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The flora of Mount Tonneri and Mount Arqueri: Mesozoic calcareous outcrops of Central-Eastern Sardinia

Abstract

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In this contribution the authors present the results of a floristic research involving a few calcareous formations of centre-eastern Sardinia in Barbagia di Seulo: Monte Tonneri and Monte Arqueri. The found floristic component is made up of 508 entities subdivided into 76 families and 305 genera. The endemic contingent is represented by 62 species, 12.20% of the entire flora. The analysis of the growth forms has shown a high percentage of herbaceous species; the chorological spectrum has shown the dominance of Mediterranean elements. The largest percentage of the endemic component refers exclusively to the Sardinian sector.

Introduction

In the rich, varied panorama of geological forms that characterises Sardinia, a vast group of mountains scattered in the central eastern part of this island, rightly named "Sardinian Dolomites", stands out.

These reliefs, which are residues of one and the same calcareous bank that in the Mesozoic covered a much vaster area than in the present time, are shaped like uneven karst reliefs carved by erosion that often uncovers the underlying granitic basement or the Palaeozoic schists. They spread discontinuously from the centre to the north-east of the island and are represented today by variously extended calcareous islands. At the centre, around the Flumendosa basin, the limestone is structured in isolated towers, named "Tacchi" or "Tonneri", which are more or less equivalent terms. A. Della Marmora (1857) writes "the term Tonneri is used in this region to indicate the stratified rocky masses, almost always dolomitic (...) that often take on the shape of a tower (...) or are pieces of one large plain that were later separated by deep valleys".

The plateaux appear morphologically different today, with jagged edges and overhanging mountain faces, up to a few hundred metres tall. Karst phenomena are present with numerous sinkholes, swallow holes, caves, and underground rivers.

Several researchers visited these calcareous areas in the past (Moris 1858, Barbey 1884, Martelli 1896, Herzog 1909), but only recently our knowledge of the flora and vegetation

has been enriched by more organic contributions (Martinoli 1956, Ballero & al. 1993, Arrigoni & Di Tommaso, 1991).

The study area of this contribution includes the calcareous formations of Monte Tonneri (1,324 m s.l.m.) and Monte Arqueri (1,110 m s.l.m.), located in centre-east Sardinia, between Barbagia di Seulo and Ogliastra (Fig.1).

The botanical knowledge of these areas is limited exclusively to reports on "Le Piante Endemiche della Sardegna" (Arrigoni & al. 1976-1991).

This contribution aims at giving a more homogeneous picture of Barbagia di Seulo, in order to highlight possible floristic peculiarities or affinities with respect to the other calcareous areas of Sardinia.

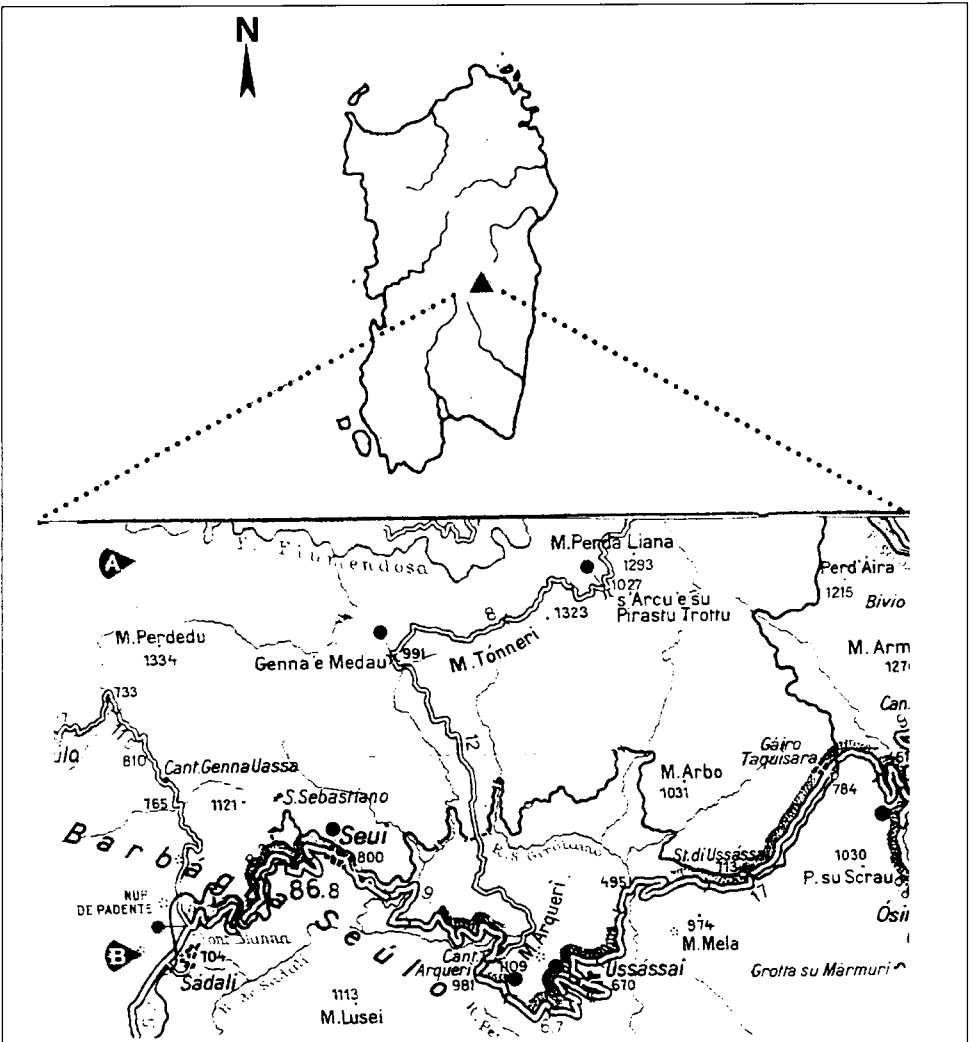


Fig.1- Geographical location of M.te Tonneri and M.te Arqueri.

The territory

Seui, a toponym of Phoenician origin meaning “solitude”, was established around the XIII century B.C. Such name was used from its foundation, though it was spelt *Seuhy* or *Sehuy*.

The town is located on the slope of a mountain at about 800 m a. s. l., in the historical-geographic area of Barbagia di Seulo, in the province of Nuoro.

Plant collections were carried out in the two distinct areas of Monte Tonneri and Monte Arqueri which are located in a calcareous-dolomitic area of about 3,000 hectares. As far back as 1926, part of this territory was under the Forestry Authority of the Sardinian Region (1,688 hectares were bought first, which were subsequently brought to 2,767 hectares).

Mount Tonneri is in section no. 531 III “Ussasai” and no. 531 IV “Villanova Strisaili” of the I.G.M.I. even though it does not belong to the municipality of Seui; to south-east it borders on Ussassai, whose boundary follows the courses of rio Pardu Coscia, rio Maccutta, and rio Gedдай from Funtana Arcada to the neighbourhood of Funtana di San Girolamo; to the east it borders on Gairo through Pizzu Erzioni, Serra Armidda, and Serra S’Ilixi as far as Bau Interflumini, and hence as far as the Flumendosa river; along the course of the Flumendosa it borders on Arzana.

To the south, Mount Arqueri (1,110 m) lies beyond the deep valley of rio Maccutta and rio Gedдай, section no. 531 sez. III “Ussassai” of the I.G.M.I., an elongated “tacco” with a rough irregular ridge overhanging the village of Ussassai, which shares the mountain with Seui.

The Mount Tonneri massif presents higher altitudes along the edge of the northern slope, which is configured as a relief with a long gentle slope on one side, and a steep one on the opposite side; here the uniformity of the slope is interrupted by a natural ledge or “step” that formed on the calcareous cliff. The ledge extends for about four kilometres and it is irregular, alternating narrow winding stretches with frequent broad platforms.

Karst erosion and erosion due to the drainage pattern formed different reliefs, whose peaks are the highest altitudes in the northern sector: Pizzu Margiani Pubusa is the highest peak at 1,324 m, followed by Pizzu Montarbu (1,304 m), Pizzu Andriottu (1,232 m), Bruncu Arrascalei (1,178 m), Pizzu Linarbu (1,178 m), and Pizzu is Abis (1,102 m). The peaks in the southern sector reach lower altitudes, rarely exceeding a thousand metres: Pizzu Erzioni (1,030 m), Perda Genn’Iacca (1,050 m), Pizzu Orgioloniga (1,092 m) and Pizzu San Pietro (1,051 m) (Agnesi & al., 1990).

The studied area contains metamorphic, eruptive, and sedimentary outcrops of the Palaeozoic and the Mesozoic. Chronologically a Palaeozoic schistose basement, which was intensely corrugated and metamorphosed by the Hercynian orogeny, formed in the Silurian. It is made up of a complex of phyllitic schists, arenaceous schists, and micaschists. The mountain range that emerged with the Hercynian orogeny was therefore rapidly dismantled by surface erosion agents, and the detritus from the higher areas was deposited in depressions that were often occupied by lacustrine basins. Sedimentation in these basins went on until the end of the Permian, when a post-orogenic type of volcanic activity, which brought about effusive eruptive rock covers, started. In the Mesozoic other events affected the geologic formations of this area. In this area the calcareous succession

reaches a thickness of about two hundred metres and presents a slightly southward-inclined attitude; it includes grey or yellowish limestones, at times oolitic, dolomites, and dolomitic limestones (Agnesi & al., 1990).

The predominant soils in the study area are Lithosols (lithic and typic xerorthents) with a vegetation represented by a very sparse maquis, red soil (lithic and typic rhodoxeralls) with a clayey horizon more than 15 cm in thickness, with a very scarce cover represented by forms of degradation of maquis and garrigue, and the Inceptisols (lithic and typic xerochrepts) with forestal vegetation or evolved maquis (Aru & al., 1991).

The Monte Tonneri area is included in the Flumendosa catchment basin, the entire territory is crossed by a number of watercourses, and spring waters are frequent. The main watercourses of the Tonneri plateau flow parallel from North to South towards rio Anus and rio Ermolinus, which rise respectively in Su Stampu and Pizzu Margiani Pubusa. Another river that crosses the Tonneri area is rio Liscerzu, which is named rio Maccutta when it receives the waters of rio Pardu Coscia at Genna Idissa and later flows into rio Geddai. The Tonneri area also includes the longest and most complex river of the territory of Seui in the Tonneri area, rio San Cristoforo, which rises in the Pauli spring and receives the tributaries of Perda Canuda and Su Accu de Marasoppa, and the waters of the Funtanas of Sa Bona, Gersadili, Ogliastu, Urzei, Crocculu and Semmida.

The area of Monte Arqueri used to have a few springs, but they were impoverished in time and have been completely depleted in the past few years.

Climate

Data of the Hydrographic Service of the Councillorship of Public Works of the Autonomous Region of Sardinia relating to the station of Seui at 812 metres a. s. l. were used to analyse the climate. The considered periods were from 1961 to 1995 for rainfall, and from 1986 to 1995 for temperatures; though scarce, these are the only available data (Tab.1).

Rainfall is concentrated between October and April with maximum values in November and December. The annual rainfall average is 860 mm with a total mean of 81 rainy days. Though modest and scarce from our observation, snow precipitation is present and appears in January and February.

Thermometric data show that the hottest months are July and August with a mean temperature of 28 °C, and the coldest month is January with a mean temperature of 3.25 °C.

Tab. 1. Thermometric and pluviometric data relating to the Seui station.

