell'Orso, Campotosto!, Pietracamela at Calderotto (Zodda 1953, 1957), Simbruini (Veri 1988), Campo Felice, Piani di Pezza (Lucchese & Lattanzi 1991), Sirente (Guarrera & Tammaro 1994).

Scleranthus annuus subsp. *verticillatus* (Tausch) Arcang. [*S. polycarpus* subsp. *collinus* (Hornung. ex Opiz) Pignatti] — sterile soils, M.ti di Chiarano beyond Roccaraso as "*S. verticillatus*" (Tenore 1831-42, Tenore & Gussone 1842), Sirente (Veri & Tammaro 1980).

Scleranthus uncinatus Schur — sterile soils in pastures, near Villavallelonga (Anzalone

& Bazzichelli 1960 from a specimen collected by Grande), Piano Aremogna! (Conti 1995), Terraegna di Pescasseroli! (Conti & Minutillo 1996), M. Genzana near "Ovile Genzana"!, M. Godi!

Paronychia kapela (Hacq.) A. Kern. subsp. *kapela* — stony cliffs and pastures - C.
Paronychia capitata (L.) Lam. — Abruzzo Mts and Valle Oscura (Mauri & al. 1830 as "*Illecebrum niveum*", Tenore 1831-42 as "*P. nivea*"), M. Corno where it is doubtfully reported (Abbate 1903, Zodda 1967 from Gussone).

Herniaria bornmuelleri Chaudhri — Endem. C. Ap. - high pastures, M.ti della Laga, Gran Sasso, Majella, Velino and Sirente (Chaudhri 1968). In Tutin & al. (1993) it is considered similar to *H. parnassica* of which it could be a subspecies.

Herniaria glabra L. subsp. *glabra* — arid environments and glades - C.

Herniaria glabra L. subsp. *nebrodensis* Jan ex Nyman — stony pastures and high meadows, Majella (Chaudhri 1968 as "*H. microcarpa* Presl"), Parco Nazionale d'Abruzzo! (Conti 1995).

Herniaria incana Lam. — stony pastures, Colli, Assergi (Mauri & al. 1830, Tenore 1831-42), Sirente (Groves 1880), Majella, Parco Nazionale d'Abruzzo! [Tenore & Gussone 1842, Anzalone & Bazzichelli 1960 as "*H. alpina* Vill. var. *incana* (Lam.)", Chaudhri 1968, Tammaro 1986a, Conti 1995], Simbruini (Veri 1988), Velino (Lucchese & Lattanzi 1991, Petriccione 1993).

Herniaria hirsuta L. subsp. *hirsuta* — uncultivated land - NC.

Herniaria hirsuta subsp. *aprutia* Chaudhri — Endem. Abr. - It is known only from the *locus classicus* in the fields surrounding Chieti (Chaudhri 1968 from a specimen collected by Sommier). According to Greuter & al. (1984-89), it is of doubtful taxonomic status and not reported in Tutin & al. (1993).

Illecebrum verticillatum L. — Majella, M. Corno (Tenore 1811-38), Montorio al Vomano where it is doubtfully recorded (Zodda 1953 from Di Giuseppe). According to Crugnola (1894) Tenore's records are to be referred to *Paronychia capitata*.

Polycarpon tetraphyllum (L.) L. subsp. *tetraphyllum* — fields and ruderal environments - C.

Polycarpon tetraphyllum subsp. *diphyllum* (Cav.) O. Bolòs & Font Quer (*P. diphyllum* Cav.) — ruderal environments. It is generally recorded from the Abruzzo (Pignatti 1982 as "*P. diphyllum*"), Pescara (Pirone & al. in press).

Polycarpon tetraphyllum subsp. *alsinifolium* (Biv.) Ball. [*P. alsinifolium* (Biv.) DC.] — saline mud, Pineto and Silvi [Zodda 1953 as "*P. tetraphyllum* var. *alsinefolium* (DC.)"].

Polycarpon polycarpoides (Biv.) Zodda — Gole di Popoli (Tammaro 1971a). According

to Pignatti (1982) in Italy it occurs only in Calabria and Sicily.

Spergularia maritima (All.) Chiov. subsp. *maritima* (*S. media* auct.) — saline soils of the coast, Giulianova [Zodda 1967 as "*Sp. rubra* var. *media* (Presl.)"], between the mouth of T. Piomba and F. Saline, mouth of F. Vomano (Pirone 1983, 1991, 1995b), Punta Penna! (Conti & Pirone 1986a as "*Sp. marina*"), near Ortona! (Conti 1990b).

Spergularia diandra (Guss.) Boiss. — sandy uncultivated land, Roseto and Bosco Martese [Zodda 1953, 1967 as "*Sp. rubra* var. *diandra* (Held.)"].

Spergularia rubra (L.) J. & C. Presl. — sandy uncultivated land - NC.

Spergularia bocconeii (Scheele) Graebn. — arid uncultivated land, Roseto [Zodda 1953, 1967 as "*Sp. rubra* var. *bocconeii* (Steud.)"], Silvi coast and F. Saline (Pirone & Tammaro 1981, Pirone 1991).

Agrostemma githago L. subsp. *githago* — fields - NC.

Silene coronaria (L.) Clairv. [*Lychnis coronaria* (L.) Desr.] — glades, cliffs, Abruzzo (Tenore 1831-42), Sirente (Groves 1880, Guarrera & Tammaro 1994) and along F. Mavone (Crugnola 1900, Zodda 1953 from specimens collected by Petrilli).

Silene flos-cuculi (L.) Clairv. (*Lychnis flos-cuculi* L.) — meadows - NC.

Silene viscaria (L.) Jess. (*Lychnis viscaria* L. subsp. *viscaria*) — subalpine meadows, M. Corno (Tenore 1831-42), Montorio al Vomano (Crugnola 1900). To be confirmed.

Silene noctiflora L. — Majella, Gran Sasso (Tenore 1831-42), near Cretone di Tornimparte (Tammaro & al. 1979). The record from Gran Sasso is probably erroneous (Crugnola 1894) as also could the one from Majella, nevertheless the recent confirmation from the Abruzzo makes its presence likely.

Silene latifolia Poir. [*Silene latifolia* subsp. *alba* (Mill.) Greuter & Burdet] — ruderal environments and uncultivated areas - C.

Silene dioica (L.) Clairv. — ruderal environments and uncultivated areas - C.

Silene viridiflora L. — woods - NC.

Silene catholica (L.) W. T. Aiton — Amphiadriatic - cool woods, Majella!, Gran Sasso!, Montorio al Vomano, Cerqueto, M. dei Fiori, Teramo (Gussone 1826, Mauri & al. 1830, Tenore 1831-42, Bertoloni 1833-54 from Orsini, Tenore & Gussone 1842, Rigo 1877, Levier 1880, Parlatore 1848-96, Abbate 1903, Zodda 1953, 1967, Conti 1987) and Parco Nazionale d'Abruzzo! (Falqui 1899).

Silene paradoxa L. — stony pastures - C.

Silene nutans L. subsp. *nutans* — open woods, meadows - NC.

Silene italica (L.) Pers. subsp. *italica* — scrub, stony slopes - C.

Silene italica subsp. *nemoralis* (Waldst. & Kit.) Nyman (*S. nemoralis* Waldst. & Kit.) — scrub, Majella (Tammaro 1986a as "*S. nemoralis*"), Velino (Lucchese & Lattanzi 1991, Petriccione 1993), Sirente (Guarrera & Tammaro 1994).

Silene italica subsp. *sicula* (Ucria) Jeanm. (*S. sicula* Ucria) — Civitella del Tronto as "*S. italica* var. *sicula* (Ucria) Fiori" (Zodda 1967). According to Pignatti (1982) it occurs only in Calabria and Sicily. Doubtfully distinct from *S. italica* subsp. *italica* (Greuter 1997b).

Silene roemerii Friv. Subsp. *staminea* (Bertol.) Nyman (*S. staminea* Bertol.) — Endem. C. S. Ap. - alpine pastures, Sirente, Gran Sasso!, M. di Mezzo, M. Grande, M. di Pizzoli, M. S. Franco, Piano delle Cinquemiglia, M. ti della Duchessa (Mauri & al. 1830 as "*S. multiflora*", Bertoloni 1833-54, Groves 1880, Matteucci & Martelli 1894, Zodda 1967 as "*S. roemerii* Friv.", Favarger 1973, Veri & Tammaro 1980 as "*S. roemerii*", Foggi & Ricceri 1993, Guarrera & Tammaro 1994, Tammaro 1995 as "*S. roemerii* Friv."), Majella (Tammaro & Veri 1975, Tammaro 1986a as "*S. roemerii*"), Simbruini! (Veri 1988 as "*S. roemerii*"), Velino (Lucchese & Lattanzi 1991 as "*S. roemerii* Friv."). According to Greuter (1995a) it is not specifically distinct.

Silene otites (L.) Wibel subsp. *otites* — arid meadows - C.

Silene vulgaris (Moench) Garcke subsp. *vulgaris* — arid meadows and glades - C.

Silene vulgaris subsp. *angustifolia* Hayek — arid meadows - C.

Silene vulgaris subsp. *glareosa* (Jord.) Marsd.-Jones & Turr — screes, Marsicano (Bassani 1992), M. Viglio!, Majella in Valle di S. Spirito (Fara S. Martino)!

Silene vulgaris subsp. *prostrata* (Gaudin) Schinz & Thell. — screes, Majella (Levier 1880, Feoli-Chiapella 1979-80), Sirente (Groves 1880 as "*S. alpina* Spr.", Veri & Tammaro 1980, Guarrera & Tammaro 1994), Gran Sasso (Bertoloni 1833-54 da Gussone as "*S. uniflora*", Pignatti 1982, Tammaro 1995), Velino (Lucchese & Lattanzi 1991, Petriccione 1993).

Silene vallesia L. subsp. *graminea* (Vis. ex Rchb.) Nyman (*S. graminea* Vis.) — montane stony meadows, Sirente (Groves 1880 as "*S. vallesia* L."), Majella, Gran Sasso (Tammaro 1986a), Dinter 1997), Parco Nazionale d'Abruzzo! (Petriccione 1986), M. Viglio!

Silene saxifraga L. — shady cliffs, Valle Oscura, Majella, Morrone, Meta, Gran Sasso (Gussone 1826, Mauri & al. 1830, Tenore 1831-42, Tenore & Gussone 1842, Cesati 1873, Jatta 1877, Chiosi 1975 from a specimen collected by Marchesetti, Furrer & Furnari 1960, Feoli & Feoli-Chiapella 1974, Tammaro 1986a), Velino (Avena &

Blasi 1974), Sirente (Veri & Tammaro 1980, Guarrera & Tammaro 1994), between "la Petogna" and Luco dei Marsi (Tammaro & al. 1995), M. Viglio!, Pizzo Deta near Rendingara!

Silene cfr. *parnassica* Boiss. & Spruner — cliffs - NC — At present the Apennine populations so far recorded under this binomial are referred to this taxon, but according to Greuter (1997b) they do not belong to it.

Silene multicaulis Guss. subsp. *multicaulis* — stony slopes, cliffs - C.

Silene acaulis (L.) Jacq. s.l. — highest parts of the cliff environments. Subsp. *cenisia* Vierh. has been reported; according to Foggi & Ricceri (1989) it is to be excluded from the Apennines, nevertheless it has been recently recorded from Majella (Tammaro 1986a), Velino (Lucchese & Lattanzi 1991, Petriccione 1993), Gran Sasso (Tammaro 1995).

Silene acaulis subsp. *bryoides* (Jord.) Nyman — highest parts of the cliff environments, main mountain groups (Foggi & Ricceri 1989, Conti 1995).

Silene armeria L. — stony meadows - NC.

Silene pusilla Waldst. & Kit. subsp. *pusilla* — shady and wet cliffs - C.

Silene coelirosa (L.) Godron — uncultivated land and arid pastures, the Abruzzo (Tenore 1831-42 as "*Lychnis coeli-rosa* Desr."), Canistro (Veri 1988), mouth of F. Sangro (Tammaro & al. 1996).

Silene pendula L. — calcareous screes, uncultivated land - NC.

Silene muscipula L. subsp. *muscipula* — fields, Velino (Martelli 1904). To be confirmed.

Silene cretica L. — fields, Vena Corvo near Teramo (Zodda 1953 from D'Amato).

Silene behen L. — surroundings of Scanno (Gravina 1812 as "*Cucubalus behen*"). Not found recently and worthy of confirmation.

Silene gallinyi Rechb. (*S. trinervia* Seb. & Mauri) — arid calcareous screes, Gole di Popoli (Tammaro 1971a).

Silene ciliata Pourr. subsp. *graefferi* (Guss.) Nyman — stony montane meadows - NC.

Silene colorata Poir. — coastal sands - C.

Silene canescens Ten. — coastal sands, it is reported, but probably because of confusion with *S. colorata*, area to be located.

Silene niceensis All. — coastal sands, Giulianova, Valle del Vomano (Zodda 1953).

Silene fuscata Link. ex Brot. — arid uncultivated land near the coast, Casalbordino (Tammaro & Pietrocola 1975), Fosso delle Farfalle!, Lentella!, near Vasto! (Conti & Manzi 1996), Marina di S. Salvo!

Silene nocturna L. — fields, arid uncultivated land - NC.

Silene neglecta Ten. [*S. nocturna* subsp. *neglecta* (Ten.) Arcang.] — fields, Majella (Tammaro 1986a).

Silene bellidifolia Juss. ex Jacq. — arid pastures, Grotta Imposta near Casoli! (Conti & Manzi 1996).

Silene gallica L. — uncultivated land, pastures - NC.

Silene conica L. — arid meadows - C.

Cucubalus baccifer L. [*Silene baccifera* (L.) Roth] — humid woods, surroundings of Scanno (Gravina 1812), Sirente (Groves 1880), Gole di Popoli (Tammaro 1971a), F. Aterno near Vittorito!, F. Vera!, F. Sangro near Ateleta! (Conti & al. 1990), Pietrasecca near the motorway crossing for Tagliacozzo (from a specimen collected by Pirone).

Drypis spinosa L. subsp. *spinosa* — screes - C.

Saponaria bellidifolia Sm. — cliffs, calcareous screes, Lago di Pettorano (Gravina 1812), Parco Nazionale d'Abruzzo! (Montelucci 1958, Anzalone & Bazzichelli 1960, Conti 1995), Sirente (Groves 1880, Guarerra & Tammaro 1994 from specimens collected by Profeta, Levier and Vaccari), Morrone, Majella!, Velino (Gussone 1826, Mauri & al. 1830, Tenore 1831-42, Tenore & Gussone 1842, Bertoloni 1833-54 from Orsini, Levier 1880, Abbate 1903, Montelucci 1958 from specimens collected by Sanguinetti and Levier in RO, Tammaro 1986a, Petriccione 1993), Gran Sasso! (Zodda 1942, Tammaro 1983c, Tammaro 1995), M. Genzana in the high Valle Marsolina!

Saponaria ocymoides L. — stony slopes, screes - C.

Saponaria officinalis L. — humid uncultivated land - C.

Vaccaria hispanica (Mill.) Rauschert s.l. — W. Asiat. (Archeophyta) — fields - NC.

Petrorrhagia saxifraga (L.) Link subsp. *saxifraga* — arid and stony slopes - CC.

Petrorrhagia dubia (Rafin.) G. López & Romo [*P. velutina* (Guss.) P. W. Ball & Heywood] — arid uncultivated land - NC.

Petrorrhagia prolifera (L.) P. W. Ball & Heywood — arid meadows - C.

Dianthus sylvestris Wulfen (s.l.) — arid meadows, stony slopes - C - a very variable

species; subsp. *longicaulis*, seems to be the most frequent in the lower altitudes, while the taxa occurring at high altitude could be referred to subsp. *sylvestris*. The discriminant characters, such as the puberulous stem and the apex of the epicalyx scales, not green-coloured, (subsp. *nodosus*) do not seem to be well defined and constant.

Dianthus monspessulanus L. — stony meadows - C - subsp. *marsicus* (Ten.) Novák, that Grande (1924b as "var. *marsicus* Ten.") has already put in synonymy with *D. monspessulanus* (sub "*D. monspeliacus*") has no systematic basis (Brilli-Cattarini pers. comm.).

Dianthus deltoides L. subsp. *deltoides* — meadows - C.

Dianthus armeria L. subsp. *armeria* — pastures - NC.

Dianthus barbatus L. subsp. *barbatus* — bushy pastures - NC.

Dianthus barbatus subsp. *compactus* (Kit.) Heuff. — bushy pastures - NC.

Dianthus ciliatus Guss. subsp. *ciliatus* — Ital-Illyr.(Amphiadriat.) - cliffs from 250 m to 950 m - NC.

Dianthus ferrugineus Mill. — Endem. S. Ap. - Morrone, Pizzoli (Mauri & al. 1830, Tenore 1831). There are no specimens of this species in Tenore and Gussone's herbaria (NAP) from the Abruzzo and its occurrence seems unlikely (Grande 1924b).

Dianthus ferrugineus subsp. *vulturius* (Guss. & Ten.) Tutin (*D. vulturius* Guss. & Ten.) — Endem. C. S. Ap. - arid meadows, scrub, Popoli (Pignatti 1982), Caramanico (Tammaro 1986a) and Capistrello (Tammaro & Visca 1987).

Dianthus carthusianorum L. (s.l.) — stony meadows - C - Most records have been referred to subsp. *tenorei* (Lacaita) Pignatti.

Velezia rigida L. — arid uncultivated land, Trasacco (Grande 1924b, Anzalone & Bazzichelli 1960 from a specimen collected by Grande).

Ceratophyllaceae

Ceratophyllum demersum L. subsp. *demersum* — running waters, Capo Pescara (Tammaro & al. 1987, Pirone & al. 1997), Filetto Lake!

Ceratophyllum submersum L. subsp. *submersum* — stagnant and flowing waters, Laghetto di Vetoio (Del Grosso & Pogliani 1976), Capo Pescara (Basile & al. 1970), Gole di Popoli (Tammaro 1971a). The plant's location at Capo Pescara has not been confirmed by Tammaro & al. (1987) and it is likely to be referred to the previous species.

Ranunculaceae

Helleborus foetidus L. — coppices and margins of woods - C.

Helleborus bocconei Ten. — Endem. Maritime Alps-Ap.-Si - coppices and margins of woods, Trasacco (Zanotti & Cristofolini 1994).

Helleborus multifidus Visiani — Amphiadriat. - M. S. Franco near Lago di Campotosto, Pietracamela along Rio Arno!, M. Corno, Porcinaro (Gran Sasso), from Poggio Valle to M. Tre Croci, Morrone! (Zanotti & Cristofolini 1994).

Helleborus niger L. — “luoghi selvatici” in the Parco Nazionale d'Abruzzo (Rovesti & Rovesti 1934), Gran Sasso and M. di Campli (Zodda 1967 for Gran Sasso from a specimen at Quartapelle herbarium and from Banti for the latter). There are no specimens in FI!, not recently found and to be confirmed.

Eranthis hyemalis (L.) Salisb. — fields - C.

Nigella damascena L. — fields, arid uncultivated land - C.

Trollius europaeus L. subsp. *europaeus* — glades in the upper part of the *Fagus sylvatica* woods, grassy terraces, Gran Sasso! (Gussone 1826, Tenore 1831-42, Bertoloni 1833-54 from Orsini, Fiori 1923-29, Lusina 1949, Zodda 1953, 1957, 1967), Pizzo di Sevo, Altopiano di Rivisondoli, Sirente (Groves 1880, Fiori 1923-29, Del Prete & al. 1980, Guarrera & Tammara 1994), M. Petroso! (Anzalone & Bazzichelli 1960, Bruno & Bazzichelli 1966, Bazzichelli & Furnari 1970) and M. Secine! (Manzi 1992a).

Actaea spicata L. — *Fagus sylvatica* woods - C.

Caltha palustris L. — marshy environments, Castelletta near Palena, Quarto di S. Chiara!, bed of F. Aventino, Rivisondoli and Piano delle Cinquemiglia, Pescocostanzo! (Gussone 1826, Tenore 1831-42, Tenore & Gussone 1842, Tammara & Visca 1987, Pirone 1986, 1987b), Campotosto! peat-bog (Cecchettani 1907, Marchetti 1936) and Campitelli near Alfedena! (Conti 1992c).

Aconitum lycoctonum L. subsp. *neapolitanum* (Ten.) Nyman (*A. lamarckii* Rchb.) — *Fagus sylvatica* wood glades - C.

Delphinium fissum Waldst. & Kit. subsp. *fissum* — *Fagus sylvatica* wood glades - C.

Delphinium halteratum Sm. — arid meadows - NC.

Delphinium pictum Willd. — recorded generally from the Abruzzo (Pignatti 1982). Tenore (1831-42) reports subsp. *requienii* (DC.) Arcang. which, according to Greuter & al. (1984-89), it is of doubtful taxonomic status.

Consolida ajacis (L.) Schur — fields and uncultivated land, Parco Nazionale d'Abruzzo at Camosciara (Anzalone & Bazzichelli 1960), Teramo province “coltivato, sfugge

talora alle colture" (Zodda 1953, 1967 as "*D. ajacis* L."), Velino (Lucchese & Lattanzi 1991).

Consolida regalis S. F. Gray subsp. *regalis* — (Archeophyta?) - fields - C.

Consolida regalis subsp. *paniculata* (Host) Soó — fields, Teramo province [Zodda 1967 as "*Delphinium consolida* var. *paniculatum* (Host)"], Velino (Lucchese & Lattanzi 1991).

Consolida pubescens (DC.) Soó — fields, Colleterotondo di Scanno (Tammaro & Visca 1987).

Anemone nemorosa L. — cool woods - NC.

Anemone trifolia L. — Intermesoli, Vallone tra i due Corni (Crugnola 1894 as "*A. baldensis*", Zodda 1953 from Di Giuseppe). There are no specimens in FI! and it is to be confirmed.

Anemone ranunculoides L. subsp. *ranunculoides* — *Fagus sylvatica* woods - NC.

Anemone apennina L. — woods up to 1600 m - C.

Anemone narcissifolia L. subsp. *narcissifolia* — high meadows, grassy terraces - NC.

Anemone coronaria L. — (Archeophyta) - fields - NC.

Anemone hortensis L. subsp. *hortensis* — arid meadows - CC.

Hepatica nobilis Schreb. — woods - CC.

Pulsatilla alpina (L.) Delarbre subsp. *alpina* — stony meadows at high altitudes, cool screes - C - Subsp. *millefoliata* Bertol., f. *macrantha* and f. *micrantha* Cortesi (Cortesi 1908) have been recorded from the Apennines.

Pulsatilla montana (Hoppe) Rchb. — arid meadows, Civitella Roveto (Veri 1988), Sirente in Valle Inserata (Guarrera & Tammaro 1994).

Clematis flammula L. — hedges, maquis up to 600-700 m - C - var. *caespitosa* Scop. has also been recorded.

Clematis vitalba L. — hedges, woods up to 1200-1300 m - CC.

Clematis recta L. — scrub and thermophilous woods, Majella! (Tenore 1831-42 as "*C. erecta*", Cesati 1873, Feoli-Chiapella 1979-80, Tammaro 1986a, Conti 1987, Dinter 1997), Morrone (Tammaro 1986a from a specimen collected by Pedicino), Montorio and along the road to Pietracamela (Zodda 1953 quotes Di Giuseppe), at Gravone!, Vallone Fossaceca! and generally from the Gran Sasso (Tammaro 1983c, Tammaro 1995).

Clematis viticella L. — hedges and cool woods especially on the plain, Montorio al Vomano, Civitella del Tronto, Penne (Zodda 1953), Pineta d'Avalos! (Tammamaro & Pirone 1981), Serranella on F. Sangro! (Pirone 1995d). The record from the surroundings of Scanno (Gravina 1812) is to be referred to *C. flammula* (Grande 1924b).

Adonis vernalis L. — cool pastures, Campo Imperatore (Fiori 1907), territory of Castelvecchio Calvisio! (Frattaroli 1996).

Adonis distorta Ten. — Endem. C. Ap. - pebbly areas at high altitude, Majella!, M. della Scala near Pizzoli (but need confirmation) (Mauri & al. 1830, Tenore 1831-42, Rigo 1877, Tammamaro 1986a), Gran Sasso!, Velino (Gussone 1826, Tenore 1831-42, Bertoloni 1833-54 from Gussone, Zodda 1953, 1957, Montelucci 1958, Petriccione 1993, Tammamaro 1995), Sirente (Groves 1880, Tammamaro 1971b, Guarrera & Tammamaro 1994). Distribution in Frattaroli & Frizzi (1988).

Adonis annua L. subsp. *annua* — fields, Trasacco, Villavallonga (Anzalone & Bazzichelli 1960 as "*A. annuus* L. var. *atrorubens* L."), Teramo, Val Vibrata (Zodda 1967 as "*A. annua* var. *atrorubens* L."), between Cappelle and Massa d'Albe (Avezzano) (Steinberg 1971), S. Demetrio, S. Pio-Navelli (Tammamaro 1995). "Subsp. *cupaniana* (Guss.) C. Steinb." is reported from the following localities: Teramo, L'Aquila province (Steinberg 1971), Majella (Tammamaro 1986a), Velino (Lucchese & Lattanzi 1991), Sirente (Guarrera & Tammamaro 1994). Subsp. *cupaniana* is not worthy of recognition (Heyn & Pazy 1989).

Adonis flammea Jacq. subsp. *flammea* — fields, Teramo, L'Aquila province [Zodda 1953, 1967 as "*A. annua* var. *flammeus* (Jacq.)", Steinberg 1971], Majella (Tammamaro 1986a), Velino (Lucchese & Lattanzi 1991).

Adonis flammea Jacq. subsp. *cortiana* (Jacq.) Steinberg — fields, Colonnella, near Massa d'Albe, M. Coccossello, Le Forme, L'Aquila, between Cappelle and Massa d'Alba, Valle di Sevice (Steinberg 1971, Lucchese & Lattanzi 1991), Conca Aquilana, S. Demetrio, Navelli (Tammamaro 1987b, 1995). Most Floras do not recognize the subspecies and they need further systematic investigation.

Adonis aestivalis L. — Pizzoli (Bertoloni 1833-54 from Cecchetto), near L'Aquila (Abbate 1903). Steinberg (1971) does not report it from the Abruzzo. To be confirmed.

Adonis microcarpa DC. — Teramo province at Mosciano S. Angelo and M. Giove [Zodda 1953, 1964, 1967 as "*A. annua* var. *microcarpus* (DC.)"], Gole di Popoli (Tammamaro 1971a). Steinberg (1971) does not report it from the Abruzzo.

Ranunculus velutinus Ten. — humid meadows - NC.

Ranunculus polyanthemus L. subsp. *polyanthemoides* (Boreau) Ahlfvengren (*R. polyanthemoides* Boreau) — humid meadows, Pietracamela (Zodda 1959c as "*R. nemorosus* DC. var. *polyanthemoides* Bor.", 1967 as "*R. polyanthemus* var.

polyanthemoides Bor.”), Majella (Tammaro 1986a), Velino (Lucchese & Lattanzi 1991), Sirente (Guarrera & Tammaro 1994). A record from the Parco Nazionale d’Abruzzo as “*R. polyanthemoides*” (Anzalone & Bazzichelli 1960) has perhaps to be referred to this taxon.

Ranunculus polyanthemoides L. subsp. *nemorosus* (DC.) Schübler & Martens (*R. nemorosus* DC.; *R. tuberosus* Lapeyr.) — In Teramo province “*R. polyanthemoides* L. var. *nemorosus* (DC.)” is reported as common (Zodda 1953, 1961a, 1965a, 1965b).

Ranunculus serpens Schrank s.l. — peaty humid meadows, Castel di Sangro, La Brionna (Tammaro & Visca 1987).

Ranunculus repens L. — humid meadows, water courses - C.

Ranunculus lanuginosus L. — woods and glades - C.

Ranunculus acris L. subsp. *acris* — humid meadows - NC.

Ranunculus acris L. subsp. *friesianus* (Jord.) Syme. — humid meadows, Sirente (Guarrera & Tammaro 1994).

Ranunculus sartorianus Boiss. & Heldr. — Amphiatr. - montane and subalpine pastures, Velino [Montelucci 1958 from Sommier, Lucchese & Lattanzi 1991 as “*R. pollinensis* (Terr.) Chiov.”], Parco Nazionale d’Abruzzo! [Anzalone & Bazzichelli 1960 as “*R. montanus* var. *sartorianus* (Boiss. & Heldr.)”], M. di Campli as “*R. sartorianus* B. & M.” (Zodda 1967 from Orsini), Majella! [Tammaro 1986a as “*R. pollinensis* (Terr.) Chiov.”] and Gran Sasso! (Barbagallo & Guglielmo 1975a as “*R. sartorianus* Boiss. & Heldr. in Boiss.”). In *R. montanus* group, also *R. pollinensis* (Terr.) Chiov. and *R. apenninus* Chiov., having doubtful systematic value, were reported.

Ranunculus oreophilus M. Bieb. — subalpine rocky pastures, Teramo province (Lüdi 1943 as “*R. breyninus*”, Zodda 1967), Majella!, Gran Sasso! (Bruno & Furnari 1966, Tammaro 1986a, 1995 as “*R. breyninus* Crantz”), Simbruini near Cappadocia (Veri 1988), Sirente (Guarrera & Tammaro 1994 as “*R. breyninus* Crantz”), Velino (Blasi & al. 1990, Lucchese & Lattanzi 1991, Petriccione 1993), Parco Nazionale d’Abruzzo! (Bruno & Bazzichelli 1966, Conti & Minutillo 1996), M. Genzana near the top!

Ranunculus neapolitanus Ten. — humid meadows - NC.

Ranunculus bulbosus L. subsp. *bulbosus* — meadows and uncultivated land - C.

Ranunculus bulbosus L. subsp. *aleae* (Willk.) Rouy & Fouc. — meadows and uncultivated land - C.

Ranunculus sardous Crantz — humid meadows - C.

Ranunculus trilobus Desf. — humid environments, Teramo, bed of F. Tordino [Zodda 1965b, 1967 as "*R. sardous* Crantz var. *trilobus* (Desf.)"].

Ranunculus muricatus L. — humid meadows - NC.

Ranunculus arvensis L. — fields - C.

Ranunculus chius DC. — humid meadows, Teramo province at Poggio Valle di Torricella Sicura [Zodda 1953 as "*R. parviflorus* L. var. *chius* (DC.)"].

Ranunculus monspeliacus L. subsp. *monspeliacus* — pastures, Velino (Tenore 1811-38, Petriccione 1993), Sirente (Guarrera & Tammaro 1994), Parco Nazionale d'Abruzzo! (Falqui 1899, Vaccari & Wilczek 1940, Anzalone & Bazzichelli 1960 as "*R. monspeliacus* var. *angustilobus* DC.", Conti 1995) and Majella (Tammaro 1986a).

Ranunculus illyricus L. — arid pastures - NC.

Ranunculus millefoliatus Vahl — arid pastures - C.

Ranunculus garganicus Ten. — arid pastures - NC.

Ranunculus marsicus Guss. & Ten. — Endem. C. Ap. - humid meadows in the karst plains, Majella, Roccaraso, Rivisondoli, Piano delle Cinquemiglia!, Voltigno!, Parco Nazionale d'Abruzzo! (Tenore 1831-42, Tenore & Gussone 1842 as "*R. cassubicus* var. *marsicus* Ten. & Guss.", Tammaro & Pirone 1980, Sgorbati & al. 1989, Conti 1992c, 1995), Altopiano delle Rocche!, Polledrara (Secine)! Some topodemes with different degree of ploidy have been found (Sgorbati & al. 1989).

Ranunculus ficaria L. subsp. *ficaria* — cool pastures, humid uncultivated areas, fields - C.

Ranunculus ficaria subsp. *bulbilifer* Lambinon — fields, uncultivated land, glades, margins of woods, Velino (Lucchese & Lattanzi 1991).

Ranunculus ficaria subsp. *calthifolius* (Rchb.) Arcang. [*R. ficaria* subsp. *nudicaulis* (Kerner) Hegl] — humid meadows, humid uncultivated land, fields, Torricella Sicura, Bosco Martese, Cortino, Pietracamela (Zodda 1953, 1967), Sirente (Tammaro & al. 1974, Guarrera & Tammaro 1994).

Ranunculus ficaria subsp. *ficariiformis* (F. W. Schultz) Rouy & Fouc. (*R. ficariiformis*) — cool pastures, humid uncultivated land, fields - PC.

Ranunculus sceleratus L. — humid environments, surroundings of Scanno (Gravina 1812). To be confirmed.

Ranunculus thora L. — stony slopes - NC.

Ranunculus brevifolius Ten. — pebbly areas and crests, main mountain groups (is absent from M.ti della Laga).

Ranunculus magellensis Ten. — Endem. C. Ap. - grassy terraces and pebbly areas at the cliff feet and exposed to a prolonged snow, main mountain groups (is absent from M.ti della Laga). In Tutin & al. (1993) it is considered as a synonym of "*R. crenatus*", out on the contrary, it is clearly distinct from it (Kunz & Reichstein 1966, Müller & Baltisberger 1984, Baltisberger 1994, Baltisberger & al. 1996, personal observations on specimens in B!).

Ranunculus aconitifolius L. — Pizzo di Sevo, Intermesoli (Mauri & al. 1830, Tenore 1831-42, Bertoloni 1833-54 from Orsini, Zodda 1953, 1967) and Simbruini with no indication about its precise locality (Veri 1988 from Furnari). The record from Pizzo di Sevo is to be referred to *R. platanifolius* and the report from Gran Sasso seems unlikely (Grande 1924b).

Ranunculus platanifolius L. — woods, subalpine scrub, Bosco Martese!, M. Intermesoli, Pizzo di Sevo and Pietracamela [Gussone 1826, Grande 1924b, Zodda 1953, 1967 as "*R. aconitifolius* var. *platanifolius* (L.)"].

Ranunculus seguieri Vill. subsp. *seguieri* — pebbly slopes, Gran Sasso! and Majella! (Mauri & al. 1830, Tenore 1831-42, Cesati 1873, Crugnola 1894, Zodda 1953, 1967 from Gussone, Schouw, Crugnola, Abbate, Tammaro 1986a). Var. *praetutianus* Pamp. (Pampanini 1928) is reported from the C. Apennines.

Ranunculus flammula L. — humid meadows, coast of Pescara (Tenore 1831-42) where it is already extinct (Tammaro & Pirone 1979), Campo Imperatore! (Tammaro 1995), Campotosto!, Voltigno! (Cecchettani 1907, Conti & al. in press).