	J	F	M	A	M	J	J	A	S	O	N	D
Max T	9,15	9,52	11,05	13,70	19,70	23,62	28,00	28,60	24,30	19,25	12,96	9,72
Min T	3,25	3,70	5,25	6,60	11,30	14,20	18,10	18,90	15,80	12,10	7,18	4,29
Mean T	6,20	6,60	8,20	10,20	15,50	18,90	23,00	23,80	20,03	15,70	10,07	7,00
mm	96,40	99,86	85,96	70,61	49,60	39,40	23,50	26,10	50,70	84,50	116,30	130,20
days	9,20	8,90	9,10	8,90	5,60	3,12	1,80	2,40	4,70	7,40	9,20	11,00

The Bagnouls and Gaussen (1953) diagram (Fig. 2) shows a period of summer aridity from mid-June to early September with a duration of about 82 days.

Following Emberger's bioclimatic classification (Daget, 1977), the climate of the studied territory can be framed in the Mediterranean climate, humid bioclimatic stage, cool winter variant.

Flora

The surveys and specimen collections were carried out between 1994 and 1999, with periodic excursions more frequently during the greatest anthesis.

Systematic and Taxonomic order follow Tutin & al. (1964-1980), while for the nomenclature reference is made to Tutin & al. (1964-1980) and Greuter & al. (1984-1989), to Ferrarini & al., 1986 for the *Pteridophyta*, to Scrugli (1990) for the *Orchidaceae*, and to the proposals of Arrigoni & al. (1976-1991) as regards other endemic taxa. In the list, for each taxon the growth form is reported according to Arrigoni (1996), to whom we refer for abbreviations and chorologic elements, while applying the phytogeographic subdivision by Takhtajan (1986) for the regional/supraregional units (European area) and by Arrigoni (1983a) for the subregional units (Mediterranean area), and comparing the distribution data

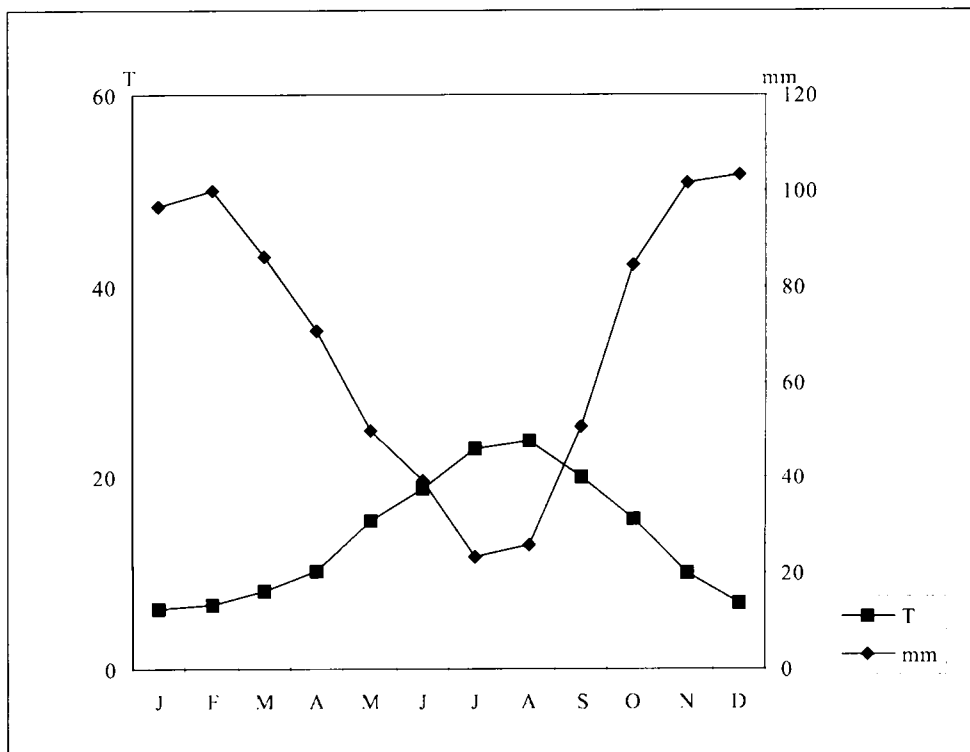


Fig. 2 - Bagnouls and Gaussen Diagram of the Seui station.

proposed by Meusel & al (1965, 1978, 1992), Jalas & Souminen (1972-1994) and Tutin & al. (1964-1980). For each taxon the most significant collection localities, habitat, and abundance are given. As regards the endemics, the previous well-known reports in the literature especially relating to the typical taxa of calcareous areas are recorded, often followed by a brief note. Taxa marked by an asterisk * refer to previous reports not found by us and therefore not taken into consideration in our ecological and chorological study.

Floristic list

Selaginellaceae

Selaginella denticulata (L.) Spring - PT - Med.- Arqueri - Anulù - Canali - Humid, rocky places, common.

Adiantaceae

Adiantum capillus-veneris L. - PT - Subcosmop. - Sa ucca de su oe- Arqueri - S'arcu de su Pirastu Trottu - Sa Scala de sa Marra - Humid places, common.

Hemionitidaceae

Anogramma leptophylla (L.) Link - PT - Cosmop. - Sa ucca de su oe - Arqueri - Humid places, rare.

Hypolepidaceae

Pteridium aquilinum (L.) Kuhn - PT - Cosmop. - Arqueri - Canali - Pauli - Marrocu - Oak wood, common.

Aspleniaceae

Asplenium trichomanes L. - PT - Subcosmop. - Arqueri - Cerasia - Middai - Pauli - Rocky ravines, sporadic.

Asplenium adiantum-nigrum L. - PT - Olart. - Canali - Cerasia - Sa ucca de su oe - Rocky ravines, common.

Asplenium onopteris L. - PT - Tetid.-Eur. - Arqueri - Canali - Sa ucca de su oe - Rocky ravines, common.

Ceterach officinarum Willd. -PT - Tetid.-Eur. - Arqueri -Anulù - Ardasai - Middai - Pauli - Sa ucca de su oe - Margiani Pubusa - Rocks, common.

Athyriaceae

Athyrium filix-femina (L.) Roth - PT - Olart. - Middai - Rocky ravines, sporadic.

Aspidiaceae

Polystichum setiferum (Forssk.) T. Moore ex Woynar - PT - Eur.-Tetid. - Cerasia - Oak wood, common. Also reported by Barbey (1884) sub *Aspidium aculeatum* (L.) Sw. from Seui.

Dryopteris filix-mas (L.) Schott - PT - Subcosmop. - Margiani Pubusa - Stony ground, rare.

Dryopteris pallida (Bory) Maire & Petitm. - PT- Med.-Eur. -Arqueri- Rocky ravines, common.

Polypodiaceae

Polipodium cambricum subsp. *serrulatum* (Sch. ex Arcang.) Pic. Ser. - PT - Med. - Montarbu - Middai - Sa ucca de su oe - Rocky ravines, common. Also reported by Barbey (1884) for Seui sub *Polipodium vulgare* var. *serratum* Willd.

Cupressaceae

Cupressus sempervirens L. - W- Cultivated - Serra Arrascialei - Anulù - Maquis, sporadic, introduced.

Juniperus communis subsp. *nana* Syme - WF - Oro. Med.- Oro.Hypso.- Middai - Margiani Pubusa - Mountain ridges, sporadic. Also reported by Barbey (1884) for the Toneri of Seui sub *Juniperus nana* Willd..

Juniperus oxycedrus L. -WA - Eur.-Med. - Middai - Sa ucca de su oe - Serra Arrascialei - Maquis, woods, common.

Taxaceae

Taxus baccata L. - W - Oro.Med.-Oro.Hypso. - Arqueri - Sa ucca de su oe - Ardasai Montarbu - Margiani Pubusa - Foot of the mountain faces, glades, common. Also reported by Barbey (1884) from the Tonneri of Seui.

Salicaceae

Salix alba L. - W - Tetid.-Eurosib. - Arqueri - Funtana Dorada - Moist places, common.

Salix atrocinerea Brot. - W - W Med.-Atl.- Arqueri - Humid places, sporadic.

Betulaceae

Alnus glutinosa (L.) Gaertner - W - Eurosib. - Med. - Montarbu - River bank, rare.

Corylaceae

Ostrya carpinifolia Scop. - W - Eur.-Med.- Arqueri - Montarbu - Canali - - Margiani Pubusa. - Cerasia - Oak wood, common.

Fagaceae

Castanea sativa Mill. - W - Cultivated - Montarbu - Forest, rare.

Quercus ilex L. - W - Med. - Arqueri - Marrocu - Canali - Middai - Genn' Iacca - San Pietro - Montarbu - Margiani Pubusa - Sa ucca de su oe - Forest, common.

Quercus pubescens Willd. - W - Eur.-Med. - Arqueri - S'Arcu de su Pirastru Trottu - Forest, rare.

Moraceae

Ficus carica L. - WA - Med.- Ir. Tur. - Ardasai - Pauli - Genn' Iacca - Sa ucca de su oe - Rocky mountain faces, sporadic.

Urticaceae

Urtica atrovirens Req. ex Loisel - HiP - Sardinian-Corsican -Tyrrhenian - Iberian (Endemic) - Anulù - Ruderal environments, rare.

Urtica dioica L. - HiP- Olart. - San Pietro - Anulù - Ruderal places, common.

Urtica dubia Forskål - HiA - Med. - Arqueri - Ruderal environments, sporadic.

Urtica pilulifera L. - HiA - Med. - San Pietro - Ruderal environments, sporadic.

Parietaria judaica L. - HpsP - Eur.-Med. - Arqueri - Middai - San Pietro - Cliffs, common.

Parietaria lusitanica L. - HiA - Med. - Canali - Arqueri - Moist, sporadic.

Santalaceae

Osyris alba L. - WF - Eur.-Med. - Canali - Middai - Serra Arrascialei - Sa ucca de su oe - Maquis, common.

Rafflesiaceae

Cytinus ruber (Fourr.) Komarov - OP - W Med. - Arqueri - Canali - Garrigues, common.

Polygonaceae

Polygonum aviculare L. - HiA - Cosmop. - Arqueri - Genn'Iacca - Grassland, common.

Rumex acetosella L. - HiP - Olart. - Arqueri - Grassland, common.

Rumex acetosa L. - HiP - Bor.-Tetid. - Arqueri - Sa ucca de su oe - Grassland, common.

Rumex crispus L. - HiP - Bor.-Tetid. - Arqueri - Genn'Iacca - Grassland, common.

Rumex pulcher subsp. *divaricatus* (L.) Murb. - HiA - Eur.- Med. - Arqueri - Grassland, widespread.

Rumex bucephalophorus L. -HiA - Med.- Macar. - Genn'Iacca - Stony places, common.

Chenopodiaceae

Beta vulgaris L. -HiP - Eur.-Med. - Canali - Arqueri - Sa ucca de su oe - Grassland, sporadic.

Chenopodium glaucum L. -HiA- Subcosmop. - Arqueri - ruderal areas, rare.

Chenopodium album L. - HiA - Olart.-Paleotrop. - Subcosmop.- San Pietro - Stony places, sporadic.

Portulacaceae

Montia fontana subsp. *variabilis* Walters -HiA - Eur.- Oro. Med. - Canali - Arqueri - Humid grasslands, rare.

Caryophyllaceae

Arenaria balearica L. - HpsP - Sardinian-Corsican -Tyrrhenian- Iberian (Endemic) - Arqueri - Margiani Pubusa - S'arcu de su Pirastru Trottu - Sa scala de sa Marra - Humid rocky ravines, common. Also reported by Diana (1981) for the State Forest of Montarbu at Funtana Dorada, for M.te Tonneri at Pirastru Trottu, and from Rio Ercolanus to Funtana d'Oro.

Arenaria serpyllifolia L. - HiA - Olart.- Paleotrop. -Canali - Arqueri - Genn'Iacca - Marrocu - Grassland, common.

Minuartia hybrida (Vill.) Schischkim - HiA - Eur.-Tetid. - Arqueri - Grassland, common.

Minuartia verna subsp. *grandiflora* (C. Presl) Hoyek - HiP - Sardinian Corsican-Apulian Siculian (Endemic) - Margiani Pubusa - S' arcu de su Pirastru Trottu - Mountain ridge areas, rare. Also reported by Arrigoni (1984) for M.te Tonneri of Seui and in the terminal part of Margiani Pubusa in the Forest of Montarbu.

Stellaria media (L.) Vill. - HiA- Olart.-Paleotrop.- Arqueri - Canali - Sa ucca de su oe - Margiani Pubusa - Grassland, common.

Cerastium supramontanum Arrigoni -Hce - Sardinian-Corsican (Calcareous mountains of central-eastern Sardinia: north-eastern district) (Endemic) - Margiani Pubusa - Mountain ridge areas. This report extends the distribution of the species to a floristic district that is characterised by conditions that are very different from the indications given by Arrigoni (1984).

Cerastium glomeratum Thuill. - HiA - Cosmop. - Arqueri - Canali - S'Arcu de su Pirastu Trottu - Grassland, common.

Sagina apetala Ard. -HiA - Eur.-Med. - Canali - Arqueri - Sa ucca de su oe - Grassland, sporadic.

Polycarpon tetraphyllum (L.) L. -HiA - Eur.-Med. - Arqueri - Canali - Sa ucca de su oe - Margiani Pubusa - Grassland, common.

Silene italica (L.) Pers. - HiP - Tetid.-Eur.- Arqueri - Waste grounds, common.

Silene nodulosa Viv. - HiP - Sardinian-Corsican (Endemic) - S'Arcu de su Pirastru Trottu - Sa scala de sa Marra - Sa scala de Monti Longu - Cliffs, sporadic. Also reported by Valsecchi (1978) for the State Forest of Montarbu at Pirastru Trottu, above Rio San Girolamo, at San Pietro, and Bruncu Arrascialei.

Silene vulgaris (Moench) Garcke - HiP - Bor.-Tetid. - Arqueri - Genn'Iacca - Pauli - Waste grounds, common.

Silene coeli rosa (L.) Godron - HiA - W Med. - Sa ucca de su oe - San Cristoforo - Margiani Pubusa - Mountain ridges, dry places, sporadic.

- Silene nicaeensis* All. - HiA - Med. - Arqueri - Grassland, rare.
Silene sericea All. - HiA - W Med. - Margiani Pubusa - Stony places, rare.
Silene bellidifolia Juss. ex Jacq. - HiA - Med. - Pauli - Waste places, rare.
Silene colorata Poir. - HiA - Med. - Margiani Pubusa - Dry places, rare.
 * *Saponaria officinalis* L. - HiP - Eurosib. - Reported by Moris (1858) for Barbagia di Seui.
Petrorhagia saxifraga (L.) Link - HiP - Eur.-Med. - Arqueri - Canali - Sa ucca de su oe - Grassland, widespread.
Petrorhagia velutina (Guss) P.W. Ball. & Heywood - HiA - Med. - Sa ucca de su oe - Arqueri - San Cristoforo - Middai - Canali - Margiani Pubusa - Dry places and grassland, common.
Dianthus arrostii C. Presl - HiP - W Med. - Sa ucca de su oe - Pizzu Linarbu - San Cristoforo - Cliffs, common.

Ranunculaceae

- Helleborus argutifolius* Viv. - WS - Sardinian-Corsican (Endemic) - Ardasai - Road edges, common.
Nigella damascena L. - HiA - Tetid.-Eur. - Sa ucca de su oe - Margiani Pubusa - Genn'Iacca - Pauli - Dry places and grassland, common.
Anemone hortensis L. - Hbu - Eur.-Med. - Arqueri - Ardasai - Grassland, common.
Clematis flammula L. - WL - Med. - San Pietro - Pauli - Oak wood, common.
Clematis vitalba L. - WL - Eur.-Med. - Arqueri - Middai - San Pietro - Canali - Marrocu - Oak wood, common.
Ranunculus repens L. - HreP - Bor. - Tetid. - Arqueri - Flooded meadow, sporadic.
Ranunculus macrophyllus Desf. - HiP-Med. - Arqueri - Humid meadows, sporadic.
Ranunculus sardous L. Crantz - HiA - Eur.-Med. - Arqueri - Flooded grassland, sporadic.
Ranunculus muricatus L. - HiA - Tetid.-Paleotrop. - Arqueri - Flooded meadow, sporadic.
Ranunculus sceleratus L. - HiA - Olart.-Paleotrop. - Arqueri - Grassland, sporadic.
Ranunculus ficaria L. - Hbu - Med.-Eur. - Arqueri - Flooded meadow, common.
Ranunculus cymbalarifolius Balbis - HceP - Sardinian-Corsican (Calcareous mountains of centre-eastern Sardinia: "tacchi" district; siliceous mountains: Gennargentu district) (Endemic) - Funtana Dorada - Funtana S'Orroli - Humid places, common. Reported also by Arrigoni (1978) for the same places of the Montarbu Forest.
Ranunculus gramineus L. - HiP - Oro. W Med. - Margiani Pubusa - Stony places, rare.
Aquilegia barbaricina Arrigoni & Nardi - HiP - Sardinian-Corsican (Siliceous mountains: Gennargentu district) (Endemic) - Arqueri - Oak wood, rare. This finding extends the distribution of the species to another floristic district, different from the one indicated by Arrigoni & Nardi (1977).
Aquilegia nugorensis Arrigoni & Nardi - HiP - Sardinian-Corsican (Calcareous mountains of central-eastern Sardinia: "tacchi" district; siliceous mountains: Gennargentu district) (Endemic) - Cerasia - Montarbu - Pirastru Trottu - Degraded places, common. Reported also by Arrigoni and Nardi (1978) for the Montarbu State Forest at Pirastru Trottu, small valleys of Rio Anus, along Rio Ermolinus, above Rio Baccu e' Pira.

Paeoniaceae

- Paeonia mascula* subsp. *russii* (Biv.) Cullen & Heywood - Hrh - W.Med. - Arqueri - Marrocu - Genn'Iacca - Canali - Anulù - Middai - Cerasia - S'Arcu de su Pirastru Trottu - Oak wood, common. Reported also by Barbey (1884) for the Toneri of Seui sub *Paeonia corallina* Retz. - pubescens Moris.

Papaveraceae

- Papaver rhoeas* L. - HiA - Tetid.-Eur. - Anulù - Margiani Pubusa - Ruins, common.

Fumaria capreolata L. - HiA- Med.- Atl. - Arqueri - Middai - Genn'Iacca - Ruins, common.
Fumaria officinalis L. -HiA- Eur.-Med. - Arqueri - Canali - Sa ucca de su oe - Margiani Pubusa - Grassland, common.

Cruciferae

Sisymbrium irio L. -HiA- Eur.-Med.- Arqueri - Middai - San Pietro – Grassland and glades, common.
Sisymbrium officinale (L.) Scop. -HiA- Eur.-Med. - San Pietro - Grassland and dry places, common.
Arabidopsis thaliana (L.) Heymh. -HiA- Eur.-Med. - Middai - San Pietro – Dry areas, common.
Bunias erucago L. - HiA - Eur.- Med. - Middai - Ruins, sporadic.
Cheiranthus cheiri L. -HiP - Eur.-Med.- Funtana Dorada – Humid places, sporadic.
Nasturtium officinale R. Br. - HiP - Tetid.-Eur.- Arqueri – Flooded meadows, small streams, common.
Cardamine flexuosa With. - HiP - Eur.- Med. - Genn'Iacca – Dry places, sporadic.
Cardamine hirsuta L. - HiA - Cosmop. - Genn'Iacca – Dry places, common.
Arabis hirsuta (L.) Scop. - HiB – Olart. - Arqueri - Ardasai - Genn'Iacca - S'Arcu de su Pirastru Trottu - Marrocu - Rocks, common.
Arabis collina Ten. - HiP – Oro. Med. - Margiani Pubusa - Sa Scala de sa Marra – Rocks, sporadic.
Arabis verna (L.) R. Br. -HiB - Med. - Arqueri - Ardasai - Genna'Iacca - Rocks, common.
Alyssum minus (L.) Rothm. - HiA - Med.- Ir. Tur. - Arqueri - Canali - Ardasai - Margiani Pubusa - Grassland, dry places, common.
Lobularia maritima (L.) Desf. - HiA - Med. - Arqueri – Road edges, common.
Clypeola jonthlaspi L. - HiA - Med.-Pont. - Ardasai - Margiani Pubusa - Marrocu – Stony places, sporadic.
Draba muralis L - HiA - Tetid.-Eurosib. - Arqueri - Grassland, sporadic.
Erophila verna subsp. *praecox* (Steven) Walters - HiA - Tetid.-Eur. - Arqueri - Canali - Ardasai - Margiani Pubusa - Grassland, common.
Capsella bursa-pastoris (L.) Medicus - HiB - Cosmop. - Arqueri - Grassland, common.
Capsella rubella Reuter - HiA - CW Med. - Ardasai – Stony places, rare.
Hormungia petraea (L.) Rchb. - HiA - Eur.-Med. - Canali – Dry places, common.
Tesdalia coronopifolia (J.P.Bergeret) Thell. - HiA - Med.-Pont. - Arqueri - Canali - Ardasai - Margiani Pubusa - Dry grassland, widespread.
Iberis integerrima Moris - HiP - Sardinian-Corsican (Calcareous mountains of central-eastern Sardinia: "tacchi" district; coastal and hilly subsector: south eastern district) (Endemic) - Sa ucca de su oe - Cliffs, rare. Reported also by Arrigoni (1980) for the Montarbu State, right side of Rio Ermolinus.
Biscutella morisiana Raffaelli - HiA - Sardinian-Corsican - Arqueri - Genn'Iacca – Stony and dry places, common. New. This species has also been reported by Raffaelli (1991) for the Montarbu State Forest at Funtana Dorada, in the neighbourhood of Margiani Pubusa and from Middai to Anulù, it appears to be endemic.
Hirschfeldia incana (L.) Lagrèze-Fossat - HiP- Med. - Arqueri - Ruderal areas, sporadic.
Calepina irregularis (Asso) Thell. - HiA - Med.- Arqueri - Canali - Ardasai - Margiani Pubusa – Humid places, flooded grassland, rare.
Morisia monantha (Viv.) Ascherson - HiP- Sardinian-Corsican (Endemic) - Canali - Serra Arrascialei - Margiani Pubusa - Grassland, common. Reported also by Barbey (1884) for the Seui "Tacco" and by Corrias (1979) for the Seui "Tacco" in Barbagia, Monte Arbu State Forest.
Raphanus raphanistrum L. - HiA - Eur.-Med. – Along the roads, common.

Resedaceae

Reseda luteola L. - HiP - Tetid.-Eur.- Genn'Iacca - Stony ground, sporadic.

Crassulaceae

Umbelicus rupestris (Salisb.) Dandy - Hbu - Med.-Atl. - Middai - Montarbu - Ardasai - Cliffs, common.

Sedum rupestre L. - HcrP - Eur.-Med. - Sa ucca de su oe - Rocky places, common.

Sedum album L. - HcrP - Tetid.-Eur. - Sa ucca de su oe - Anulù - Canali - Rocky places, common.

Sedum dasyphyllum L. - HcrP - Med. - Margiani Pubusa - Sa ucca de su oe - Anulù - Ardasai - Genn'Iacca - Cliffs, common.

Sedum caespitosum (Cav.) DC. - HcrA - Med. - Genn'Iacca - Pauli - Rocky places, common.

Sedum caeruleum L. - HcrA - W Med. - Arqueri - Marrocu - Rocky places, common.

Saxifragaceae

Saxifraga cervicornis Viv. - WS - Sardinian-Corsican (Endemic) - Arqueri - S'Arcu de su Pirastru Trottu - Cliffs, sporadic. Reported also by Valsecchi (1978) for the Seui Tonneri, the M.te Arbu Forest, and the terminal part of P.ta Margiani Pubusa.