Ranunculus lingua L. — "nei posti paludosi e lungo l'Aterno" near Sirente (Groves 1880) where it has not been confirmed recently.

Ranunculus ophioglossifolius Vill. — humid environments, Giulianova, Tortoreto, Montepagano, Teramo, Miano (Zodda 1953 from Di Giuseppe), Bosco di Atessa! (Conti & Pirone 1992).

Ranunculus lateriflorus DC. — marshy environments, Piano delle Cinquemiglia below Rivisondoli (Fiori 1923-29), Quarto del Barone and Quarto di S. Chiara (Pedrotti & al. 1976).

Ranunculus gramineus L. — pastures, Gran Sasso! (Tammaro 1983c, 1995), Velino (Lucchese & Lattanzi 1991, Petriccione 1993), Sirente (Tammaro & Veri 1971, Guarrera & Tammaro 1994), Parco Nazionale d'Abruzzo! (Conti 1995), Salviano!

Ranunculus aquatilis L. — sluggish waters, Val di Foro (Tammaro 1986a), Lago di Filetto (Buchwald 1995), Lago di Ortucchio (Tammaro & al 1995), F. Pescara at Popoli (Pirone in press). It is reported also from Teramo province but it has probably disappeared after drainage works (Zodda 1967 from Di Giuseppe).

Ranunculus trichophyllus Chaix subsp. *trichophyllus* — stagnant and sluggish waters - NC.

Ranunculus circinatus Sibth. — Sirente, "nei posti paludosi e lungo l'Aterno" (Groves 1880 as *Batrachium divaricatum* Sch.) where it has not been confirmed recently.

Ranunculus fluitans Lam. — F. Sangro (Tenore 1831-42 as "*R. peucedanoides* Desf.") where it has not been confirmed recently.

Ceratocephala falcata (L.) Pers. — fields, near L'Aquila (Tenore 1831-42) Aielli (Fiori 1923-29), Parco Nazionale d'Abruzzo (Grande 1904), Piano di Navelli, between Ovindoli and Celano, Val d'Arano in M. Sirente, Velino over Massa d'Albe, near L'Aquila and Avezzano, Valle dell'Aterno, near S. Demetrio nei Vestini [Tammaro 1969, Guarrera & Tammaro 1994 as "*C. falcata* subsp. *incurva* (Steven) Chrték & Chrtkova", Tammaro 1995 as "*C. falcata* subsp. *incurva* (Steven) Chrték & Chrtkova"]].

Myosurus minimus L. — humid muds, Rivisondoli (Grande 1922 from a specimen collected by Gussone). Not found recently and to be confirmed. Although it is undoubtedly rare in C. Italy (Conti 1992b), it can seem rarer than it is because, being a not very visible ephemeral plant, it is often overlooked.

Aquilegia vulgaris L. (sensu Auct. Fl. Ital.) — glades and margins of woods - C.

Aquilegia viscosa Gouan — stony slopes, Parco Nazionale d'Abruzzo at Camosciara (Pignatti 1982) and in M. Marsicano (Petriccione 1986, Dinter 1997), Velino (Petriccione 1993).

Aquilegia magellensis Huter, Porta & Rigo — Endem. Abr. - wet calcareous cliffs, Majella! [Tenore 1831-42 as "*A. viscosa*", Bertoloni 1833-54 as "*A. pyrenaica*", Porta 1879, Feoli-Chiapella 1979-80 as "*A. ottonis* Orph.", Tammaro 1986a as "*A. ottonis* Orph. subsp. *magellensis* (Huter, Porta & Rigo) Ciferri & Giacomini"], Parco Nazionale d'Abruzzo! [Anzalone & Bazzichelli 1960 as "*A. pyrenaica* DC. var. *ottonis* (Orph.)"; Bazzichelli & Furnari 1970 as "*A. ottonis*"] and Simbruini! (Conti & al. 1990).

Aquilegia atrata Koch — Sirente (Groves 1880), Gran Sasso (Zodda 1967 as "*A. vulgaris* L. var. *atroviolacea* Ave") and Majella (Feoli-Chiapella 1979-80, Tammaro 1986a). Unlikely and to be confirmed.

Thalictrum aquilegiifolium L. subsp. *aquilegiifolium* — *Fagus sylvatica* wood glades - C.

Thalictrum foetidum L. — screes, Majella! (Gussone 1826, Mauri & al. 1830, Tenore 1831-42, Bertoloni 1833-54 from Gussone, Conti 1987), Sirente (Groves 1880, Guarrera & Tammaro 1994).

Thalictrum minus L. subsp. *minus* — stony glades, Majella! (Tenore 1831-42 as "*Th. minus*", Conti 1986), Parco Nazionale d'Abruzzo at Villavallelonga! [Anzalone

& Bazzichelli 1960 as "*Th. foetidum* var. *minus* (L.)" from a specimen collected by Grande, Conti 1987], Velino! (Lucchese & Lattanzi 1991, Petriccione 1993).

Thalictrum simplex L. subsp. ***simplex*** — humid meadows especially in the karst plains, Piano delle Cinquemiglia (Fiori 1923-29), Parco Nazionale d'Abruzzo! (Anzalone & Bazzichelli 1960, Conti & Pirone 1986b), Quarto di S. Chiara! (Conti & al. 1990), Altopiano delle Rocche in Val d'Arano!

Thalictrum lucidum L. [*Th. morisonii* C. C. Gmel. subsp. *mediterraneum* (Jord.) P. W. Ball; *Th. exaltatum* Gaudin subsp. *mediterraneum* (Jordan) P. Fournier] — riversides and ditches - NC.

Thalictrum flavum L. — Sirente (Guarrera & Tammaro 1994), Gran Sasso (Tammaro 1995), M.ti della Laga near Poggio Cancelli (Gubellini pers. comm.). The real distribution of this species is to be verified since it is often confused with others belonging to the same group.

Paeoniaceae

Paeonia officinalis L. subsp. ***villosa*** (Huth) Cullen & Heywood — *Fagus sylvatica* wood glades, cool pastures, surroundings of Scanno at Fonte della Fascia (Gravina 1812), Majella!, Morrone!, M. dei Fiori (Tenore 1811-38, Tenore 1831-42 as "*P. paradoxa*", Tenore & Gussone 1842 as "*P. pubens*", Cesati 1873 as "*P. pubens*", Feoli-Chiapella 1979-80, Conti 1986), Gran Sasso! (Lusina 1949, Bazzichelli 1960, Zodda 1967, Chiosi 1975 from a specimen collected by Marchesetti, Barbagallo & Guglielmo 1975a, Tammaro 1995, Dinter 1997), Parco Nazionale d'Abruzzo! (D'Andrea 1982, Bassani 1992), Sirente (Guarrera & Tammaro 1994), Simbruini (Tammaro & al. 1974, Veri 1988), Velino (Petriccione 1993). The records of *P. peregrina* are to be referred to this taxon (Bernardo & al. 1995).

Berberidaceae

Berberis vulgaris L. subsp. ***vulgaris*** — margins of woods, scrub, main mountain groups (Pirone 1995d).

Mahonia aquifolium (Pursh) Nutt. — N. Americ. - cultivated - "Teramo, avanzo di antiche colture" (Zodda 1953, 1967).

Guttiferae

Hypericum hircinum L. — Teramo province with no indication of locality (Zodda 1945 from a specimen collected by Quartapelle), Valle del Mavone (Crugnola 1900, Zodda 1953 from a specimen collected by Petrilli). There are no specimens in FI! and according to Pignatti (1982) its occurrence in the Teramo province is doubtful.

Hypericum androsaemum L. — cool woods from sea level to 1400 m, Teramo, Bosco Martese! (Abbate 1903, Zodda 1953, 1959b), Gran Sasso! (Tammaro 1983c), Valle del Castellano!, Bosco del Chiarino near Lago di Provvidenza!, Abetina di Rosello!,

Vallone d'Angri!, Fosso di Vallevò! (Pirone 1995d), Gole di Celano (Dinter 1996), Vallone Fossaceca!, Bosco di Oricola! According to Viegi & al. (1990) it is a naturalized adventitious species.

Hypericum calycinum L. — naturalized, Teramo (Abbate 1903, Fiori & Paoletti 1896-1908), Colle Casoli, near Atri (Zodda 1953 from D'Amato), L'Aquila (Viegi & al. 1990 from a specimen collected by Petrarca).

Hypericum hirsutum L. — humid meadows - C.

Hypericum hyssopifolium Chaix — humid stony slopes, Parco Nazionale d'Abruzzo (Anzalone & Bazzichelli 1960 as "*H. hyssopifolium* Vill."), M.ti della Laga and Le Moricane (Parlatore 1848-96 as "*H. hyssopifolium* Vill.", Zodda 1953).

Hypericum montanum L. — open woods - C.

Hypericum perfoliatum L. — scrub, cool grassy land - C.

Hypericum richeri Vill. subsp. *richeri* — stony slopes, pastures, scrub, main mountain groups.

Hypericum australe Ten. — M. Brancastello [Zodda 1953 as "*H. montanum* var. *australe* (Ten.)"].

Hypericum tetrapterum Fr. — marshy environments, banks - C.

Hypericum maculatum Crantz — Teramo and Pietracamela (Zodda 1953 as "*H. quadrangulum* var. *maculatum* Crantz"). According to the distribution of this species in Italy (probably only in the alpine area), the records from the Abruzzo are unlikely (Pignatti 1982).

Hypericum perforatum L. [*H. perforatum* L. subsp. *veronense* (Schrank) A. Fröhl.] — fields, arid meadows - C.

Lauraceae

Laurus nobilis L. — cool deep valleys between the Mediterranean and supramediterranean horizon - subspontaneous at Penne at Colle Romano (Zodda 1953), Tossicia, Gabiano di Civitella del Tronto near T. Marino (Zodda 1967), Pineta d'Avalos! (Tammaro & Pirone 1981), F. Osento, F. Verde, F. Aventino, Gole del Salinello!, Fosso Vallevò!, Fosso Valle Grande! and adjacent deep valleys (Rocca S. Giovanni, S. Vito Chietino)! (Manzi 1992b, Pirone 1995d).

Papaveraceae

Papaver dubium L. — fields - NC.

Papaver rhoeas L. subsp. *rhoeas* [*P. rhoeas* subsp. *strigosum* (Boenn.) Soó] — fields - CC.

Papaver somniferum L. — uncultivated land, low hilly areas and Fucino (Viegi & al. 1990).

Papaver hybridum L. — fields - C.

Papaver apulum Ten. — fields, between Roseto and Montepagano, Pineto at Torre di Cerrano [Zodda 1953 as "*P. hybridum* var. *apulum* (Ten.)"].

Papaver alpinum L. subsp. *ernesti-mayeri* (Markgr.) Wraber — calcareous screes at high altitude, Majella! [Tenore 1831-42 as "*P. alpinum albiflorum*" and as "*P. pyrenaicum* Willd.", Bertoloni 1833-54 from Gussone as "*P. pyrenaicum*", Tammaro 1986a), Gran Sasso! (Tenore 1831-42 as "*P. pyrenaicum* Willd.", Bertoloni 1833-54 from Orsini and Gussone as "*P. pyrenaicum*", Furrer & Furnari 1960, Bazzichelli 1960, Zodda 1953, 1961b, 1967 as "*P. alpinum* var. *pyrenaicum* (W.)", Chiosi 1975 from a specimen collected by Marchesetti as "*P. alpinum* var. *pyrenaicum*", Tammaro 1995 as "*P. jolicum* E. Mayer & Merxm."), Velino [Tenore 1831-42 as "*P. pyrenaicum* Willd."; Bertoloni 1833-54 from Orsini as "*P. pyrenaicum* var. *beta*", Montelucci 1958 as "*P. alpinum* L. subsp. *pyrenaicum* (W.)", Lucchese & Lattanzi 1991, Petriccione 1993 as "*P. jolicum*"], Sirente (Guarrera & Tammaro 1994 as "*P. jolicum* E. Mayer & Merxm."), Parco Nazionale d'Abruzzo on M. Marsicano! (Petriccione 1986 as "*P. jolicum* E. Mayer & Merxm."). The records of *P. degenii* (Urum. & Jáv.) Kuzmanov from the Abruzzo have been referred to this taxon according to Kadereit (1990).

Glaucium flavum Crantz — coastal ruins and slopes, pebbly beaches - NC.

Glaucium corniculatum (L.) J. H. Rudolph — fields and sandy places of the Teramo province (Crugnola 1900), "Base del Gran Sasso" (Zodda 1953 from Petrilli).

Chelidonium majus L. — ruderal environments, walls - CC.

Corydalis cava (L.) Schweigg. & Körte subsp. *cava* — woods - C.

Corydalis intermedia (L.) Méral — woods, Abruzzo (Pignatti 1982), Velino (Petriccione 1993).

Corydalis pumila (Host) Rchb. — woods, Parco Nazionale d'Abruzzo! as "*C. solida* SW. var. *pumila* (Rchb.)" (Grande 1904), Gran Sasso (Frizzi 1986b), M. dei Fiori (Brilli-Cattarini & Gubellini 1987c).

Corydalis solida (L.) Clairv. subsp. *solida* — woods - NC.

Corydalis solida subsp. *densiflora* (C. Presl.) Arcang. — Corno Piccolo at Castellano (Zodda 1957 as "*C. solida* var. *densiflora*"); to be confirmed (Pignatti 1982).

Pseudofumaria alba (Mill.) Lidén subsp. *alba* (*Corydalis ochroleuca* Auct.) — Endem. Illyrian-Ad. - stony slopes and shady screes at the feet of the mountains, Majella! (Tenore 1831-42 as "*C. capnoides*", Feoli-Chiapella 1979-80 as "*C. ochroleuca*", Tammaro 1986a as "*C. ochroleuca*"), Parco Nazionale d'Abruzzo! [Tenore 1831-42

as "*Fumaria lutea* L.", Tenore & Gussone 1842, Falqui 1899, Vaccari & Wilczek 1940 as "*C. lutea*", Anzalone & Bazzichelli 1960 as "*C. lutea* DC. var. *ochroleuca* (Koch.)", Conti 1995], Gole di Celano! (Guarrera & Tammara 1994), Velino (Lucchese & Lattanzi 1991, Petriccione 1993).

Fumaria agraria Lag. — uncultivated land, ruderal environments, Teramo as "*F. capreolata* var. *agraria* (Lag.)" (Zodda 1953).

Fumaria capreolata L. subsp. *capreolata* — fields, uncultivated land - CC.

Fumaria densiflora DC. — ruderal environments, fields - C.

Fumaria officinalis L. subsp. *officinalis* — fields, uncultivated land, ruderal environments - CC.

Fumaria officinalis subsp. *wirtgenii* (Koch) Sell — uncultivated land, Teramo (Zodda 1967).

Fumaria vaillantii Loisel. — fields, uncultivated land, Colli, Velino, Chieti (Mauri & al. 1830, Tenore 1831-42, Cesati 1873, Lucchese & Lattanzi 1991).

Fumaria parviflora Lam. — fields - C.

Capparidaceae

Capparis spinosa L. (incl. *C. ovata* Desf.) — cliffs, old walls, coast and hill belt (Pirone 1985d).

Cruciferae

Sisymbrium irio L. — ruderal environments - C.

Sisymbrium austriacum Jacq. (s.l.) — ruderal environments, Majella (Tenore 1831-42).
Not found recently. To be confirmed.

Sisymbrium altissimum L. — ruderal environments - NC.

Sisymbrium orientale L. subsp. *orientale* — ruderal environments - NC.

Sisymbrium polyceratium L. — ruderal environments - NC.

Sisymbrium officinale (L.) Scop. — ruderal environments - C.

Descurainia sophia (L.) Webb ex Prantl — ruderal environments - NC.

Alliaria petiolata (M. Bieb.) Cavara & Grande — ruderal environments - CC.

Arabidopsis thaliana (L.) Heynh. — fields, uncultivated land - C.

Myagrurn perfoliatum L. — S. W. Asiat. - naturalized, C (Viegi & al. 1990).

Isatis allionii P. W. Ball. — Near endem. - screes, main mountain groups.

Isatis tinctoria L. subsp. *tinctoria* — naturalized (?), arid uncultivated land - C (Viegi & al., 1990).

Bunias erucago L. — ruderal environments, uncultivated land - C.

Erysimum cheiranthoides L. — humid meadows, Pietracamela (Zodda 1953, 1967), Prati del Sirente near Rovere where it is regarded as doubtfully adventitious (Guarrera & al. 1995), Altopiano delle Rocche in natural environments in Val d'Arano!

Erysimum cheiri (L.) Crantz — naturalized, walls - C (Viegi & al. 1990).

Erysimum majellense Polatschek — Endem. C. S. Ap. - stony slopes, Gran Sasso, Majella, Morrone, M. d'Ocre, near S. Potito, near Sora at the boundaries of Abruzzo, Gole di S. Venanzio (Polatschek 1974), Sirente (Guarrera & Tammara 1994), Velino (Lucchese & Lattanzi 1991, Petriccione 1993). Pittioni (W) collected the type of the species between Majelletta and M. Amaro (Polatschek 1974).

Erysimum pseudorhaeticum Polatschek — Endem. N. C. S. Ap. - stony slopes and stony pastures - C - The species of the *E. sylvestre* group are very variable and they need further systematic investigation as pointed out by Favarger & Goodhue (1977).

Hesperis laciniata All. subsp. *laciniata* — stony slopes, screes - NC.

Hesperis matronalis L. subsp. *matronalis* — cool *Fagus sylvatica* woods at their lower limit, on rocky substratum - NC.

Malcolmia orsiniana (Ten.) Ten. subsp. *orsiniana* — Oroph. Apenn.-Dinaric (Amphiadriatic) — calcareous cliffs, Majella (Rigo 1877, Levier 1880, Feoli-Chiapella 1979-80, Tammara 1986a) and Gran Sasso (Mauri & al. 1830 as "*Hesperis orsiniana*", Tenore 1831-42, Bertoloni 1833-54 from Orsini and Mauri, Parlatore 1848-96 as "*Matthiola orsiniana*", Villani 1921, Zodda 1953). *M. ramosissima* (Desf.) Thell. is reported from Orfento (Villani 1921 as "*M. parviflora* DC."), but probably erroneously because it is a species typical of the coasts; similarly, according to Zodda (1953), Di Giuseppe's records from Giulianova and Montepagano are erroneous.

Maresia nana (DC.) Batt. — sandy coastal habitats, Pineto (Zodda 1967 as "*Malcolmia confusa* Bss.") where it seems to be extinct (Pirone & Conti 1996).

Matthiola incana (L.) R. Br. subsp. *incana* — old walls in the coastal belt - naturalized - NC.

Matthiola incana subsp. *rupestris* (Rafin.) Nyman — doubtfully reported from the Abruzzo (Jalas & Suominen 1994).

Matthiola fruticulosa (L.) Maire subsp. *fruticulosa* — stony slopes - NC - According to Tammaro (1985a) it is to be referred to *Matthiola sicula* (P. Conti) Tammaro. But some exsiccata observed cannot be included in Tammaro's description (1985a). This taxon, as well as the following, needs further investigation.

Matthiola fruticulosa subsp. *valesiaca* (Gay ex Gaudin) P. W. Ball [incl. *M. italica* (P. Conti) Tammaro] — stony slopes, Gran Sasso!, Velino!, Sirente, Simbruini and Majella (Tammaro 1985a, 1986a, Lucchese & Lattanzi 1991).

Barbarea vulgaris R. Br. subsp. *vulgaris* — humid environments - C.

Barbarea vulgaris subsp. *arcuata* (Opiz) Hayek — humid environments, near Teramo [Zodda 1967 as "*B. vulgaris* var. *arcuata* (Rchb.)"]. This taxon is of doubtful taxonomic status (Greuter & al. 1984-89).

Barbarea stricta Andr. — humid environments, Piano Maggiore di Valle Castellana [Zodda 1965, 1967 as "*B. vulgaris* var. *stricta* (Fr.)"], Villetta Barrea [Anzalone & Bazzichelli 1960 as "*B. vulgaris* R.Br. *stricta* (Fr.) (Andrz.)"], Gole di Popoli (Tammaro 1971a).

Barbarea verna (Mill.) Asch. — humid environments, Abruzzo as "*B. praecox*" (Tenore 1831-42, Jalas & Suominen 1994).

Barbarea bracteosa Guss. — humid environments - C.

Rorippa amphibia (L.) Besser — ditches, watercourses, Sirente as "*Nasturtium amphibium*" (Parlatore 1848-96 from Groves), Gole di Popoli (Tammaro 1971a), Lago di Ortucchio and ditches of Fucino (Tammaro & al. 1995).

Rorippa sylvestris (L.) Besser subsp. *sylvestris* — humid environments - C.

Rorippa palustris (L.) Besser — humid environments, Abruzzo (Tenore 1831-42 as "*N. palustre* DC."), Castel di Sangro (Bertoloni 1833-54 from Gussone as "*Nasturtium palustre* DC."), territory of Villavallelonga (Grande 1904 as "*Nasturtium palustre* DC."), Lago di Ortucchio (Tammaro & al. 1995), Piano di Pescocostanzo-Rivisondoli (Buchwald 1995).

Nasturtium officinale R. Br. — sources, riversides - C.

Cardamine bulbifera (L.) Crantz — *Fagus sylvatica* woods - C.

Cardamine heptaphylla (Vill.) O. E. Schulz — *Fagus sylvatica* woods - NC.

Cardamine kitaibelii Bech. — *Fagus sylvatica* woods - C.

Cardamine enneaphylos (L.) Crantz — *Fagus sylvatica* woods - C.

Cardamine amara L. (s.l.) — humid environments, Gran Sasso, Arsita, M. di Pizzoli,

Majella, Morrone (Mauri & al. 1830, Tenore 1831-42, Parlatore 1848-96, Zodda 1967), Gole di Popoli (Tammaro 1971a), Carsoli (Veri 1988), Capo Pescara (Pirone & al. 1997).

Cardamine amara subsp. *grandifolia* Arcang. — Endem? - humid environments, Gran Sasso (Zodda 1967 from Orsini, Tenore and Crugnola, Tammaro, 1995) and Majella (Tammaro 1986a). Perhaps the reports from the Parco Nazionale d'Abruzzo (Conti 1995 as "*C. raphanifolia* Pourr. cfr. subsp. *acris* (Griseb.) O. E. Schulz") should be referred here.

Cardamine pratensis L. subsp. *pratensis* — humid meadows, Abruzzo Mts (Tenore 1831-42), M.ti di Pizzoli, Arsita (Mauri & al. 1830), Gole di Popoli (Tammaro 1971a).

Cardamine pratensis subsp. *granulosa* (All.) Arcang. (*C. granulosa* All.) — Endem. It. — humid meadows, Gran Sasso, Lago di Campotosto! [Fiori 1929, Zodda 1953, 1967 as "*C. pratensis* var. *granulosa* (All.)"].

Cardamine resedifolia L. — Majella in Valle dell'Orfento, Vado di S. Antonio (Cesati 1873 as "*C. resedifolia* var. *heterophylla* Sol.", Parlatore 1848-96 from Cesati and Levier, Tammaro 1986a from a specimen collected by Levier).

Cardamine monteluccii Brilli Catt. & Gubellini — Endem? C. S. Ap.-Si - screes within scrub with dominant *Ostrya carpinifolia*, Majella in Vallone di Fara S. Martino! (Conti 1987). For its description and distribution see Brilli-Cattarini & Gubellini (1986a).

Cardamine graeca L. — stony slopes in mixed woods and low *Fagus sylvatica* woods - C.

Cardamine chelidonia L. — Near endem. - *Fagus sylvatica* woods and cool woods - C.

Cardamine parviflora L. — humid meadows, Piani di Ovindoli (Guarrera & Tammaro 1994).

Cardamine impatiens L. — humid shady areas - C.

Cardamine flexuosa With. — Abruzzo (Majella?) (Jalas & Suominen 1994).

Cardamine hirsuta L. — ruderal environments, scrub - C.

Turritis glabra L. [incl. *T. pseudoturritis* (Boiss. & Heldr.) Velen.] — woods - C.

Arabis brassica (Leers) Rauschert — *Fagus sylvatica* woods, scrub, hedges, Sirente (Groves 1880 as "*A. brassicaeformis* Wallroin."), Gran Sasso [Barbagallo & Guglielmo 1975a as "*A. pauciflora* (Grimm) Garcke"], Velino! (Lucchese & Lattanzi 1991), Valle di Fonte d'Appia!, Valle dell'Inferno! (Conti & Minutillo 1996), Serra Lunga near Collelongo (Scoppola & Modena 1997).

Arabis sagittata (Bertol.) DC. — arid meadows, hedges, open woods - C.

Arabis hirsuta (L.) Scop. — stony slopes, scrub - C.

Arabis ciliata Clairv. — snowbed meadows, humid pastures, Velino (Lucchese & Lattanzi 1991).

Arabis surculosa A. Terracc. [*A. serpillifolia* Vill. subsp. *nivalis* (Guss.) B. M. G. Jones] — Oroph. S. E. Europ. (Amphiadriat.) - snowbed meadows - NC.

Arabis collina Ten. — cliffs, walls, scrub - C.

Arabis rosea DC. — cliffs, walls, Teramo province, Gran Sasso (Zodda 1967, Tammaro 1995), Parco Nazionale d'Abruzzo! [Grande 1924b; Anzalone & Bazzichelli 1960 as "*A. muralis* Bert. var. *rosea* (DC.)"], Majella! (Cesati 1873, Tammaro 1986a), Rosello!

Arabis turrita L. — stony and shady scrub - C.

Arabis auriculata Lam. (*A. recta* Vill.) — stony meadows, Velino, M. di Pizzoli, Majella (Mauri & al. 1830, Cesati 1873, Tenore 1831-42, Parlatore 1848-96), Rocca Calascio (Fascetti & Veri 1983), M. Corno, Civitella del Tronto (Bertoloni 1833-54 from Orsini, Zodda 1953), Prati d'Angro (from a specimen collected by Rosati in Herb. PNA!), Gole di Celano (Dinter 1997).

Arabis verna (L.) R. Br. — cliffs, scrub - NC.

Arabis bellidifolia Crantz subsp. *stellulata* (Bertol.) Greuter & Burdet — montane cliffs and highest parts, Parco Nazionale d'Abruzzo at M. Petroso [Terracciano 1890 as "*A. stellulata* Bert.", Bassani 1992 as "*A. pumila* Jacq. subsp. *stellulata* (Bertol.) Nyman"], surroundings of Gioia Vecchio (Vaccari & Wilczek 1940 as "*A. pumila* Wulf."), Gran Sasso, Velino, Pizzoli (Mauri & al. 1830 as "*A. alpina* var. *pumila*", Tenore 1831-42 as "*A. stellulata* Bert.", Furrer & Furnari 1960 as "*A. pumila*", Zodda 1953 as "*A. pumila*", Tammaro 1995) and Majella (Feoli-Chiapella 1979-80).

Arabis alpina L. subsp. *alpina* — cliffs, stony ground at high altitude, Velino (Tenore 1831-42, Lucchese & Lattanzi 1991), Gran Sasso, M. ti della Laga (Furrer & Furnari 1960, Zodda 1967, Chiosi 1975 from a specimen collected by Marchesetti, Tammaro 1995), Majella (Tammaro 1986a as "*A. alpina*"), Sirente (Guarrera & Tammaro 1994). A great number of records from Majella are undoubtedly to be referred to the following taxon. Its occurrence in the Parco Nazionale d'Abruzzo is doubtful (Conti 1995).

Arabis alpina L. subsp. *caucasica* (Willd. ex Schlecht.) Briq. — screes, shady screes, cliffs - C.

Aubrieta columnae Guss. subsp. *columnae* — Endem. C.S. Ap. - cliffs, seldom on walls - NC.

Lunaria rediviva L. — gorges - C.

Lunaria annua L. subsp. *annua* — naturalized - NC.

Lunaria annua L. subsp. *pachyrhiza* (Borbás) Hayek — humid stony slopes, Majella in Valle di Selva Romana! and Gran Sasso at Vallone d'Angri! (Conti 1987), Sirente (Guarrera & Tammara 1994), Gole del Sagittario near Anversa! (Conti 1995), Valle dell'Orfento, Gran Sasso gorges in Teramo province (Pirone pers. comm.).

Alyssoides utriculata (L.) Medik. (*Vesicaria utriculata* DC.) — cliffs, arid stony slopes, Morrone (Tenore & Gussone 1842 as "*Alyssum utriculatum*"), Parco Nazionale d'Abruzzo! (Vaccari & Wilczek 1940, Società Botanica Italiana 1953, Anzalone & Bazzichelli 1960, Anzalone 1960, Conti 1995), Velino (Lucchese & Lattanzi 1991, Petriccione 1993), Sirente! (Guarrera & Tammara 1994, Dinter 1997).

Alyssum alyssoides (L.) L. — arid stony meadows - C.

Alyssum campestre (L.) L. subsp. *campestre* [*A. simplex* Rudolphi subsp. *simplex*; *A. minus* (L.) Rothm. subsp. *minus*] — arid meadows - C.

Alyssum campestre subsp. *strigosum* (Banks & Solander) J alas [*A. strigosum* Banks & Solander; *A. minus* subsp. *strigosum* (Banks & Solander) Stoj.] — arid meadows - NC.

Alyssum montanum L. subsp. *montanum* — stony pastures - C - Var. *australe* Freyn has been recorded from southern Gran Sasso (Tammara 1995). *A. alpestre* L. (Parlatore 1848-96 from Tenore) has also been reported, but, according to Grande (1918), it is erroneously and confused with some forms of *A. montanum*; it is therefore to be excluded from the flora of Abruzzo.

Alyssum diffusum Ten. — stony pastures - NC.

Alyssum cuneifolium Ten. subsp. *cuneifolium* — stony areas at high altitude, Parco Nazionale d'Abruzzo in Val Fondillo (Falqui 1899), Majella!, Morrone (Mauri & al. 1830, Tenore 1831-42, Bertoloni 1833-54 from Gussone, Cesati 1873, Tammara 1986a), Gran Sasso in M. Scindarella (Furrer & Furnari 1960), Velino (Petriccione 1993). The report from the Parco Nazionale d'Abruzzo is doubtful and probably erroneous.

Fibigia clypeata (L.) Medik. — arid and stony slopes in the low - montane belt up to 1200 m - NC.

Aurinia sinuata (L.) Griseb. [*Alyssoides sinuata* (L.) Medik.] — calcareous cliffs, E. Vallone di Taranta!, Porrara near Palena (Tammara & al. 1978, Tammara 1986a), Gessopalena! (Manzi 1992a), Roccascalegna!, Pennadomo!, Montelapiano! (Conti & Manzi 1996).

Aurinia rupestris (Heynh.) Cullen & T. R. Dudley — cliffs, stony slopes, Sirente (Groves 1880 as "*Alyssum rupestre* Ten.", Guarrera & Tammara 1994 as "*Ptilotrichum cyclocarpum* Boiss."), Majella! and Morrone [Mauri & al. 1830 as "*Alyssum*

rupestre", Tenore 1831-42 as "*Alyssum rupestre*", Cesati 1873, Parlato 1948-96 as "*Koniga rupestris*", Küpfer 1972 as "*Ptilotrichum rupestre* (Ten.) Boiss. subsp. *rupestre*", Tammaro 1986a as "*Ptilotrichum cyclocarpum* Boiss."].

Lobularia maritima (L.) Desv. subsp. *maritima* — arid uncultivated land, walls, especially along the coast - C.

Clypeola jonthlaspi L. — arid meadows, stony slopes - C.

Draba aizoides L. subsp. *aizoides* — cliffs, stony pastures - C.

Draba aspera Bertol. — cliffs and pebbly areas - NC - var. *eriocarpa* (Guss.) Walters has been reported from Majella (Tammaro 1986a).

Draba tomentosa Clairv. — cliffs, M. Amaro (Tammaro 1986a from a specimen collected by Vaccari).

Draba muralis L. — uncultivated land, walls - NC.

Erophila verna (L.) Chevall. — arid uncultivated land - C.

Erophila praecox (Steven) DC. — arid uncultivated land - C - Some authors regard it as a synonym of *E. verna*; it is to be studied further.

Cochlearia officinalis L. subsp. *officinalis* — N. W. Europ. - naturalized, Fucino (Tammaro & Allegrini 1985).

Kernera saxatilis (L.) Rchb. subsp. *saxatilis* (*Cochlearia saxatilis* L.) — cliffs - NC.

Camelina sativa (L.) Crantz — cultivated land, abandoned fields, Parco Nazionale d'Abruzzo (Vaccari & Wilczek 1940), Gole di Popoli (Tammaro 1971a) and Majella at Caramanico and Guardiagrele (Parlato 1848-96 from Cesati, Tammaro 1986a).

Neslia apiculata Fischer & al. [*N. paniculata* (L.) Desv. subsp. *thracica* (Velen.) Bornm.] — fields - C.

Capsella bursa-pastoris (L.) Medik. — uncultivated land, ruderal environments - CC.

Capsella rubella Reuter — uncultivated land, ruderal environments - CC.

Pritzelago alpina (L.) Kuntze subsp. *alpina* [*Hutchinsia alpina* (L.) R. Br.] — cliffs, grassy terraces - NC.

Pritzelago alpina subsp. *brevicaulis* (Spreng.) Greuter & Burdet (*H. brevicaulis* Spreng.) — pebbly pastures, Majella (Tammaro 1986a as "*H. brevicaulis* ").

Hornungia petraea (L.) Rchb. subsp. *petraea* (*Hutchinsia petraea* R. Br.) — cliffs and

arid meadows - C.

Thlaspi arvense L. — fields, ruderal environments - C.

Thlaspi alliaceum L. — fields, uncultivated land - C.

Thlaspi perfoliatum L. subsp. *perfoliatum* — fields, uncultivated land - C.

Thlaspi caerulescens J. Presl & C. Presl subsp. *brachypetalum* (Jord.) J alas (Th. *brachypetalum* Jord.) — arid pastures, Parco Nazionale d'Abruzzo [Vaccari & Wilczek 1940, Società Botanica Italiana 1953, Anzalone & Bazzichelli 1960 as "Th. *alpestre* L. *brachypetalum* (Jord.)"], Gran Sasso, le Moricane (Parlatore 1848-96 from Tenore as "Th. *alpestre*", Zodda 1967 as "Th. *alpestre* var. *brachypetalum*", Tammaro 1995), Majella (Tammaro 1986a), Simbruini (Veri 1988), Campo Felice (Lucchese & Lattanzi 1991), Sirente (Guarrera & Tammaro 1994). According to Grande (1914) the reports of *Th. alpestre* L. are to be referred to *Th. brachypetalum* as well as other stations of Mainarde and Irpinia. The report of *Th. alpestre* s.s. (Tammaro 1995) from the southern Gran Sasso is doubtful, since its occurrence is restricted to Austria (Jalas & al. 1996).