Saxifraga hulbifera L. - HiP - Eur.-Med. - Arqueri - Oak wood, rare.

Rosaceae

Rubus ulmifolius Schott - WF- CW Med.-Atl. - Sa ucca de su oe - Middai - Cerasia - Marrocu - San Pietro - Genn'Iacca - Pauli - Hedges, common.

Rosa canina L. - WF - Tetid.-Eur. - Arqueri - Sa ucca de su oe - Middai - Cerasia - Canali - Genn'Iacca - Pauli - Hedges, common.

Agrimonia eupatoria L. - HiP - Tetid.-Eur. - Cerasia - Oak wood, sporadic.

Sanguisorba minor subsp. *rupicola* (Boiss. & Reut.) Nordborg - HiP - CW Med. - Arqueri - Sa ucca de su oe - Ardasai - Marrocu - Grassland, common.

Geum urbanum L. - HiP- Tetid.-Eurosib. - Arqueri - Oak wood, sporadic.

Potentilla erecta (L.) Rauschel - HiP - Tetid.-Eurosiber.- Anulù - Grassland, sporadic.

Potentilla reptans L. - Hst -Tetid.-Eurosib. - Arqueri - Sa ucca de su oe - Ardasai - Middai - Canali - San Pietro - Grassland, common.

Potentilla caulescens subsp. *nebrodensis* (Strobl ex Ziman) Arrigoni - WS - Sardinian-Apulian Sicilian (Endemic) -Arqueri - S'arcu de su Pirastru Trottu - Cliffs, frequent. Arrigoni (1979) also reports this entity for the Montarbu State Forest at Pirastru Trottu, and at Bruncu Arrasciale.

Aphanes arvensis L. - HiA - Eur.-Med. - Arqueri - Grassland, common.

Pyrus amygdaliformis Vill. - WA - Med. - Arqueri - Sa ucca de su oe - Margiani Pubusa - Genn'Iacca - Pauli - Marrocu - Road edges, maquis, common.

Sorbus aria (L.) Crantz - WA - Oro. Med. - Oro.Hypso. - Arqueri - Margiani Pubusa - S'Arcu de su Pirastru Trottu - Cliffs, frequent.

Amelanchier ovalis Medik. - W - Oro. Med.- Oro.Hypso. - S'Arcu de su Pirastru Trottu - Cliffs, rare.

Crataegus monogyna Jacq. W- Med.-Eur. - Arqueri - Serra Arrascialei - Ardasai - Pauli - Marrocu - Woods, frequent.

Prunus spinosa L.- WF - Tetid.-Eurosib. - Canali - Pauli - Maquis, sporadic.

Prunus prostrata Labill. - WF - Oro. Med. - Margiani Pubusa - Cliffs, rare.

Leguminosae

Genista corsica (Loisel) DC. - WF - Sardinian-Corsican (Endemic)- Serra Arrascialei - Pauli - Degraded zones, common. The species is also reported by Valsecchi (1978) for the territory of Usassai and Seui, with reference to a herbarium sample of Sommer in 1872.

**Genista aetnensis* (Biv.) DC. - WA - Sardinian-Corsican-Apulian Sicilian (Endemic) - Reported by Moris (1858) for the Barbagia di Seui and by Barbey (1884) generally for the territory.

- Robinia pseudacacia* L. - W - Cultivated - Middai - Road edges, frequent.
- Psoralea morisiana* Pignatti & Metlesics - WS - Sardinian-Corsican (Endemic) - Genn'Iacca - Cliffs, frequent. The species is also reported by Camarda (1981) for the Montarbu Forest, south of Pizzu Erzioni and at Genna e' Acca.
- Lupinus angustifolius* L. - HiA- Med.- San Pietro - Degraded places, common.
- Vicia cracca* L. HscP - Olart. - Arqueri - S'Arcu de su Pirastru Trottu - Stony ground, common.
- Vicia villosa* subsp. *pseudocracca* (Bertol.) P.W. Ball - HiA - Med.- Arqueri - Grassland, sporadic.
- Vicia hirsuta* (L.) S.F. Gray - HiA - Tetid.Eur.- Canali - Pauli - Grassland in the maquis, sporadic.
- Vicia disperma* DC. - HiA - W Med.- Canali - Pauli - Maquis, common.
- Vicia sativa* subsp. *nigra* (L.) Ehrh. - HiA - Tetid. - Arqueri - Grassland, common.
- Vicia lathyroides* L. -HiA - Eur.-Med. - Canali - Dry places, grassland, common.
- Vicia lutea* L. -HiA - Eur.-Med. - Arqueri - Canali - Sa ucca de su oe - Grassland, common.
- Lathyrus angulatus* L. - HiA - CW Med. - Middai - Grassland, common.
- Lathyrus articulatus* L. - HiA- Med.- Middai - S'Arcu de su Pirastru Trottu - Canali- Grassland, common.
- Lathyrus aphaca* L. - HiA - Med.- Arqueri - Sa ucca de su oe - Canali - Grassland, sporadic.
- Ononis ornithopodioides* L. - HiA - Med.- Sa ucca de su oe - S'Arcu de su Pirastru Trottu - Canali - Grassland, common.
- Ononis reclinata* L. - HiA - Med.-Tur. - Arqueri - Road edges, sporadic.
- Ononis minutissima* L. - WS - CW Med.- Sa ucca de su oe - S'Arcu de su Pirastru Trottu - Canali - Pauli - Grassland, common.
- Melilotus officinalis* (L.) Pallas - HiB- Subcosmop. - Genn'Iacca - Grassland, common.
- Melilotus elegans* Salzm. - HiA- Med. - San Pietro - Grassland, common.
- Melilotus sulcata* Desf. - HiA - Med. - Anulù - Grassland, dry places, common.
- Medicago lupulina* L. - HiA - Olart.-Paleotrop.- Canali - Degraded places, common.
- Medicago orbicularis* (L.) Bartal. - HiA - Tetid.-Eur. - Arqueri - Grassland, common.
- Medicago rugosa* Desr. - HiA - Med. - San Pietro - Anulù - Grassland, common.
- Medicago tornata* (L.) Miller - HiA - W.Med. - Middai - Maquis, dry places, common.
- Medicago truncatula* Gaertner - HiA - Med.- Sa ucca de su oe - S'Arcu de su Pirastru Trottu - Canali - Grassland, common.
- Medicago rigidula* (L.) All. - HiA - Eur.-Med - Arqueri - Anulù - Grassland, widespread.
- Medicago aculeata* Gaertner - HiA -Med.- Sa ucca de su oe - San Pietro - Canali - Grassland, common.
- Medicago murex* Willd. - HiA- Med.- Canali - Arqueri - Grassland, common.
- Medicago praecox* DC. - HiA - Med.- S'Arcu de su Pirastru Trottu - San Cristoforo - Grassland, common.
- Medicago minima* (L.) Bartal. - HiA - Olart.-Paleotrop. - Canali - Middai - Degraded places, common.
- Trifolium repens* L. - HreP- Bor.-Tetid.- Canali - Humid places, rare.
- Trifolium glomeratum* L. - HiA- Eur.-Med. - Arqueri - Grassland, common.
- Trifolium resupinatum* L.- HreA- Tetid.-Eur.- San Cristoforo - Canali - Grassland, common.
- Trifolium tomentosum* L. - HreA - Med.-Ir. Tur. - Arqueri - San Cristoforo - Grassland, common.
- Trifolium campestre* Schreber -HiA- Tetid.-Eur. - Arqueri - Grassland, garrigue, common.
- Trifolium micranthum* Viv. - HiA - Eur.-Med. - Canali - Humid places, common.
- Trifolium arvense* L. - HiA - Tetid.-Eur.- Arqueri - Canali- San Cristoforo - Grassland, common.
- Trifolium scabrum* L. - HiA - Eur.-Med.- Sa ucca de su oe - Canali - Anulù - Grassland, widespread.
- Trifolium stellatum* L. - HiA - Med.-Pont. - Arqueri - Anulù - Grassland, degraded places, common.
- Trifolium incarnatum* L. - HiA - Eur.-Med. - Arqueri - Grassland, common.
- Trifolium pratense* L. - HiP - Olart. - Arqueri - Canali - Grassland, common.

- Trifolium cherleri* L. - HiA- Eur.-Med. - Arqueri - Genn'Iacca - San Pietro - Grassland, common.
- Trifolium angustifolium* L. - HiA - Eur.-Med. - Arqueri - Middai - Canali - Sa ucca de su oe - Genn'Iacca - Maquis, widespread.
- Trifolium leucanthum* Bieb. - HiA - Olart. - Arqueri - Genn'Iacca - San Pietro - Grassland, common.
- Trifolium subterraneum* L. - HreA - Eur.-Med.- Arqueri - Middai - Canali- Sa ucca de su oe - Genn'Iacca - Maquis and grassland, common.
- Dorycnium hirsutum* (L.) Ser. - WS- Med. - Arqueri - Middai - Canali - Sa ucca de su oe - Genn'Iacca - Maquis, common.
- Dorycnium rectum* (L.) Ser. - HiP - Med.-Pont. - Genn'Iacca - Humid places, common.
- Dorycnium pentaphyllum* Scop- WS - Eur.-Med. - Genn'Iacca - Maquis, sporadic.
- Lotus edulis* L. - HiA -Med.- Sa ucca de su oe - Marrocu - Genn'Iacca- Grassland, sporadic.
- Lotus ornithopodioides* L. -HiA- Med.- Sa ucca de su oe - Marrocu - Genn'Iacca - Humid places, grassland, sporadic.
- Hymenocarpus circinnatus* (L.) Savi - HreA- Med.- Arqueri - Canali - Genn'Iacca - Glades, common.
- Anthyllis hermanniae* L. -WF - Med. - Margiani Pubusa - Middai - Canali - Mountain ridge areas, grassland, frequent.
- Anthyllis vulneraria* L. subsp. *praepropera* (A. Kerner) Bornm - HiP- Med.- Arqueri - Ardasai - Genn'Iacca - Sa ucca de su oe - Funtana d'Oru - Pauli - Middai - Anulù - Stones, oak wood, common.
- Ornithopus pinnatus* (Miller) Druce - HiA- Med.-Atl.- Sa ucca de su oe- Marrocu - Genn'Iacca - Grassland, common.
- Coronilla valentina* L. - WF - CW Med. - Genn'Iacca - Cliffs, sporadic.
- Coronilla scorpioides* (L.) Kock - HiA - Eur.-Med.- Canali - Grassland, common.
- Hippocrepis glauca* Ten. -HiP - Med. - Canali - Grassland, common.
- Hippocrepis ciliata* Willd. - HiA - Med. - Canali - Grassland, common.
- Hippocrepis unisiliquosa* L. - HiA - Med. - Sa ucca de su oe - Grassland, common.
- Scorpiurus muricatus* L. - HiA - Med. - Genn'Iacca - San Pietro - Grassland, common.

Geraniaceae

- Geranium rotundifolium* L. - HiP - Eur.-Med. - Canali - Genn'Iacca - Ardasai - Grassland, common.
- Geranium molle* L. - HiA - Tetid.-Eur. - Middai - Grassland, common.
- Geranium colombinum* L. - HiA - Tetid.-Eur. - Arqueri - Margiani Pubusa - Ardasai - Grassland, common.
- Geranium robertianum* L. - HiB - Tetid.-Eur. - Arqueri - Ardasai - S'Arcu de su Pirastru Trottu - Grassland, maquis, common.
- Geranium purpureum* Vill. - HiA -Eur.-Med. - Canali - Dry places, common.
- Erodium ciconium* (L.) L'Hér - HiB - Tetid.- Eur. - Arqueri - Anulù - Ruins, sporadic.
- Erodium cicutarium* (L.) L'Hér - HiB - Subcosmop. - Arqueri - Ardasai - Grassland, garrigue, sporadic.