Thlaspi stylosum (Ten.) Mutel — Endem. C. Ap. - pebbly areas subjected to long periods of snow, main mountain groups.

Thlaspi praecox Wulfen — arid pastures, Velino, Parco Nazionale d'Abruzzo! as "Th. *montanum* var. *praecox* (Wulfen)" (Grande 1904, Anzalone & Bazzichelli 1960, Bazzichelli & Furnari 1970, Montelucci 1958, Petriccione 1993), Sirente (Guarrera & Tammaro 1994).

Thlaspi torreanum (Ten.) Greuter & Burdet — Endem.? C. S. Ap. - According to Greuter & al. (1984-89) this taxon is of doubtful taxonomic status. Grande (1924b) puts it in synonymy with *Th. praecox*.

Aethionema saxatile (L.) R. Br. subsp. *saxatile* — stony slopes - C.

Iberis semperflorens L. — naturalized - NC.

Iberis sempervirens L. — cliffs, mountains near Sulmona as "*I. garrexiana* DC." (Tenore 1831-42) and Gole di S. Venanzio! (Conti 1992a).

Iberis saxatilis L. subsp. *saxatilis* — stony areas, mountain tops - NC.

Iberis carnosa Willd. subsp. *carnosa* (*I. pruitii* Tineo; *I. tenoreana* DC.) — arid pastures, Majella!, Morrone [Tenore 1811-38 as "*I. tenoreana*"; Tammaro & al. 1979 as "*I. pruitii* Tineo var. *tenoreana* (DC.)"], "M. Calvo prope Sublacum" from Mauri (Bertoloni 1833-54), Velino, M. di Pizzoli (Mauri & al. 1830, Parlatore 1848-96, Montelucci 1958 from Tenore, Petriccione 1993), Sirente (Groves 1880), Gran Sasso (Tammaro 1995), Parco Nazionale d'Abruzzo! (Conti & Minutillo 1996), M. Viglio!

Iberis umbellata L. subsp. *umbellata* — arid grassy uncultivated land - NC.

Biscutella laevigata L. subsp. *laevigata* — screes, stony pastures - CC.

Biscutella laevigata subsp. *australis* Raffaelli & Baldoin — arid stony pastures, screes from 900 to 1300 m, Majella, Morrone, Gran Sasso, Sirente, Velino, Argatone, Genzana (Raffaelli & Baldoin 1997).

Biscutella ambigua DC. (*B. nicaeensis* Jord.) — arid and stony pastures. According to Raffaelli & Ricceri (1987) and Jalas & al. (1996) occurring only in Provence and Liguria but recently reported from Sirente in the surroundings of Tione (Guarrera & Tammaro 1994) and to be confirmed.

Biscutella didyma L. (s.l.) — arid uncultivated land, surroundings of Scanno (Gravina 1812 as "*B. apula*"), Vallone di Pennapiedimonte (Tammaro 1986a) and mouth of F. Osento! (Conti 1990b).

Biscutella cichoriifolia Loisel. (*B. hispida* DC.) — arid and stony meadows, Sirente "strada del Vado Santo Venanzio" (Groves 1880, Guarrera & Tammaro 1994 from a specimen of Groves), near Petrella Liri! *B. auriculata* L. is reported from the high mountains of Abruzzo as "*Iondraba sulphurea*" (Parlatore 1848-96 da Tenore), according to Pignatti (1982) it is confused with *B. cichoriifolia*.

Lepidium campestre (L.) R. Br. — uncultivated land, ruins - C - Also *L. subulatum* L. has been recorded but, according to Grande (1913) it is to be excluded because it has been erroneously reported from Martinsicuro (Tenore 1831-42) and to be referred to an undeterminable crucifer.

Lepidium sativum L. subsp. *sativum* — naturalized, Morrone (Viegi & al. 1990 from specimens dating back to the last century). To be confirmed.

Lepidium virginicum L. — uncultivated land, naturalized, Teramo province along F. Vezzola and F. Tordino, bed of F. Tronto near Castel di Lama (Zodda 1953a, 1965b, 1967, Viegi & al. 1990), Pescara (Pirone & al. in press).

Lepidium latifolium L. — arid uncultivated land, Majella at Caramanico (Tenore 1831-42, Tenore & Gussone 1842, Tammaro 1986a from a specimen collected by Izzarello).

Lepidium graminifolium L. subsp. *graminifolium* — ruderal environments - C - "*L. graminifolium* subsp. *suffruticosum* (L.) P. Monts." has been reported from Teramo and Silvi marina [Zodda 1953 as "*L. graminifolium* var. *suffruticosum* (L.)"]. Probably to be referred to this taxon.

Cardaria draba (L.) Desv. subsp. *draba* (*Lepidium draba* L.) — ruderal environments - C.

Coronopus squamatus (Forssk.) Asch. (*Coronopus procumbens* Gilib.) — trampled areas - NC.

Coronopus didymus (L.) Sm. — N. Amer. become Cosmop. — naturalized adventitious herb - C (Viegi & al. 1990).

Conringia orientalis (L.) Dumort. — fields - NC.

Conringia austriaca (Jacq.) Sweet — fields - NC.

Diplotaxis erucoides (L.) DC. subsp. *erucoides* — cultivated and uncultivated land - CC.

Diplotaxis tenuifolia (L.) DC. — walls, arid uncultivated land - C.

Diplotaxis muralis (L.) DC. — ruderal environments, uncultivated land - C.

Diplotaxis viminea (L.) DC. — uncultivated land, Abruzzo (Pignatti 1982), Conca di Capestrano (Tammaro 1995).

Brassica napus L. subsp. *napus* — naturalized, Gran Sasso, Parco Nazionale d'Abruzzo, Magliano dei Marsi (Viegi & al. 1990).

Brassica rapa L. subsp. *rapa* — naturalized - C (Viegi & al. 1990).

Brassica rapa subsp. *oleifera* (DC.) Metzger [*B. rapa* subsp. *sylvestris* (L.) Janch.] — cultivated land, places where animals gather - C.

Brassica fruticulosa Cyr. subsp. *fruticulosa* — Abruzzo (Jalas & al. 1996).

Brassica nigra (L.) Koch (*Sinapis nigra* L.) — fields, uncultivated land - NC.

Brassica gravinae Ten. — Endem. C. S. Ap.-N. Africa - pebbly areas, stony slopes, Majella!, Morrone!, Gran Sasso!, M. dei Fiori!, M. di Campi, M. di Civitella, Difesa di Pettorano, Chiarino at Canale delle Capezze, M.ti della Laga (Gussone 1826, Mauri & al. 1830, Tenore 1831-42, Bertoloni 1833-54 from Orsini and Gussone, Rigo 1877, Levier 1880, Abbate 1903, Zodda 1942, 1953, 1965b, 1967, Favarger 1973, Tammaro 1986a), Sirente (Groves 1880, Tammaro 1971b), Velino (Lucchese & Lattanzi 1991), Parco Nazionale d'Abruzzo! (Bassani 1992), M. Porrara (Galetti pers. comm.), M. Genzana!

Sinapis arvensis L. — fields, uncultivated land - NC.

Sinapis alba L. subsp. *alba* — fields, uncultivated land - C.

Sinapis alba L. subsp. *dissecta* (Lag.) Bonnier — fields, uncultivated land, Fucino margins (Bertoloni 1833-54 from Orsini as "*S. dissecta* Lag."), Montepagano di Roseto [Zodda 1967 as "*S. alba* var. *dissecta* (Lag.)"].

Eruca vesicaria (L.) Cav. (*E. sativa* Mill.) — NC - subsp. *sativa* (Mill.) Thell. (Viegi & al. 1990) and subsp. *rongirostris* (Uechtr.) Jahandiez have been reported from the mouth of F. Tronto [Zodda 1967 as "*E. sativa* var. *erysimoides* (Sieb.)"].

Hirschfeldia incana (L.) Lagrèze-Fossat subsp. *incana* — ruderal environments, Teramo and Tottea di Crognaleto in M.ti della Laga (Zodda 1953, 1967 as "*Brassica adpressa* Bss. var. *hirta* Fiori").

Cakile maritima Scop. subsp. *maritima* — beaches - C.

Rapistrum rugosum (L.) All. subsp. *rugosum* [incl. *R. rugosum* subsp. *orientale* (L.) Arcang.; *R. rugosum* subsp. *linnaeanum* Rouy & Foucaud] — fields, ruderal environments - C - Tenore reports also *R. perenne* (L.) All., but according to Grande (1918) it is a confusion with this taxon.

Calepina irregularis (Asso) Thell. — uncultivated land - C.

Raphanus raphanistrum L. subsp. *raphanistrum* — ruderal environments - C.

Raphanus raphanistrum subsp. *landra* (Moretti ex DC.) Bonnier & Layens [*R. raphanistrum* subsp. *maritimus* (Sm.) Thell.] — ruderal environments - NC.

Raphanus sativus L. — T/H - cultivated - C.

Resedaceae

Reseda luteola L. — stony uncultivated land - NC.

Reseda alba L. subsp. *alba* — arid and sandy uncultivated land - C.

Reseda phyteuma L. subsp. *phyteuma* — uncultivated land and ruins - C.

Reseda odorata L. — naturalized adventitious species (Viegi & al. 1990), M. dei Fiori (Zodda 1954).

Reseda lutea L. subsp. *lutea* — uncultivated land and ruins - C.

Crassulaceae

Umbilicus erectus DC. — Gole di Popoli (Tammaro 1971a), but perhaps erroneously.

Umbilicus rupestris (Salisb.) Dandy — shady cliffs, near S. Valentino (Tammaro 1986a).

Umbilicus horizontalis (Guss.) DC. — humid cliffs, shady walls - C.

Sempervivum arachnoideum L. subsp. *arachnoideum* — cliffs, mountain tops - C.

Sempervivum arachnoideum L. subsp. *tomentosum* (C. B. Lehm. & Schnittspahn) Schinz & Thell. — cliffs, mountain tops - C - f. *niveum* Montelucci has been recorded.

Sempervivum tectorum L. subsp. *schottii* Wettst. — cliffs and cliff environments - C.

Sempervivum italicum I. Ricci — Endem. C. Ap. - cliffs, stony slopes, Simbruini, Velino, M. Bello and M. d'Aria near Avezzano, S. Demetrio, Rivisondoli (Ricci 1961), M. Porrara (Feoli-Chiapella 1979-80), Sirente (Guarrera & Tammara 1994), Marsica in the localities with *Phlomis fruticosa* (Pirone 1995c), Focalone, Portella (Dinter 1996, 1997), Parco Nazionale d'Abruzzo at Serrone!, Serralunga! and Pizzo Marcello! (Conti & Minutillo 1996). According to Tutin & al. (1993), this species is doubtfully to be referred to *S. marmoreum* Griseb.

Sedum telephium L. subsp. *maximum* (L.) Schinz & Thell. — walls and shady cliffs, screes, Abruzzo (Parlatore 1848-96 as "*S. maximum*"), Majella! (Tenore 1831-42 as "*S. maximum* L.", Abbate 1903, Conti 1987), Civitella Roveto [Veri 1988 as "*S. maximum* (L.) Suter"] Gran Sasso (Tammara 1983c), Camosciara! (Conti 1995). The records of *S. telephium* L. from Morrone (Tenore & Gussone 1842), Civitella del Tronto and Pietracamela (Zodda 1953, 1967) are probably to be referred to this taxon.

Sedum anacampseros L. — cliffs, Gran Sasso at Arapietra (Crugnola 1900, Zodda 1953 quotes Petrilli).

Sedum sediforme (Jacq.) Pau — thermophilous stony slopes - NC.

Sedum anopetalum DC. (*S. ochroleucum* Chaix) — cliffs, walls - NC.

Sedum montanum Perr. & Song. subsp. *montanum* — stony areas and cliffs - NC.

Sedum rupestre L. subsp. *rupestre* — stony areas and cliffs, cliff pastures - CC.

Sedum amplexicaule DC. [*S. tenuifolium* (Sm.) Strobl] — stony areas and cliffs, Sirente [Groves 1880, Fiori 1923-29, Guarrera & Tammara 1994 as "*S. amplexicaule* DC. subsp. *tenuifolium* (Sm.) Greuter"], Parco Nazionale d'Abruzzo (Grande 1924b, Vaccari & Wilczek 1940, Anzalone & Bazzichelli 1960).

Sedum acre L. [incl. *S. acre* subsp. *neglectum* (Ten.) Arcang.] — walls, screes, stony slopes - CC.

Sedum alpestre Vill. — rocks, Majella (Tenore 1831-42 as "*S. repens*", Tammara 1986a).

Sedum sexangulare L. — cliffs - C.

Sedum album L. — walls and cliffs - CC.

Sedum dasyphyllum L. subsp. *dasyphyllum* — walls and cliffs - CC.

Sedum monregalense Balbis — Endem. W. Alps-N. C. Ap.-Co - cliffs and shady stony areas, "in Abruzzo nella catena del Pizzo di Sevo sopra Umuto" (Parlatore 1848-96), M. dei Fiori, Pizzo di Sevo, Pizzo di Moscio, Bosco Langammella, Colle Dell'Orso, Pietracamela (Abbate 1903, Zodda 1953, 1964, 1967), Bosco Martese! Probably Parlatore's report refers to Marche.

Sedum magellense Ten. subsp. *magellense* — cool stony slopes - C.

Sedum cepaea L. — cool woods to 800 m - NC.

Sedum atratum L. subsp. *atratum* — stony meadows at high altitude, stony slopes - C.

Sedum stellatum L. — sunny cliffs, stony and arid slopes, Valle del Trigno, between S. Salvo and Lentella! (Conti & al. 1990).

Sedum annuum L. — walls and cliffs, Caramanico (Tammaro 1986a).

Sedum rubens L. — walls, screes - NC.

Sedum caespitosum (Cav.) DC. [*S. rubrum* (L.) Thell.] — walls and cliffs, Villavallelonga and Trasacco (Anzalone & Bazzichelli 1960 from specimens collected by Grande).

Sedum hispanicum L. — walls and cliffs - C.

Saxifragaceae

Saxifraga rotundifolia L. subsp. *rotundifolia* — woods - CC - *S. taygetea* Boiss. & Heldr. has been reported from M.ti della Laga on M. Gorzano [Zodda 1967 as "*S. rotundifolia* L. var. *taygetea* (Bss.)"] but it is to be checked and perhaps to be referred to *S. rotundifolia*.

Saxifraga caesia L. — cliffs at high altitude, Gran Sasso!, Pizzoli, Morrone, Majella! (Mauri & al. 1830, Tenore 1831-42, Matteucci & Martelli 1894, Furrer & Furnari 1960, Tammaro 1986a), Parco Nazionale d'Abruzzo! (Tenore 1831-42, Tenore & Gussone 1842, Lusina 1953, Anzalone & Bazzichelli 1960, Bruno & Bazzichelli 1966, Bazzichelli & Furnari 1970).

Saxifraga marginata Sternb. — cliffs, Majella (Mauri & al. 1830 as "*S. neglecta* Ten.", Tenore 1831-42, Feoli-Chiapella 1979-80), Velino (Montelucci 1958), Gran Sasso along the path to Franchetti refuge, Toppe del Tesoro (Pirone 1997b).

Saxifraga porophylla Bertol. subsp. *porophylla* — Endem. C. S. Ap. - cliffs from 1000 m upwards - C.

Saxifraga oppositifolia L. subsp. *oppositifolia* [incl. *S. latina* (N. Terracc.) Hayek] — stony areas, screes at high altitude - NC.

Saxifraga oppositifolia subsp. *speciosa* (Dörfl. & Hayek) Engl. & Irmsch. [*S. speciosa* (Dörfl. & Hayek) Dörfl. & Hayek] — Endem. C. Ap. - stony areas, screes at high altitude - NC.

Saxifraga callosa Sm. subsp. *callosa* (*S. lingulata* Bellardi) — cliffs - C - "var. *australis* (Moric.) D. A. Webb" occurs in C. S. Apennines.

Saxifraga paniculata Mill. subsp. *paniculata* — cliffs and stony slopes - C - subsp. *stabiana* (Ten.) Pignatti, which seems to be not much differentiated, has also been recorded.

Saxifraga aizoides L. — screes and humid stony areas, Gran Sasso! and M.ti della Laga! (Zodda 1967).

Saxifraga granulata L. subsp. *granulata* — arid and stony pastures - C.

Saxifraga bulbifera L. — pastures and glades - C.

Saxifraga exarata Vill. subsp. *ampullacea* (Ten.) D. A. Webb (*S. ampullacea* Ten.) — Endem. C. Ap. - cliffs at high altitude, main mountain groups (it does not occur in M.ti della Laga). The report from Simbruini (Veri 1988 as "*S. moschata* ssp. *moschata*"), as well other previous reports as "*S. exarata* var. *moschata*" should be verified. All the group deserves further investigation.

Saxifraga italica D. A. Webb — Endem. C. Ap. - cliffs and humid screes at high altitude, subjected to long periods of snow, Gran Sasso!, Majella!, Morrone [Matteucci & Martelli 1894 as "*S. androsacea* L. var. *tridentata* Gand.", Bazzichelli 1960, Bruno & Furnari 1966, Zodda 1967 as "*S. androsacea* L. var. *tridens* (Jan)", Küpfer 1972, Tammaro 1986a, Tammaro 1995], Velino (Petriccione 1993), Sirente (Guarrera & Tammaro 1994), between M. Pratello and Toppe del Tesoro (Pirone 1997b).

Saxifraga sedoides L. subsp. *sedoides* — humid screes and stony areas subjected to long periods of snow, Gran Sasso! and Majella! (Tenore 1831-42, Bertoloni 1833-54 from Orsini and Gussone, Jatta 1877, Rigo 1877, Matteucci & Martelli 1894, Bazzichelli 1960, Furrer & Furnari 1960, Zodda 1953, Tammaro 1986a, Tammaro 1995).

Saxifraga glabella Bertol. — Oroph. S. E. Europ. (Amphiadriat.) — stony slopes subjected to long periods of snow, main mountain groups.

Saxifraga tridactylites L. — cliffs and walls - C.

Saxifraga adscendens L. subsp. *adscendens* — stony slopes - NC.

Saxifraga adscendens subsp. *parnassica* (Boiss. & Heldr.) Hayek — stony slopes - NC.

Chrysosplenium alternifolium L. — humid montane woods, M.ti della Laga, Valle del Vomano (Tenore 1831-42, Abbate 1903, Zodda 1953), Bosco di Oricola! (Conti & Manzi 1996).

Parnassia palustris L. subsp. *palustris* — humid meadows and wet cliffs - NC.

Philadelphus coronarius L. — S. E. Europ.-Turkey — naturalized - Caramanico and Salle (Pirone 1995d).

Grossulariaceae

Ribes multiflorum Kit. ex Roem. & Schult. subsp. *multiflorum* — *Fagus sylvatica* wood glades, scrub and cool environments from 1000 to 1900 m, M. dei Fiori (Tenore 1831-42 as "*R. vitifolium*") Morrone (Porta 1879), Parco Nazionale d'Abruzzo! (Anzalone & Bazzichelli 1960, Conti 1995 from specimens collected by Rosati), Simbruini (Veri 1988), Sirente (Guarrera & Tammaro 1994), Majella, Gran Sasso, Altipiani Maggiori, M.ti Pizzi, Porrara and Rosello (Arrigoni 1968, Tammaro 1983c, Pirone 1995d).

Ribes rubrum L. — *Fagus sylvatica* woods, Sirente (Groves 1880), "Bocche di Chiarano prima di Scanno, alla valle dell'Orso et alibi" (Gravina 1812, Tenore 1831-42), M. dei Fiori [Paolucci 1891 as "*R. rubrum* L. var. *spicatum* (Robson)"], Gran Sasso in Valle del Vasto (Tammaro 1985b).

Ribes petraeum Wulfen — *Fagus sylvatica* wood glades, surroundings of Scanno in Valle dell'Orsolina (Gravina 1812), Barrea (Tenore 1831-42 as "*R. petraeum* Host."), Pacentro (Cesati 1873) and Sirente (Veri & Tammaro 1980). The only recent record is from Sirente, where it has not been reported by Guarrera & Tammaro (1994), it is therefore worthy of confirmation.

Ribes uva-crispa L. — *Fagus sylvatica* wood glades, scrub and hedges, to 1600 m - C.

Ribes alpinum L. — *Fagus sylvatica* woods, also on cliffs, M. S. Franco (Tenore 1831-42), Pizzoli (Bertoloni 1833-54), Colli di M. Bove and Peschio dei Castagni (Montelucci 1933, Anzalone & al. 1961), Sirente (Groves 1880, Tammaro 1971b, Tammaro & al. 1974, Guarrera & Tammaro 1994), Velino! (Lucchese & Lattanzi 1991, Petriccione 1993), Gran Sasso (Zodda 1967), Palena (Tammaro 1986a), Parco Nazionale d'Abruzzo! (Anzalone & Bazzichelli 1960, Conti 1995), Campotosto!

Pittosporaceae

Pittosporum tobira (Thunb.) W. T. Aiton — E. Asiat. - naturalized in Pineta d'Avalos! (Pirone 1995d).

Platanaceae

Platanus orientalis L. — naturalized - "Tenore scrive ch'esso nasce isolato nei boschi degli Abbruzzi" (Parlatore 1848-96), along F. Vezzola where it could be growing wild because it is cultivated in Teramo nearby (Zodda 1953, 1954, 1967), Collelongo (Viegi & al. 1990), Serranella (Pirone 1995d).

Platanus acerifolia (Aiton) Willd. — naturalized.

Rosaceae

Spiraea hypericifolia L. subsp. *obovata* (Waldst. & Kit. ex Willd.) H. Huber — stony slopes and hedges, near Trasacco in Fucino, S. Demetrio near L'Aquila, Teramo

[Gussone 1826 as "*S. flabellata* Bertol.", Tenore 1831-42 as "*S. flabellata* Bertol.", Bertoloni 1833-54 from Gussone, Fiori & Paoletti 1896-1908, Zodda 1953 sub "*S. hypericifolia* var. *hispanica* (Hoffm. & Lk.)" from Gussone]. Iberian-Provençal species of doubtful nativeness (Pirone 1995d).

Filipendula vulgaris Moench — meadows - NC.

Filipendula ulmaria (L.) Maxim. subsp. *ulmaria* — humid meadows, Campotosto peat-bog (Cecchettani 1907 as "*Spiraea ulmaria*"), Gole di Popoli, southern Gran Sasso (Tammaro 1971a, 1995), Molina Aterno (Pignatti 1982).

Filipendula ulmaria (L.) Maxim. var. *denudata* (J. & C. Presl.) Maxim. — humid meadows - NC.

Rubus saxatilis L. — screes generally in the higher part of the *Fagus sylvatica* wood - NC.

Rubus idaeus L. — glades of montane and subalpine woods, screes - C.

Rubus ulmifolius Schott — hedges, woods, uncultivated land, from the plain up to 1000-1200 m - C - var. *heteromorphus* (Ripart) Sudre is reported from Teramo province (Zodda 1953, 1965b, 1967 as "*R. dalmatinus* Tratt.").

Rubus acheruntius Ten. — Teramo [Zodda 1958b, 1967 as "*R. caesius* var. *acheruntinus* (Ten.)"]. This taxon is of doubtful taxonomic status to be furtherly investigated (Pignatti 1982).

Rubus anatolicus Focke — Intermesoli and Pietracamela as "*R. sanctus* Schreb." (Zodda 1967). According to Pignatti (1982) it is to be checked.

Rubus bifrons Vest. — Teramo (Zodda 1958a, 1962, 1967).

Rubus procerus P. J. Muller — Teramo province (Zodda 1959a as "*R. procerus* P. I. M. var. *praecox* (Bert.)", 1962a as "*R. praecox*", 1967 as "*R. praecox* Bertol. f. *procerus*").

Rubus candicans Weihe — *Fagus sylvatica* woods, hedges, arid meadows, Gran Sasso at Pietracamela (Zodda 1957 as "*R. fruticosus* var. *candicans* (Weihe)", 1959a as "*R. thyrsoides* Wimm. var. *fragrans* Focke-Boscaglio", 1967), Majella (Tammaro 1986a), Velino (Lucchese & Lattanzi 1991). Doubtfully reported from Sirente (Guarrera & Tammaro 1994). Also *R. fragrans* Focke has been recorded at S. Leucio (Zodda 1967 as "*R. candicans* var. *fragrans* Focke").

Rubus thyrsanthus Focke — Illyr? - *Fagus sylvatica* woods at Passo Lanciano (Tammaro 1986a).

Rubus canescens DC. — hedges and open woods up to 1200 m - C.

Rubus collinus DC. — Bosco Martese [Zodda 1953, 1958a, 1967 as "*R. tomentosus* Borkh. var. *collinus* (DC.)"], Valle dell'Orfento (Tammaro 1986a).

Rubus pallidus Weihe & Ness — Bosco Martese [Zodda 1953 as "*R. glandulosus* var. *pallidus* (W. & N.)", 1962, 1967], according to Pignatti (1982) this record is unlikely and it is to be checked.

Rubus menkei Weihe & Ness — Bosco Martese (Zodda 1958b, 1962, 1967).

Rubus schleicheri Weihe — Bosco Martese (Zodda 1967). To be checked (Pignatti 1982).

Rubus bellardii Weihe & Nees — Majella [Abbate 1903 as "*R. fruticosus* var. *Bellardi* (Weihe & N.)"], Bosco Martese (Zodda 1958b, 1967), Parco Nazionale d'Abruzzo (Grande 1904). According to Anzalone & Bazzichelli (1959-60) and Pignatti (1982) the occurrence of this species is to be confirmed.

Rubus hirtus Waldst. & Kit. — *Fagus sylvatica* woods - C.

Rubus caesius L. — humid shady environments, especially in riparian woods - C.

Rubus corylifolius Sm. — *Fagus sylvatica* wood glades, Bosco Martese (Zodda 1962a, 1967), Porrara near Campo di Giove (Tammaro 1986a).

Rosa pimpinellifolia L. — scrub on stony slopes - NC.

Rosa glutinosa Sm. — oak wood glades, M. Scarafano (Tammaro 1995).

Rosa serafini Viv. — Pietralta, Bilancino (Mauri & al. 1830). Zodda (1953) recorded it but it has not been confirmed in Zodda (1967). To be verified.

Rosa rubiginosa L. — Cusciano di Montorio al Vomano and var. *nudiuscula* Peterm. at Cesacastina di Crognaleto (Zodda 1957, 1965b, 1967). To be checked.

Rosa agrestis Savi — scrub - NC.

Rosa micrantha Borrer ex Sm. — scrub, coppices, hedges - NC.

Rosa pendulina L. — stony slopes up to 1800-2200 m - NC.

Rosa villosa L. — arid slopes, hedges, scrub - NC.

Rosa tomentosa Sm. — scrub, hedges, Teramo province as "*R. tomentosa* Chaix" (Zodda 1961a, 1965b, 1967), Velino (Lucchese & Lattanzi 1991).

Rosa rubrifolia Vill. — wood glades, Colli (Mauri & al. 1830), Fucino and Pietralta (Tenore 1831-42, Parlatore 1848-96 as "*R. ferruginea*"), Velino (Mauri & al. 1830 as "*R. rubrifolia* var. *glandulosa* Ten.", Blasi & al. 1990), near Pietracamela (Zodda 1953, 1957, 1961a, 1967 as "*R. rubrifolia* var. *pubescens* R. Kell."), Majella in the

woods of Guardiagrele (Tammaro 1986a).

Rosa montana Chaix var. *marsica* (Godet) Burnat & Gremli — wood glades, Velino (Montelucci 1958; Blasi & al. 1990 as "*R. montana*"), Pietracamela and Bosco Martese (Zodda 1967).

Rosa dumalis Bechst. var. *dumalis* — scrub - NC.

Rosa dumalis var. *coriifolia* (Fr.) Boulenger — scrub - NC.

Rosa canina L. var. *canina* (*R. lutetiana* Léman) — open woods, scrub, hedges from the plain to 1500 m - CC.

Rosa canina var. *andegavensis* (Bast.) Desportes - NC.

Rosa canina var. *collina* (Jacq.) Gren. & Godr. — Fucino margins and Rocca di Mezzo (Bertoloni 1833-54 da Orsini as "*R. collina* Willd."). To be confirmed.

Rosa corymbifera Borkh. [*R. canina* var. *corymbifera* (Borkh.) Rouy] - C.

Rosa nitidula Besser [*R. canina* var. *blondeana* (Ripart) Duffort] - NC.

Rosa obtusifolia Desv. [*R. canina* var. *tomentella* (Léman) Baker] - NC.

Rosa pouzinii Tratt. — scrub, hedges, Teramo province (Zodda 1953, 1957, 1961a, 1967).

Rosa gallica L. — scrub, hedges - NC.

Rosa arvensis Huds. — open woods and scrub - C.

Rosa sempervirens L. — maquis, *Quercus ilex* woods, hedges, from the sea level to 800-900 m - C.

Rosa foetida Herrm. - Asia-occid. — Parco Nazionale d'Abruzzo between Villetta Barrea and Barrea (Anzalone 1962).

Agrimonia eupatoria L. subsp. *eupatoria* — arid meadows, uncultivated land - C.

Agrimonia repens L. — H - Adv. - doubtful in Abruzzo (Viegi & al. 1973).

Aremonia agrimonoides (L.) DC. subsp. *agrimonoides* — *orno-ostryetum* formations, Fagus sylvatica woods - C.

Sanguisorba officinalis L. — Majella (it is probably to be referred to Quarti) (Mauri & al. 1830), Quarto di S. Chiara! (Tammaro 1986a), Pianure di Rivisondoli! (Tenore & Gussone 1842, Pirone 1987b), near Gioia Vecchio (Vaccari & Wilczek 1940), Piano di Ovindoli!, Gole di Celano (Guarrera & Tammaro 1994), Piano delle Cinquemiglia

(Buchwald 1995), Secine in the locality called Polledrara!

Sanguisorba minor Scop. subsp. *muricata* Briq. — arid meadows - C.

Dryas octopetala L. — pebbly slopes on the mountain tops, stony slopes at high altitudes - NC.

Geum micropetalum Gasparr. — Sirente (Groves 1880 as "*G. pyrenaicum* Willd.", Grande 1913 as "*G. heterocarpum* Boiss.", Del Prete & al. 1980 from specimens collected by Groves, Profeta and Levier as "*G. heterocarpum* Boiss."). Not confirmed recently.

Geum rivale L. — marshy meadows, Pantano di Scanno! (Avena & Rosati 1973), Villavallelonga (Del Prete & al. 1980 from a specimen collected by Grande) Campitelli near Alfedena! (Conti 1992c), Secine in Polledrara!, Piano delle Cinquemiglia! (Conti & al. in press), Campotosto!

Geum urbanum L. — glades, coppices - CC.

Geum molle Vis. & Pancic — montane pastures - NC.

Potentilla fruticosa L. — Gran Sasso at Campopericoli (Zodda 1967). Pignatti (1982) reports it from the Maritime Alps where it is rare, according to him, the Gran Sasso site could perhaps have been derived from naturalized plants.

Potentilla palustris (L.) Scop. — Campotosto peat-bog in Valle di Mascioni near Ponte delle Stecche as "*Comarum palustre* L." (Cecchetti 1907, Marchetti 1936) where it is now extinct.

Potentilla argentea L. — surroundings of Scanno (Gravina 1812), Pizzo di Sevo, Difesa di Pettorano at Cerealto and Bagnuli (Parlatore 1848-96), Simbruini at Canistro (Veri 1988).

Potentilla calabra Ten. — Difesa di Pettorano (Tenore 1831-42). It is probably the same site that Parlatore attributed to *P. argentea*. Pignatti (1982) reports it generally from the Abruzzo.

Potentilla inclinata Vill. [*P. argentea* L. var. *canescens* (Besser) Fiori] — pastures, M. Corno (Abbate 1903 as "*P. canescens* Bess."), Parco Nazionale d'Abruzzo at Rifugio della Difesa [Anzalone & Bazzichelli 1960 as "*P. argentea* L. var. *canescens* (Besser)"], Velino (Petriccione 1993).

Potentilla supina L. — Avezzano in the Fucino margins (Gussone 1826, Mauri & al. 1830, Tenore 1831-42) where it could be extinct.

Potentilla recta L. — pastures - CC.

Potentilla detommasii Ten. — pastures - NC.

Potentilla hirta L. (s.l.) — arid meadows, pastures. Its occurrence in the Abruzzo has to be verified, as well as the occurrence in the rest of the Peninsula. The peculiar leaf characters of this species have never been observed in the Italian specimens; it is probably to be referred to *Potentilla pedata* Nestler.

Potentilla thuringiaca Bernh. ex Link — glades, territory of Villavallelonga (Grande 1913 as "*P. chrysantha* Trev. var. *normalis* Th. Wolf."). To be confirmed.

Potentilla brauneana Hoppe ex Nestler — damp snowbed meadows, Corno Grande as "*P. hirta* var. *dubia* Zimm." (Zodda 1967), M. Portella [Furrer & Furnari 1960 as "*P. dubia* (Crantz) Zimmeter"].

Potentilla crantzii (Crantz) Beck ex Fritsch subsp. *crantzii* — snowbed meadows, pastures at high altitudes - C.

Potentilla aurea L. — Velino, M. Corno (Tenore 1831-42 as "*P. crocea* Hall. f. & Lehm."), Campo Imperatore (Bazzichelli 1960). According to Pignatti (1982) it is probably reported by mistake.

Potentilla heptaphylla L. — Majella (Tenore 1831-42 as "*P. opaca*"), montane meadows (Abbate 1903 as "*P. opaca*"). To be confirmed.

Potentilla rigoana Wolf — Endem? C. S. Ap. - stony pastures and meadows at high altitude, Majella! (Feoli-Chiapella 1979-80), Velino (Lucchese & Lattanzi 1991), Sirente (Guarrera & Tammaro 1994), Velino (Petriccione 1993), doubtfully from Gran Sasso (Tammaro 1995), M. Midia, Fontecellese, near Camerata at Bosco Secco, M. Vallevona, from M. Roccasecca to M. dei Bisognosi, M. Bove, Villavallelonga!, M. dei Fiori, Pizzo di Sevo!, Bosco Martese (Moraldo in litt.), M. Porrara (Galetti pers. comm.).