Linaceae

- Linum bienne* Miller - HiB - Eur.-Med. - Arqueri - Margiani Pubusa - Marrocu - Grassland, dry places, common.
- Linum tryginum* L. - HiA - Tetid.-Eur. - Sa ucca de su oe - Garrigue, common.
- Linum strictum* L. - HiA - Med.- Middai - San Pietro - Garrigue, common.

Euphorbiaceae

Mercurialis annua L. - HiA - Tetid.-Eur.- Arqueri - San Pietro – Ruderal places, along roads, common.

Mercurialis corsica Cosson - WS - Sardinian-Corsican (Endemic) - Middai – Dry places, rare. Reported by Corrias (1980) for the same place.

Euphorbia spinosa L. - WF - CW Med.- Arqueri - Margiani Pubusa - S'arcu de su Pirastru Trottu – Mountain ridges, sporadic.

Euphorbia helioscopia L. - HiA - Tetid.-Eur. - Ardasai - San Pietro - Grassland, degraded places, common.

Euphorbia exigua L. - HiA - Eur.-Med. - Sa ucca de su oe - Marrocu - Genn'I acca - Grassland, common.

Euphorbia peplus L. - HiA - Cosmop.- Arqueri - Grassland, common.

Euphorbia cupanii Guss ex Bartol.- Hrh - Sardinian-Corsican-Apulian-Sicilian (Endemic) - Pauli - Middai - Serra Arrascalei - Degraded places, rare. Reported by Valsecchi (1980) for the Montarbu State Forest, at Anulù for the Rio Anus valley, as far as Cuile su Linnaru.

Euphorbia semiperfoliata Viv. - WS - Sardinian-Corsican (Endemic) - Ardasai - San Cristoforo – Oak wood, rare. This entity has been reported by Valsecchi (1979) for the Seui Tonneri and the marginal areas of the Montarbu State Forest.

Euphorbia characias L. -WF - Med. - Arqueri - Genn'Iacca - Canali - Serra Linarbu - Anulù - Ardasai – Dry, rocky places, common.

Polygalaceae

Polygala monspeliaca L. - HiA - Tetid.-Pont. - Arqueri - Genn'Iacca - Canali - Margiani Pubusa - San Cristoforo Grassland, degraded places, common.

Polygala sardoa Chodat -HceP - Sardinian-Corsican (Calcareous mountains of centre-eastern Sardinia: "tacchi" district; coastal and hilly subsector; south western district) (Endemic) - S' Arcu de su Pirastru Trottu - Margiani Pubusa - Cliffs, common. Reported also by Arrigoni (1983b) for Pizzu Erzioni, cliffs above Rio Ermolinus, Genn'i Acca, Pizzu Pargiani Pubusa, and from Middai to Anulù.

Anacardiaceae

Pistacia terebinthus L. - WA - Med.- Genn'Iacca - San Pietro - Sa ucca de su oe - Middai - Maquis, common.

Pistacia lentiscus L. - WA - Med.-Macar. - Middai - Genn'Iacca - Anulù - Maquis, common.

Aceraceae

Acer campestre L. - W - Tetid.-Eur. - Montarbu - Woods, rare.

Acer monspessulanum L. - W - Eur.-Med. - Canali - Margiani Pubusa – Topmost areas, oak wood, sporadic.

Aquifoliaceae

Ilex aquifolium L. - W – Oro. Med.-Eur - Arqueri - Montarbu - Humid places, woods, common. Reported also by Barbey (1884) for Seui, Taquisara valley.

Rhamnaceae

Rhamnus alpinus L.- WA – Oro.Med. – Oro.Hypso. - Margiani Pubusa - Ardasai - S'arcu de su Pirastru Trottu – Topmost areas, sporadic.

Malvaceae

Malva sylvestris L. - HiP - Tetid.-Eur. - Sa ucca de su oe - Anulù - Montarbu - Degraded places, common.

Lavatera olbia L. - WF - Med. - Ardasai - Degraded places, rare.

Althaea hirsuta L. - HiA - Med.-Ir. Tur. - Sa ucca de su oe - Degraded places, sporadic.

Thymelaeaceae

Daphne gnidium L. - WF - Med.- Macar. - Sa ucca de su oe - Arqueri - Marrocu - Pauli - Maquis, Road edges, common.

Daphne oleoides Schreder - WF - Oro. Med.-Pont. - Margiani Pubusa - S'arcu de su Pirastru Trottu - Topmost areas, rare.

Thymelaea tartonraira (L.) All. - WF - Med. - Middai - Canali - Sa ucca de su oe - Marrocu - Pauli - Maquis, Road edges, sporadic. Reported also by Barbey (1884) for the Seui "Tacco".

Guttiferae

Hypericum hircinum L. - WS - Sardinian-Corsican-Tyrrhenian (Endemic) - Arqueri - Sa ucca de su oe - S'Arcu de su Pirastru Trottu - Humid places, common.

Hypericum tomentosus L. - HiP - W Med. - Serra Arrascialei - San Pietro - Genn'Iacca - Pauli - Grassland, common.

Hypericum perforatum L. - HiP - Eur.-Med. - Arqueri - Sa ucca de su oe - Middai - Marrocu - San Cristoforo - Genn'Iacca - Montarbu - Serra Arrascialei - Grassland, Road edges, common.

Violaceae

Viola odorata L. - HstP - Eur.-Med. - Canali - Rocks, rare.

Viola alba Besser. subsp. *dehnhardtii* (Ten.) W.Becker - HstP - Med. - Anulù - Cerasia - Canali - Oak wood, common.

Cistaceae

Cistus incanus L. - WF - Med.-Pont. - Marrocu - Pauli - Anulù - Garrigue, common.

Cistus incanus subsp. *corsicus* (Loisel.) Heywood - WF - Sardinian-Corsican (Endemic) - Pauli - Montarbu - Garrigue, common.

Cistus monspeliensis L. - WF - Med.- Macar. - Pauli - Genn'Iacca - Garrigue, common.

Cistus salvifolius L. - WF - Med. - Atl. - Genn'Iacca - Fontana d'Oru - Garrigue, common.

Tuberaria guttata (L.) Fourr - HiA - Med. - Atl. - S'Arcu de su Pirastru Trottu - Grassland, garrigue, rare.

Helianthemum croceum (Desf.) Pers. - WS - Oro. W Med. - Canali - Marrocu - Pauli - Margiani Pubusa - San Cristoforo - Garrigue, degraded places, sporadic.

Helianthemum morisianum Bertol. - WS - Sardinian-Corsican (Calcareous mountains of centre-eastern Sardinia: north-eastern and "tacchi" district (Endemic) - Arqueri - Margiani Pubusa - Canali - S'Arcu de su Pirastru Trottu - Garrigue, common. This entity was also reported by Arrigoni (1977) for the Montarbu State Forest, from Middai to Anulù, P.ta Margiani Pubusa, and between Funtana Dorada and Funtana S'Orroli.

Onagraceae

Epilobium hirsutum L. - HiP - Tetid.- Eurosib. - Sa ucca de su oe - Open places, common.

Araliaceae

Hedera helix L. - WL - Med.-Eur. - Arqueri - Ardasai - rocky mountain faces, common.

Umbelliferae

- Sanicula europaea* L. - HiP - Tetid.-Eurosib. - Montarbu - Cerasia - Funtana Dorada - Humid places, sporadic.
- Eryngium campestre* L. - HiP - Eur.-Med. - Arqueri - Sa ucca de su oe - Anulù - Middai - Degraded, dry places, common.
- Scandix pecten-veneris* L. - HiA - Eur. - Med.-Macar.- Arqueri - Genn'Iacca - Rocky places, oak wood, common.
- Smyrniolus olusatrum* L. - HiB - Med.-Atl. - Genn'Iacca - Stony ground, common.
- Smyrniolus rotundifolius* Mill. - HiB - Med. - Arqueri - Cerasia - Cool places, sporadic.
- Pimpinella saxifraga* L. - HiP - Eur.-Med. - Sa ucca de su oe - Grassland, common.
- Oenanthe lisa* Moris - HiP - Sardinian-Corsican (Endemic) - Arqueri - Ardasai - Grassland, topmost areas, rare.
- Foeniculum vulgare* Mill. subsp. *piperitum* (Ucria) Cuthino - HiP - Med. - Middai - Marrocu - Road edges, sporadic.
- Bupleurum fruticosum* L. - WF - Med. - Middai - Sa ucca de su oe - Marrocu - Genn'Iacca - Road edges, garrigue, common.
- Apium nodiflorum* (L.) Lag. - HiP - Subcosmop. - Arqueri - Humid places, sporadic.
- Ammoides pusilla* (Brot.) Breistr. - HiA - Med. - Arqueri - Sa ucca de su oe - Middai - Grassland, widespread.
- Ferula communis* L. - HiP - Med. - San Pietro - Dry places, sporadic.
- Ptychotis sardoa* Pignatti & Metlesics - HiP - Sardinian-Corsican (Calcareous mountains of central-eastern Sardinia: north-eastern and "tacchi") (Endemic) - Middai - Stony ground, rare.
- Laserpitium siler* subsp. *garganicum* Arc. - HiP - Med. - Arqueri - S'arcu de su Pirastru Trottu - Cliffs, frequent.
- Thapsia garganica* L. - HiP - W Med. - Arqueri - Marrocu - Anulù - Road edges, garrigue, degraded places, common.
- Torilis nodosa* (L.) Gaertner - HiA - Med.- Ir. Tur. - Arqueri - Marrocu - Anulù - Middai - Road edges, degraded places, widespread.
- Torilis arvensis* (Hudson) Link - HiA - Tetid.-Eur. - Genn'Iacca - Waste grounds, common.
- Daucus carota* L. - HiB - Olart.-Paleotrop. - Arqueri - Marrocu - Middai - Grassland, oak wood, common.

Ericaceae

- Erica terminalis* Salisb. - WB - W Med. - Sa ucca de su oe - Margiani Pubusa - San Cristoforo - Canali - Cerasia - Pauli - Topmost areas, maquis, common. Reported by Herzog (op. cit.) for the Seui Tonneri sub *Erica stricta* Donn.
- Erica arborea* L. - WB - Tetid.-Paleotrop. - Montarbu - Maquis, common.
- Erica scoparia* L. - WB - W Med.-Atl. - Serra Arrasciali - Marrocu - Garrigue, maquis, undergrowth, common.
- Arbutus unedo* L. - WA - Med. - Marrocu - Pauli - Ardasai - Middai - San Pietro - undergrowth, common.

Primulaceae

- Cyclamen repandum* Sibth & Sm. - Htu - Med. - Arqueri - Middai - Canali - Oak wood, common.
- Asterolinon linum-stellatum* (L.) Duby - HiA - Med.- Arqueri - Canali - Middai - Sa ucca de su oe - Grassland, garrigue, sporadic.
- Anagallis arvensis* L. - HreA - Subcosmop. - Middai - Genn'Iacca - Grassland, common.
- Samolus valerandi* L. - HiP - Subcosmop. - Arqueri - Humid places, common.

Plumbaginaceae

Armeria sardoia Spreng. - WS - Sardinian-Corsican (Endemic) - Margiani Pubusa - Cengia del M.te Tonneri – Topmost areas, rare. Reported also by Arrigoni (1984) for the Tonneri. P.ta Margiani Pubusa.

Limonium morisianum Arrigoni - WS - Sardinian-Corsican (Calcareous mountains of centre-eastern Sardinia: "tacchi" district) (Endemic) - Arqueri - Margiani Pubusa - Cliffs, sporadic. Reported also by Arrigoni (1978) the Tonneri.