Potentilla tabernaemontani Asch. — reported in the past from many localities, also because it was confused with *P. rigoana*. Recently reported from Velino (Lucchese & Lattanzi 1991, Petriccione 1993).

Potentilla cinerea Chaix ex Vill. [*P. subacaulis* L. var. *cinerea* (Chaix) Fiori] — stony pastures, M. di Campi, M. dei Fiori! (Bertoloni 1833-54 from Orsini), Majella (Tenore 1831-42, Cesati 1873), Collelongo [Grande 1913 as "*P. praetutiana* (Ten.) Grande"], M. Gorzano, M. Corno [Tenore 1832 as "*P. cinerea* var. *praetutiana* Ten.", Zodda 1953 as "*P. subacaulis* var. *cinerea* (Chaix)"].

Potentilla erecta (L.) Raeusch. — humid meadows - NC.

Potentilla reptans L. — humid meadows, banks, ditches - CC.

Potentilla caulescens L. subsp. *caulescens* — cliffs - C.

Potentilla nebrodensis Strobl. — Endem? - Valle dell'Orfento (Tammaro 1986a). Taxon similar to *P. caulescens* needing further systematic investigation.

Potentilla nitida L. — Orohypophyll-Alpine-Apenninic - cliffs and stony slopes, Gran Sasso in M. Prena! (Conti 1992a) and Corno Grande (Guarrera & al. 1995). Tenore (1811-38) reports it from Majella, Gran Sasso, etc. but perhaps confused with *P. apennina* (Crugnola 1894).

Potentilla apennina Ten. — cliffs at high altitude, main mountain groups (it does not occur on M.ti della Laga).

Potentilla micrantha Ramond ex DC. — woods, glades - C - *P. sterilis* (L.) Garcke has been reported from Tre Confini (Terracciano 1873, Falqui 1899), M. dei Fiori, M. Pelone [Crugnola 1900, Zodda 1953, 1967 as "*P. sterilis* var. *fragariastrum* (Ehrh.)"], Gole di Popoli (Tammaro 1971a) but perhaps because confused with *P. micrantha* as Zodda (1953) has already notified.

Sibbaldia procumbens L. — damp snowbed meadows, plains at high altitude, M. Corno, Campopericoli!, Majella (Gussone 1826, Tenore 1831-42, Jatta 1877, Parlato 1848-96 from Gussone, Furrer & Furnari 1960, Zodda 1953 as "*Potentilla sibbaldi* Hall.", Chiapella-Feoli & Feoli 1977), Pizzo di Sevo (Lüdi 1943, Pedrotti 1981, 1982a) and M. Greco!

Fragaria vesca L. — glades, open woods - CC.

Fragaria moschata Duchesne — *Fagus sylvatica* woods, Tossicia (Crugnola 1900 as "*Fragaria elatior* Ehrh."), but according to Zodda (1953) to be referred to var. *sativa*, Fondo Majella (Tammaro 1986a).

Fragaria viridis Duchesne subsp. *viridis* — *Fagus sylvatica* wood glades, Selva di Pacentro (Cesati 1873 as "*F. collina*"), Fonte Romana (Tammaro 1986a), Sirente (Guarrera & Tammaro, 1994).

Alchemilla transiens (Buser) Buser — pastures at high altitude - C.

Alchemilla alpina L. — pastures at high altitude, Majella (Tammaro 1986a).

Alchemilla subsericea Reuter — pastures at high altitude, Murelle (Tammaro 1986a).

Alchemilla nitida Buser — pastures at high altitude, Sirente (Groves as "*A. alpina*", Guarrera & Tammaro 1994), Velino (Lucchese & Lattanzi 1991), Camosciara (Dinter 1996, 1997). *Alchemilla plicatula* Gand. has also been reported from the Parco Nazionale d'Abruzzo as well, but doubtfully (Bazzichelli & Furnari 1970), M. Scindarella (Furrer & Furnari 1960), Majella and Velino (Petriccione 1988, 1993), but its real difference with *A. nitida* (cf. Fröhner 1990, Tondi in litt.) is to be verified.

Alchemilla glaucescens Wallr. — pastures - NC.

Alchemilla flabellata Buser — pastures, Gran Sasso (Furrer & Furnari 1960).

Alchemilla colorata Buser — pastures - C.

Alchemilla monticola Opiz — pastures - NC.

Alchemilla strigulosa Buser — pastures, Majella in the pastures of Majelletta (in AQUI, leg. Tammaro, det. Tondi).

Alchemilla subcrenata Buser — pastures, Sirente (Guarrera & Tammaro 1994), Gran Sasso at Fossa di Paganica (in RO - Herb. Anzalone, leg. Anzalone, det. Tondi).

Alchemilla xanthochlora Rothm. — pastures, Parco Nazionale d'Abruzzo! [Anzalone & Bazzichelli 1960 as "*A. vulgaris* L. var. *pratensis* (Schmidt)", Conti & Minutillo 1996], Majella (Tammaro 1986a), Gran Sasso (Tammaro 1995).

Alchemilla marsica Buser — Endem. Abr. - pastures, Coppo dell'Orso near Villavallelonga (Vaccari 1911) where it is to be confirmed and Valle dell'Inferno! (Parco Nazionale d'Abruzzo) from a sample collected together with Francesco Minutillo and kindly determined by Giancarlo Tondi.

Alchemilla undulata Buser — Coppo dell'Orso near Villavallelonga (Vaccari 1911) where it is to be confirmed.

Alchemilla cfr. *heteropoda* Buser — Camosciara! (leg. F. Conti, det. G. Tondi).

Alchemilla subser. *Subglabrae* H. Lindb. [*A. vulgaris* subsp. *alpestris* (Schmidt) Sch. & K.] — Pietracamela and Bosco Martese (Zodda 1967).

Alchemilla effusa Buser — Gran Sasso (Furrer & Furnari 1960). To be confirmed.

Alchemilla glabra Neygenf. — pastures, Valle di Chiarano! (leg. F. Conti & Minutillo, det. G. Tondi).

Alchemilla coriacea Buser — pastures, Parco Nazionale d'Abruzzo on M. Petroso (Anzalone & Bazzichelli 1960, Bazzichelli & Furnari 1970, D'Andrea 1982), Bosco Martese [Zodda 1967 as "*A. vulgaris* var. *coriacea* (Borkh.)"].

Alchemilla cfr. *inconcinna* Buser — Passo Godi! (leg. F. Conti, det. G. Tondi).

Alchemilla straminea Buser — pastures, Val Fondillo! (Conti & Minutillo 1996).

Aphanes arvensis L. — arid pastures, fields - C.

Aphanes microcarpa (Boiss. & Reut.) Rothm. — arid pastures, Teramo province [Zodda 1967 as "*Alchemilla arvensis* var. *microcarpa* (B. & R.)"].

Cydonia oblonga Mill. — Asia - naturalized - C.

Pyrus communis L. subsp. *piraster* (L.) Schübl. et Martens [*P. piraster* (L.) Duroi] —

scrub, broad-leaved woods to 1400 m - C.

Pyrus amygdaliformis Vill. — coppices, maquis, garigue, hedges to 1000-1100 m - NC.

× *Malosorbus florentina* (Zuccagni) Browicz [*Malus florentina* (Zuccagni) C. K. Schneid.] — Abruzzo (Tenore 1831-42 as "*P. florentina* Targioni"), near Villavallelonga [Grande 1924b as "*Pyrus florentina* (Zucc.) Targ. Tozz"].

Malus sylvestris Mill. — margins and glades of woods - C.

Malus domestica Borkh. — naturalized - C.

Sorbus domestica L. — supramediterranean scrub to about 800 m - C.

Sorbus aucuparia L. subsp. *aucuparia* — glades in the *Fagus sylvatica* wood and subalpine scrub - NC.

Sorbus torminalis (L.) Crantz — supramediterranean broad-leaved woods - C.

Sorbus chamaemespilus (L.) Crantz (*Pyrus chamaemespilus* Ehrh.) — subalpine stony slopes, Pizzoli (Bertoloni 1833-54 from Mauri and Orsini as "*Mespilus chamaemespilus*"), Sirente (Groves 1880, Guarrera & Tammaro 1994), Velino (Tenore 1831-42 as "*P. chamaemespilus*"; Petriccione 1993), Parco Nazionale d'Abruzzo on M. Petrosol, M. Capraro and at Villavallelonga (Anzalone & Bazzichelli 1960 as "*P. chamaemespilus*", Bruno & Bazzichelli 1966, Bazzichelli & Furnari 1970, Petriccione 1988), Gran Sasso in Malecoste, Campo Pericoli, Campo Imperatore! (Tenore 1831-42, Crugnola 1894, Tammaro 1983c), M. Prenal, Simbruini in M. Fontecellese?, M. Piccionara? (Montelucci 1933 as "*P. chamaemespilus*") and in the Zompo lo Schioppo Natural Reserve on M. Ortara! (Conti 1992b).

Sorbus aria (L.) Crantz subsp. *aria* — open woods, stony slopes, glades, mostly in the mountain belt - C.

Sorbus aria (L.) Crantz subsp. *cretica* (Lindl.) Holmboe [*S. graeca* (Spach) Kotschy] — Parco Nazionale d'Abruzzo near Civitella Alfedena (Loche & al. 1991), Velino (Lucchese & Lattanzi 1991), Sirente (Guarrera & Tammaro 1994), M. Scarafano (Tammaro 1995). A remarkable variability has been noticed and the discriminant characters between this species and the previous one are not well defined.

Sorbus aria × *aucuparia* — Parco Nazionale d'Abruzzo in Val di Corte (Petriccione 1986, from a specimen collected by Sulli in herb. PNA), Vallone della Terratta!

Eriobotrya japonica (Thunb.) Lindley — Cultiv. spont. - coast and hill belt - NC.

Amelanchier ovalis Medik. subsp. *ovalis* — scrub on cliff, open woods to 1200 m - C.

Amelanchier ovalis Medik. subsp. *cretica* (Willd.) Pignatti — Gioia Vecchio (Vaccari &

Wilczek 1940 as "*A. ovalis* var. *cretica* DC.") but, according to Anzalone & Bazzichelli (1959-60), this site is doubtful. It is also recorded from Majella at the Valle dell'Orfento (Tammara 1986a), Velino (Lucchese & Lattanzi 1991, Petriccione 1993), Sirente (Guarrera & Tammara 1994).

Cotoneaster integerrimus Medik. — rocky places - NC.

Cotoneaster nebrodensis (Guss.) K. Koch — rocky places - NC.

Pyracantha coccinea M. Roem. — margins of woods, glades, hedges, from the plains to low mountains - C.

Mespilus germanica L. — doubtful exotic species, subacidic broad-leaved woods - NC - It is not clear if it is a residual of ancient cultivation or if it is spontaneous.

Crataegus laevigata (Poir.) DC. subsp. *laevigata* — deciduous broad-leaved woods and glades to 1200 m - C.

Crataegus monogyna Jacq. subsp. *monogyna* — margins of woods, hedges, to 1500 m - CC.

Prunus persica (L.) Batsch — naturalized - C.

Prunus dulcis (Mill.) D. A. Webb — naturalized - C.

Prunus cerasifera Ehrh. — S. E. Europ.-S. W. Asia - naturalized (Zodda 1967 as "*P. myrobalana* Lois.", Lastoria 1989). Not reported in Viegi & al. (1990).

Prunus spinosa L. — bright woods, scrub, hedges, to 1500 m - CC.

Prunus domestica L. subsp. *domestica* — naturalized - C.

Prunus domestica L. subsp. *insititia* (L.) C. K. Schneider — naturalized - C.

Prunus avium L. — woods and margins of woods - CC.

Prunus cerasus L. — naturalized - C.

Prunus mahaleb L. — rocky places, hedges, margins of the thermophilous woods - C.

Leguminosae

Cercis siliquastrum L. subsp. *siliquastrum* — stony slopes, thermophilous oak-woods to 800 m - NC - Reported from the Abruzzo since the last century (Tenore & Gussone 1842). For its distribution see Pirone (1995d).

Ceratonia siliqua L. — near Lentella! between the Mediterranean maquis and an olive-grove. Two specimens, not clear from the nativeness point of view, were found (Conti & al. in press).

Albizia julibrissin Durazzini — reported as cultivated spontaneous (Viegi & al. 1990 from a specimen collected by Rossi) but it does not seem growing wild.

Anagyris foetida L. — Pignatti (1982) reports it from the Abruzzo; exact locality not indicated, but it is not present in the local floristic inventories and there are no specimens in FI!

Laburnum anagyroides Medik. — margins of woods and glades from the supramediterranean to the mountain belt - CC.

Laburnum alpinum (Mill.) Bercht. & J. Presl — *Fagus sylvatica* woods glades, Majella (Feoli & Feoli-Chiapella 1974), Rocca Calascio (Fascetti & Veri 1983), Velino (Petriccione 1993), Parco Nazionale d'Abruzzo! (Tenore & Gussone 1842 as "*Cytisus laburnum*", Grande 1924a, Petriccione & al. 1993), Bocche di Chiarano, Altipiani Maggiori and at Vallone d'Angora (Pirone 1995d).

Calicotome spinosa (L.) Link — garigue, Valle dell'Orta! (Conti & Manzi 1996).

Calicotome infesta (C. Presl.) Guss. — garigue, hills overlooking the sea and along the ditches between Abbazia di S. Giovanni in Venere!, S. Vito Chietino! and Lanciano! (Conti 1990b, Conti & Manzi 1997c).

Cytisophyllum sessilifolium (L.) O. Lang (*Cytisus sessilifolius* L.) — open woods, margins of woods and scrub - CC.

Cytisus nigricans L. (*Lembotropis nigricans* L.) — open woods, surroundings of Scanno (Gravina 1812), near Montorio al Vomano (Furrer 1928), between Teramo and il Ceppo (Alessandrini 1978).

Cytisus villosus Pourr. — maquis and hill and montane woods in shady and cool areas, hill pine-woods of Pescara (Pirone 1985), M. Velino (Petriccione 1993), Valle dell'Orta, M.ti della Laga, Ripa dei Gatti di Torrebruna, Feudo Ugni (Pirone 1995d), Bocca di Valle (Dinter 1997).

Cytisus decumbens (Durande) Spach — pastures and open woods to 1000 m, M. Grande di Pizzoli, Val Chiarino (Gran Sasso) (Tenore 1811-38, Abbate 1903 as "*Genista procumbens* K. & W. var. *humilis*"), Gran Sasso, Sirente, Marsica! (Fiori 1923-29, Anzalone & Bazzichelli 1960 as "*Genista decumbens* W.", Anzalone 1962 as "*Genista decumbens* W. var. *typica*", Bazzichelli & Furnari 1970, Tammaro 1971b, Guarrera & Tammaro 1994, Conti 1995, Dinter 1996, 1997), Velino (Lucchese & Lattanzi 1991), Majella (Tammaro 1986a).

Cytisus scoparius (L.) Link subsp. *scoparius* — glades of montane woods on acid soil - CC on M.ti della Laga and in Carseolano, rarer in other places.

Chamaecytisus spinescens (C. Presl) Rothm. (*Cytisus spinescens* Presl.) — garigue, maquis and open woods from 300 to 1300 m - C.

Chamaecytisus triflorus (Lam.) Skalická subsp. *triflorus* — arid pastures, maquis and scrub, to 1500 m - C - The previous records of *Ch. hirsutus* (L.) Link subsp. *hirsutus* have to be referred to this taxon (Cristofolini 1991).

Chamaecytisus triflorus (Lam.) Skalická subsp. *pumilus* (De Not.) Greuter & Burdet [*Cytisus pumilus* De Not.; *Ch. hirsutus* (L.) Link subsp. *pumilus* (De Not.) Briq.] — Endem. Maritime Alps, Parco Nazionale d'Abruzzo [Anzalone & Bazzichelli 1960 quote Vaccari and Wilczek but they are doubtful about its real occurrence; probably it is "*Chamaecytisus polytrichus* (Bieb.) Ponert"].

Chamaecytisus hirsutus L. subsp. *polytrichus* (M. Bieb.) Ponert — arid pastures, woods, Gran Sasso [Tammaro 1995 as "*Chamaecytisus polytrichus* (M. Bieb.) Rothm."].

Genista monspessulana (L.) L. Johnson — surroundings of Scanno (Gravina 1812 as "*Genista candicans*"). To be confirmed.

Genista tinctoria L. subsp. *tinctoria* — open woods and their borders, sparse pastures on humid soils - CC.

Genista tinctoria L. subsp. *ovata* (Waldst. & Kit.) Arcang. — *Fagus sylvatica* wood glades, Valle dell'Orfento at La Sfischia (Tammaro 1986a).

Genista januensis Viv. (*G. triangularis* Willd.) — open woods and rocky pastures, Parco Nazionale d'Abruzzo (Anzalone & Bazzichelli 1960 from specimens collected by Grande doubting whether they belong to the species investigated), Simbruini (Veri 1988), Velino (Blasi & al. 1990, Lucchese & Lattanzi 1991, Stanisci 1997), gypsum outcrops near Lentella!

Genista pilosa L. — *Fagus sylvatica* wood glades, Majella in Vallone di S. Spirito, Valle dell'Orfento, Rocca Campanile (Tenore 1831-42, Tenore & Gussone 1842, Bertoloni 1833-54 from Gussone, Tammaro 1986a).

Genista radiata (L.) Scop. — cliffs and rocky pastures on mountain ridges to 1500 m - "Alti gioghi" (Abbate 1903), Parco Nazionale d'Abruzzo at Villavallelonga (Grande 1910). It occurs in the Alps and in northern and central Apennines as far as the Abruzzo where it reaches the southern limit of its Italian distribution.

Genista sagittalis L. [*Chamaespartium sagittale* (L.) Gibbs] — montane pastures, M. di Roseto, Pizzo di Sevo (Tenore 1831-42), Sirente (Groves 1880, Tammaro & al. 1974, Guarrera & Tammaro 1994), Fano Adriano (Crugnola 1894), raises around Piano delle Cinquemiglia (Pirone 1997b), M. Genzana in "I Piselli"! Recently confirmed for the Monti della Laga in the areas belonging to Marche (Pedrotti 1982b) and Latium (Tondi 1992).

Spartium junceum L. — scrub in the coast and hill belt - CC.

Ulex europaeus L. subsp. *europaeus* — Zodda (1945) reports it from a specimen collected by Quartapelle, but exact locality not indicated; there are no specimens in FI! and it

is worthy of confirmation.

Argyrolobium zanonii (Turra) P. W. Ball. subsp. *zanonii* — arid meadows, garigue - PC.

Lupinus angustifolius L. subsp. *angustifolius* — Zodda (1945) reports it from the Teramo province from a specimen in Quartapelle herbarium but it is no longer kept in the *Compendio della Flora Teramana* (Zodda 1967).

Lupinus albus L. subsp. *albus* — E. Medit. - naturalized - NC (Viegi & al. 1990).

Robinia pseudoacacia L. — N. Amer. - naturalized - CC.

Galega officinalis L. — humid uncultivated land - C.

Colutea arborescens L. (s.l.) — open oak-woods and hedges to 1200 m - C.

Astragalus sesameus L. — arid meadows and garigue - NC.

Astragalus hamosus L. — arid pastures and meadows - NC.

Astragalus danicus Retz. — humid meadows, *Nardus* grassland, Velino, Sirente (Tammaro 1971b, Lucchese & Lattanzi 1991, Dinter 1996), M. Rotella (Petriccione 1986), Piano Aremogna! and Piano delle Cinquemiglia! (Conti 1995), M. Focalone (Dinter 1997).

Astragalus hypoglottis L. subsp. *gremlii* (Burnat) Greuter & Burdet [*A. purpureus* Lam. subsp. *gremlii* (Burnat) Asch. & Graebn.] — grassy and stony slopes, Parco Nazionale d'Abruzzo at Gioia Vecchio and at Scanno (Vaccari & Wilczek 1940 as "*A. hypoglottis* var. *gremlii* Burnat").

Astragalus depressus L. subsp. *depressus* — montane pastures - C.

Astragalus australis (L.) Lam. — stony pastures at high altitude, Pietracamela (Crugnola 1894 as "*Phaca australis*"), Majella in Val Cannella!, Campo di Giove, Passo Portella di Rivisondoli (Tammaro 1986a), M.ti della Laga on Gorzano! (Conti 1990b), Pizzo di Camarda!

Astragalus glycyphyllos L. — deciduous woods, uncultivated land - C - var. *setiger* Guss. has also been reported.

Astragalus sirinicus Ten. — pastures at high altitude - NC.

Astragalus sempervirens Lam. subsp. *gussonei* Pignatti — Endem. Ap. - stony montane pastures - CC.

Astragalus odoratus Lam. — S. E. Europ.-S. W. Asiat. - Adv. casual — Colle di Castelnuovo in Marsica (Fiori & Paoletti 1896-1908, Viegi & al. 1990 from a specimen collected by Levier). The species deserves confirmation because it has not been found recently.

Astragalus onobrychis L. — pebbly, arid pastures, Majella (Tenore 1831-42), Gran Sasso in Gola di Appari (Tammaro & Pirone 1980 as "*A. onobrychis* var. *microphyllus* Besser ex DC").

Astragalus monspessulanus L. subsp. *monspessulanus* — arid uncultivated land - C.

Astragalus monspessulanus subsp. *illyricus* (Bernh.) Chater — Pietracamela at Fonticelle (Zodda 1967) and Gran Sasso in general (Chiosi 1975 from a specimen collected by Marchesetti). To be confirmed.

Astragalus vesicarius L. subsp. *vesicarius* — meadows at high altitude, montane pastures, M. di Pizzoli (Mauri & al. 1830 as "*Oxytropis vesicarius*"), Sirente (Groves 1880), M. Grande at Marsica as *A. vesicarius* DC. (Tenore 1831-42), between Pescara and Anversa degli Abruzzi at Passo "Olmo di Bobbi"! (Anzalone 1962 as "*A. vesicarius*"), and from it to Pizzo Marcello!, M. S. Franco (Bertoloni 1833-54 from Orsini), near Castel del Monte (Lusina 1949), M. Costa delle Vitelle (Bazzichelli & Furnari 1970), Marcolano (Dinter 1996), Valle del Vomano (Pignatti 1982), Marcolano (Dinter 1997), M. Prena!, M. Genzana! All the localities of Abruzzo have this subspecies, *A. vesicarius* subsp. *vesicarius* (Anzalone 1970).

Astragalus aquilanus Anzalone — Endem. of Abruzzo and Calabria - arid meadows, near L'Aquila! (Anzalone 1970) and other localities in L'Aquila province! (Veri 1971, Tammaro & al. 1979, Frattaroli & Frizzi 1988, Conti & Minutillo 1996). Considered an endemic of the Abruzzo, it has been recently found on M. Pollino in Calabria (Bernardo 1996).

Oxytropis neglecta Ten. (*O. pyrenaica* Godron & Gren.) — stony meadows at high altitude - NC.

Oxytropis campestris (L.) DC. subsp. *campestris* — stony meadows at high altitude - NC
— The populations from the Abruzzo should be referred to *O. alpina* Ten., which according to Leins & Merxmüller (1966) is a synonym of this taxon. Nevertheless, after having observed and compared many specimens coming from different areas, some slight differences have been noticed, especially regarding the shape of the stipules and vexillum. It is worthy investigating further whether these differences are part of the variability of *O. campestris* subsp. *campestris*, or if they deserve taxonomic recognition.

Oxytropis pilosa (L.) DC. — stony meadows at high altitude, Velino and Torricella (Mauri & al. 1830, Tenore 1831-42), Gran Sasso (Lusina 1949 as "*Astragalus pilosus*", Bazzichelli 1960 as "*A. pilosus* L.", Tammaro 1995), Sirente (Guarrera & Tammaro 1994).

Oxytropis caputoi Moraldo & La Valva — Endem. C. S. Ap. - stony meadows at high altitude, Sirente, Velino (Moraldo & La Valva 1980, Lucchese & Lattanzi 1991, Petriccione 1993), Majella! (Tammaro 1986a), Parco Nazionale d'Abruzzo!, M. Genzana!, M. Rotella (Petriccione 1986, Conti 1995), Morrone di Popoli!, Cagnano Amiterno and Gran Sasso near Castel del Monte! (Tammaro & Visca

1987), M. Mileto!, M. Pratello! (and from specimens collected by Pirone). Its separation from *O. pilosa* is doubtful (Brilli-Cattarini pers. comm.).

Glycyrrhiza glabra L. — coastal and clayey hill belt to 20 km from the sea (Zodda 1953, Montelucci 1970, Pirone & Tammaro 1981).

Amorpha fruticosa L. — N. Americ. - naturalized - Teramo province (Zodda 1961a, 1964, 1967), Pescara, Montesilvano!, Città S. Angelo, F. Saline, F. Tronto!, T. Vibrata!, F. Vomano! (Tammaro & Pirone 1979, Pirone 1983, Viegi & al. 1990, Conti & Manzi 1996, Pirone 1995d), mouth of F. Osento!

Bituminaria bituminosa (L.) Stirton (*Psoralea bituminosa* L.) — uncultivated land and arid pastures areas - C.

Phaseolus vulgaris L. — Americ. - naturalized - Teramo province (Zodda 1953a).

Vigna unguiculata (L.) Walpers — Paleotrop. - naturalized - NC.

Cicer arietinum L. — Pontic (?) - naturalized - Pescara, Teramo (Zodda 1954, Viegi & al. 1990).

Vicia cassubica L. — woods - NC.

Vicia ochroleuca Ten. subsp. *ochroleuca* — hedges, S. Salvo and Vasto (Villani 1921). To be confined.

Vicia dumetorum L. — open woods, hedges, "Morrone salendo Fonte freddo" (Tenore & Gussone 1842), Bosco Martese at Ceppo (Zodda 1953), Passo Lanciano (Tammaro 1986a), Val d'Arano (Dinter 1997).

Vicia pisiformis L. — woods, M.ti della Laga near Rocca S. Maria (Guarrera & al. 1995).

Vicia onobrychioides L. subsp. *onobrychioides* — coppices, hedges, pastures - C.

Vicia altissima Desf. — Valle dell'Orfento and Sterparo di Perticoni in Semivicoli (Cesati 1873, Villani 1921). Species worthy of confirmation because it has not been found recently, there are no specimens in FI!

Vicia cracca L. subsp. *cracca* — open woods, glades - C.

Vicia cracca subsp. *incana* (Gouan) Rouy (*V. incana* Gouan) — open woods, glades - C.

Vicia tenuifolia Roth subsp. *tenuifolia* — glades - C.

Vicia villosa Roth subsp. *villosa* — Velino (Petriccione 1993).

Vicia villosa Roth subsp. *varia* (Host) Corb. [*V. villosa* subsp. *dasycarpa* (Ten.) Cavillier] — hedges, scrub - C.

Vicia villosa subsp. *ambigua* (Guss.) Kerguelen (*V. pseudocracca* Bertol.) — cultivated land, arid uncultivated land, Majella (Cesati 1873, Villani 1921), Sirente (Guarrera & Tammaro 1994).

Vicia benghalensis L. (*V. atropurpurea* Desf.) — arid pastures, uncultivated areas, Abruzzo (Pignatti 1982), Rocca Calascio (Fascetti & Veri 1983).

Vicia ervilia (L.) Willd. — E. Medit? - naturalized - cultivated land - C.

Vicia hirsuta (L.) Gray — arid pastures - C.

Vicia disperma DC. — uncultivated areas, arid pastures - C.

Vicia parviflora Cav. [*V. tenuissima* (Bieb.) Schinz & Thell.] — uncultivated land, hedges - NC.

Vicia tetrasperma (L.) Schreb. — cultivated and uncultivated land - NC.

Vicia pubescens (DC.) Link — fields, arid pastures - NC - Abruzzo (Pignatti 1982).

Vicia sepium L. — woods, glades - CC.

Vicia grandiflora Scop. — degraded woods, hedges, uncultivated land - NC.

Vicia barbazitae Ten. & Guss. — open woods, Parco Nazionale d'Abruzzo at M. La Difesa [Fiori 1923-29 as "*V. grandiflora* Scop. var. *laeta* (Ces.)"].

Vicia pannonica Crantz subsp. *striata* (M. Bieb.) Nyman — uncultivated land, hedges - NC.

Vicia sativa L. subsp. *sativa* — Cultiv. - var. *cosentini* (Guss.) Groves has also been recorded.

Vicia sativa subsp. *nigra* (L.) Ehrh. [*V. sativa* subsp. *angustifolia* (L.) Gaudin; *V. sativa* subsp. *segetalis* (Thuill.) Celak; *V. sativa* subsp. *cordata* (Hoppe) Batt.] — uncultivated land, arid meadows - C.

Vicia sativa subsp. *macrocarpa* (Moris) Arcang. — arid meadows - NC.

Vicia lathyroides L. — meadows and arid uncultivated land, Giulianova (Zodda 1953), Sirente (Guarrera & Tammaro 1994), Capo Pescara (Pirone & al. 1997), Gole del Sagittario! (Conti & Minutillo 1996).

Vicia peregrina L. — arid uncultivated land, fields - NC.

Vicia lutea L. subsp. *lutea* — uncultivated land, arid pastures - C.

Vicia hybrida L. — arid meadows - C.

Vicia bithynica (L.) L. — uncultivated land, arid meadows, fields - C.

Vicia narbonensis L. — uncultivated and cultivated land - NC.

Vicia faba L. — naturalized - C.

Lens nigricans (M. Bieb.) Godron — arid meadows, Tagliacozzo (Fiori 1923-29 as "*V. lens* var. *marschalii*"), Marsica in the localities with *Phlomis fruticosa*! (Pirone 1995c), Valle Macrana! (Conti & Minutillo 1996).

Lens culinaris Medik. — naturalized - NC.

Lens ervoides (Brign.) Grande — arid meadows - C.

Lathyrus vernus (L.) Bernh. subsp. *vernus* — woods - CC.

Lathyrus venetus (Mill.) Wohlf. — woods - CC.

Lathyrus niger (L.) Bernh. subsp. *niger* — cool woods on slightly acid soil, surroundings of Scanno (Gravina 1812 as "*Orobis niger*"), Campli, Civitella (Zodda 1953), Majella (Tammara 1986a), Bosco di Vallaspra near Atesa! (Conti & Pirone 1992).

Lathyrus ochraceus Kittel subsp. *occidentalis* (Fischer & C. A. Meyer) Bässler [*L. occidentalis* (Fischer & C. A. Meyer) Fritsch] — Zodda (1953) reports it as "*L. luteus* Pet. var. *laevigatus* Beck" from the Bosco di Trignano over Pietracamela. Nevertheless he thought afterwards that the occurrence of *L. luteus* was not certain (Zodda 1967). Pignatti (1982) reports it from the Teramo province probably on the basis of the first report. There are no specimens in FI!

Lathyrus pannonicus (Jacq.) Garcke subsp. *asphodeloides* (Gouan) Bässler — humid meadows, Sulmona district (Tenore 1831-42 as "*Orobis albus* var. *asphodeloides*" from Gravina), Prati del Sirente, Altopiano delle Rocche! [Tammara 1971b as "*L. pannonicus* (Jacq.) Garcke subsp. *pannonicus*"], Piano delle Cinquemiglia!, Piana di Ovindoli!, (Anzalone & Veri 1975 from specimens collected by Gavioli and Chiarugi in FI!), Quarti! (Pedrotti 1969), Villavallelonga (Pignatti 1982), Voltigno! (Pirone 1987a) and Templo, from Pescasseroli to Bisegna! (Conti 1992c). Specimens from the localities of Prati del Sirente and Altopiano delle Rocche are to be referred to *L. pannonicus* subsp. *asphodeloides* (Anzalone & Veri 1975).

Lathyrus linifolius (Reichard) Bässler (*L. montanus* Bernh.) — montane pastures, Gran Sasso (Bertoloni 1833-54 from Orsini, Marcantonio and Gussone, Zodda 1953 from a specimen collected by Petrilli, 1957), Pizzo di Moscio (from a specimen collected by Pedrotti in CAME!).

Lathyrus pratensis L. — meadows, scrub - C.

Lathyrus sylvestris L. subsp. *sylvestris* — hedges, margins of woods - C.

Lathyrus latifolius L. — uncultivated land, hedges - C.

Lathyrus odoratus L. — Endem. C. S. It-Si - arid pastures, Gole di Popoli (Tammaro 1971a), Grotta Imposta! (Conti & Manzi 1996).

Lathyrus sphaericus Retz — arid uncultivated land - C.

Lathyrus angulatus L. — arid uncultivated land, fields, Teramo province at Castiglione della Valle di Colledara, Ornano (Crugnola 1900, Zodda 1953 from a specimen collected by Petrilli), Gole di Popoli (Tammaro 1971a), Conca Aquilana (Console & Frattaroli 1989). The previous reports of *L. angulatus* recorded by Gussone, Tenore, Falqui and Crugnola are to be referred to *L. sphaericus* (Grande 1924a).

Lathyrus incospicuus L. — arid uncultivated land, Villavallelonga area (Grande 1904, Fiori 1923-29).

Lathyrus setifolius L. — arid uncultivated land, Cappadocia (Tenore 1831-42), among fields (Abbate 1903), Torrevecchia teatina (Villani 1921), Teramo province at Cellino Attanasio (Zodda 1967), Gole di Popoli (Tammaro 1971a), Carsoli, Pereto, Balsorano (Veri 1988), Conca Aquilana, Gran Sasso (Console & Frattaroli 1989, Tammaro 1995), Velino (Lucchese & Lattanzi 1991), Sirente (Guarrera & Tammaro 1994), Costa Macrana! (from a specimen collected by Rosati in Herb. PNA).

Lathyrus cicera L. — arid uncultivated land, fields - NC.

Lathyrus sativus L. — naturalized - C (Viegi & al. 1990).

Lathyrus annuus L. — uncultivated land, fields - C.

Lathyrus hirsutus L. — uncultivated land, pastures areas, Simbruini at Cappadocia and Oricola (Mauri & al. 1830, Tenore 1831-42, Bertoloni 1833-54, Veri 1988), "Nei grani e campi cretosi" (Abbate 1903), Villavallelonga (Grande 1904), Teramo province (Zodda 1967), Chieti province (Villani 1921), Sirente (Guarrera & Tammaro 1994).

Lathyrus clymenum L. — maquis, pastures, fields - NC.

Lathyrus ochrus (L.) DC. — uncultivated land, fields - C.

Lathyrus nissolia L. — uncultivated land, humid meadows, Abruzzo (Tenore 1831-42), Parco Nazionale d'Abruzzo between Gioia Vecchio and Pescasseroli! (Anzalone & Bazzichelli 1960, Conti 1995), Marcolano (Dinter 1996), Gole di Popoli, Gran Sasso! (Tammaro 1971a, Tammaro 1995), Sirente! (Guarrera & Tammaro 1994), Vallone del Carapale!, La Cicerana!, Passo Godi!

Lathyrus aphaca L. — uncultivated land - C.

Pisum sativum L. subsp. *sativum* — naturalized - C.

- Pisum sativum* L. subsp. *elatius* (M. Bieb.) Asch. & Graebn. — uncultivated land - C.
- Ononis rotundifolia* L. — firm screes, Sirente (Groves 1880), Gran Sasso at Fonte Cerreto and M. Cristo (Tammaro & Frizzi 1982), Gole di Celano (Dinter 1996, 1997).
- Ononis cristata* Mill. — montane and subalpine pastures, Piani di Pezza between Velino and Rocca di Mezzo, Velino, Sirente (Mauri & al. 1830, Tenore 1831-42 as "*O. cenisia*", Groves 1880, Montelucci 1958, Tammaro 1971b, Lucchese & Lattanzi 1991, Tammaro & Catonica 1992), M. ti del Cicolano (Bertoloni 1833-54 as "*O. cenisia*" da Orsini), Gran Sasso! (Lusina 1949, Barbagallo & Guglielmo 1975, Tammaro 1995), Majella! (Tammaro 1986a from a specimen collected by Sommier, Conti 1987). Some morphological and quantitative differences have been noticed between W. Alpine and C. Apennine populations but at present no formal taxonomic recognition has been assigned to the two populations (Tammaro & Catonica 1992).
- Ononis natrix* L. subsp. *natrix* — arid meadows - C.
- Ononis ornithopodioides* L. — arid meadows, near Lentella! and Fresagrandinara! (Conti & al. in press).
- Ononis reclinata* L. — arid meadows - C.
- Ononis viscosa* subsp. *breviflora* (DC.) Nyman (*O. breviflora* DC.) — arid pastures - C - *O. viscosa* L. is reported from Civitella and Montorio at Fosso dello zolfo (Bertoloni 1833-54 from Orsini) but it is probably to be referred to this taxon.
- Ononis pusilla* L. (*O. columnae* All.) — arid meadows - C.
- Ononis minutissima* L. — arid meadows, territory of Rivisondoli (Pignatti 1977).
- Ononis spinosa* L. subsp. *spinosa* — arid clayey uncultivated land - CC.
- Ononis spinosa* subsp. *antiquorum* (L.) Arcang. — arid uncultivated land - NC.
- Ononis alba* Poir. subsp. *alba* — stony pastures, under Campo di Giove (Cesati 1873), Gole di Popoli (Tammaro 1971a).
- Ononis oligophylla* Ten. — Endem. C. S. It-Si - clayey fields, M. Corno (Bertoloni 1833-54 from Narduccio), Majella near Caramanico, S. Valentino, and Lavino (under Turri) (Mauri & al. 1830, Tenore 1831-42, Tenore & Gussone 1842, Cesati 1873). To be confirmed.
- Ononis variegata* L. — sandy coastal habitats - NC.
- Melilotus altissimus* Thuill. — humid uncultivated land - C.
- Melilotus albus* Medik. — uncultivated land - C.

Melilotus officinalis (L.) Lam. — uncultivated land - C.

Melilotus italica Lam. — uncultivated land, Montepagano di Roseto (Zodda 1967).

Melilotus neapolitanus Ten. — sandy arid uncultivated land, Abruzzo (Tenore 1831-42), coast of Pescara (Tammaro & Pirone 1979).

Melilotus indicus All. — fields, uncultivated land - C.

Melilotus elegans Ser. — fields, uncultivated land - NC.

Melilotus sulcatus Desf. — arid uncultivated land - C.

Trigonella esculenta Willd. — fields, arid uncultivated land, surroundings of Scanno (Gravina 1812 as "*T. corniculata*"), Abruzzo [Tenore 1831-42 as "*T. corniculata* (L.) L."], Conca Aquilana [Console & Frattaroli 1989 as "*T. corniculata* (L.) L."].

Trigonella gladiata M. Bieb. — arid meadows, Abruzzo (Tenore 1831-42), "Ex Piceno in Pizzo di Sevo prope arcem della Galeotta a Marzialesetto" (Bertoloni 1833-54), Velino (Montelucci 1958 from a specimen collected by Levier), near Barrea! (Conti 1995).

Trigonella foenum-graecum L. — S. W. Asiat. - naturalized - C.

Medicago monspeliaca (L.) Trautv. (*Trigonella monspeliaca* L.) — arid meadows, Fontecchio (Tammaro & Pogliani 1977), Rocca Calascio (Fascetti & Veri 1983), Poggio Picenze (Veri 1983), Rivisondoli territory (Pirone 1997b), near Pescina! and Morrone over Badia near Eremo di S. Onofrio!, M. Salviano!

Medicago lupulina L. — pastures, uncultivated land, ruderal environments - CC.

Medicago secundiflora Durieu — naturalized, arid uncultivated land, Gole di Popoli (Tammaro 1971a).

Medicago sativa L. subsp. *sativa* — Eurasiat? - naturalized - CC.

Medicago falcata L. subsp. *falcata* [*M. sativa* subsp. *falcata* (L.) Arcang.] — Eurasiat. - naturalized - CC.

Medicago prostrata Jacq. subsp. *prostrata* — arid meadows - PC, more frequent in L'Aquila province. Also var. *pubescens* Guss. has been reported.

Medicago marina L. — coastal dunes - NC.

Medicago orbicularis (L.) Bartal. — fields, arid uncultivated land - C.

Medicago interexta (L.) Mill. — cultivated land, arid uncultivated areas - NC.

Medicago scutellata (L.) Mill. — arid uncultivated land, Abruzzo (Tenore 1831-42), Pescara, Montepagano in Teramo province (Pirone & Tammaro 1981), Casalbordino (Tammaro & Pietrocola 1974) and in the territory of Cupello (Manzi 1992a).

Medicago rigidula (L.) All. — arid meadows - C.

Medicago italica (Mill.) Fiori subsp. *italica* — stony grassy land, Majella (Tammaro 1986a as "*M. tornata*"), probably to be referred to this taxon.

Medicago truncatula Gaertn. — arid uncultivated land - NC.

Medicago littoralis Loisel. — arid sandy uncultivated land - NC.

Medicago tuberculata (Retz.) Willd. — uncultivated land, fields - NC.

Medicago arabica (L.) Huds. — T - Euri-Medit. - uncultivated land, fields - C.

Medicago polymorpha L. (*M. hispida* Gaertn.) — uncultivated land, fields - C.

Medicago disciformis DC. — garigue, Marsica in the localities with *Phlomis fruticosa* (Pirone 1995c).

Medicago minima (L.) L. — arid meadows - C.

Trifolium strictum L. (*T. laevigatum* Poir.) — uncultivated land, Tagliacozzo (Fiori 1923-29), Parco Nazionale d'Abruzzo at Villavallelonga (Anzalone & Bazzichelli 1960 from a specimen collected by Grande), Teramo (Zodda 1953 from Di Giuseppe), Sirente (Guarrera & Tammaro 1994).

Trifolium montanum L. subsp. *montanum* — montane pastures, M. Bilancere, Pietracamela, Intermesoli, M. Corno (Zodda 1967).

Trifolium montanum subsp. *rupestre* (Ten.) Nyman — stony pastures - C.

Trifolium repens L. subsp. *repens* — uncultivated land, cool meadows - CC.

Trifolium repens subsp. *prostratum* Nyman — pastures - C - According to Greuter & al. (1984-89) it is a doubtful species.

Trifolium pallescens Schreb. — alpine pastures, Pignatti (1982) reports it generally from the Abruzzo, but exact locality not indicated.

Trifolium thalii Vill. — stony slopes, damp snowbed meadows - C.

Trifolium hybridum L. subsp. *hybridum* — humid meadows, Templo, from Pescasseroli to Bisegna! (Conti 1992c).

Trifolium hybridum L. subsp. *elegans* (Savi) Asch. & Graebn. — pastures - NC.

Trifolium nigrescens Viv. subsp. *nigrescens* — arid pastures - NC.

Trifolium spumosum L. — arid uncultivated land, Valle del Mavone (Zodda 1953 from Petrilli).

Trifolium vesiculosum Savi — Abruzzo (Tenore 1831-42), Morrone (from a specimen collected by Martelli in FI!). It has not been observed recently and is to be confirmed.

Trifolium fragiferum L. subsp. *fragiferum* — humid meadows - C.

Trifolium resupinatum L. — humid meadows - C.

Trifolium tomentosum L. — arid uncultivated land - NC.

Trifolium badium Schreb. — subalpine pastures, rare in the Abruzzo (Grande 1918), Pizzo di Sevo, M. Pelone, Pizzo della Cavata, Pietracamela (Mauri & al. 1830, Tenore 1831-42, Zodda 1953).

Trifolium spadiceum L. — humid meadows, Chiarino, Pizzo di Sevo, Arsita (Mauri & al. 1830, Tenore 1831-42), Valle del Mavone (Abbate 1903), Bosco Martese (Conti & Manzi 1997c from a specimen collected by Zodda in herb. PNA!), Voltigno!, Campotosto!

Trifolium brutium Ten. — Endem. C. S. Ap.-Si - arid pastures, Pignatti (1982) reports it generally. According to Moggi (1956) it occurs only in S. Apennines.

Trifolium patens Schreb. — humid meadows - NC.

Trifolium aureum Pollich — wood glades. According to Grande (1918) it is quite common as "*T. strepens* Crantz". Pignatti (1982) reports it from the south to Simbruini but he does not record it from the Abruzzo. Recently confirmed from Forca di Barrea (Conti & Manzi 1997c from a specimen collected by Rosati in herb. PNA!) and M. Marcolano (Dinter 1997).

Trifolium campestre Schreb. subsp. *campestre* — meadows and arid uncultivated land - CC.

Trifolium dubium Sibth. (*T. minus* Sm.) — humid meadows, Castel di Sangro at La Brionna (Tammaro 1983a), Campotosto between Colle Staffi and "le Valli" (Conti & al. in press), Bosco di Oricola!, Piani Palentini!

Trifolium striatum L. subsp. *striatum* — uncultivated land, pastures areas, Giulianova (Chiosi 1975 from a specimen collected by Marchesetti), Capistrello (Veri 1988), Velino in Valle di Sevice (Lucchese & Lattanzi 1991).

Trifolium striatum L. subsp. *tenuiflorum* (Ten.) Arcang. — arid uncultivated land, Oricola (Veri 1988).

Trifolium filiforme L. (*T. micranthum* Viv.) — humid pastures. Pignatti (1982) reports it occurring generally and in Prati del Sirente (Guarrera & Tammaro 1994).

Trifolium arvense L. subsp. *arvense* — arid uncultivated land - C.

Trifolium bocconei Savi — S. Valentino (Mauri & al. 1830). There are no specimens in FI!: to be confirmed.

Trifolium phleoides Willd. — arid pastures, M.ti of Villavallelonga (Grande 1914, Fiori 1923-29), Sirente (Guarrera & Tammaro 1994), Rivisondoli territory (Pirone 1997b).

Trifolium ligusticum Loisel. — humid uncultivated land, Abruzzo (Tenore 1831-42), "Ex Praetutiis in sylvis di Cavaliere ab Orsino" (Bertoloni 1833-54). There are no specimens in FI!; not reported recently and worthy of confirmation.

Trifolium scabrum L. — arid meadows - C.

Trifolium lucanicum Gasp. ex Guss. [*T. scabrum* subsp. *lucanicum* (Gasp.) Pignatti] — arid meadows, Pescasseroli and Gioia Vecchio (Fiori 1927, Anzalone & Bazzichelli 1960), Giulianova, Farindola near Tavo [Zodda 1953 as "*T. scabrum* var. *lucanicum* (Gasp.)"], Piani Palentini!

Trifolium stellatum L. — arid uncultivated land, ruderal environments - C.

Trifolium incarnatum L. subsp. *incarnatum* — uncultivated land - C.

Trifolium incarnatum subsp. *molinerii* (Balbis ex Hornem.) Syme — uncultivated land - C.

Trifolium pratense L. subsp. *pratense* — meadows, uncultivated land - CC - var. *villosissimum* Ten. and var. *microphyllum* Fiori have been reported.

Trifolium pratense L. subsp. *nivale* (Koch) Arcang. — according to Greuter & al. (1984-89) this taxon is of doubtful taxonomic status.

Trifolium pratense L. subsp. *semipurpureum* (Strobl) Pignatti — Endem. C. S. It - subalpine pastures - C.

Trifolium pallidum Waldst. & Kit. — grassy uncultivated land, Pietracamela at Capo le Vene [Zodda 1967 as "*T. pratense* var. *pallidum* (W. & K.)"].

Trifolium noricum Wulfen subsp. *praetutianum* (Savi) Arcang. — Endem. C. S. Ap. - subalpine pastures - NC.

Trifolium lappaceum L. — below Turri (Tenore & Gussone 1842), Giulianova (Chiosi 1975), Abruzzo (Pignatti 1982).

Trifolium cherleri L. — grassy uncultivated land - C.

Trifolium medium L. subsp. *medium* — meadows and margins of woods - NC.

Trifolium alpestre L. — glades, open woods - NC.

Trifolium rubens L. — *Fagus sylvatica* wood glades, M. di Campoli (Zodda 1953 from D'Amato), Sirente (Guarrera & Tammaro 1994). According to Pignatti (1982) southwards to the Gran Sasso.

Trifolium angustifolium L. — pastures and arid uncultivated areas - C.

Trifolium ochroleucon Huds. — meadows and glades - C.

Trifolium alexandrinum L. — naturalized - cult. at Penne (Zodda 1953) and naturalized in the bed of the F. Tronto (Zodda 1960a, 1967).

Trifolium echinatum M. Bieb. — arid uncultivated land - NC.

Trifolium squamosum L. (*T. maritimum* Huds.) — arid pastures, Giulianova, Roseto (Zodda 1953). At present it seems extinct from the coasts of the Abruzzo (Pirone & Conti 1996).

Trifolium squarrosum L. — arid pastures - NC.

Trifolium subterraneum L. — arid uncultivated land. Pignatti (1982) reports it generally without indicating an exact locality.

Dorycnium hirsutum (L.) Ser. — arid pastures - C.

Dorycnium rectum (L.) Ser. — humid meadows, banks, Teramo province! (Bertoloni 1833-54 from Marcantonio, Zodda 1953, 1967), Casalbordino (Tammaro & Pietrocola 1975), Simbruini (Pignatti 1982), Saline (Pirone 1991), mouth of F. Sangro! and Fosso del Diavolo!

Dorycnium pentaphyllum Scop. subsp. *pentaphyllum* — arid meadows - NC.

Dorycnium herbaceum Vill. subsp. *herbaceum* [*D. pentaphyllum* Scop. subsp. *herbaceum* (Vill.) Rouy] — arid meadows - C.

Lotus glaber Mill. (*L. tenuifolius* Rchb.; *L. tenuis* Waldst & Kit. ex Willd.) — humid meadows - C.

Lotus corniculatus L. — arid pastures, uncultivated land - CC.

Lotus alpinus (DC.) Ramond — alpine pastures. Reported from several mountain groups and recently confirmed for Pizzo di Sevo and M. dei Fiori (Foggi & Ricceri 1989). In Majella three hexaploid localities of a *Lotus* have been investigated. The species, for its ecology and physiognomy, has been recognised temporarily as *L. alpinus* but it needs further studies be sure of its identity (Beuret 1977).

Lotus pedunculatus Cav. (*L. uliginosus* Schkuhr) — humid meadows, Parco Nazionale d'Abruzzo at Gioia Vecchio as "*L. corniculatus* var. *villosus* Thuill." (Vaccari & Wilczek 1940), Majella (Abbate 1903 as "*L. villosus* Th.", Tammaro 1986a), Campo Felice, Piani di Pezza (Lucchese & Lattanzi 1991), Rivisondoli territory (Pirone 1997b).

Lotus preslii Ten. — humid meadows - NC.

Lotus angustissimus L. — humid meadows. In Abruzzo it is common (Crugnola 1894, Abbate 1903), according to Zodda (1953) it is reported because of the confusion with "*L. corniculatus* var. *tenuifolius*", but recently found in Saline (Tammaro & Pirone 1979).

Lotus edulis L. — arid uncultivated land, sandy coastal habitats, Vasto near Punta Penna! (Conti 1986), Punta della Vignola! (Conti & al. in press) and Simbruini near Cappadocia (Veri 1988).

Lotus creticus L. (*L. commutatus* Guss.) — sands and coastal cliffs - C.

Lotus ornithopodioides L. — uncultivated land, pastures areas - C.

Lotus maritimus L. [*Tetragonolobus maritimus* (L.) Roth] — humid meadows, Tortoreto (Bertoloni 1833-54 from Marcantonio), mouths from F. Tronto to F. Tordino [Zodda 1967 as "*L. maritimus* var. *siliquosus* (L.)"].

Lotus tetragonolobus L. (*T. purpureus* Moench) — uncultivated land and arid meadows - C.

Securigera securidaca (L.) Degen & Dörfler — arid uncultivated land - C.

Securigera varia (L.) Lassen (*Coronilla varia* L.) — open woods, glades - C.

Securigera cretica (L.) Lassen (*Coronilla cretica* L.) — arid slopes - NC.

Anthyllis montana L. subsp. *atropurpurea* (Vuk.) Pignatti — stony slopes at high altitude - C.

Anthyllis montana L. subsp. *jacquinii* (A. Kerner) Hayek — stony slopes at high altitude, Gran Sasso (Matteucci & Martelli 1894 as "*A. jacquinii* Kev.", Tammaro 1983c, Biondi & al. 1988).

Anthyllis vulneraria L. subsp. *maura* (Beck) Maire — meadows and arid uncultivated land - C.

Anthyllis vulneraria subsp. *rubriflora* (DC.) Arcang. [*A. vulneraria* subsp. *praepropera* (A. Kern.) Bornm.] - montane pastures - NC.

Anthyllis vulneraria subsp. *carpatica* (Pant.) Nyman [?*A. vulneraria* subsp. *tricolor* (Vuk.) P. Fourn.] — montane pastures, Parco Nazionale d'Abruzzo [Vaccari & Wilczek 1940 as "*A. vulneraria* var. *rubra* Gouan", Anzalone & Bazzichelli 1960 as

"*A. vulneraria* subsp. *tricolor* (Vukot.)"], Gran Sasso. M.ti della Laga [Zodda 1953, 1967 as "*A. vulneraria* subsp. *tricolor* (Vuk.)"].

Anthyllis vulneraria subsp. *weldeniana* (Rchb.) Cullen (*A. adriatica* Beck) — stony pastures at high altitude — NC.

Anthyllis vulneraria L. subsp. *polyphylla* (DC.) Nyman — stony montane pastures, Velino, M. di Pizzoli (Tenore 1831-42), Campotosto (Cecchetti 1907 as "*A. vulneraria* L. var. *polyphylla* DC.", Parco Nazionale d'Abruzzo! (Anzalone & Bazzichelli 1960), Terranera di Rocca di Mezzo (Tammaro 1984b) and Majella! (Tammaro 1986a).

Anthyllis vulneraria L. subsp. *pulchella* (Vis.) Bornm. — meadows at high altitude — NC.

Anthyllis vulneraria L. subsp. *vulnerarioides* (All.) Arcang. — arid meadows, Velino in Valle di Sevice (Lucchese & Lattanzi 1991).

Anthyllis vulneraria L. subsp. *nana* (Ten.) Tammaro — Endem. C. Ap. - Gran Sasso, Velino, Simbruini at Camposecco, Majella (Tammaro 1984c, Petriccione 1993), Sirente (Guarrera & Tammaro 1994). Taxon of doubtful systematic status.

Tripodion tetraphyllum (L.) Fourr. (*A. tetraphylla* L.) — garigue, arid meadows — C.

Ornithopus compressus L. — arid uncultivated land — C.

Ornithopus perpusillus L. — surroundings of Scanno (Gravina 1812). There are no specimens in FI!; not recently recorded and worthy of confirmation.

Coronilla valentina L. subsp. *valentina* — garigue, stony slopes, surroundings of Scanno (Gravina 1812), Gole di Popoli! (Tammaro 1971a), near Vallone di Taranta Peligna! (Tammaro & al. 1978), Valle dell'Orta! (Conti 1983), Vallone di Fara S. Martino!, Valle dell'Orfento!, foot of M. Pallano between Bomba and Piane d'Archi! (Conti 1987), cliff gorges of Pennadomo!, low Valle del Trigno (gypsum cliffs of Lentella and Fresagrandinara!), Rocca S. Giovanni and Vallevò deep valleys!, Belvedere di Turrivalignani (Pirone 1995d).

Coronilla vaginalis Lam. — stony slopes — NC.

Coronilla minima L. subsp. *minima* — arid meadows — C.

Coronilla scorpioides (L.) Koch — arid meadows — C.

Coronilla repanda (Poir.) Guss. subsp. *repanda* — arid uncultivated land, Villetta Barrea [Anzalone & Bazzichelli, 1959-60 as "*C. scorpioides* Koch var. *repanda* (Guss.)"].

Hippocrepis emerus (L.) Lassen subsp. *emerus* (*Coronilla emerus* L. subsp. *emerus*) — open woods and margins of mesophilous woods — CC.

Hippocrepis emerus subsp. *emeroides* (Boiss. & Spruner) Lassen [*Coronilla emerus* subsp. *emeroides* (Boiss. & Spruner) Holmboe] — open woods and margins of xerophilous woods - CC.

Hippocrepis glauca Ten. — arid meadows - C.

Hippocrepis comosa L. — arid meadows - C.

Hippocrepis ciliata Willd. — arid hills (Abbate 1903), Giulianova [Zodda 1953 as "*H. multisiliquosa* var. *ciliata* (W.)"].

Hippocrepis biflora Spreng. — arid meadows - C.

Scorpiurus muricatus L. — arid uncultivated land - C.

Hedysarum coronarium L. — uncultivated land - C - Introduced from Calabria Region at the beginning of the 19th century (Manzi 1990).

Hedysarum spinosissimum subsp. *capitatum* (Rouy) Asch. & Graebn. (*H. glomeratum* F. G. Dietr.) — arid meadows - NC - *H. spinosissimum* L. (s.l.) has been reported from Bucchianico (Villani 1921). There are no specimens in FI!

Onobrychis alba (Waldst. & Kit.) Desv. subsp. *alba* — arid pastures - C - *O. tenoreana* Lacaita (Lacaita 1913) (*O. alba* subsp. *tenoreana* (Lacaita) Pignatti) has been erroneously reported. Lacaita himself (1921) stated "è nome da cancellare perché la pretesa specie non esiste" (Anzalone & Corazzi 1997).

Onobrychis montana DC. subsp. *montana* — arid meadows, in Abruzzo Mts (Tenore 1831-42), Velino [Montelucci 1958 as "*O. viciaefolia* Scop. var. *montana* (Lam. & DC.)"], Teramo province (Zodda 1967 as "*O. viciaefolia* var. *montana* (Lam. & DC.)"].

Onobrychis arenaria (Kit.) DC. subsp. *arenaria* — arid meadows, Velino near Magliano dei Marsi (Tammaro 1980), Majella (Feoli-Chiapella 1979-80) and doubtfully reported from the Parco Nazionale d'Abruzzo (Anzalone & Bazzichelli 1960).

Onobrychis arenaria subsp. *tommasinii* (Jord.) Asch. & Graebn. — Teramo, M. Tre Croci, Bosco Martese [Zodda 1953 as "*O. viciaefolia* Scop. var. *tommasinii* (Jord.)"].

Onobrychis viciifolia Scop. — Medit.-Mont.(?) - naturalized - CC.

Onobrychis caput-galli Lam. — arid uncultivated land - NC.

Oxalidaceae

Oxalis corniculata L. — ruderal environments - C.

Oxalis dillenii Jacq. — S. Amer. - Adv. nat. [Zodda 1959c as "*O. corniculata* var. *dillenii* (Jacq.)", Viegi & al. 1990 from specimens collected by Zodda and Tammaro, Pirone & al. in press].

Oxalis acetosella L. — *Fagus sylvatica* woods - C.

Oxalis pes-caprae L. — S. Afr. - naturalized - NC.

Oxalis articulata Savigny — S. Amer. Adv. - naturalized, Teramo province (Zodda 1953, 1967).

Oxalis debilis Kunth (*O. corymbosa* DC.; *O. martiana* Zucc.) — S. Amer. - naturalized, Martinsicuro and Giulianova (Zodda 1962b, 1967) and coasts of Pescara (Tammaro & Pirone 1979).

Geraniaceae

Geranium macrorrhizum L. — screes, shady cliffs, surroundings of Scanno "alla via dell'Impietrature" (Gravina 1812), Parco Nazionale d'Abruzzo! (Parlatore 1848-96, Anzalone & Bazzichelli 1960), M.ti della Laga, Gran Sasso, Morrone (Abbate 1903, Zodda 1953, 1957, 1967).

Geranium austroapenninum Aedo — Endem. C. S. Ap. - It is necessary to cite all the previous reports from C. S. Apennines under "*G. subcaulescens* DC." [*G. cinereum* Cav. subsp. *subcaulescens* (DC.) Hayek] as this new species (Aedo 1994, 1996). In the Abruzzo it is reported from Sirente (Groves 1880), Parco Nazionale d'Abruzzo! (Parlatore 1848-96 as "*G. cinereum*", Anzalone & Bazzichelli 1960 as "*G. cinereum*", Bazzichelli & Furnari 1970 as "*G. cinereum*", Conti 1995 as "*G. subcaulescens*", Aedo 1994, 1996), Velino (Petriccione 1993). The *locus classicus* is at Scanno, Coppo del Campitello (Aedo 1994, 1996). Probably, it is also necessary to quote the report from Majella of *G. argenteum* L. (Tammaro 1986a) as this is restricted to Alps and N. Apennines.

Geranium sanguineum L. — scrub, glades - C.

Geranium sylvaticum L. — damp grassland, *Fagus sylvatica* wood glades - NC.

Geranium versicolor L. — cool woods - C.

Geranium nodosum L. — cool woods, M. Corno, Pietracamela at Aschiera, M. dei Fiori, Chiarino, M.ti della Laga!, M. Capo d'Acqua, Pizzo delle Cavate, Campotosto (Tenore 1831-42, Furrer 1928, Zodda 1953, Pedrotti 1982a, Dinter 1996), Morrone (Tenore & Gussone 1842), Majella (Feoli-Chiapella 1979-80), Simbruini near Pereto and Rocca di Botte (Veri 1988), Velino (Lucchese & Lattanzi 1991), Sirente (Guarrera & Tammaro 1994), M.ti Pizzi (Galetti pers. comm.).

Geranium phaeum L. — surroundings of Scanno at Bosco del Pratillo (Gravina 1812, Tenore 1831-42), Gran Sasso (Abbate 1903), Majella in Valle dell'Orfento and

Valle Cupa (Tammaro 1986a). According to Grande (1914) Tenore's record based on Gravina's collection is to be referred to *G. reflexum* L.; further reports are to be confirmed. Probably Tammaro's reports have been drawn from the literature. Actually Cesati (1873) reports *G. phaeum* from Morrone, Majella, Orfento and Valle Cupa.

Geranium reflexum L. — clear areas of *Fagus sylvatica* woods with accumulation of organic humus - C.

Geranium bohemicum L. — Majella (Tenore 1831-42). Pignatti (1982) reports it only from the Alps.

Geranium tuberosum L. subsp. *tuberosum* — uncultivated land - NC.

Geranium pyrenaicum Burm.f. subsp. *pyrenaicum* — uncultivated land, margins of woods - C.

Geranium rotundifolium L. — cultivated land, hedges - C.

Geranium molle L. subsp. *molle* — ruderal environments, uncultivated land - C.

Geranium molle subsp. *brutium* (Gasp.) Graebn. (*G. brutium* Gasp.) — degraded woods, meadows - NC.

Geranium pusillum Burm. f. (*G. delicatulum* Ten. & Guss.) — ruderal environments - NC.

Geranium columbinum L. — uncultivated land, ruderal environments, cultivated areas - C.

Geranium dissectum L. — uncultivated land - C.

Geranium lucidum L. — walls, shady cliffs - C.

Geranium robertianum L. subsp. *robertianum* — woods, hedges, shady cliffs, walls - C.

Geranium robertianum subsp. *purpureum* (Vill.) Nyman (*G. purpureum* Vill.) — cliffs, hedges, scrub - C.

Erodium alnifolium Guss. — arid uncultivated land, Martinsicuro as "*E. chium* var. *crassifolium* (Asch.) Fiori" (Zodda 1953), Chieti, Majella at Roccamorice and between Caramanico and S. Valentino (Tenore 1831-42 as "*E. obliquifolium*", Parlato 1848-96, Cesati 1873, Tammaro 1986a from a specimen collected by Levier).

Erodium laciniatum (Cav.) Willd. subsp. *laciniatum* — sandy coastal habitats, Giulianova, Roseto as "*E. chium* var. *laciniatum* (W.)" (Zodda 1953), Pescara (Tenore 1831-42 as "*E. affine*", Parlato 1848-96, Cesati 1872, 1873, Tammaro & Pirone 1979), Vasto (Pignatti 1982).

Erodium malacoides (L.) L'Hér. subsp. *malacoides* — ruderal environments - C.

Erodium alpinum L'Hér. — Endem. C. S. Ap. - arid pastures - NC.

Erodium ciconium (L.) L'Hér. — arid pastures, ruderal environments - C.

Erodium moschatum (L.) L'Hér. — uncultivated land - NC.

Erodium cicutarium (L.) L'Hér. subsp. *cutarium* — arid uncultivated land, ruderal environments - CC.

Erodium acaule (L.) Bech. & Thell — uncultivated land, arid pastures. Near Cerchio, Celano (Tenore 1831-42 as "*E. romanum*"), Parco Nazionale d'Abruzzo at Pescasseroli and Rifugio della Difesa [Anzalone & Bazzichelli 1960 as "*E. cicutarium* L'Hér. var. *romanum* (L'Hér.)"], Alba Adriatica as "*E. romanum* L'Hér." (Zodda 1965b, 1967).

Tropaeolaceae

Tropaeolum majus L. — S. Amer. Adv. - naturalized Giulianova, Tordino (Zodda 1956, 1958b).

Zygophyllaceae

Tribulus terrestris L. — sandy uncultivated land mostly along the coast - C.

Linaceae

Linum capitatum Schult. subsp. *serrulatum* (Bertol.) Hartvig. — Oroph. S. E. Europ. (Amphiadriat.) — stony pastures at high altitude - C.

Linum nodiflorum L. — arid uncultivated land, Salviano (Mauri & al. 1830), Giulianova, Teramo (Bertoloni 1833-54 from Orsini, Zodda 1953), between Francavilla and Pescara (Parlatore 1848-96), sources of Pescara (Pirone & al. 1997), Valle dell'Orta!, Grotta Imposta! (Conti & al. in press).

Linum narbonense L. — arid and stony meadows - NC - territory of Villavallelonga (Grande 1918, Fiori 1923-29), near Teramo (Zodda 1953), Campo Felice (Lucchese & Lattanzi 1991, personal observation from a specimen collected by Rosati in herb. PNA!).

Linum alpinum Jacq. subsp. *julicum* (Hayek) Hegi — montane and subalpine meadows - C (Anzalone & Corazzi 1998).

Linum austriacum L. subsp. *tommasinii* (Rchb.) Greuter & Burdet — S. E. Europ. (Illyrian) — arid meadows, "Ex collibus argillosis Praetutiorum" (Bertoloni 1833-54 as "*L. alpinum* var. B"), between Gioia Vecchio and Pescasseroli!, Villavallelonga (Anzalone & Bazzichelli 1960 as "*L. perenne* L. *austriacum* L."), Velino! (Lucchese

& Lattanzi 1991), Gran Sasso!, Sirente (Frizzi & al. 1993, Guarrera & Tammaro 1994, Tammaro 1995), Lecce Vecchia!, near Sperone! (Conti 1995), Gole di Popoli!, between Sulmona and Cansano! (Pirone & Tammaro 1997), Capo Pescara! (Pirone & al. 1997), M. Corno, M. dei Fiori, Colle Bove (Anzalone & Corazzi 1998).

Linum usitatissimum L. — Cultiv. and subsont. - NC.

Linum bienne Mill. [*L. usitatissimum* L. subsp. *angustifolium* (Huds.) Thell.] — uncultivated land, fields - C.

Linum viscosum L. — hill and montane pastures - C.

Linum maritimum L. — humid subsaline meadows, coast of Teramo! (Tenore 1831-42, Bertoloni 1833-54 from Orsini, Zodda 1953, 1957, 1962a, 1967, Conti & Manzi 1996), Pineta d'Avalos! (Pirone 1987b), mouth of F. Sangro (Gehu & al. 1984, Tammaro & al. 1996), Marina di S. Salvo!

Linum trigynum L. — garigue, arid pastures - C.

Linum tenuifolium L. — arid meadows - CC.

Linum strictum L. subsp. *strictum* — arid meadows - C.

Linum strictum subsp. *corymbulosum* (Rchb.) Rouy (*L. corymbulosum* Rchb.) — arid meadows - C.

Linum catharticum L. (s.l.) — stony meadows - CC.

Euphorbiaceae

Andrachne telephioides L. — arid uncultivated land, Fontecchio near L'Aquila (Tammaro & Pogliani 1977). The report from "Atria" (probably Atri) (Bertoloni 1833-54) has not been yet confirmed and it is not supported by herbarium data (Tammaro & Pogliani 1977).

Chrozophora tinctoria (L.) A. Juss. — fields - NC.

Mercurialis annua L. — ruderal environments - CC.

Mercurialis perennis L. — cool woods - C.

Mercurialis ovata Sternb. & Hoppe — screes and stony pastures at high altitude over the limit of the wood to 2000 m - Sirente (Groves 1880), Velino (Montelucci 1958), Parco Nazionale d'Abruzzo on M. Petrosol!, near Villavallelonga, Gola della Capriola near Barrea, Serra Rocca Chianano!, Valle di Chianano! [Tenore 1831-42, Tenore & Gussone 1842, Anzalone & Bazzichelli 1960 "sub *M. perennis* L. var. *ovata* (Stern & Hpe.) Fiori", Bazzichelli & Furnari 1970, Conti 1995], Majella!