Oleaceae

Fraxinus ornus L. - WA - M.Eur.Med. - Montarbu - Forest, sporadic.

Olea europaea var. *sylvestris* Brot. - WA - Med.- Macaron. - Genn'Iacca - Cliffs, sporadic.

Phyllirea angustifolia L. - WA - Med.-Macar. - Canali - Middai - Pauli - Anulù - Maquis, undergrowth, common.

Gentianaceae

Blackstonia perfoliata (L.) Huds. - HiA - Eur.-Med. - Arqueri - Sa ucca de su oe - Middai - Pauli - Grassland, common.

Centaureum erythraea Rafn. - HiB - Tetid.-Eur. - Sa ucca de su oe - Anulù - Grassland, common.

Asclepiadaceae

Vincetoxicum hirundinaria Medik. - HiP - Med.-Eurosib. - Arqueri - Sa ucca de su oe - Middai - Pauli - Margiani Pubusa - Grassland, common.

Rubiaceae

Sherardia arvensis L. - HiA - Eur.-Med. - Arqueri - Genn'Iacca - Ardasai - Anulù - Grassland, stony ground, common.

Asperula pumila Moris - HpuP - Sardinian-Corsican (Calcareous mountains of centre-eastern Sardinia: "tacchi" district) (Endemic) - Genn'Iacca - Rocky ravines, very rare. Arrigoni (1980) reports it also for M.te Tonneri.

Galium scabrum L. - HiP - Med.- Macar. - Montarbu - Oak woods, common.

Galium schmidii Arrigoni - HiP - Sardinian-Corsican (Endemic) - Margiani Pubusa - Topmost areas, common.

Galium glaucophyllum E. Schmid - HiP - Sardinian-Corsican (Calcareous mountains of centre-eastern Sardinia: "tacchi" district; coastal and hilly subsector: south western district) (Endemic) - Margiani Pubusa - S'Arcu de su Pirastru Trottu - Topmost areas, common. Arrigoni (1980) reports it for Montarbu at P.ta Margiani Pubusa.

Galium corsicum Spreng. - HceP - Sardinian-Corsican (Endemic) - Margiani Pubusa - Topmost areas, common. Reported also by Arrigoni (1980) for the same place.

Galium setaceum Lam. - HiA - Med. - San Pietro - Grassland, sporadic.

Galium spurium L. - HiA - Olart. - Genn'Iacca - Grassland, sporadic.

Galium aparine L. - HiA - Olart. - Arqueri - Grassland, humid places, common.

Cruciata glabra (L.) Ehrend. - HiP - Oro. Med - Oro.Hypso. - Arqueri - Grassland, sporadic.

Valantia hispida L. - HiA - Med. - Pauli - Anulù - Margiani Pubusa - Grassland, dry places, sporadic.

Rubia peregrina L. - WL - Med.-Atl. - Arqueri - Sa ucca de su oe - Pauli - Ardasai - San Pietro - Maquis, oak wood, common.

Convulvulaceae

Convolvulus cantabrica L. - HiP - Eur.-Med. - Margiani Pubusa - Marrocu - Middai - Canali - Genn'Iacca - Sa ucca de su oe - Degraded places, common.

Convolvulus althaeoides L. - HscP - Med. - Arqueri - Sa ucca de su oe - Grassland, common.

Boraginaceae

Heliotropium europaeum L. - HiA - Tetid.-Eur. - Arqueri - Road edges, common.

Buglossoides arvensis (L.) I.M. Johnston - HiA - Tetid.-Eur. - Arqueri - Ardasai - Middai - Genn'Iacca - Grassland, common.

Cerinthe major L. - HiA - Med. - Gersadili - Arqueri - Ruderal areas, sporadic.

Echium italicum L. - HiB - Tetid.-Eur. - Arqueri - Anulù - Grassland, degraded places, common.

Echium creticum L. - HiB - W Med. - Arqueri - Grassland, common.

Borago officinalis L. - HiA - Med. - Arqueri - Grassland, sporadic.

Borago pygmaea (DC.) Chater & W. Greuter - HiP - Sardinian-Corsican-Tyrrhenian (Endemic) - Arqueri - Sa ucca de su oe - Cerasia - Humid places, springs, common. Valsecchi (1980) also reports it for the Montarbu State Forest at Funtana Dorada, Anulù, rio Ermolinus, and riu San Girolamo.

Myosotis arvensis (L.) Hill - HiA - Eur.-Med. - Arqueri - Humid places, sporadic.

Myosotis pusilla Loisel - HiA - Eur.-Med. - Arqueri - Anulù - Grassland, sporadic.

Cynoglossum officinale L. - HiB - Tetid.-Eurosib. - Arqueri - Middai - Sa ucca de su oe - Genn'Iacca - Road edges, grassland, common.

Cynoglossum creticum Miller - HiB - Eur.-Med. - Margiani Pubusa - Ardasai - San Pietro - San Cristoforo - Degraded places, stony places, common.

**Cynoglossum cheirifolium* L. - HiB - Med. - Reported by Barbey (1884) for the Seui territory.

Verbenaceae

Verbena officinalis L. - HiP - Cosmop. - San Pietro - Garrigue, common.

Labiatae

Teucrium chamaedrys L. - WS - Eur.-Med. - S'arcu de su Pirastru Trottu - San Pietro - Garrigue, degraded places, sporadic.

Teucrium flavum L. subsp. *glaucum* (Jordan and Fourr) Ronninger - WF - Med. - Middai - Arqueri - Sa ucca de su oe - Marrocu - Pauli - Canali - Genn'Iacca - Maquis, common.

Teucrium marum L. - WF - Med. - Sa ucca de su oe - Marrocu - Margiani Pubusa - Genn'Iacca - Canali - Middai - Rocks, garrigue, common.

Teucrium polium subsp. *capitatum* (L.) Arcang. - WS - Med. - Arqueri - Pauli - Dry places, sporadic.

Marrubium vulgare L. - HiP - Tetid.-Eur. - Anulù - Genn'Iacca - Dry places, common.

Sideretis romana L. - HiP - Med. - Genn'Iacca - San Cristoforo - Anulù - Sa ucca de su oe - Anulù - Marrocu - Pauli - Dry places, common.

Lamium bifidum Cirillo - HiA - W Med. - Arqueri - Grassland, rare.

Stachys glutinosa L. - WS - Sardinian-Corsican-Tyrrhenian (Endemic) - Sa ucca de su oe - Middai - Marrocu - Pauli - Margiani Pubusa - Genn'Iacca - Ardasai - Maquis, cliffs, common.

Stachys corsica Pers. - HreP - Sardinian-Corsican (Endemic) - Arqueri - Margiani Pubusa - Ardasai - S'Arcu de su Pirastru Trottu - Oak wood, rocky ravines, common. This entity was reported by Camarda (1978) for the Montarbu forest on the Tonneri at Pirastru Trottu.

Glechoma sardoa (Bég.) Bég. - HreP - Sardinian-Corsican (Endemic) - Genn'Iacca - Margiani Pubusa - Shady places, very rare.

Prunella laciniata (L.) L. - HiP - Eur.-Med. - Middai - Canali - Humid places, common.

Prunella vulgaris L. - HiP - Bor.-Tetid. - Arqueri - Anulù - Sa ucca de su oe - Genn'Iacca - Middai - Canali - Humid places, common.

Acinos sardous (Asch. & Levier) Arrigoni - WS - Sardinian-Corsican (Calcareous mountains of centre-eastern Sardinia: north-eastern and "tacchi" districts (Endemic) - Arqueri - Margiani Pubusa - Canali - S'Arcu de su Pirastru Trottu - Ardasai - Anulù - Sa ucca de su oe - Mountain

garrigues, common. Arrigoni (1983b) reports this species also for the Montarbu Forest at Funtana d'Oro, Funtana S' Orroli, and Bruncu Arraschialei.

Calamintha nepeta (L.) Savi - HiP - Oro. Med.-Eur. - Genn' Iacca - Mountain garrigues, common.

Clinopodium vulgare (L.) subsp. *arundanum* (Boiss.) Nyman - HiP - Med. - Arqueri - Grassland, common.

Micromeria cordata Moris - WS - Sardinian-Corsican (Calcareous mountains of centre-eastern Sardinia: north-eastern and "tacchi" districts) (Endemic) - Serra Arraschialei - Montarbu - Mountain garrigues, sporadic. This entity has been reported by Valsecchi (1978) for the same place.

Micromeria graeca subsp. *tenuifolia* (Ten.) Nyman - WS - CW Med. - Arqueri - Sa ucca de su oe - Canali - Genn' Iacca - Dry, stony places, common.

Thymus herba-barona Loisel. - WS - Sardinian-Corsican (Endemic) - Serra Arraschialei - Middai - Margiani Pubusa - Anulù - Genn' Iacca - Pauli - Dry places, common.

Mentha requienii Benth. - HreP - Sardinian-Corsican - Tyrrhenian (Endemic) - Sa ucca de su oe - Cerasia - Humid places, springs, sporadic.

Mentha pulegium L. - HiP - Eur.-Med. - Arqueri - Middai - Sa ucca de su oe - San Cristoforo - Serra Arraschialei - Canali - Humid places, grassland, road edges, common.

Mentha aquatica L. - HiP - Tetid.-Eur. - Sa ucca de su oe - Humid places, sporadic.

Mentha insularis Req. - Hrh - Sardinian-Corsican - Tyrrhenian-Iberian (Endemic) - Arqueri - Sa ucca de su oe - Humid places, common.

Rosmarinus officinalis L. - WF - Med. - Arqueri - Canali - Serra Arraschialei - Sa ucca de su oe - Genn' Iacca - Marrocu - Middai - Canali - Margiani Pubusa - Maquis, common.

Lavandula stoechas L. - WF - Med. - Arqueri - Serra Arraschialei - Middai - Canali - Pauli - Maquis, common.

Salvia verbenaca L. - HiP - Med.-Atl. - Sa ucca de su oe - Grassland, grass-grown places, common.

Solanaceae

Atropa belladonna L. - HiP - Oro.Med.- Oro.Hypso. - Montarbu - Rio Ermolinus, rare.

Solanum nigrum L. - HiA - Subcosmop. - San Pietro - Stony places, sporadic.

Scrophulariaceae

Verbascum pulverulentum Vill. - HiB - Oro.Med.-Eur - Sa ucca de su oe - Dry uncultivated land, common.

Scrophularia peregrina L. - HiA - Med. - Sa ucca de su oe - Genn' Iacca - Dry, stony places, common.

Scrophularia trifoliata L. - HiP - Sardinian-Corsican (Endemic) - Sa ucca de su oe - Pauli - Middai - Rocky mountain faces, common. Reported by Valsecchi (1982) for the Tonneri at Pirastru Truttu.

Misopates orontium (L.) Rafin. - HiA - Tetid.-Eur. - Genn' Iacca - Dry places, common.

Linaria triphylla (L.) Mill. - HiA - W Med. - San Pietro - Along the road edges, sporadic.

Linaria pelisseriana (L.) Mill. - HiA - Med.-Atl. - Arqueri - Sa ucca de su oe - Grassland, common.

Cymbalaria acutirloba (Viv.) A. Chev. - HreP - Sardinian-Corsican-Tyrrhenian-Iberian (Endemic) - S' Arcu de su Pirastru Trottu - Humid mountain faces, rare. Reported also by Arrigoni (1979) for the Montarbu State Forest.

Cymbalaria muelleri (Moris) A. Chev. - HreP - Sardinian-Corsican (Calcareous mountains of centre-eastern Sardinia: "tacchi" district) (Endemic) - Arqueri - Canali - Middai - Genn' Iacca - Rocky places, sporadic. Reported by Arrigoni (1979) for the Montarbu State Forest and cliffs south of Erzioni.

Digitalis purpurea L. - HiP - W Med.-Atl. - Cerasia - Road edges, rare.