(Tammaro 1986a), Serrone! In C. Apennines it colonizes mainly high-mountain screes. The leaves are almost glabrous on the blades while in other parts of the distribution, particularly on the young leaves, they are covered by short and dense hairs, mostly along the veins.

Ricinus communis L. — Paleotrop. naturalized - Giulianova, Silvi Marina, bed of T. Piomba [Zodda 1953, 1954 as "*R. communis* var. *megalospermos* (Del.)"] and F. Saline (Pirone 1995d).

Chamaesyce nutans (Lag.) Small (*Euphorbia nutans* Lag.) — N. Americ. - naturalized - uncultivated land, ruderal environments, Teramo (Tenore 1831-42 as "*E. preslii*"), Pescara! (Pirone & al. in press).

Chamaesyce peplis (L.) Prokh. (*Euphorbia peplis* L.) — sandy coastal habitats - NC, it is likely it is going to become extinct.

Chamaesyce humifusa (Willd. ex Schlecht.) Prokh. (*Euphorbia humifusa* Willd. ex Schlecht.) — Asiat. (Adv.) - naturalized - Teramo province (Zodda 1953a).

Chamaesyce vulgaris Prokh. subsp. *massiliensis* (DC.) Benedi & J. J. Orell (*Euphorbia chamaesyce* L.) — uncultivated land, ruderal environments, above Turri (Tenore & Gussone 1842), Pescara (Benedi & Orell 1992 from a specimen collected by Kuntze).

Chamaesyce maculata (L.) Small (*Euphorbia maculata* L.) — N. Amer. - ruderal environments, Ortona!, Pescara!, Martinsicuro! (Conti & Manzi 1996).

Chamaesyce prostrata (Aiton) Small (*Euphorbia prostrata* Aiton) — N. Americ. - naturalized at Teramo (Zodda 1953, 1967), Pescara (Pirone & al. in press), Torre de' Passeri!

Euphorbia palustris L. — marshy retrodune environments, formerly on the coast at Francavilla near Pescara (Bertoloni 1833-54 from Orsini) where it is already extinct and now only at Vasto Marina! where a small population has been recently found (Conti & Manzi 1997c).

Euphorbia gasparrini Boiss. subsp. *samnitica* (Fiori) Pignatti — Endem. C. Ap. - cool pastures, Parco Nazionale d'Abruzzo! (Anzalone & Bazzichelli 1960 as "*E. epithymoides* L. var. *samnitica* Fiori", Conti 1992c, 1995), Majella, Campo Felice! (Basile & al. 1970, Tammaro 1986a), Gran Sasso! [Lusina 1949 as "*E. epithymoides* var. *samnitica* Fiori", Pirone 1987a, Tammaro 1995 as "*E. samnitica* (Fiori) Tammaro"], Piano delle Cinquemiglia! (Pignatti 1982), Prati del Sirente! (Tammaro & Veri 1971 as "*E. epithymoides*", Conti 1992a), M. Genzana at "i Pisell"!

Euphorbia dulcis L. subsp. *purpurata* (Thuill.) Rothm. — cool woods, Rocca di Mezzo "in sylva de' Cerri" from Mauri and Orsini (Bertoloni 1833-54), near the meadows of Sirente (Guarrera & Tammaro 1994 as "*E. dulcis*"), Valle dell'Aterno (Furrer

1928), Villavallelonga (Anzalone & Bazzichelli 1960), M.ti della Laga in Pizzo di Sevo (Mauri & al. 1830 as "*E. purpurata*", Tenore 1831-42, Parlato 1848-96, Zodda 1967), Capistrello, Carsoli and Tagliacozzo (Veri 1988).

Euphorbia verrucosa L. [*E. flavicoma* DC. subsp. *verrucosa* (Fiori) Pignatti] — arid pastures, M. dei Fiori (Mauri & al. 1830), Sirente (Guarrera & Tammaro 1994), Giulianova, as "*E. pilosa*" from Orsini (Bertoloni 1833-54), Gole di Popoli (Tammaro 1971a as "*E. brittingeri* Opiz ex Samp."), Oricola (Veri 1988).

Euphorbia spinosa L. subsp. *spinosa* — sunny stony slopes - C.

Euphorbia platyphyllos L. subsp. *platyphyllos* — uncultivated land, fields - C - *E. platyphyllos* subsp. *literata* (Jacq.) J. Holub needs further systematic investigation (Greuter & al. 1984-89).

Euphorbia marginata Pursh — N. Americ. (cultiv.) - NC.

Euphorbia stricta L. (*E. serrulata* Thuill.) — cultivated land, Teramo and Paranesi di Rocca S. Maria [Zodda 1953 as "*E. platyphylla* L. *stricta* (L.)"].

Euphorbia hirsuta L. (*E. pubescens* Vahl) — humid uncultivated land, riversides, Pescara (Tenore 1831-42) where it has disappeared (Tammaro & Pirone 1979), M. dei Fiori (Mauri & al. 1830), Giulianova, Tortoreto, Poggio Morello all'Acquiriti, Teramo in F. Vezzola (Abbate 1903, Zodda 1953, 1960a, 1967), Bucchianico (Villani 1921), Saline (Pirone 1991), Serranella! (Conti in press).

Euphorbia helioscopia L. — fields, ruderal environments - CC.

Euphorbia myrsinites L. — stony slopes - CC.

Euphorbia rigida M. Bieb. — Velino, Castel di Sangro (Tenore 1831-42), Piano delle Cinquemiglia (Abbate 1903). There are no specimens in FI!; not found recently and worthy of confirmation.

Euphorbia lathyris L. — ruderal environments, surroundings of Scanno (Gravina 1812), Teramo province where it seems disappeared (Zodda 1953a, 1961) and in Abruzzo in general (Pignatti 1982).

Euphorbia exigua L. — fields, ruderal environments, garigue - C.

Euphorbia falcata L. subsp. *falcata* — fields, arid uncultivated land - C.

Euphorbia peplus L. — fields, ruderal environments - C.

Euphorbia segetalis L. — cultivated land, ruderal environments - "Praetutiorum citra, nec non ex Inarime ab Eq. Gussonio" (Bertoloni 1833-54), Giulianova, Roseto and Gran Sasso at Colledoro di Castelli (Zodda 1953, 1967), near Saline and Francavilla (Tammaro & Pirone 1979).

Euphorbia nicaeensis All. subsp. *nicaeensis* — arid meadows, stony slopes - NC.

Euphorbia nicaeensis subsp. *japygica* (Ten.) Fiori — Gran Sasso (Tammaro 1995). According to Greuter & al. (1984-89) this taxon is of doubtful taxonomic status.

Euphorbia seguieriana Necker — Sirente (Tammaro & al. 1974, Veri & Tammaro 1980), L'Aquila province (Veri 1983). Guarrera & Tammaro (1994) did not confirm it from Sirente.

Euphorbia pithyusa L. subsp. *pithyusa* — Valle del Mavone (Crugnola 1900, Zodda 1953 from Petrilli). To be confirmed.

Euphorbia pithyusa subsp. *cupanii* (Bertol.) A. R. Sm. — hills near Pescara (Tenore 1831-42 as "*E. tanaicensis* Guss.", Parlatore 1848-96 as "*E. cupanii* Guss."). Not found recently and to be confirmed.

Euphorbia paralias L. — coastal dunes - NC.

Euphorbia cyparissias L. — stony slopes, pebbly areas, arid pastures - CC.

Euphorbia terracina L. — arid sandy uncultivated land along the coast - NC.

Euphorbia amygdaloides L. subsp. *amygdaloides* — cool woods - CC.

Euphorbia characias L. subsp. *characias* — thermophilous stony slopes, maquis, garigue - C.

Rutaceae

Ruta chalepensis L. — arid meadows, maquis - NC, to be investigated.

Ruta graveolens L. — thermophilous stony slopes - C.

Ruta divaricata Ten. [*R. graveolens* L. subsp. *divaricata* (Ten.) Gams] — thermophilous stony slopes, Majella (Cesati 1873), Sirente (Groves 1880), surroundings of Castelnuovo (Tammaro 1995). Recently reported from many localities (Pirone & Tammaro 1997).

Dictamnus albus L. — scrub, mostly open *orno-ostryetum* formations, Majella at Caramanico, Valle dell'Orfento (Mauri & al. 1830, Cesati 1872, Anzalone & Veri 1975 from a specimen collected by Pedicino, Feoli-Chiapella 1979-80), Morrone near Roccacasale and Difesa di Pettorano (Gravina 1812, Tenore & Gussone 1842), Difesa near Villavallelonga (Grande 1904), Sulmona and Simbruini near Pereto (Anzalone & Veri 1975 from specimens collected by Pedicino), Conca di Capestrano (Tammaro 1995).

Simaroubaceae

Ailanthus altissima (Mill.) Swingle — adventitious (China) - naturalized - C.

Polygalaceae

Polygala chamaebuxus L. — *Pinus nigra* woods, stony slopes, Camosciara!, M. Capraro near Forca Resuni!, Villetta Barrea!, Marsicano! (Tenore 1831-42, Tenore & Gussone 1842, Società Botanica Italiana 1953, Anzalone & Bazzichelli 1960, Bruno & Bazzichelli 1966, Bazzichelli & Furnari 1970, Conti 1995), southern side of Gran Sasso (Catonica 1997).

Polygala monspeliaca L. — garigue, arid meadows, erosion furrows of Atesa and Valle del Sangro (Pirone 1995a), Marsica! in the localities with *Phlomis fruticosa* (Pirone 1995c), Capo Pescara (Pirone & al. 1997).

Polygala major Jacq. — montane stony pastures, "var. *italiana* Chodat" and "var. *apennina* Chodat" have been reported as well.

Polygala flavescens DC. — Endem. Ap. - arid pastures, margins of thermophilous woods - NC - It occurs in L'Aquila province in Velino!, Simbruini! and the Parco Nazionale d'Abruzzo! where it is common.

Polygala nicaeensis Koch subsp. *mediterranea* Chodat — arid meadows - C.

Polygala vulgaris L. subsp. *vulgaris* — pastures - NC.

Polygala alpestris Rchb. — montane pastures, stony slopes, main mountain groups. *P. angelisii* Ten. is reported from C. Italy. Grande (1924a) puts this species in synonymy with "*P. vulgaris* L. subsp. *alpestris* (Rchb.)". However, it needs further systematic investigation.

Polygala serpyllifolia J. A. C. Hose — Campotosto (Cecchettani 1907 as "*P. depressa* Wend."). No longer found and probably extinct.

Polygala amarella Crantz — Gran Sasso and Majella on M. Focalone (Tammaro 1983c, Dinter 1996, 1997).

Polygala alpina (Poir.) Steud. — alpine pastures, Gran Sasso (Kunz & Reichstein 1966).

Anacardiaceae

Rhus coriaria L. — arid uncultivated land, hedges, between Pacentro and Campo di Giove! (Gussone 1826, Tenore 1831-42, Tammaro 1985b), Valle dell'Orta near S. Valentino, Ortona!, between Celano and Avezzano! (Pirone 1995d).

Cotinus coggygria Scop. — stony slopes, open woods, Gole di S. Venanzio! (D'Errico 1936, Tammaro & Visca 1987), Casali di Aschi (Conti 1995), Gole di Popoli (Pirone 1995d).

Pistacia terebinthus L. — arid and stony slopes, maquis - C.

Pistacia lentiscus L. — arid and stony slopes, maquis - C.

Aceraceae

Acer platanoides L. — cool montane woods to 1500 m - NC.

Acer cappadocicum Gled. subsp. *lobelii* (Ten.) Murray (*A. lobelii* Ten.) — Endem. C. S. Ap. - mesophilous woods between *Quercus cerris* and *Fagus sylvatica* woods, M. Serrone (Parco Nazionale d'Abruzzo) (Spada 1978), Abetina di Rosello!, *Fagus sylvatica* wood of Palena (Conti & al. 1986), Castiglione Messer Marino!, Morrone di Salle (Pirone 1995d), Bosco Schiapparo di Rivisondoli (Pirone 1997b).

Acer campestre L. — thermophilous woods, margins of woods, hedges - CC - subsp. *marsicum* (Guss.) Hayek needs further systematic investigation.

Acer pseudoplatanus L. — submontane and montane woods to the upper limit of the *Fagus sylvatica* woods at 1800-1900 m - CC.

Acer opalus Mill. subsp. *obtusatum* (Waldst. & Kit. ex Willd.) Gams [*A. obtusatum* Waldst. & Kit. ex Willd. subsp. *obtusatum*; *A. obtusatum* subsp. *neapolitanum* (Ten.) Pax] — woods with formations of evergreen sclerophylls to the *Fagus sylvatica* woods - CC.

Acer monspessulanum L. subsp. *monspessulanum* — *Quercus ilex* woods and supramediterranean woods - C.

Acer negundo L. — N. Americ. naturalized - "Subspontaneo lungo la strada da Basciano al Pilone" (Zodda 1953a, 1967), along Vomano near Montorio, Fosso Grande (Pescara) and between Spoltore and Loreto Aprutino (Pirone 1995d).

Hippocastanaceae

Aesculus hippocastanum L. — naturalized - NC.

Balsaminaceae

Impatiens noli-tangere L. — glades in cool woods - NC.

Aquifoliaceae

Ilex aquifolium L. — montane woods, mainly those of *Fagus sylvatica* - NC - found also in Valle Grande di Rocca S. Giovanni! at 60 m (Pirone 1995d).

Celastraceae

Euonymus europaea L. — woods, margins of woods, hedges - C.

Euonymus latifolia (L.) Mill. — cool woods - NC.

Euonymus verrucosa Scop. — cool woods - NC (Pirone 1995d).

Buxaceae

Buxus sempervirens L. — thermophilous woods, scrub and stony supramediterranean garigue to 1200 m - NC.

Rhamnaceae

Paliurus spina-christi Mill. — arid slopes, Mediterranean and supramediterranean maquis and garigue to 800 m - C.

Ziziphus zizyphus (L.) Meikle (*Z. jujuba* Miller; *Z. sativa* Gaertn.) — E. Asia (?) - naturalized - NC.

Rhamnus alaternus L. subsp. *alaternus* — *Quercus ilex* groves and Mediterranean maquis - C.

Rhamnus saxatilis Jacq. [*R. saxatilis* subsp. *infectoria* (L.) P. Fourn.] — Mediterranean and supramediterranean arid stony slopes - C.

Rhamnus cathartica L. — woods, scrub - C.

Rhamnus alpina L. subsp. *alpina* — screes, stony glades within *Fagus sylvatica* woods, to 1900 m - C.

Rhamnus alpina subsp. *fallax* (Boiss.) Maire & Petitm. — screes, stony glades within *Fagus sylvatica* woods to 1900 m, Parco Nazionale d'Abruzzo (Bazzichelli & Furnari 1970), Sirente (Guarrera & Tammaro 1994), Velino (Petriccione 1993), Gran Sasso (Tammaro 1995).

Rhamnus pumila Turra — calcareous cliffs - C.

Vitaceae

Vitis vinifera L. subsp. *vinifera* — Cultiv. and naturalized, watercourses and cool hedges - NC.

Vitis labrusca L. — N. Amer. Cultiv. and naturalized.

Parthenocissus quinquefolia (L.) Planchon — N. Amer. Cultiv. and naturalized.

Tiliaceae

Tilia platyphyllos Scop. subsp. *platyphyllos* — mesophilous woods - C.

Tilia platyphyllos Scop. cfr. subsp. *cordifolia* (Besser) C. K. Schneider — mesophilous woods, Abetina di Rosello!, Sirente!

Tilia cordata Mill. — mesophilous woods - NC.

Malvaceae

Malope malacoides L. — clayey uncultivated land - NC.

Malva alcea L. — uncultivated land - NC.

Malva moschata L. — uncultivated land - C.

Malva sylvestris L. subsp. *sylvestris* — ruderal environments, pastures - C.

Malva nicaeensis All. — arid uncultivated areas, pastures - C.

Malva parviflora L. — uncultivated land, Gioia Vecchio (Vaccari & Wilczek 1940), Teramo province in Valle del Mavone as "*M. parviflora* var. *microcarpa* (Desf.)" (Zodda 1953 from specimens collected by Petrilli), Fucino (Tammaro 1985c), Pescara (Pirone & al. in press).

Malva pusilla Sm. — uncultivated land, Pescara (Pirone & al. in press).

Malva neglecta Wallr. — ruderal environments, uncultivated land - CC.

Lavatera cretica L. — arid uncultivated land, Capistrello (Veri & Bruno 1978, Veri 1988), S. Salvo Marina!, Torre di Cerrano! (Conti & al. in press).

Lavatera arborea L. — arid uncultivated land - naturalized at Penne and along the coast, at Roseto (Zodda 1953), Pescara and Chieti provinces (Pescara!, Francavilla!, Ortona!, Punta Penna!, Vasto!).

Lavatera thuringiaca L. subsp. *ambigua* (DC.) Nyman — margins of woods - C.

Lavatera punctata All. — arid uncultivated land, Piano della Pescara (Parlatore 1848-96, Cesati 1873), S. Salvo (Rigo 1877), Casalbordino (Tammaro & Pietrocola 1974) and between S. Vito and Fossacesia! (Conti & Pirone 1991), Gessopalena! (Conti & Manzi 1996).

Althaea hirsuta L. — arid pastures, uncultivated areas - C..

Althaea cannabina L. — uncultivated land - C.

Althaea officinalis L. — riversides and ditches from the coast (Teramo province and Marina di S. Salvo!) to the mountains - NC.

Alcea rosea L. — naturalized (unknown origin) - C.

Alcea biennis Winterl [*Alcea pallida* (Willd.) Waldst. & Kit.] — Pontic (naturalized) - arid uncultivated land, Sirente (Groves 1880), Gole del Sagittario!, Colle Truscino! (Conti & Minutillo 1996).

Abutilon theophrasti Medik. — marshy environments, reported generally from the Abruzzo (Parlatore 1848-96 as "*A. avicennae*"), Oasi di Serranella! (Conti & Manzi 1996), Gessopalena in Pastini! (Conti & al. in press).

Hibiscus trionum L. — Paleotrop. and subtrop. - naturalized, L'Aquila and S. Demetrio Plains, Coppito near Pizzoli (Tenore 1831-42), Teramo province, but exact locality not indicated (Zodda 1945 from a specimen collected by Quartapelle). Zodda (1967) does not confirm its occurrence in Teramo province.

Thymelaeaceae

Daphne mezereum L. — woods and margins, scrub - C.

Daphne gnidium L. — maquis, Gran Sasso at Tossicia (Crugnola 1900, Zodda 1953 from specimens collected by Petrilli). Not found recently and to be confirmed.

Daphne laureola L. — woods from sea level to 1800 m - C.

Daphne alpina L. subsp. *alpina* — cliffs, pastures, subalpine scrub, Gran Sasso (Gussone 1826, Bazzichelli 1960, Zodda 1967), Sirente (Guarrera & Tammaro 1994), M. d'Ellera (Conti & al. in press). Other ancient reports exist, i.e. that concerning Morrone (Tenore & Gussone 1842), but they are doubtful. It probably occurs at Marcolana where Grande (1925) found both *D. alpina* and *D. oleoides* as well as all the possible intermediates between them, so that he decided to put them into synonymy. The report from the Abruzzo (M. Matese) made by Urbani (1992) is to be referred to Molise.

Daphne oleoides Schreb. — cliffs, pastures, subalpine scrub - C.

Daphne sericea Vahl (*D. oleaefolia* Lam.) — cliffs and maquis, Gole di Popoli!, above Raiano, Gole di S. Venanzio! (Gussone 1826 as "*D. collina* Smith", Tenore 1831-42, Fiori 1923-29, D'Errico 1936, Tammaro 1971a), Sulmona (Bertoloni 1833-54 from Orsini as "*D. collina*"), Gole del Sagittario! (Anzalone 1960 as "*D. oleaefolia* Lam."), near Capestrano in Scarafano and Cappucciata Mts!, Majella in Valle dell'Orta! (Conti & Pellegrini 1988), Serra di Navelli (Pirone 1995d), Capo Pescara (Pirone & al. 1997).

Thymelaea hirsuta (L.) Endl. — mouth of F. Mavone from a specimen collected by Petrilli (Crugnola 1900, Zodda 1953). No longer found and probably extinct.

Thymelaea passerina (L.) Coss. & Germ. — uncultivated land, Teramo province, Penne (Bertoloni 1833-54 from Orsini as "*Stellaria passerina*", Zodda 1953, 1965a, 1965b, 1967), Caramanico and below Chieti (Tenore & Gussone 1842 as "*Stellera passerina*"), Sirente (Groves 1880 as "*Stellaria passerina*").

Elaeagnaceae

Elaeagnus angustifolia L. — Temp. Asia - naturalized.

Violaceae

Viola odorata L. — margins of woods - C.

Viola suavis M. Bieb. — thermophilous woods, Pignatti (1982) reports it generally from the Abruzzo, Velino (Lucchese & Lattanzi 1991).

Viola alba Besser subsp. *dehnhardtii* (Ten.) W. Becker — scrub and open woods - CC - The report from Majella of *V. umbrosa* (Tenore 1831-42) is to be referred to *V. alba* (Grande 1924b).

Viola hirta L. — hedges, meadows - C.

Viola pyrenaica Ramond. ex DC. — shady places, near Scanno (Pignatti 1982).

Viola rupestris A. F. W. Schmidt — M.ti della Laga and Gran Sasso [Zodda 1953, 1964, 1967 as "*V. canina* var. *rupestris* (Schmidt)"].

Viola reichenbachiana Jord. ex Boreau — cool woods - CC.

Viola riviniana Rchb. — woods - NC.

Viola biflora L. — Gran Sasso (Crugnola 1894 from a specimen collected by Petrilli); to be confirmed.

Viola magellensis Porta & Rigo ex Strobl — Endem. C. Ap. - calcareous screes at high altitude, Majella!, Gran Sasso! and M.ti della Laga on M. Gorzano [Rigo 1877, Matteucci & Martelli 1894 as "*V. cenisia* L.", Fiori 1923-29, Furrer & Furnari 1960 as "*V. cenisia* L. var. *magellensis* (Porta & Rigo)", Bazzichelli 1960 as "*V. cenisia* L. var. *magellensis* (Porta & Rigo)", Zodda 1967 as "*V. cenisia* L. var. *magellensis* (Porta & Rigo)", Tammaro 1986a, 1995]. Not found recently on M. Gorzano and worthy of confirmation (Conti 1990a).

Viola eugeniae Parl. subsp. *eugeniae* — Endem. C. Ap. - stony pastures, "f. *pallidiflora* Huet du Pavillon" has also been reported.

Viola eugeniae Parl. subsp. *levieri* (Parl.) Arcang. — Endem. Abr. - meadows - NC.

Viola tricolor L. subsp. *tricolor* — fields, S. Stefano di Sessanio (from a specimen collected by Manzi and Verdecchia). The reports from Roccaraso (Bertoloni 1833-54 from Orsini), Caramanico, Campo di Giove (Cesati 1873), Sirente (Groves 1880), Gran Sasso, M.ti della Laga (Abbate 1903, Zodda 1967) as "*V. tricolor* s.l." must be verified in order to attribute the subspecies.

Viola tricolor L. subsp. *saxatilis* (A. F. W. Schmidt) Arcang. (*V. tricolor* subsp. *subalpina* Gaudin) — humid meadows, M. Corno, Campotosto (Zodda 1953), Quarto di S. Chiara (Tammaro 1986a).

Viola arvensis Murray — fields, uncultivated land - C.

Viola hymettia Boiss. & Heldr. — arid meadows, Gole del Sagittario near Anversa! (Conti 1995), near the sources of F. Pescara (Pirone & al. 1997), near Capestrano! (Conti & al. in press), Morrone above Badia near the Eremo di S. Onofrio!

Viola kitaibeliana Schult. — uncultivated land, Gran Sasso at Fonticelle near Pietracamela as "*V. tricolor* var. *kitaibeliana* (R. & S.)" (Zodda 1953).

Cistaceae

Cistus albidus L. — arid hills, Gran Sasso at Ornano, Tossicia and Isola del Gran Sasso from specimens collected by Petrilli (Crugnola 1900, Zodda 1953), but recently it has not been confirmed (Rizzotto 1979). There are no specimens in FI!

Cistus creticus L. subsp. *creticus* — degraded garigue and maquis - C (Pirone 1995d, Pirone & Tammaro 1997).

Cistus creticus subsp. *eriocephalus* (Viv.) Greuter & Burdet — Mediterranean garigue and maquis - NC (Pirone 1995d as "*C. incanus*").

Cistus monspeliensis L. — garigue, Rocca S. Giovanni in Valle Grande! (Conti & Pirone 1991).

Cistus salviifolius L. — garigue - C.

Tuberaria guttata (L.) Fourr. — garigue, surroundings of Scanno (Gravina 1812 as "*Cistus guttatus*") and generally from the Abruzzo (Pignatti 1982).

Tuberaria praecox Grosser — arid uncultivated land, reported from the Abruzzo without the exact locality (Pignatti, 1982).

Helianthemum croceum (Desf.) Pers. — arid and stony meadows - C.

Helianthemum nummularium (L.) Mill. subsp. *tomentosum* (Scop.) Schinz & Thell. — stony pastures, scrub - C.

Helianthemum nummularium subsp. *obscurum* (Celak.) Holub — stony pastures, scrub - C.

Helianthemum nummularium subsp. *glabrum* (W. Koch) Wilczek — stony pastures, scrub - C.

Helianthemum nummularium cfr. subsp. *semiglabrum* (Badaro) M. Proctor — stony pastures, scrub - C.

Helianthemum nummularium subsp. *grandiflorum* (Scop.) Schinz & Thell. — stony pastures, scrub - CC.

Helianthemum apenninum (L.) Mill. subsp. *apenninum* — stony pastures, scrub - C.

Helianthemum salicifolium (L.) Mill. — arid meadows - C.

Helianthemum oelandicum (L.) Dum. subsp. *alpestre* (Jacq.) Ces. — stony slopes - C.

Helianthemum oelandicum subsp. *italicum* (L.) Ces. — stony slopes - C.

Helianthemum oelandicum subsp. *incanum* (Willk.) G. López — stony slopes - C.

Fumana procumbens (Dunal) Gren. & Godr. — arid meadows - C.

Fumana ericoides (Cav.) Gandoger. — arid meadows - C.

Fumana thymifolia (L.) Spach ex Webb — arid meadows - C.

Tamaricaceae

Tamarix africana Poir. — coastal environments, banks, escarpments and slopes subject to landslides - C.

Tamarix gallica L. — cultiv. in the Teramo province (Zodda 1967). Its present occurrence is to be verified.

Myricaria germanica (L.) Desv. — pebbly margins of the torrents, Majella in F. Lavino (Tenore 1831-42 as "*T. germanica*"), F. Orfento (Parlatore 1848-96, Abbate 1903, Feoli & Feoli-Chiapella 1976), and in F. Tordino and F. Vezzola (Zodda 1953).

Elatinaceae

Elatine alsinastrum L. — humid doline - Voltigno (Pedrotti 1978, from a specimen collected by Pedrotti in CAME!).

Cucurbitaceae

Ecballium elaterium (L.) A. Rich. — sandy uncultivated land, screes - C.

Bryonia dioica Jacq. — hedges and humid scrub - C.

Citrullus lanatus (Thunb.) Matsumura & Nakai — naturalized, Teramo province (Zodda 1953a, 1954).

Lythraceae

Lythrum salicaria L. — borders of the ditches, watercourses, marshes - C.

Lythrum hyssopifolia L. — marshy environments, muds, surroundings of Scanno (Gravina 1812), "In inundatis Aprutii" (Tenore 1831-42), Giulianova (Abbate 1903,

Zodda 1953 from D'Amato), Montesilvano, F. Saline (Pirone 1983, 1991), Casalbordino!, Marina di S. Salvo! (Conti & al. in press).

Myrtaceae

Myrtus communis L. (s.l.) — Mediterranean maquis, surroundings of Scanno (Gravina 1812), coast from Silvi! to Vasto! but rare and isolated, Alanno at Petricca, Casoli at Guarenna (Pirone 1995d).

Punicaceae

Punica granatum L. — S. W. Asiat. - naturalized.

Onagraceae

Circaea lutetiana L. — cool woods - C.

Circaea alpina L. — in the Abruzzo mountains (Tenore 1831-42), Bosco Martese [Zodda 1967 as "*C. lutetiana* var. *alpina* (L.)"]. To be confirmed.

Oenothera biennis L. — Subcosmop. - naturalized - According to Soldano (1993) it is to be confirmed.

Oenothera suaveolens Desf. ex Pers. var. *latipetala* Soldano — coasts - C (Soldano 1993).

Oenothera erythrosepala Borbás — naturalized, Pescara in Pineta d'Avalos (Tammaro & Pirone 1981).

Oenothera adriatica Soldano — coast - between the mouth of Borsacchio and Roseto (Soldano 1993).

Oenothera oakesiana (A. Gray) Robbins ex S. Wats. & Coult. in A. Gray — coast between the mouth of Borsacchio and Roseto (Soldano 1993).

Epilobium angustifolium L. — glades, screes, humid depressions - C.

Epilobium dodonaei Vill. — unstable stony slopes - C.

Epilobium hirsutum L. — humid environments - C - var. *subglabrum* Koch and var. *tomentosum* Vent. have been reported.

Epilobium parviflorum Schreb. — humid environments - NC.

Epilobium montanum L. — *Fagus sylvatica* woods - C.

Epilobium collinum C. C. Gmel. — Doubtfully reported from the Parco Nazionale d'Abruzzo (Anzalone & Bazzichelli, 1959-60); known also from Gran Sasso and

M.ti della Laga as "*E. montanum* var. *collinum* (Gmel.)" (Zodda 1967). According to Pignatti (1982) it is to be confirmed only on the Alps.

Epilobium lanceolatum Sebast. & Mauri — humid environments. Doubtfully reported from the Parco Nazionale d'Abruzzo (Anzalone & Bazzichelli 1960), Turrialignani (Tenore & Gussone 1842), Fucino, Pizzoli (Mauri & al. 1830), Val di Foro (Tammaro 1986a), Pietracamela at Bosco di Trignano and M.ti della Laga as "*E. montanum* var. *lanceolatum* (Seb. & M.)" (Zodda 1967). In Fucino is probably extinct (Tammaro & al. 1995).

Epilobium tetragonum L. subsp. *tetragonum* — humid environments - C.

Epilobium tetragonum subsp. *lamyi* (F. W. Schultz) Nyman — humid environments, Teramo as "*E. tetragonum* var. *canescens* Doell." (Zodda 1967).

Epilobium obscurum Schreb. — humid meadows, Montesilvano (Tammaro & Frizzi 1982), Pescara (Pirone & al. in press), Rigopiano! (Conti & al. in press).

Epilobium roseum Schreb. — Orfento (Tenore 1831-42). Not found recently and to be confirmed.

Epilobium palustre L. — marshy environments, Villetta Barrea (Anzalone & Bazzichelli 1960 from a specimen collected by Grande), Pantano di Scanno! (Avena & Rosati 1973), Campitelli! (Conti 1995), Pineta d'Avalos (Tammaro & Pirone 1981), Montesilvano (Pirone & Tammaro 1981, Pirone 1983), Rivisondoli in Pantaniello (Pirone 1987b), Voltigno!

Epilobium alsinifolium Vill. — sources, shady and wet cliffs, M. Pelone and M. Costone (Bertoloni 1833-54 from Orsini and Gussone), M.ti della Laga! and Gran Sasso! as "*E. alpinum* var. *alsinifolium* Vill." (Zodda 1953, 1967), Majella!, M. Corno, M. Grande, Camosciara! (Gussone 1826 as "*E. organifolium*", Tenore 1831-42 as "*E. organifolium* Lam.", Tenore & Gussone 1842 as "*E. organifolium* Lam.", Cesati 1873, Jatta 1877, Fiori 1927, Tammaro 1986a from specimens collected by Groves and Huet du Pavillon), Duchessa (Martelli 1904).

Haloragaceae

Myriophyllum verticillatum L. — stagnant waters, Teramo province, but exact locality not indicated (Zodda 1945 from a specimen collected by Quartapelle), Villareia near Pescara (Buchwald 1995), Gran Sasso (Tammaro 1995).

Myriophyllum spicatum L. — stagnant waters, Sirente (Groves 1880, Guarrera & Tammaro 1994), Teramo province, but exact locality not indicated (Zodda 1953 from a specimen collected by Quartapelle), Gole di Popoli, F. Tirino, Villareia near Pescara (Tammaro 1971a, Corbetta & Pirone 1989, Buchwald 1995), sources of Capo Pescara, artificial small lakes near Roseto (Pirone 1987a, Pirone & al. 1997), Quarto Grande! and Quarto di S. Chiara! (Conti & al. 1990), M. Velino (Petriccione 1993), artificial reservoir near Alanno (Pirone in litt.), Oasi di Serranella! (Conti in

press) and lake of S. Stefano di Sessanio!

Theligonaceae

Theligonum cynocrambe L. — uncultivated land, ruderal environments - C.

Hippuridaceae

Hippuris vulgaris L. — surroundings of Scanno (Gravina 1812). Not found recently and to be confirmed.

Cornaceae

Cornus sanguinea L. subsp. *sanguinea* — hedges, scrub, woods - CC.

Cornus mas L. — scrub, hedges - C.

Araliaceae

Hedera helix L. subsp. *helix* — woods - CC.

Umbelliferae

Sanicula europaea L. — woods, mainly *Fagus sylvatica*, but found also in the coastal wood dominated by *Quercus ilex* near S. Vito Chietino! - CC.

Astrantia major L. subsp. *elatior* (Friv.) K. Maly — clearings in *Fagus sylvatica* woods - C.

Astrantia pauciflora Bertol. subsp. *tenorei* (Mariotti) Bechi & Garbari — Endem. C. Ap. - stony pastures at high altitude, main mountain groups (Tammaro & al. 1988).

Eryngium maritimum L. — coastal dunes - NC.

Eryngium amethystinum L. — arid pastures, f. *siculum* Lojac. at Roccamorice (Mauri & al. 1830 as "*E. multifidum*"), Teramo, Silvi (Zodda 1953).

Eryngium campestre L. — arid pastures - C - var. *virens* (Link) Weiss was reported from the low flow of F. Tordino (Zodda 1967).

Echinophora spinosa L. — coastal dunes - NC.

Myrrhoides nodosa (L.) Cannon (*Physocaulos nodosus* Koch) — scrub, margins of woods, Scanno! (Fiori 1923-29), near Villavallelonga! (Grande 1904), Massa d'Albe at the feet of Velino (Montelucci 1958), Lucoli Alta (Anzalone 1962), Monteluco di Roio, Gole di Celano and Ajelli (Tammaro & al. 1979 also mention the specimens of Vaccari and Grande) and near Pereto!

Chaerophyllum hirsutum L. subsp. *hirsutum* — *Fagus sylvatica* wood glades, nitrified

environments, Parco Nazionale d'Abruzzo, Gran Sasso, Simbruini, M.ti della Laga (Tammaro & al. 1988), Velino (Lucchese & Lattanzi 1991). "Var. *calabricum* (Guss.) Paol." was also reported.

Chaerophyllum hirsutum subsp. *magellense* (Ten.) Pignatti — Endem. Ap. - *Fagus sylvatica* wood glades, nitrified environments - C.

Chaerophyllum aureum L. — nitrified environments - C.

Chaerophyllum temulum L. (*Ch. temulentum* L.) — glades, ruderal environments - CC.

Anthriscus sylvestris (L.) Hoffm. — *Fagus sylvatica* woods, cool meadows - C.

Anthriscus nitidus (Wahlenb.) Garcke — *Fagus sylvatica* woods, Vallone del Peschio di Iorio! (Pescasseroli), Valle dell'Inferno (Barrea)! (Conti & Minutillo 1996).

Anthriscus nemorosa (M. Bieb.) Spreng. — woods - NC.

Anthriscus caucalis M. Bieb. (*A. vulgaris* Pers.) — ruderal environments, arid uncultivated land - NC.

Scandix australis L. subsp. *australis* — fields, arid meadows - C.

Scandix pecten-veneris L. subsp. *pecten-veneris* — fields - C.

Scandix pecten-veneris L. subsp. *macroryncha* (C. A. Mey.) Rouy — arid pastures, Gioia Vecchio!, between Gioia Vecchio and Pescasseroli!, between Pescasseroli and Campomizzo!, Costa Macrana! (Conti & Minutillo 1996).

Scandix pecten-veneris L. subsp. *brachycarpa* (Guss.) Thell. — Casalbordino (Tammaro & al. 1988).

Coriandrum sativum L. — S. W. Medit. - naturalized, near L'Aquila! and Velino (Tammaro & al. 1988).

Bifora testiculata (L.) Roth — fields - NC.

Smyrniolum olusatrum L. — humid uncultivated land, ruderal environments - C.

Smyrniolum perfoliatum L. — shady uncultivated land, Giulianova and Tortoreto (Zodda 1953). In Zodda (1967) only the site at Giulianova is reported.

Bunium bulbocastanum L. — stony pastures - C.

Bunium petraeum Ten. — Endem. C. S. Ap. - arid pastures - NC.

Bunium alpinum Waldst. & Kit. — Meta, M. Greco, Majella and Pizzo di Sevo (Mauri & al. 1830, Tenore 1831-42, Tenore & Gussone 1842 as "*Ligusticum alpinum* Spr.",

Abbate, 1903). According to Pignatti (1982) this is an Illyrian species not present in our flora.

Conopodium capillifolium (Guss.) Boiss. — woods, Valle del Vomano, Pietracamela at Cese [Abbate 1903 as "*Bunium capillifolium* Guss.", Zodda 1953, 1957 as "*Bunium maius* Gouan var. *capillifolium* (Bert.)"].

Huetia cynapioides (Guss.) P.W. Ball subsp. *cynapioides* — woods, Majella at Valle dell'Orfento and Salle (Gussone 1826 as "*Myrrhis cynapioides* Guss.", Tammamaro & al. 1988 from a specimen collected by Profeta), Sirente (Groves 1880 as "*Biasoletia tuberosa* Kch.", Tammamaro & al. 1988, Guarrera & Tammamaro 1994), Bosco di S. Antonio (Pirone 1997b).

Pimpinella anisum L. — Asiat.(?) - Velino at 1300-1400 m (Parlatore 1848-96 from a specimen of Levier as "*Apium anisum*"), Scurcola (Abbate 1903). Not found recently and to be confirmed.

Pimpinella peregrina L. — grassy uncultivated land - NC.

Pimpinella tragioides Vill. [*P. tragioides* subsp. *lithophila* (Schischk.) Tutin] — stony slopes - C - For the morphological diversity and taxonomy of the *P. tragioides* group in the Mediterranean see Yurtseva & Tikhomirov (1998).

Pimpinella major (L.) Huds. subsp. *major* — cool woods - NC - "var. *orientalis* (Gouan) Fiori" is reported from the Parco Nazionale d'Abruzzo (Anzalone & Bazzichelli 1960) and the Teramo province (Zodda 1953, 1967). "Var. *dissecta* (Spreng.) Fiori & Paol." from M.ti della Laga, Gran Sasso and Sirente (Tammamaro & al. 1988).

Pimpinella saxifraga L. subsp. *saxifraga* — arid meadows - C.

Aegopodium podagraria L. — cool woods - C.

Sium latifolium L. — stagnant waters, riversides, Giulianova and Canzano (Zodda 1953 from Di Giuseppe) and near Popoli (Tammamaro & al. 1988).

Berula erecta (Huds.) Coville (*Sium erectum* Huds.) — slow waters - NC.

Crithmum maritimum L. — coastal cliffs, pebbly beaches - C.

Seseli libanotis (L.) Koch — stony montane pastures - C - var. *samniticum* Arc., var. *pyrenaicum* Briq. (Zodda 1953, 1967).

Seseli peucedanoides (Bieb.) Kos.-Pol. — montane pastures, Velino (Petriccione 1993).

Seseli montanum L. — cliffs and stony slopes - C (Anzalone & Lattanzi, 1988).

Seseli tommasinii Rechb. f. (*S. viarum* Calest.) — Amphiadriatic - arid meadows, stony slopes - C.

Seseli tortuosum L. — arid uncultivated land, near L'Aquila! and Fosso Argo, Cagnano Amiterno, Popoli, between Massa d'Albe and Avezzano, Gioia dei Marsi!, Valledonga from Fucino to 900 m! (Tenore 1831-42, Parlato 1848-96, Abbate 1903, Tammaro 1971a, Pacioni & Veri 1983, Anzalone & Lattanzi 1988, Lucchese & Lattanzi 1991, Conti 1995, Conti & Minutillo 1996), Salviano (Tammaro & al. 1995), Sirente (Guarrera & Tammaro 1994), Fresagrandinara!

Oenanthe globulosa L. subsp. *globulosa* — "Osteria di Salino" (Mauri & al. 1830), ditches near Silvi (Bertoloni 1833-54 as "*Phellandrium globulosum*"), Silvi at Bosco Saganata, near Castelli (Zodda 1953, 1965a, 1965b, 1967), ditches along the coasts of Pescara province and Silvi (Tenore 1831-42, Parlato 1848-96); this species must be considered extinct because of the drying up of the channels (Tammaro & Pirone 1979, Pirone & Conti 1996).

Oenanthe fistulosa L. — humid meadows, surroundings of Scanno (Gravina 1812), Castel di Sangro in La Brionna (Tammaro & Visca 1987), Piano di Rivisondoli-Roccaraso (Buchwald 1995), Altopiano delle Rocche in Val d'Arano! (Conti & al. in press).

Oenanthe pimpinelloides L. — humid meadows, humid wood environments - C.

Oenanthe silaifolia M. Bieb. — humid meadows, feet of Morrone from a specimen collected by Guadagno as var. *media* (Griseb.) Beck (Tammaro & al. 1988), Altopiano delle Rocche in Val d'Arano!, Piani Palentini!

Oenanthe lachenalii C. C. Gmel. — humid saline meadows, Roseto and Martinsicuro as "*O. pimpinelloides* var. *lachenalii* (Gmel.)" (Zodda 1953, 1967) where it is probably extinct (Pirone & Conti 1996), Marina di S. Salvo! (Conti & al. in press).

Oenanthe aquatica (L.) Poir. — ditches, Pignatti (1982) reports from the Abruzzo generally and at Castel di Sangro (Tammaro & al. 1988).

Aethusa cynapium L. subsp. *cynapioides* (M. Bieb.) Nyman — fields, ruins - C.

Aethusa cynapium L. subsp. *agrestis* (Wallr.) Dostál — fields, distribution to be checked.

Athamanta sicula L. — cliffs and walls, Vallone di Fara S. Martino! (Tammaro 1980), Gessopalena and la Morgia! (Manzi 1992a).

Grafia golaka (Hacq.) Rchb. (*Hladnikia golaka* Rchb.f.) — montane meadows, Parco Nazionale d'Abruzzo! (Grande 1904 as "*Malabaila hacquetii* Tausch", Anzalone & Bazzichelli 1960), Majella!, Morrone, Gran Sasso! (Gussone 1826 as "*Ligusticum hacquetii*", Mauri & al. 1830, Abbate 1903 as "*Ligusticum hacquetii*", Zodda 1953, 1957, Tammaro 1986a), Velino (Tammaro & al. 1988, Blasi & al. 1990, Petriccione 1993), Sirente (Guarrera & Tammaro 1994), M. Viglio!

Foeniculum vulgare Mill. subsp. *vulgare* — arid uncultivated land - C.

Foeniculum vulgare subsp. *piperitum* (Ucria) Béguinot — arid uncultivated land. The

distribution of this species and of the previous one is to be investigated, since they are not well distinct and their discriminant characters vary also within the same population.

Anethum graveolens L. — S. W. Asiat (Adv.) - naturalized, Difesa di Pettorano (Gravina 1812), Pescina and Ortona dei Marsi (Bertoloni 1833-54 from Gussone), "nelle vigne a mezzogiorno d'Aquila presso S. Benedetto" (Parlatore 1848-96), Marsica (Anzalone & Bazzichelli 1960 from specimens collected by Grande), Teramo province (Zodda 1953, 1967), in several localities of L'Aquila province, Majella (Tammaro & al. 1988, Viegi & al. 1990).

Meum athamanticum Jacq. — montane pastures, M.ti della Laga and Gran Sasso (Parlatore 1848-96 as "*Ligusticum meum* Crantz", Zodda 1953, 1957, 1967).

Physospermum verticillatum (Waldst. & Kit.) Vis. — Majella as "*Smyrniium verticillatum*" (Parlatore 1848-96 from Tenore) where it need confirmation. There are no specimens in FI!

Conium maculatum L. — ruderal environments - C.

Cachrys ferulacea (L.) Calest. (*Prangos ferulacea* Lindley; *Cachrys alata* Caruel) — arid pastures - NC.

Bupleurum rotundifolium L. — fields - NC.

Bupleurum lancifolium Hornem. — fields - NC.

Bupleurum baldense Turra subsp. *baldense* — arid meadows - CC.

Bupleurum baldense Turra subsp. *gussonei* (Arcang.) Tutin — arid meadows, Teramo province (Zodda 1967), Gole di Popoli (Tammaro 1971a), Caramanico (Tammaro 1986a).

Bupleurum praealtum L. (*B. junceum* L.) — scrub, hedges - NC.

Bupleurum gerardii All. — open woods, Majella (Mauri & al. 1830, Parlatore 1848-96 from a specimen collected by Pedicino), Parco Nazionale d'Abruzzo between Villetta Barrea and Scanno (Anzalone & Bazzichelli 1960 as "*B. gerardi* var. *patens* Rchb."), Velino and Gran Sasso (Tammaro & al. 1988).

Bupleurum rollii Montel. — Endem. C. It. - Simbruini "nei lunghi valloni denudati dietro il Midia, verso Cappadocia" (Montelucci 1961).

Bupleurum tenuissimum L. — clayey soils, Guardiagrele (Tenore & Gussone 1842 as "var. *columnae*"), Canzano, Castellalto (Zodda 1953 from Di Giuseppe) and Pescara (Tammaro & al. 1988 from a specimen collected by Kuntze) where it is probably extinct (Pirone & Conti 1996).

- Bupleurum semicompositum* L. — Giulianova as "*B. glaucum* Ten." (Tenore 1831-42) and mouth of Saline (Pirone 1987c). At present it seems extinct from the coasts of the Abruzzo (Pirone & Conti 1996).
- Bupleurum petraeum* L. — Endem. Alps-C. Ap. - calcareous cliffs, Gran Sasso (Tammaro & al. 1988 from a specimen collected by Fiori).
- Bupleurum falcatum* L. subsp. *cernuum* (Ten.) Arcang. — stony pastures - CC.
- Bupleurum rigidum* L. — M.ti della Laga at Bosco Martese (Longhitano & Ronsisvalle 1974), but probably reported erroneously.
- Trinia glauca* (L.) Dumort. subsp. *glauca* — cliffs and stony pastures - NC.
- Trinia dalechampii* (Ten.) Janch. — stony slopes, pastures at high altitude - C - The reports as "*T. glauca* (L.) Dumort. subsp. *carniolica* (A. Kern. ex Janch.) H. Wolff" must be referred to this taxon.
- Apium graveolens* L. — naturalized, uncultivated land - NC.
- Apium nodiflorum* (L.) Lag. — sluggish waters - C.
- Apium repens* (Jacq.) Lag. — lake margins, Lago di Ortucchio (Tammaro & al. 1988). Not confirmed by Tammaro & al. (1995).
- Petroselinum crispum* (Mill.) A. W. Hill (*P. sativum* Hoffm.) — naturalized - NC.
- Petroselinum segetum* (L.) Koch — fields, uncultivated land, near Lanciano (Tenore 1831-42 as "*Apium segetum*") and Castelli (Argenti 1984).
- Ridolfia segetum* Moris — fields - NC.
- Sison amomum* L. — hedges, humid environments - C.
- Ammi visnaga* (L.) Lam. — uncultivated land - NC.
- Ammi majus* L. — uncultivated land, ruins - NC.
- Ptychotis saxifraga* (L.) Loret & Barr. — arid uncultivated land, Sirente near Secinaro (Tammaro & al. 1988).
- Ammoides pusilla* (Brot.) Breistr. — scrub, pastures areas and arid uncultivated land - NC (Tammaro & al. 1988, Petriccione 1993, Guarrera & al. 1995, Tammaro & al. 1995, Pirone & Tammaro 1997).
- Falcaria vulgaris* Bernh. — fields, uncultivated land, Valle dell'Aterno near L'Aquila (Fiori 1923-29, Lusina 1952), Marsica at Villavallelonga and Trasacco (Anzalone & Bazzichelli 1960 from Grande) and between Pescara and Cocullo (Anzalone 1962),

reported also from other localities of L'Aquila province (Lorito & Veri 1975, Tammaro & al. 1988, Lucchese & Lattanzi 1991).

Carum carvi L. — humid meadows, Valle Morino near Scoppito (Pacioni & Veri 1983) and Piana di Pescasseroli (Manzi 1992a).

Carum heldreichii Boiss. — N. E. Medit.-Mont.(Amphiadriat.) - stony slopes - C.

Cnidium silaifolium (Jacq.) Simonk. subsp. *silaifolium* — scrub - NC.

Ligusticum lucidum Mill. subsp. *cuneifolium* (Guss.) Tammaro — Endem. C. Ap. - screes, Velino, Sirente, Morrone, Majella!, Parco Nazionale d'Abruzzo! (Gussone 1826 as "*L. cuneifolium* Guss.", Tammaro 1989). According to Greuter & al. (1984-89) this taxon is of doubtful taxonomic status.

Angelica sylvestris L. subsp. *sylvestris* — impluviums, humid woods - C.

Angelica archangelica L. — naturalized, Majella (Villani 1921). According to Pignatti (1982) it is not spontaneous in Italy.

Ferula communis L. — arid uncultivated land along the roads, Vasto!, S. Vito Chietino! (Conti & Pirone 1987), Francavilla al mare!, Pianella! and Teramo province along the highway!. Reported from some localities of the inland: Rocca di Cambio, Sirente and Gole di Celano (Anzalone & al. 1991) but it is probably to be referred to *F. glauca*. The latter species has been observed at Gole di Celano!

Ferula glauca L. [*F. communis* L. subsp. *glauca* (L.) Rouy & Camus] — arid stony slopes, ruderal environments. Known for several hill and feet mountain areas in the whole region (Conti 1986).

Ferulago campestris (Besser) Grec. — arid pastures - NC.

Ferulago sylvatica (Besser) Rchb. — Morrone at Roccacasale and Salto dell'Orso as "*F. barrelieri*" (Tenore & Gussone 1842, Cesati 1872) and M. Genzana in Valle Vozzi (Bernardi 1979 from a specimen collected by Groves).

Opopanax chironium (L.) Koch — arid uncultivated land; "var. *garganicus* (Burnat ex Lacaita) Moggi" from M. Corno [Zodda 1967 as "*Pastinaca opopanax* L. var. *chironium* (Lac.)"] and Majella (Tammaro 1986a).

Peucedanum officinale L. — arid uncultivated land, glades, Majella (Tenore 1831-42, Abbate 1903), Marsica in the localities with *Phlomis fruticosa* (Pirone 1995c), Bosco di Vallaspra! (Conti & Manzi 1996), Grotta Imposta!, Altino in Brecciolì! (Conti & al. in press). According to Grande (1925) the report from Majella is to be referred to *Cachrys ferulacea*. Nevertheless, the locality of Grotta Imposta is close to Majella and it confirms its occurrence.

Peucedanum carvifolia Vill. — woods and glades, M. Pelone (Bertoloni 1833-54 from

Orsini as "*Palimbia chabraei*"), Gran Sasso on M. Corno and at Pietracamela, Aquila at S. Demetrio, M. ti della Laga on M. Gorzano, Majella (Gussone 1826 as "*Imperatoria chabraei* Spr.", Mauri & al. 1830 as "*Imperatoria chabraei*", Tenore 1831-42 as "*Imperatoria chabraei*", Parlatore 1848-96, Abbate 1903 as "*Selinum carvifolia* Crantz", Zodda 1953), Valle di Chiarino!, Sirente (Veri & Tammamro 1980), Tagliacozzo (Veri 1988) and Voltigno (from a specimen collected by Pedrotti in CAME!). The record from Sirente is not reported in Guarrera & Tammamro (1994).

Peucedanum schottii Besser — scrub, Villavallelonga [Grande 1924b, Fiori 1923-29, Anzalone & Bazzichelli 1960 as "*P. schottii* Bess. var. *petraeum* (Noé)" from specimens collected by Grande], M. Corno, Pietracamela! [Parlatore 1848-96, Zodda 1967 as "*P. schottii* var. *petraeum* (Noé)"], Valle dell'Inferno (Abbate 1903), Valle dell'Orfento (Tammamro 1986a).

Peucedanum venetum (Spreng.) Koch — scrub, Sirente (Groves 1880), near Caramanico, Roccamorice, below Turrialignani (Tenore & Gussone 1842 as "*Selinum venetum*", Tammamro 1986a from a specimen collected by Groves), Teramo, Cellino Attanasio, Montorio, Pietracamela, Campli a Paduli (Tenore 1831-42, Zodda 1953, 1965a, 1965b, 1967).

Peucedanum austriacum (Jacq.) Koch — woods - C - var. *velutinum* Levier (Tammamro 1986a) is reported from Majella.

Peucedanum oreoselinum (L.) Moench — scrub, glades - NC.

Peucedanum palustre (L.) Moench — M. Corno (Tenore 1831-42 as "*Selinum palustre*"). Not found recently and to be confirmed.

Peucedanum cervaria (L.) Lapeyr. — scrub - NC - var. *latifolium* (Viv.) DC. is reported from Majella (Tammamro 1986a).

Peucedanum verticillare (L.) Koch — Oroph. Alps-Apenn.- NC (Tammamro & al. 1988, Dinter 1996).

Pastinaca sativa L. subsp. *urens* (Req.) Celak — uncultivated land, ruderal environments - C.

Heracleum sphondylium L. subsp. *orsinii* (Guss.) H. Neumayer. — Oroph. Balk-Apenn. (Amphiadriat.) — screes, stony slopes - C.

Heracleum sphondylium L. subsp. *sphondylium* — grassy uncultivated land - NC.

Heracleum sphondylium L. subsp. *ternatum* (Velen.) Brummitt — humid uncultivated land - C.

Heracleum sphondylium L. subsp. *sibiricum* (L.) Simonk. — woods - C.

Tordylium maximum L. — arid uncultivated land - C.

Tordylium officinale L. — arid meadows, Majella (Mauri & al. 1830), “ex montosis Praetutiorum ad sepes” (Bertoloni 1833-54 from Gussone, Pignatti 1982).

Tordylium apulum L. — arid meadows - C.

Elaeoselinum asclepium (L.) Bertol. subsp. *asclepium* — thermophilous stony slopes, Riofreddo (Mauri & al. 1830 as “*Thapsia asclepium*”), Sirente (Groves 1880), Gole di Popoli!, Sulmona! (Parlatore 1848-96 from Orsini), Difesa di Villavallelonga (Grande 1904), *Fagus sylvatica* woods near Casoli, M. Ospedalera near Popoli, Villalago (Tammaro & al. 1979), Valle dell’Orta! (Conti 1987), Marsica in the localities with *Phlomis fruticosa*! (Pirone 1995c), between Gioia dei Marsi and Gioia Vecchio!, between Raiano and Goriano Sicoli (Pirone & Tammaro 1997), Capo Pescara (Pirone & al. 1997).

Laserpitium siler L. var. *siculum* (Spreng.) Fiori — Endem. Ap. Si - stony slopes - CC – The previous reports of *L. siler* must be referred to this taxon (Grande 1913), as well as many of the reports referred to *L. garganicum* which is much less widespread (Santangelo & al. 1994).

Laserpitium garganicum (Ten.) Bertol. subsp. *garganicum* — Valle di Fara (Tenore 1832, Grande 1924a), Velino (Tenore 1831-42).

Laserpitium latifolium L. — stony slopes - C - var. *asperum* is reported from Majella Crantz (Tammaro 1986a).

Laserpitium gallicum L. — Gran Sasso in Val Chiarino and at Pietracamela (Gussone 1826, Mauri & al. 1830, Tenore 1831-42, Bertoloni 1833-54 from Gussone, Parlatore 1848-96, Abbate 1903, Zodda 1953, 1967 as “var. *platyphyllum* Rouy”, Barbagallo & Guglielmo 1975), Velino (Tammaro & al. 1988 from specimens collected by Martelli, Lucchese & Lattanzi 1991, Petriccione 1993).

Torilis nodosa (L.) Gaertn. — fields – NC (Tammaro & al. 1988).

Torilis arvensis (Huds.) Link subsp. *recta* Jury — hedges, fields, ruderal environments – C.

Torilis arvensis subsp. *purpurea* (Ten.) Hayek — arid uncultivated land, ruderal environments – C.

Torilis japonica (Houtt.) DC. [*T. anthriscus* (L.) Gmel.] — uncultivated land - C.

Torilis leptophylla (L.) Rchb. f. — uncultivated land and ruins, Velino (Montelucci 1958 quotes Martelli and Levier), Pietracamela (Zodda 1953), Majella and other localities of L’Aquila province (Parlatore 1848-96 as “*Caucalis leptophylla* L.”, Tammaro 1986a from specimens collected by Pedicino and Vaccari, Tammaro & al. 1988).

Caucalis platycarpos L. subsp. *platycarpos* — fields - C.

Turgenia latifolia (L.) Hoffm. — uncultivated land, fields - C.

Orlaya daucoides (L.) Greuter — arid uncultivated land - C.

Orlaya grandiflora (L.) Hoffm. — arid uncultivated land - C.

Orlaya daucorlaya Murb. — uncultivated land and arid fields, Salle! and Caramanico (Fiori 1923-29), Azzinano, Pietracamela at Colle Piano as "*Daucus grandiflorus* Scop. var. *daucorlaya* (Drude)" (Zodda 1961a, 1967), between Pacentro and Passo S. Leonardo (Tammaro & Visca 1987), L'Aquila province (Tammaro & al. 1988, Frizzi & al. 1993), Simbruini at Castellafiume, Tagliacozzo and Balsorano (Veri 1988), Sirente (Tammaro & Guarrera 1994).

Daucus broteri Ten. — arid uncultivated land - C.

Daucus guttatus Sm. — arid uncultivated land, coast of Pescara (Tammaro & Pirone 1979), Villavallelonga (Tammaro & al. 1988 from a specimen collected by Grande), between Casoli and Gessopalena! (Conti & Manzi 1997c).

Daucus carota L. subsp. *carota* — uncultivated land, ruderal environments - CC.

Daucus carota L. subsp. *maritimus* (Lam.) Batt. — arid uncultivated land along the coast - NC.

Daucus carota L. subsp. *major* (Vis.) Arcang. — uncultivated land, arid meadows, Majella (Tammaro 1986a) and along the Valle del Pescara (Tammaro & al. 1988).

Daucus carota subsp. *maximus* (Desf.) Ball. — uncultivated land - NC.

Daucus gingidium L. (s.l.) — sandy coastal habitats, Giulianova as "*D. carota* var. *gingidium* (L.)" (Zodda 1967). In Tammaro & al. (1988) only this taxon is reported; it also comprises the localities attributed by Pirone to subsp. *fontanesii*.

Daucus gingidium subsp. *polygamus* (Gouan) Onno — arid uncultivated land, Turrivalignani, Roccamorice as "*D. polygamus*" (Tenore 1831-42, Tenore & Gussone 1842).

Daucus gingidium subsp. *fontanesii* (Thell.) Onno — conglomerate cliffs, Punta Aderci near Vasto (Pirone 1984), Punta Penna, Punta Cavalluccio (Pirone 1995b).

Pseudorlaya pumila (L.) Grande — coastal dunes, Pescara (Tenore 1831-42 as "*Caucalis maritima* Lam."), Giulianova and Roseto as "*D. pumilus* Ball." (Abbate 1903 as "*Daucus pumilus*", Zodda 1953, 1967), coast of Casalbordino! (Conti & Stanisci 1990), Torre di Cerrano (Pirone in press). According to Tammaro & Pirone (1979) the species has disappeared from the Pescara because of the tourist developments.

Pyrolaceae

Pyrola minor L. — cool *Fagus sylvatica* woods - NC.

Pyrola chlorantha Sw. — *Fagus sylvatica* woods, scrub with *Pinus mugo*, Majella in Vallone di Fara S. Martino! (Conti 1987), Camosciara! (Conti 1995).

Pyrola rotundifolia L. — *Fagus sylvatica* woods, Parco Nazionale d'Abruzzo (Bazzichelli & Furnari 1970), but perhaps confused with *P. chlorantha* and to be confirmed.

Orthilia secunda (L.) House — *Fagus sylvatica* woods - C.

Moneses uniflora (L.) A. Gray (*P. uniflora* L.) — scrub with *Pinus mugo*, Parco Nazionale d'Abruzzo at Camosciara (Anzalone & Bazzichelli 1960 from a specimen collected by Grande), Majella! (Tenore 1831-42 as "*Pyrola uniflora*", Cesati 1873 as "*Pyrola uniflora*", Rigo 1877 as "*Pyrola uniflora*", Tammaro 1986a), Isola del Gran Sasso at S. Nicola as "*Pyrola uniflora*" (Crugnola 1894, Abbate 1903).

Monotropa hypopitys L. — *Fagus sylvatica* woods, cool woods - C - found also in the *Quercus ilex* wood between S. Vito Chietino and Vallevò! at a few metres from the sea.

Ericaceae

Erica arborea L. — maquis, thermo-xerophilous woods of broadleaves, on siliceous or acidified soils, M.ti della Laga! and surrounding areas (Zodda 1953, 1959b, 1965b, 1967, Longhitano & Ronsisvalle 1974, Pedrotti 1982a), Gole del Salinello (Guarrera & Tammaro 1992), Giuliano Teatino, Torricella Sicura and S. Tommaso di Rocca S. Giovanni! (Pirone 1995d).

Erica multiflora L. — reported from Cavaceppo (Abruzzo?) (Mauri & al. 1830); Pignatti (1982) reports it generally, but exact locality not indicated and to be confirmed. There are no specimens in FI!

Erica scoparia L. subsp. *scoparia* — maquis and garigue, Tossicia, S. Pietro di Isola del Gran Sasso from specimens collected by Petrilli (Crugnola 1900, Zodda 1953), Tocco Casauria (Tammaro & al. 1985). The localities of the Teramo province have not been confirmed in *Compendio della Flora Teramana* (Zodda 1967).

Arbutus unedo L. — maquis and *Quercus ilex* woodland - NC.

Arctostaphylos uva-ursi (L.) Spreng. — subalpine scrub, stony slopes - C.

Vaccinium uliginosum L. subsp. *microphyllum* (Lange) Tolm. (*V. gaultherioides* Bigelow) — subalpine moorland, M.ti della Laga (Pedrotti & Cortini Pedrotti 1978 as "*V. gaultherioides*"). According to Greuter & al. (1984-89) this taxon is of doubtful taxonomic status.

Vaccinium myrtillus L. — *Fagus sylvatica* woods in the higher belt, moorland, scrub and pastures to 2500 m, Majella! (Tenore 1831-42, Cesati 1873, Tammaro 1986a, Conti 1987), Gran Sasso! (Bertoloni 1833-54 from Gussone, Furrer & Furnari 1960, Bruno & Furnari 1966, Zodda 1967, Catonica 1997), Bilancino near Paduli and M.ti della

Laga! (Tenore 1831-42, Parlatore 1848-96, Zodda 1953, 1959b, 1967) and the Parco Nazionale d'Abruzzo! (Anzalone & Bazzichelli 1960).

Primulaceae

Primula acaulis (L.) L. subsp. *acaulis* (*P. vulgaris* Huds.) — woods - CC.

Primula elatior (L.) L. subsp. *intricata* (Gren. & Godron) Widmer — cool pastures, M. ti della Laga on Pizzo di Sevo (Parlatore 1848-96 as "*P. intricata* Gren. & Godr.", Zodda 1967), Torre di Fonte Vidona (Abbate 1903 as "*P. intricata* Gren & Godron"), Majella (Tammaro 1986a from a specimen collected by Pedicino).

Primula veris L. subsp. *suaveolens* (Bertol.) Gutermann & Ehrend. (*P. columnae* Ten.) — pastures, territory of Villavallelonga (Grande 1904 as "*P. suaveolens* Bert."), M. dei Fiori (Bertoloni 1833-54 from Orsini as "*P. suaveolens*", Villani 1921), Majella and Gran Sasso (Parlatore 1848-96 as "*P. suaveolens* Bert.", Feoli-Chiapella 1979-80).

Primula auricula L. subsp. *auricula* — cool cliffs - NC.

Primula auricula L. subsp. *balbisii* (Lehm.) Nyman [*P. auricula* subsp. *ciliata* (Moretti) Lüdi] — cool cliffs - NC.

Androsace vitaliana (L.) Lapeyr. subsp. *praetutiana* (Sünd) Kress [*Vitaliana primuliflora* Bertol. subsp. *praetutiana* (Sünd) I. K. Ferguson] — Endem. C-Ap. - mountain tops, slopes with calcareous scree, Sirente, Velino, Gran Sasso!, Majella! (Mauri & al. 1830 as "*Aretia vitaliana*", Tenore 1831-42 as "*Androsace vitaliana* L.", Bertoloni 1833-54, Cesati 1873 as "*Aretia vitaliana* L.", Rigo 1877 as "*Aretia vitaliana* L.", Parlatore 1848-96, Matteucci & Martelli 1894, Groves 1880 as "*Gregoria vitaliana* Duby", Martelli 1904 as "*Gregoria vitaliana* Duby", Chiarugi 1930, Montelucci 1958, Furrer & Furnari 1960 as "*Douglasia vitaliana*", Bazzichelli 1960 as "*Douglasia vitaliana*", Bruno & Furnari 1966, Zodda 1967 as "*Douglasia vitaliana*", Favarger 1973, Petriccione 1993, Guarrera & Tammaro 1994, Tammaro 1986a, 1995).

Androsace villosa L. subsp. *villosa* — stony mountain tops - C in the main mountain groups.

Androsace alpina (L.) Lam. — Velino (Avena & Blasi 1974). The report is unlikely and perhaps it was made through confusion with other similar taxa.

Androsace mathildae Levier — Endem. C. Ap.-Montenegro (Amphiadriatic) - shady cliffs at high altitude, Gran Sasso! [Levier 1877, Bazzichelli 1960, Zodda 1957, 1967 as "*A. alpina* Lam. var. *mathildae* (Lev.)", Majella! (Levier 1877, Parlatore 1848-96 as "*Aretia mathildae*", Fiori 1923-29, Tammaro 1986a, Conti 1987). Considered as an endemic of C. Apennines, but it has also been found in Montenegro (Wraber 1983).

Androsace maxima L. — arid meadows, fields, Velino (Parlatore 1848-96, Fiori 1923-29,

Montelucci 1958), Montelucio di Roio, Collebrincioni, Piano di Navelli (Tammaro 1981a, Tammaro 1995), Sperone! (Conti 1995).

Soldanella minima Hoppe subsp. *samnitica* Cristofolini & Pignatti — Endem. Majella — wet rocks at high altitude, Majella! (Cristofolini & Pignatti 1962, Tammaro 1986a, Conti & Pellegrini 1988).

Soldanella alpina L. — snowbed meadows, shady terraces, Parco Nazionale d'Abruzzo! (Tenore 1831-42, Grande 1904, Lusina 1953, Anzalone & Bazzichelli 1960), M.ti della Laga! and Gran Sasso! (Tenore 1831-42, Parlatore 1848-96, Zodda 1953, 1967, Chiosi 1975 from a specimen collected by Marchesetti).

Cyclamen hederifolium Aiton (*C. neapolitanum* Ten.) — woods — CC.

Cyclamen repandum Sm. subsp. *repandum* — woods — CC.

Lysimachia nummularia L. — riversides, humid meadows, Gran Sasso, Teramo, beds of Tordino and Vezzola, flow of Mavone (Crugnola 1900, Zodda 1945 from a specimen collected by Quartapelle, but exact locality not indicated, 1953, 1967), Bosco di Mozzagrogna (Manzi & Pellegrini 1994), near Civitaluparella at Lago La Valle (from a specimen collected by Manzi).

Lysimachia vulgaris L. — humid meadows - NC.

Asterolinon linum-stellatum (L.) Duby — arid meadows - CC.

Anagallis arvensis L. subsp. *arvensis* — uncultivated land, fields - CC.

Anagallis arvensis subsp. *parviflora* (Hoffmanns. & Link) Arcang. (*A. parviflora* Hoffmanns. & Link) — M.ti della Laga at Pagliaroli near Cortino (Zodda 1953 as "*A. arvensis* var. *micrantha* G. & G."). This subspecies is doubtfully taxonomically separable from the previous one (Greuter & al. 1984-89).