Erinus alpinus L. - HiP - Oro. W Med -Atl. - Margiani Pubusa - S'arcu de su Pirastru Trottu - Cliffs, rare.

Veronica arvensis L. - HiA - Tetid.-Eur.- Funtana Dorada - Canali - Humid places, sporadic.

Veronica cymbalaria Bodard -HiA - Eur.-Med. - Funtana Dorada - Humid places, sporadic.

Parentucellia viscosa (L.) Caruel - HiA - Med.-Atl.- Ardasai - San Cristoforo - Humid places, sporadic.

Parentucellia latifolia (L.) Caruel - HiA - Med. -Atl. - Arqueri - Canali - Grassland, common.

Bellardia trixago (L.) All. - HiA - Med.-Ir. Tur. - Arqueri - Sa ucca de su oe - San Cristoforo - Grassland, sporadic.

Orobanchaceae

Orobanche ramosa L. - OA - Med. - Arqueri - Marrocu - Sa ucca de su oe - Ardasai - Canali -Middai - Grassland, common.

Orobanche lavandulacea Rehb. - OA - Tetid. - Arqueri - Grassland, common.

Plantaginaceae

Plantago major L. - HiP - Cosmop. - Arqueri - Grassland, humid places, common.

Plantago coronopus L. - HiP - Eur.-Med. - Arqueri - Grassland, road edges, common.

Plantago subulata subsp. *insularis* (Gren & Godr.) Nyman - WS - Sardinian-Corsican (Endemic) - Montarbu - Pastureland, rare.

Plantago lanceolata L. - HiP -Tetid.-Eurosib. - Arqueri - Canali - Grassland, common.

Plantago lagopus L. - HiA - Med. - Arqueri - Pauli - Grassland, degraded places, common.

Plantago bellardi All. - HiA - S Med. - Arqueri -Pauli - Canali- Grassland, degraded places, common.

Caprifoliaceae

Viburnum tinus L. - WA - Med. - Montarbu - Woods, rare.

Lonicera implexa Aiton - WL - Med. - Middai - Sa ucca de su oe - Maquis, woods, common.

Valerianaceae

Valerianella eriocarpa Desv. - HiA - Med. - Arqueri - Canali - Grassland, common.

Valerianella muricata (Steven ex Bieb.) J.W. Loudon - HiA - Med. - Canali - Ardasai - Grassland, common.

Centranthus calcitrapa (L.) Dufur. - HiA - Med. - Arqueri - Canali - Ardasai - Grassland, stony places, common.

Dipsacaceae

Dipsacus ferox Loisel. - HiB - W Med. - Arqueri - Sa ucca de su oe - Pauli - Road edges, grassland, common.

Scabiosa holosericea Bertol. - HiP - Oro. CW Med. - Pauli - Marrocu - S'Arcu de su Pirastru Trottu - Rocks, common.

Campanulaceae

Campanula erinus L. - HiA - Med. - Middai - Rocks, sporadic.

Campanula forsythii (Arcang.) Podl. - Hrh - Sardinian-Corsican (Calcareous mountains of centre-eastern Sardinia: north-oriental and "tacchi" districts) (Endemic) - Arqueri - Margiani Pubusa - Crevices in the rock, sporadic. Reported by Arrigoni (1978) also for Pirastru Trottu and Bruncu Arrascialei.

Legousia falcata (Ten.) Fritsch - HiA - Med. - Genn' Iacca - Sa ucca de su oe - Stony places, sporadic.

Legousia hybrida (L.) Delarbre - HiA - Eur.-Med. - Ardasai - Stony places, sporadic.

Jasone montana L. subsp. *echinata* (Boiss. & Reut.) Nyman - HiP - Eur.-Med. - Arqueri - San Cristoforo - Grassland, sporadic.

Compositae

Eupatorium cannabinum L. - HiP - Eur.-Med. - Montarbu - Humid places, sporadic.

Bellis annua L. - HiP - Med.-Macar. - Arqueri - Sa ucca de su oe - Pauli - Marrocu - Ardasai - Grassland, common.

Bellis perennis L. - HiP - Eur.-Med. - Arqueri - Sa ucca de su oe - Pauli - Marrocu - Ardasai - Grassland, common.

Bellium bellidioides L. - HiP - Sardinian-Corsican-Iberian (Endemic) - Funtana Dorada - Humid places, sporadic. Reported by Arrigoni (1979) for the same locality.

Filago pyramidata L. - HiA - Eur.-Med. - Arqueri - Pauli - Marrocu - Ardasai - Grassland, sporadic.

Evax pygmaea (L.) Brot. - HreA - Med.-Macar. - Ardasai - Stony places, common.

Evax asterisciflora (Lam.) Pers. - HreA - CW Med. - Arqueri - Anulù - Ardasai - Garrigue, common.

Helichrysum saxatile Moris - WS - Sardinian-Corsican (Calcareous mountains of central-eastern Sardinia: "tacchi" district) (Endemic) - Genn'iacca - Sa ucca de su oe - Margiani Pubusa - S'Arcu de su Pirastru Trottu - Rocky mountain faces, common. Reported by Arrigoni (1980) also for Bruncu Arrasciale, San Pietro, and Pizzu Erzioni.

Helichrysum italicum subsp. *microphyllum* (Willd) Nyman - WS - Med. - Arqueri - Sa ucca de su oe - Ardasai - Anulù - Marrocu - Middai - Maquis, common.

Phagnalon sordidum (L.) Rchb. - WS - CW Med. - Arqueri - Middai - San Cristoforo - Rocky mountain faces, common.

Phagnalon rupestre (L.) DC. - WS - W-Med. - Arqueri - San Cristoforo - Rocky mountain faces, common.

Phagnalon saxatile (L.) Cass. - WS - W-Med. - Arqueri - Marrocu - Stony places, widespread.

Inula conyzia DC. - HiB - Oro. Med.-Oro.Hypso. - Arqueri - Marrocu - Degraded places, common.

Dittrichia viscosa (L.) Greuter - HiP - Med.-Macar. - Arqueri - Pauli - Road edges, grassland, common.

Pulicaria dysenterica (L.) Bernh. - HiP - Tetid.-Eur. - Arqueri - Montarbu - Humid places, common.

Pallenis spinosa (L.) Cass. - HiB - Med. - Arqueri - Marrocu - Anulù - Genn'iacca - Grassland, common.

Santolina insularis (Gennari ex Fiori) Arrigoni - WF - Sardinian-Corsican (Calcareous mountains of central-eastern Sardinia: "tacchi" district; siliceous mountains: Gennargentu district; coastal and hilly subsector: south western district) - (Endemic) - Arqueri - Sa ucca de su oe - Middai - San Cristoforo - Pauli - Anulù - Garrigue, common. This taxon was reported by Arrigoni (1982) also for Pirastru Trottu, Rio Anus, Funtana d'Oro, and Funtana S'Orroli.

Anthemis arvensis L. - HiA - Med. - Arqueri - Anulù - Ardasai - Middai - Margiani Pubusa - Grassland, common.

Achillea ligustica All. - HiP - Med. - Sa ucca de su oe - Genn'iacca - Road edges, common.

Petasites fragrans (Vill.) C. Presl - HrhP - Eur.-Med. - Funtana Dorada - Humid places, common.

Senecio erraticus Bertol. - HiB - Med.-Eur. - Serra Arrasciailei - Clearings in the maquis, rare.

Senecio delphinifolius Vhal. - HiA - W Med. - Arqueri - Hedges, sporadic.

Senecio lividus L. - HiA - Med. - Arqueri - Anulù - Ardasai - Middai - Margiani Pubusa - Grassland, common.

Carlina corymbosa L. - HiP - Med. - Arqueri - Marrocu - Road edges, common.

Atractylis gummifera L. - HiP - Med. - Pauli - Dry places, sporadic.

Xeranthemum inapertum (L.) Mill. - HiA - CW Med. - Margiani Pubusa - Garrigue, sporadic.

Carduus pycnocephalus L. - HiP - Tetid. - Arqueri - Anulù - Ardasai - Stony places, common.

- Arctium minus* Bernh. - HiB - Eur.-Med. - Arqueri - Oak wood, sporadic.
- Cirsium vulgare* (Savi) Ten. -HiB -Tetid.-Eurosib.- Arqueri - Anulù - Ardasai - Middai - Margiani Pubusa - Grassland, common.
- Ptilostemon casabonae* (L.) Greuter - HiP - Sardinian-Corsican-Tyrrhenian-Italic Provençal (Endemic) - Arqueri - Pauli - Margiani Pubusa - Anulù -Middai - Road edges, degraded places, common.
- Galactites tomentosa* Moench - HiB - Med. - Arqueri - Anulù - Grassland, common.
- Onopordum illyricum* L. - HiB - Med. - Arqueri - Sa ucca de su oe - Ruderal places, common.
- Silybum marianum* (L.) Gaertner - HiB -Tetid. - Arqueri - Humid places, common.
- Centaurea filiformis* Viv. - WS - Sardinian-Corsican (Calcareous mountains of central-eastern Sardinia: north-eastern and "tacchi" districts) (Endemic) - Genn'Iacca - Cliffs, rare. Reported by Arrigoni (1981) for the same locality.
- Centaurea calcitrapa* L. - HiB - Eur.- Med.-Macar. - Arqueri - Sa ucca de su oe - Pauli - Marrocu - Anulù - Maquis, common.
- Crupina vulgaris* Cass. - HiA - Tetid.-Eur. - Sa ucca de su oe - Margiani Pubusa - Middai - Dry places, common.
- Carthamus lanatus* L. - HiA -Tetid.-Eur. - Arqueri -Sa ucca de su oe - Margiani Pubusa - Pauli - Ardasai - Dry places, common.
- Cychorium intibus* L. - HceP - Olartico - Arqueri - Middai - Road edges, sporadic.
- Hyoseris radiata* L. - HiP - Med. - Arqueri - Ardasai - Grassland, sporadic.
- Hedypnois cretica* (L.) Dum-Courset - HiA - Med. - Marrocu -Anulù - Grassland, sporadic.
- Rhagadiolus stellatus* (L.) Gaertn. - HiA - Med. - Arqueri - Ardasai - Grassland, sporadic.
- Urospermum dalechampii* (L.) Schmidt - HiP - CW Med. - Arqueri - Anulù - Sa ucca de su oe - Marrocu - Grassland, common.
- Hypochoeris robertia* Fiori - HiP -CW Med. - Sa ucca de su oe - Margiani Pubusa -Marrocu - Rocks, sporadic.
- Hypochoeris radicata* L. - HiP - Eur.- Med.- Macar. - Arqueri - Grassland, sporadic.
- Picris echioides* L. - HiA - Med.-Atl. - Arqueri - Humid places, common.
- Scorzonera callosa* Moris -HiP - Sardinian-Corsican (Endemic) - Margiani Pubusa - Canali Degraded areas, grassland, rare. Reported by Arrigoni (1979) also for Funtana Dorada, Funtana S'Orroli, Pizzu Erzioni, and Riu Anus.
- Sonchus asper* (L.) Hill. - HiA - Bor.-Tetid. - Sa ucca de su oe - Grassland, common.
- Sonchus tenerrimus* L. - HceP - Med. - Margiani Pubusa - Canali - Degraded areas, sporadic.
- Taraxacum officinale* (L.) Weber - HiP - Cosmop. - Arqueri - Grassland, common.
- Crepis vesicaria* L. - HiA - Med.-Pont. - Canali - Grassland, common.
- Crepis bellidifolia* Loisel. - HiA - W Med. - Arqueri - Grassland, common.
- Hieracium oliastreae* Arrigoni - HiA - Sardinian-Corsican (Calcareous mountains of centre-eastern Sardinia: "tacchi" district) (Endemic) - Montarbu - Margiani Pubusa - S'Arcu de su Pirastru Trottu - Grassland, calcareous cliffs, common. Reported also by Arrigoni (1985) for the Montarbu State Foresta, along the road to Arqueri-Lago del Flumendosa, Fundu de Tonneri..
- Hieracium iolai* Arrigoni - HiP - Sardinian-Corsican (Calcareous mountains of central-eastern Sardinia: "tacchi" district) (Endemic) - Arqueri - Ardasai - Oak woods, sporadic. Reported by Arrigoni (1985) also for Bruncu Arrascialè, south of Erzioni, and Funtana Dorada.
- Hieracium zizianum* Tausch - subsp. *sardonium* Zahn - HiP - Sardinian-Corsican (Endemic) - S'Arcu de su Pirastru Trottu - Calcareous cliffs, sporadic. Reported by Arrigoni (1985) also for the Forestry station, Margiani Pubusa, Pirastru Trottu, the San Pietro trackman's lodge, and small valleys of Rio Anus.