Anagallis arvensis L. subsp. *foemina* (Mill.) Schinz & Tell. — uncultivated land, fields - NC.

Samolus valerandi L. — wet environments, humid meadows - C.

Plumbaginaceae

Plumbago europaea L. — ruderal environments, uncultivated land - C.

Armeria canescens (Host) Boiss. subsp. *canescens* — montane stony pastures - CC.

Armeria canescens subsp. *gracilis* (Ten.) Bianchini — this taxon is of doubtful taxonomic status (Greuter & al. 1984-89).

Armeria nebrodensis (Guss.) Boiss. — Sirente, Fossa di Paganica, Simbruini (Tammaro al. 1974, Veri & Tammaro 1980 as "*A. canescens* subsp. *nebrodensis*"). Worthy of

confirmation, Guarrera & Tammaro (1994) do not confirm it from the Sirente.

Armeria majellensis Boiss. subsp. *majellensis* — This taxon is of doubtful taxonomic status (Greuter & al. 1984-89).

Armeria seticeps Rchb. — Endem. Marit. Alps - N. C. Ap. - stony pastures, from Pescasseroli to Opi and Barrea (Vaccari & Wilczek 1940), Majella (Cesati 1873, Fiori 1923-29). To be confirmed.

Armeria denticulata (Bertol.) DC. — Endem. N. Ap. - Morrone (Tenore 1831-42 as "*Statice denticulata* Bert."), Gran Sasso in Vallone tra i due Corni and Rio Arno at Callarone [Abbate 1903, Zodda 1953, 1967 as "*A. vulgaris* W. var. *denticulata* (Bertol.)"], Parco Nazionale d'Abruzzo from Valico di Pantano to Scontrone (Vaccari & Wilczek 1940); Anzalone & Bazzichelli (1959-60) report the previous citation as "*A. vulgaris* W. var. *denticulata* (Bert.)" showing their doubt on the real occurrence of the species. The other localities need confirmation. Pignatti (1982) reports it only from Tuscany.

Armeria arenaria (Pers.) Schult. [*A. plantaginea* (All.) Willd.] — M.ti di Roseto, Gran Sasso, Majella (Tenore 1831-42 as "*A. plantaginea*"), Sirente (Groves 1880 as "*A. plantaginea*"), Marsica at Trasacco, Villavallalonga [Anzalone & Bazzichelli 1960 as "*A. vulgaris* W. var. *plantaginea* (W.)" from specimens collected by Grande], Barrea (Vaccari & Wilczek 1940), Majella (Parlatore 1848-96 as "*A. plantaginea*"), M. dei Fiori and Gran Sasso [Zodda 1953, 1967 as "*A. vulgaris* W. var. *plantaginea* (W.)"]. According to Pignatti (1982) the species has been confused with other taxa.

Limonium sinuatum (L.) Mill. — "Sfuggita dagli orti a Roseto; unico esemplare" (Zodda 1953 as "*Statice sinuata* L."), to be confirmed.

Limonium narbonense Mill. [*L. serotinum* (Rchb.) Pignatti] — retrodune clayey soils, mouth of F. Tronto, Fosso di Castiglione della Valle towards the mouth, as "*Statice limonium* L. var. *serotina* (Rchb.)" (Crugnola 1900, Zodda 1953 from a specimen collected by Petrilli, 1962). At present it seems extinct from the coast of the Abruzzo (Pirone & Conti 1996).

Limonium bellidifolium (Gouan) Dumort. — Pignatti (1982) reports it from the Abruzzo but it is not mentioned in the literature and has not been found along the coast.

Limonium virgatum (Willd.) Fourr. (*L. oleifolium* L. subsp. *oleifolium*) — conglomerate coast cliffs, Fossacesia (Tammaro 1980 as "*L. oleifolium* L. subsp. *oleifolium*"), Punta Penna! (Conti & al. 1990), Punta Cavalluccio (Pirone 1995b), Punta della Vignola!

Goniolimon italicum Tammaro, Frizzi & Pignatti — Endem. Abr. - arid meadows, Ocre, Conca di Capestrano! (Tammaro & al. 1982, Frizzi 1986a, Frattaroli 1988).

Styracaceae

Styrax officinalis L. — "Anco in Abruzzo" (Grande 1913 quotes Anguillara). No longer

found and to be confirmed.

Oleaceae

Jasminum officinale L. — C. Asia - naturalized, stony slopes - NC.

Fraxinus ornus L. subsp. *ornus* — scrub and mixed woods - CC.

Fraxinus excelsior L. subsp. *excelsior* — cool woods - C.

Fraxinus angustifolia Vahl subsp. *oxycarpa* (Willd.) Franco & Rocha Afonso
(*F. oxycarpa* Willd.) — ditches, watercourses, humid woods - NC.

Syringa vulgaris L. — naturalized - NC.

Ligustrum vulgare L. — hedges, scrub, open broadleaf woods and margins - C.

Ligustrum lucidum Ait. — naturalized - NC.

Olea europaea L. — cult. spont - NC.

Phillyrea latifolia L. — maquis, *Quercus ilex* woods, broadleaf woods of the supramediterranean to 800 m - C.

Phillyrea angustifolia L. — maquis, Pineta di Pescara (Tammaro & Pirone 1981), Montesilvano at Colle Selva (Pirone 1985), near Lentella! (Conti & al. in press).

Gentianaceae

Blackstonia perfoliata (L.) Huds. subsp. *perfoliata* — humid environments, fields - C.

Blackstonia acuminata (Koch & Ziz) Domin [*B. perfoliata* (L.) Huds. subsp. *serotina* (Rchb.) Vollmann] — humid environments along the coast - NC.

Centaureum erythraea Rafn subsp. *erythraea* — fields, pastures, garigue - CC.

Centaureum pulchellum (Sw.) Druce subsp. *pulchellum* — humid meadows - NC.

Centaureum tenuiflorum (Hoffmanns. & Link) Fritsch subsp. *acutiflorum* (Schott) Zeltner — humid uncultivated land, Villavallelonga, Teramo province, as "*Erythraea pulchella* Fr. var. *tenuiflora* (Hoffmg. & Link)" (Anzalone & Bazzichelli 1960 from a specimen collected by Grande, Zodda 1962a, 1967), mouth of T. Piomba (Pirone 1983 as "*C. tenuiflorum*"), erosion furrows of Gessopalena (Biondi & al. 1990 as "*C. tenuiflorum*"), Marina di Vasto (Pirone 1995b as "*C. tenuiflorum*"), erosion furrows between Guardiagrele and Pennapiedimonte!, Marina di S. Salvo!

Centaureum spicatum (L.) Fritsch — retrodune humid meadows, Teramo province!

(Zodda 1953, 1962a, 1965b, 1957 as "*Erythraea spicata* Pers.", Conti & Manzi, 1996), Pescara, Scafone di S. Valentino (Mauri & al. 1830, Cesati 1873 as "*Eythraea spicata*"), Punta Aderci (Pirone 1995b), Marina di S. Salvo! In Pescara it is probably extinct because of anthropic causes (Tammaro & Pirone 1979) while in the Teramo province it has become less frequent.

Centaureum maritimum (L.) Fritsch — garigue, arid meadows, erosion furrows of Gessopalena (Biondi & al. 1990), Pescara!

Gentiana lutea L. subsp. *lutea* — montane pastures - C.

Gentiana pneumonanthe L. — Piano delle Cinquemiglia (Tenore 1831-42, Tomei & al. 1986 from a specimen collected by Pellegrini dating back to 1911) where it has been no longer seen and is perhaps extinct.

Gentiana cruciata L. — pastures - C.

Gentiana dinarica Beck — stony slopes - C - also *G. acaulis* and *G. ligustica* (Halda 1996) have been reported for C. Ap., but their occurrence in the Abruzzo must be verified.

Gentiana verna L. subsp. *verna* — cool montane pastures, stony slopes - C.

Gentiana verna L. subsp. *tergestina* (G. Beck) Hayek — Grotta Caprara, Velino (Mauri & al. 1830 as "*G. aestiva* R. & S.") and doubtfully from the Abruzzo (Kunz & Reichstein 1966 as "*G. verna* var. *pseudotergestina* Schinz & Thell.").

Gentiana brachyphylla Vill. subsp. *favratii* (Rittener) Tutin [*G. magellensis* (Vaccari ex Ronniger) Tammaro] — mountain tops, calcareous scree, Sirente (Groves 1880 as "*G. bavarica*"), Majella!, Gran Sasso and Velino (Mauri & al. 1830 as "*G. bavarica*", Zodda 1953 as "*G. bavarica* L.", Tammaro 1986b). Its distribution area comprises, apart from C.-Apennines, Alps, Spain, Balcanic Peninsula, Armenia, Caucasus, Iran and Turkey (Halda 1996).

Gentiana nivalis L. — cool meadows at high altitude - NC.

Gentiana utriculosa L. — stony meadows at high altitude - NC.

Gentiana ciliata L. subsp. *ciliata* [*Gentianopsis ciliata* (L.) Ma subsp. *ciliata*] — montane pastures, stony slopes - C.

Gentiana columnae Ten. [*Gentianella columnae* (Ten.) Holub.] — Endem. C. Ap. - meadows at high altitude - NC.

Gentiana campestris L. subsp. *campestris* [*Gentianella campestris* (L.) Börner] — montane meadows and meadows at high altitude - NC.

Gentiana anisodonta Borbás [*Gentianella anisodonta* (Borbás) A. Löve] — Endem.

Alps-Ap. Croatia - meadows at high altitude - NC.

Menyanthaceae

Menyanthes trifoliata L. — montane marshy environments, Campotosto! peat-bog (Cecchetti 1907, Marchetti 1936), Villetta Barrea (Anzalone & Bazzichelli 1960 from a specimen collected by Grande) where it has disappeared, Il Lagozzo! in Alfedena territory (Naviglio 1983), Campitelli! and Passo Godi! (Conti 1992c).

Apocynaceae

Nerium oleander L. subsp. *oleander* — S. Medit. — naturalized.

Vinca minor L. — cool woods - NC.

Vinca major L. subsp. *major* — woods, hedges - C.

Asclepiadaceae

Vincetoxicum hirundinaria Medik. subsp. *hirundinaria* — pastures, scrub - C.

Rubiaceae

Sherardia arvensis L. — ruderal environments, garigue, arid uncultivated land - CC.

Crucianella latifolia L. — Fucino (Mauri & al. 1830, Tenore 1831-42, Parlato 1848-96 from Terracciano). There are no specimens in FI!; to be confirmed.

Crucianella angustifolia L. — arid pastures, Villavallelonga (Anzalone & Bazzichelli 1960 from a specimen collected by Grande).

Asperula aristata L. f. subsp. *scabra* (J. & C. Presl.) Nyman — stony pastures - NC.

Asperula aristata L. f. subsp. *oreophila* (Briq.) Hayek — stony slopes - NC.

Asperula neglecta Guss. — Endem. C. Ap. - stony meadows at high altitude, Majella! (Tenore 1811-38, Rigo 1877, Feoli-Chiapella 1979-80, Tammaro 1986a), Pizzo di Sevo [Bertoloni 1833-54, Villani 1921 as "*A. cynanchica* var. *neglecta* (Guss.)", Zodda 1953, 1957, 1967], Gran Sasso! (Gussone 1826, Tenore 1811-38, Bertoloni 1833-54, Abbate 1903, Fiori 1907, Zodda 1953, 1967, Tammaro 1995), Velino (Martelli 1904), Sirente (Groves 1880 as "*A. nitens*", Guarrera & Tammaro 1994), near Opi [Falqui 1899 as "*A. cynanchica* L. var. *neglecta* (Guss.)"].

Asperula cynanchica L. — arid pastures, stony areas - C - At higher altitudes it is possible to find var. *nitens* (Guss.) Arcang. with much shorter internodes, doubtfully taxonomically distinct.

Asperula taurina L. subsp. *taurina* — *Fagus sylvatica* woods - C.

Asperula laevigata L. — *Fagus sylvatica* woods, Majella (Cesati 1873, Feoli-Chiapella 1979-80, Tammaro 1986a), Teramo province (Parlatore 1848-96, Zodda 1953, 1967), Valle del Rio Torto (Tenore & Gussone 1842), Lagozzo! (Conti 1995).

Asperula arvensis L. — fields, uncultivated land - NC.

Asperula purpurea (L.) Ehrend. subsp. *purpurea* — stony pastures, stony slopes - CC.

Galium rotundifolium L. — cool *Fagus sylvatica* woods, Morrone (Parlatore 1848-96), Majella in Valle dell'Orfento from specimens collected by Levier (Tammaro 1986a), territory of Villavallelonga, Serra Lunga near Collelongo (Grande 1904, Anzalone & Bazzichelli 1960, Petriccione & al. 1993, Scoppola & Modena 1997), Cortino, Bosco Martese! (Zodda 1953, 1959b), Gran Sasso at Costa Incodara! (Conti & Manzi 1996), Valle del T. Castellano near "Cascata Le Moricane"!

Galium odoratum (L.) Scop. — *Fagus sylvatica* woods - CC.

Galium debile Desv. — marshy environments - NC.

Galium palustre L. — marshy environments, surroundings of Scanno (Gravina 1812), Rivisondoli, Pescocostanzo (Gussone 1826, Tenore 1831-42), Parco Nazionale d'Abruzzo! (Anzalone & Bazzichelli 1960 from Grande, Conti 1995), Quarto del Barone (Tammaro 1986a), Teramo, Giulianova and Mosciano S. Angelo along Rovano (Abbate 1903, Zodda 1953, 1967), Capo Pescara (Pirone & al. 1997).

Galium elongatum Presl. [*G. palustre* L. subsp. *elongatum* (Presl) Arcang.] — marshy environments - NC.

Galium verum L. subsp. *verum* — arid pastures, scrub - CC.

Galium mollugo L. — hedges, scrub - C — Several taxa could be included in this binomial. The species needs systematic investigation.

Galium album Mill. — hedges, scrub - C.

Galium corrudifolium Vill. — garigue, stony slopes - NC.

Galium lucidum All. — stony slopes - CC.

Galium bernardii Gren. & Godron — Endem. C. S. Ap.-Si-Co - screes and arid pastures, Majella (Mauri & al. 1830 as "*G. witmanni*", Tenore 1811-38, 1831-42, Cesati 1873, Feoli-Chiapella 1979-80, Tammaro 1986a), Gran Sasso and M.ti della Laga above Cortino [Zodda 1953 as "*G. lucidum* var. *vitmannii* (Ten.)"]. According to Grande (1924a) "*G. vitmanni* Ten." is to be referred to *G. lucidum*", while Pignatti (1982) refers it doubtfully to this taxon.

Galium laevigatum L. — Oroph. Alps-Apenn. - woods - NC - The reports from the Abruzzo of "*G. sylvaticum* (non L.) Ten." must be referred to "*G. aristatum* L."

(Grande 1924a) and according to Pignatti (1982) the records of "*G. aristatum*" must be referred to this taxon.

Galium anisophyllum Vill. — stony slopes. "*G. rubrum* L." has been reported from Morrone (Parlatore 1848-96), Gole di Popoli (Tammaro 1971a), M. dei Fiori, M. di Campi, Gran Sasso and Majella (Abbate 1903). According to Grande (1924a) the localities of Morrone as "*G. rubrum* L. flore albo Bert." and of Gran Sasso as "*G. pusillum* (non L.) D'Amato" are to be referred to "*G. pumilum* Murr. subvar. *austriacum* (Jacq.)", i.e. to *G. anisophyllum*. According to Pignatti (1982) the reports of *G. rubrum* from C. and S. Italy are erroneous.

Galium saxatile L. — M. Corno (Mauri & al. 1830, Tenore 1831-42, Abbate 1903 as "*G. hercynicum* Will."). According to Zodda (1953), it has been erroneously reported.

Galium megalospermum All. — M. Corno (Mauri & al. 1830), Velino (Tenore 1831-42). Pignatti (1982) reports it only from Alps.

Galium magellense Ten. — Endem. C. Ap. - screes - C in the main mountain groups.

Galium spurium L. — fields, uncultivated land - NC.

Galium aparine L. — ruderal environments - CC.

Galium tricornutum Dandy — fields - NC.

Galium verrucosum Huds. — fields - NC.

Galium parisiense L. — arid pastures, garigue - NC.

Galium divaricatum Pourr. ex Lam. — uncultivated land - NC.

Galium verticillatum Danth. — Marsica at Villavallelonga and Ortucchio, near Sulmona (Grande 1910).

Galium murale (L.) All. — walls and cliffs - NC.

Cruciata laevipes Opiz [*Galium cruciata* (L.) Scop.] — hedges, margins of woods, uncultivated land - C.

Cruciata glabra (L.) Ehrend. (*Galium verum* Scop.) — hedges, scrub - C.

Cruciata pedemontana (All.) Ehrend. — wood glades, pastures, near Gioia Vecchio! (Conti 1995).

Valantia muralis L. — cliffs, walls - NC.

Valantia hispida L. — cliffs, Gole di Popoli (Tammaro 1971a).

Rubia peregrina L. — maquis, hedges, woods, to 1000 m - C

Rubia tinctorum L. — W. and C. Asiat. — naturalized, ruderal environments, hedges - NC.

Convolvulaceae

Cuscuta scandens Brot. subsp. *scandens* (*C. tinei* Insenga) — on *Beta* and *Gramineae* occurring in the coastal zone, Giulianova and Isola del Gran Sasso at Ruzzo [Zodda 1967 as "*C. australis* R. Br. var. *breviflora* (Vis.)"], coast of Pescara (Tammaro & Pirone 1979) perhaps confused with *C. scandens* subsp. *cesatiana*.

Cuscuta scandens subsp. *cesatiana* (Bertol.) Greuter & Burdet (*C. cesatiana* Bertol.) — N. Amer.? - Adv. nat., on *Xanthium*, *Polygonum* and other psammophilous plants, coasts of Pescara! and Teramo!, Villa Vomano, Fucino! (Fiori 1923-29, Zodda 1953a, 1954, 1957, 1962a, 1967 as "*C. pentagona* Engelm.", Tammaro 1985b, Viegi & al. 1990), surroundings of Stiffe (Guarrera & Tammaro 1994).

Cuscuta suaveolens Ser. — Adv. casual, Velino (Martelli 1904); the occurrence of this taxon is to be reconfirmed (Viegi & al. 1990).

Cuscuta europaea L. subsp. *europaea* — on *Urtica dioica*, *Sambucus ebulus*, etc. - C.

Cuscuta epilinum Weihe — Adv. nat. - on flax in cultivation and on weeds, Teramo province (Zodda 1953 from Di Giuseppe), Chieti, Guardiagrele (Viegi & al. 1990). Zodda (1967) does not confirm its occurrence in the Teramo province.

Cuscuta palaestina Boiss. (s.l.) — on *Rubiaceae* and *Umbelliferae*, near Teramo [Zodda 1953 as "*C. epithymum* Murr. var. *palaestina* (Boiss.)"].

Cuscuta epithymum (L.) L. subsp. *epithymum* — C.

Cuscuta epithymum subsp. *kotschy* (Des Moul.) Arcang. (*C. kotschy* Des Moul.) — Parco Nazionale d'Abruzzo [Anzalone & Bazzichelli 1960 as "*C. epithymum* var. *kotschy* (Desmoulins)"] and Teramo province [Zodda 1953 as "*C. epithymum* var. *kotschy* (Des Moul.)"]. This taxon is of doubtful taxonomic status (Greuter & al. 1984-89).

Cuscuta planiflora Ten. — Velino (Mauri & al. 1830, Martelli 1904, Lucchese & Lattanzi 1991), Silvi, Arapietra on Gran Sasso, Majella at Valle dell'Orfento [Cesati 1873, Porta 1879, Parlatore 1848-96, Zodda 1953 as "*C. epithymum* var. *planiflora* (Ten.)"].

Calystegia soldanella (L.) Roem. & Schult. — coastal dunes - NC.

Calystegia sepium (L.) R. Br. subsp. *sepium* — hedges, humid woods - NC.

Calystegia silvatica (Kit.) Griseb. — hedges, scrub - NC.

Convolvulus lineatus L. — arid slopes, S. Vincenzo Val Roveto (Veri 1988).

Convolvulus cantabrica L. — arid meadows - CC.

Convolvulus arvensis L. — fields, uncultivated land - C.

Convolvulus althaeoides L. — uncultivated land, "basse falde del Morrone a Rocca Casale" (Tenore & Gussone 1842), Guarenna! (Conti & Manzi 1996), near Lentella! and Rosciano (Conti & al. in press).

Convolvulus elegantissimus Mill. — arid and stony meadows - NC.

Ipomoea purpurea (L.) Roth — naturalized, uncultivated land, Teramo province (Zodda 1953a, 1967), Subequo (Castelvecchio?) (Viegi & al. 1990 from a specimen collected by Tammaro) and Pescara!

Boraginaceae

Heliotropium europaeum L. — ruderal environments, cultivated land, arid uncultivated areas - C.

Lithospermum officinale L. — cool meadows, hedges - NC.

Lithospermum purpureocaeruleum L. — open woods - C.

Lithospermum arvense L. subsp. *arvense* — uncultivated land, arid pastures - NC.

Lithospermum incrassatum Guss. [*Buglossoides incrassata* (Guss.) I. M. Johnst.] — arid pastures, M. Salviano, Velino, M. dei Fiori (Mauri & al. 1830, Tenore 1831-42, Lucchese & Lattanzi 1991), Trasacco and Villavallelonga (Fiori & al. 1907 as "*L. arvense* L. var. *incrassatum* Guss." from Grande, Anzalone & Bazzichelli 1960 from specimens collected by Grande as "*L. arvense* L. *caerulescens* DC."), Teramo and Pineto [Zodda 1967 as "*L. arvense* var. *splitgerberi* (Guss.)"].

Neatostema apulum (L.) I. M. Johnst. [*Lithospermum apulum* (L.) Vahl] — arid uncultivated land, from Pescasseroli to Opi and Barrea (Vaccari & Wilczek 1940), Capo Pescara (Pirone & al. 1997).

Onosma helvetica (DC.) Boiss. — cliffs, arid and sunny slopes, Sirente (Guarrera & Tammaro 1994).

Onosma echioides L. — Endem. Ap. - arid and stony pastures - C - var. *columnae* Lacaita has also been reported.

Onosma javorkae Simonkai — arid and stony pastures - NC.

Onosma stellulata Waldst. & Kit. — Sirente (Groves 1880), above Caramanico, near Castelvecchio and Pacentro (Parlatore 1848-96). According to Pignatti (1982), the reports from Italy are to be attributed to *O. echioides* or to *O. helveticum*. Groves' exsiccata regarding Sirente have not been found (Guarrera & Tammaro 1994).

Cerinth minor L. subsp. *minor* — uncultivated land, cultivated areas, meadows, surroundings of Scanno (Gravina 1812), Majella (Tammaro 1986a), Valle del Vomano (Abbate 1903 as "*C. minor*", Zodda 1953 as "*C. minor*" from Crugnola), Capistrello (Veri 1988 as "*C. minor*"), Val d'Arano (Guarrera & Tammaro 1994, Dinter 1996 as "*C. minor* var. *maculata*"), Gran Sasso (Tammaro 1995).

Cerinth minor L. subsp. *auriculata* (Ten.) Domac (*C. auriculata* Ten.) — *Fagus sylvatica* woods glades, scrub, Sirente, Altopiano delle Rocche, Velino! [Groves 1880 as "*C. maculata* M. B.", Villani 1921 as "*C. minor* L. var. *maculata* (L. p.p. M. B.)", Guarrera & Tammaro 1994, Tenore in Bertoloni 1833-54], Colle di Mandria Murata (Tammaro 1971b), Majella at Valle dell'Orfento (Tammaro 1986a), along Rio d'Assergi (Fiori 1907 as "*C. maculata* L. p.p. M. B.") near Voltigno! (Guarrera & al. 1995, Tammaro 1995), Serra Rocca Chiarano! (Conti 1995).

Cerinth glabra Mill. subsp. *glabra* — Valle del Vomano (Zodda 1953 from Crugnola), Grande di M. di Pizzoli at Valle del Paradiso (Bertoloni 1833-54 as "*C. maculata* Link"). To be confirmed.

Cerinth major L. subsp. *major* — cultivated land - NC.

Cerinth major subsp. subsp. *gymnandra* (Gasparr.) Rouy — pastures, Sirente (Guarrera & Tammaro 1994).

Echium asperrium Lam. — Piano delle Cinquemiglia (Tenore 1831-42 as "*E. pyramidale*"). To be confirmed.

Echium italicum L. subsp. *italicum* — uncultivated areas, arid pastures - C.

Echium vulgare L. subsp. *vulgare* (incl. *E. pustulatum* Sm.) — arid pastures, ruderal environments - C.

Echium plantagineum L. — arid uncultivated land, ruderal environments - C.

Echium parviflorum Moench — therophitic meadows, near the sources of F. Pescara (Pirone & al. 1997).

Pulmonaria apennina Cristof. & Puppi — Endem. W-Alps-Ap. - woods. For its regional distribution see Puppi & Cristofolini (1996).

Pulmonaria picta Rouy — Endem. S. W. Alps-N. C. Ap. - woods. Some reports as *P. saccharata* are to be referred to this taxon, whose distribution is to be investigated (Cristofolini pers. comm.).

Symphytum tuberosum L. subsp. *angustifolium* (A. Kern.) Nyman [*S. tuberosum* L. subsp. *nodosum* (Schur) Soó] — woods - C.

Symphytum bulbosum K.F. Schimp. — cool woods - NC.

Anchusa undulata L. subsp. *hybrida* (Ten.) Béguinot (*A. hybrida* Ten.) — arid uncultivated land, fields, Roseto, Pineto, Giulianova, perhaps also in Mavone [Zodda 1967 as "*A. undulata* L. var. *hybrida* (Ten.)"], near Avezzano, L'Aquila, Morrone di Popoli [Tammamaro & al. 1979 as "*A. undulata* L. subsp. *hybrida* (Ten.) Couthino"], Majella at Rapino (Tammamaro 1986a), Pescara! [Villani 1921, Tammamaro & Pirone 1979 as "*A. undulata* subsp. *hybrida* (Ten.) Couth."], Simbruini (Veri 1988), Velino (Lucchese & Lattanzi 1991). *Anchusa undulata* L. has been reported from Giulianova (Abbate 1903) and Gole di Popoli (Tammamaro 1971a) but it is probably to be referred to *A. undulata* subsp. *hybrida*.

Anchusa azurea Mill. (*A. italica* Retz.) — uncultivated land, arid pastures - C.

Lycopsis arvensis L. [*A. arvensis* (L.) M. Bieb.] — uncultivated land, Teramo and Notaresco (Zodda 1967 from Di Giuseppe). In Italy it occurs southwards to Tuscany (Selvi & Bigazzi 1998) and probably it is to be excluded from the Abruzzo (Selvi pers. comm.).

Cynoglossis barrelieri (All.) Vural & Kit Tan subsp. *barrelieri* [*A. barrelieri* (All.) Vitman] — uncultivated land, arid pastures - C.

Borago officinalis L. — fields, ruderal environments - C.

Asperugo procumbens L. — uncultivated land, ruderal environments - C.

Myosotis incrassata Guss. — arid pastures - C.

Myosotis pusilla Loisel. — Villavallelonga, Trasacco (Grande 1904, Fiori 1923-29, Anzalone & Bazzichelli 1960). According to Pignatti (1982), the reports of *M. pusilla* Loisel. from C. Italy are probably to be referred to *M. incrassata* Guss.

Myosotis arvensis Hill subsp. *arvensis* — arid pastures, cultivated areas, uncultivated land - NC.

Myosotis ramosissima Rochel subsp. *ramosissima* — arid pastures, uncultivated land - C.

Myosotis discolor Pers. — sandy slopes, M.ti della Laga (Zodda 1967 as "*M. arvensis* var. *versicolor* Pers."), Simbruini (Tammamaro & al. 1974).

Myosotis stricta Link ex Roem. & Schult. — arid pastures, Roccaraso and Rivisondoli (Tenore 1831-42 as "*M. micrantha*"), Prato della Corte (Cesati 1873), Piani di Pezza, Campo Felice (Lucchese & Lattanzi 1991).

Myosotis speluncicola (Boiss.) Rouy — caves, Pietracamela at Prati di Tivo (Zodda 1962b, 1967 as "*M. arvensis* var. *marcillyana* Burnat") and Velino in Valle Majelama and Valle di Sevice (Pignatti 1982, Lucchese & Lattanzi 1991).

Myosotis sylvatica Ehrh. ex Hoffm. subsp. *sylvatica* — woods, scrub - C.

Myosotis sylvatica Hoffm. subsp. *subarvensis* Grau — *Fagus sylvatica* woods, Majella at Fonte Romana (Tammaro 1986a).

Myosotis decumbens Host subsp. *florentina* Grau — Endem. N. C. Ap. - glades, margins of woods - C.

Myosotis alpestris A.F.W. Schmidt — montane pastures, stony slopes - C.

Myosotis suaveolens Willd. — M. Gorzano [Zodda 1967 as "*M. alpestris* var. *suaveolens* (W. & K.)"]. According to Pignatti (1982) the occurrence of this species in Italy is to be confirmed.

Myosotis ambigens (Bég.) Grau — Endem. C. S. Ap. - montane pastures, stony slopes - C.

Myosotis scorpioides L. — marshy meadows, surroundings of Scanno (Gravina 1812), from Rocca di Mezzo to Bosco Cerro (Mauri & al. 1830), Pescocostanzo (Tenore 1831-42 as "*M. palustris* With. & Spr."), Parco Nazionale d'Abruzzo! [Vaccari & Wilczek 1940 as "*M. palustris* L.", Anzalone & Bazzichelli 1960 as "*M. palustris* Hill var. *strigulosa* (Rchb.)", Avena & Rosati 1973, Conti 1995], Gole di Popoli [Tammaro 1971a as "*M. palustris* (L.) Nath subsp. *strigulosa* (Rchb.) Arc."], Laghetto di Vetoio (Del Grosso & Pogliani 1976 as "*M. palustris*"), Capo Pescara (Tammaro & al. 1987), Sirente (Guarrera & Tammaro 1994), Molino di Rivisondoli, Val d'Arano (Pirone 1987b).

Myosotis nemorosa Besser — woods and humid meadows - NC.

Myosotis laxa Lehm. subsp. *caespitosa* (Schultz) Nordh. (*M. caespitosa* Schultz) — marshy meadows, Sirente "posti paludosi e lungo l'Aterno" (Groves 1880 as "*M. caespitosa*"), Castel di Sangro at La Brionna (Tammaro 1983a as "*M. caespitosa*"), F. Tirino (Pirone 1987c as "*M. caespitosa*"), sources of F. Pescara, Lago di Campotosto (Pirone & al. 1997). According to Guarrera & Tammaro (1994) the report from Sirente is to be referred to *M. scorpioides*.

Myosotis sicula Guss. — humid meadows, Roccaraso and Rivisondoli (Tenore 1831-42). To be confirmed.

Lappula squarrosa (Retz.) Dumort. subsp. *squarrosa* — arid uncultivated land, stony pastures - NC.

Cynoglossum officinale L. — Pizzo di Sevo, M. Corno, Assergi, M. Salviano and M. della Stella, Majella at Vado di S. Antonio and at Rapina, Morrone (Tenore 1831-42, Parlatore 1848-96), Valle del Rio Torto (Tenore & Gussone 1842), surroundings of Gioia Vecchio (Vaccari & Wilczek 1940), Velino (Montelucci 1958), Teramo province (Zodda 1953, 1967), Majella (Tammaro 1986a), Gole di Popoli (Tammaro 1971a), Ernici and Simbruini (Veri 1988), Sirente (Guarrera & Tammaro 1994). Several reports are probably to be referred to *C. montanum*.

Cynoglossum columnae Ten. — arid and stony pastures, Rocca di Mezzo, Fossa Grande,

Bosco di Pizzoli (Mauri & al. 1830), Gran Sasso (Parlatore 1848-96, Zodda 1953), Majella, Morrone, Anversa (Tenore 1831-42, Rigo 1877), Sirente (Guarrera & Tammaro 1994) and the Parco Nazionale d'Abruzzo (Vaccari & Wilczek 1940, Anzalone & Bazzichelli 1960).

Cynoglossum creticum Mill. — uncultivated land - C.

Cynoglossum montanum L. — uncultivated areas, stony pastures - C.

Cynoglossum cheirifolium L. — Tenore (1831-42) reports it from the Abruzzo generally, from Bazzano near L'Aquila (Anzalone & Veri 1975), Rocca Calascio (Fascetti & Veri 1983), Farindola at Mortaio d'Angri (Zodda 1953).

Cynoglossum magellense Ten. — Endem. C. S. Ap. - arid pastures - C.

Cynoglossum apenninum L. [*Solenanthus apenninus* (L.) Fisch. & C.A. Mey.] — Endem. C. S. Ap. - *Fagus sylvatica* wood glades, montane pastures - C.

Verbenaceae

Vitex agnus-castus L. — retrodune humid depressions, Giulianova (Bertoloni 1833-54 from Marcantonio, Zodda 1953 from Orsini), Casalbordino (Tammaro & Pietrocola 1974), Fossacesia! (Tammaro 1983a), S. Nicola near Vasto! (Conti & Stanisci 1990), mouth of F. Sangro (Pirone 1995d). According to Zodda himself (1965b), it seems to have disappeared in Giulianova.

Verbena officinalis L. — ruderal environments - C.

Lippia nodiflora (L.) Michx. — humid meadows, Roseto near the mouth of the F. Vomano (Zodda 1953) and Pescara at Pineta d'Avalos! (Conti 1986). The report from L'Aquila cited in Viegi & al. (1990) is to be referred to *L. canescens* (De Martis & Loi 1982).

Lippia canescens Kunth — near L'Aquila (De Martis & Loi 1982). In the distribution map drawn according to the herbarium material, two localities are present, but in the list of the specimens observed there was only one sample belonging to L'Aquila, while the specimen of the other site, in the Teramo province, was not present according to the specimens seen.

Callitrichaceae

Callitriche stagnalis Scop. — sluggish or stagnant waters - C.

Callitriche palustris L. — oligotrophic ponds, generally shady - Abruzzo (Pignatti 1982).

Callitriche brutia Petagna — sluggish waters, "In agro Praetutiano ab Orsino" (Bertoloni 1833-54 as "*C. autumnalis*"), Abruzzo (Pignatti 1982).