Liliaceae

Asphodelus aestivum Brot. -HrhP- Med. - Arqueri - Anulù - Garrigue, common.

Colchicum neapolitanus (Ten.) Ten. - HbuP - W Med. - Pauli-Marrocu - San Pietro - Dry places, grassland, sporadic.

**Gagea foliosa* (J. & C.Presl) Schultes & Schultes fil. - HbuP - Oro. CW Med.- Reported by Barbey (1884) for the Seui Mountains at Pirastru Trott.

Ornithogalum corsicum Jord. & Fourr. - HbuP - Sardinian-Corsican (Endemic) - Arqueri - Meadows, rare. Reported also by Corrias (1984) sub *Ornithogalum biflorum* Jord. & Fourr. for Seui and Montarbu Forest.

Urginea undulata (Desf.) Steinh - HbuP - W Med. - Pauli - Dry meadows, rare.

Scilla autumnalis L. - HbuP - Tetid.-Eur. - Pauli - Marrocu - Meadows, sporadic.

Muscari comosum (L.) Mill. - HbuP - Tetid.-Eur. - Arqueri - Genn'Iacca - Meadows, common.

Allium roseum L. - HbuP - Med. - Pauli - San Pietro - Dry places, grassland, rare.

Allium subhirsutum L. - HbuP - Med. - Arqueri - San Pietro - Canali - Margiani Pubusa - Rocky places, grasslands, common.

Allium triquetrum L. - HbuP - W Med. - Arqueri - Canali - Anulù - Grasslands, common

Allium parviflorum Viv. - HbuP - Sardinian-Corsican (Endemic) - Arqueri - Marrocu - Pauli - Dry and stony places, sporadic. Reported by Valsecchi (1982) for M. Arqueri.

Allium vineale L. - HbuP - Eur.-Med. - Pauli - Dry places, grasslands, rare.

Asparagus albus L. -WS - W Med. - Arqueri - Middai - Serra Arrasciailei - Dry places, garrigue, common

Asparagus acutifolius L. - HrhP - Med. - Canali - Middai - Maquis, oak wood, common.

Ruscus aculeatus L. - WS - Eur.-Med. - Middai - Canali - Marrocu - Oak wood, common.

Smilax aspera L. - WL - Med.- Paleotrop. - Middai - Genn'Iacca - Maquis, oak wood, common.

Amaryllidaceae

Leucojum aestivum L. subsp. *pulchellum* (Salisb) Briq. - HbuP - W Med. - Arqueri - Canali - Humid meadows, common. Reported also by Barbey (1884) sub *Leucojum hernandezii* Camb for the Seui territory and by Martelli (1886) sub *Leucojum pulchellum* Salisb, for the mountainous areas, brooks and swampy areas of the Seui territory.

Leucojum autumnale L. - HbuP- Med. - Arqueri - Canali. - Humid grassland, rare.

Narcissus tazetta L. - HbuP- Med.- Macar. - Arqueri - Humid meadows, common. Reported by Martelli (1896), sub *Narcissus grandicrenatus* Parl., for the Seui territory.

Pancreatum illyricum L. - HbuP - Sardinian-Corsican -Tyrrhenian (Endemic) - Arqueri - Margiani Pubusa - San Pietro - Canali - Degraded places, sporadic. Reported also by Barbey (op. cit.: 186) for the Seui territory, by Martelli (1896) for pasturelands and mountain areas in the Seui territory, and by Valsecchi (1982) for Funtana D'oro and Funtana S'Oroli.

Dioscoreaceae

Tamus communis L. - WL - Eur.-Med. - Margiani Pubusa - Degraded places, sporadic.

Iridaceae

Crocus minimus DC. -Hbu - Sardinian-Corsican-Tyrrhenian (Endemic) - Montarbu - Grassland, rare. Reported for the same locality also by Camarda (1982). It was also reported by Martelli (1896) sub *Crocus imperati* var. *sardoa* Martelli for the mountains in the neighbourhood of Seui.

Romulea ligustica Parl. -Hbu - W Med. - Arqueri - Montarbu - Grassland, sporadic. Reported by Martelli (1896) as being frequent in the plains and mountains around Seui.

Romulea requienii Parl. - Hbu - Sardinian-Corsican (Endemic) - Arqueri - Ardasai - Grassland, sporadic. Reported by Martelli (1896) in the neighbourhood of Seui.

Romulea columnae Sabast. & Mauri -Hbu - Med.- Canali - Middai – Clearings in the maquis, sporadic.

Juncaceae

Luzula italica Parl. - HiP – Oro. Med. - Marrocu - Undergrowth, sporadic.

Luzula forsteri (Sm.) DC. - HiP - Eur.-Med. - Marrocu - Undergrowth, common.

Juncus acutus L. - Hrh - Eur.-Med. - Sa ucca de su oe - Middai - Humid places, common.

Juncus effusus L. - Hrh - Subcosmop. - Sa ucca de su oe - Canali - Humid places, common.

Juncus articulatus L. - HiP - Tetid.-Eurosib. - Sa ucca de su oe - Canali - Humid places, common

Graminaceae

Lolium rigidum Gaudin - HgA - Eur.-Med. - Arqueri - Marrocu - Middai - Pauli - Dry places, common.

Lolium perenne L. - HgP - Tetid. -Eur.- Arqueri - Ardasai - Middai – Dry places, common.

Vulpia sicula (C. Presl) Link - HgP- Oro. Med. - Marrocu - Canali - Grassland, sporadic.

Vulpia bromoides (L.) S.F. Gray - HgA - Tetid.-Eur. - Arqueri- Sa ucca de su oe – Grassland and glades, common.

Vulpia ciliata Dumort - HgA - Eur.-Med. - Sa ucca de su oe - Grassland, sporadic.

Desmazeria rigida (L.) Tutin - HiA - Eur.-Med. - Marrocu - Grassland, sporadic.

Poa annua L. - HgA- Cosmop - San Pietro - Middai - Anulù - Grassland, common

Poa halbisii Parl. - Grh - Sardinian-Corsican (Endemic) - S'arcu de su Pirastu Trottu – Calcareous cliffs. Reported also by Arrigoni (1982) for the same locality.

Poa bulbosa L. - HgP - Tetid.-Eurosib. - Ardasai - Marrocu - San Pietro - Road edges, sporadic.

Dactylis glomerata subsp. *hispanica* (Roth) Nyman - HgP - Bor.-Tetid.- Arqueri - Middai - Grassland, garrigue, common.

Cynosurus echinatus L. - HgA - Eur.-Med. - Arqueri - Ardasai - Grassland sporadic.

Cynosurus cristatus L. - HgP - Med.-Eur. - Arqueri - Grassland, common.

Lamarckia aurea (L.) Moench - HgA - Med.-Pont.- Ardasai - San Pietro- Road edges, common.

Briza maxima L. - HgA - Med. Eur. - Arqueri - Sa ucca de su oe - Grassland, maquis, common.

Briza minor L. - HgA - Cosmop. - Anulù - Ardasai - Sa ucca de su oe – Humid grassland, sporadic

Sesleria insularis subsp. *barbaricina* Arrigoni - HgP - Sardinian-Corsican (Calcareous mountains of central-eastern Sardinia: north-eastern and “tacchi” district) (Endemic) - Arqueri - Rocks.

Reported by Arrigoni (1983b) for the Tonneri at Pirastru Trottu.

Melica minuta L. - HgP - Med. - Canali - Rocks, common.

Melica ciliata L. - HgP- Eur.-Med. - Arqueri - Ardasai - Grassland, rare.

Glyceria plicata Fries -Hrh - Tetid.-Eur.- Sa ucca de su oe - Ardasai - Humid grassland, sporadic.

Bromus rigidus Roth - HgA - Med. - Arqueri – Meadows and road edges, common.

Bromus sterilis L. - HgA - Tetid.-Eur. - Arqueri - Ardasai - Canali -Middai - Grassland, common.

Bromus intermedius Guss. - HiA - Med.Eur.- Arqueri - Ardasai – Grassland and glades, common.

Bromus hordeaceus L. - HgA - Tetid.-Eur. - Arqueri - Canali - Ardasai- Along the roads, common.

Brachypodium retusum (Pers.) Beauv. - Hst - W-Medit.- Maquis, dry stony places, sporadic.

Brachypodium distachyon (L.) Beauv. - HiA - Med.-Ir. Tur. - Canali - Ardasai – Grassland in the maquis, widespread.

Aegilops triuncialis L. - HgA - Eur.-Med. - Canali - Grassland, common.

Aegilops geniculata Roth - HgA - Med.-Pont. - Arqueri- Ardasai- Middai - Grassland, common.

Hordeum murinum subsp. *leporinum* (Link) Arcangeli - HgA - Eur.-Med. - Middai - Grassland, common.

Avena fatua L. - HgA - Med. - Arqueri - Sa ucca de su oe - San Cristoforo – Dry places, grassland.

Trisetum flavescens (L.) Beauv. - HgP - Eur.-Med. - Arqueri - Ardasai - Canali – Rocky ravines, rare.

Lophocloa cristata (L.) Hyl. - HgA - Bor.-Tetid. - S'Arcu de su Pirastru Trottu - Maquis, sporadic.

Lagurus ovatus L. - HgA - Med.-Atl. - Arqueri - Sa ucca de su oe - Dry places, grassland.

Aira caryophyllea L. - HgA - Subcosmop. - S'Arcu de su Pirastru Trottu - Maquis and grassland, sporadic.

Holcus lanuatus L. - HgP - Eur.-Med. - S'Arcu de su Pirastru trottu- Anulù - Grassland, maquis, sporadic.

Phleum pratense L. - HgP - Bor.-Tetid.- Arqueri - Ardasai - Humid grassland, sporadic.

Phalaris arundinacea L. - HgP - Eur.-Med. - Pauli- Ardasai San Pietro - Grassland, common.

Phalaris acquatica L. - HgP - Tetid.-Macaron. - Ardasai- Middai - Grassland, along the roads, rare.

Piptatherium miliaceum (L.) Cosson - HgP - Med.-Pont. - San Pietro - Ardasai - Road edges, sporadic.

Stipa capensis Thunb. -HgA - Med. - Arqueri - Sa ucca de su oe - San Pietro - Road edges, ruderal places, sporadic.

Stipa bromoides (L.) Dörf. - Hrh - Med. - Ardasai - Middai - Canali - Grassland, common.

Cynodon dactylon (L.) Pers - Hrh- Subosmop. - Arqueri - Sa ucca de su oe - San Pietro - Grassland, ruderal places, widespread.

Setaria glauca (L.) Beauv - HgA - Subcosmop. - Sa ucca de su oe - Ruderal places, common.

Imperata cylindrica (L.) Raeusch. - Hrh - Eur.-Med. - Sa ucca de su oe - Grassland, sporadic.

Araceae

Arum italicum Mill. - Hrh - Eur.-Med. - Gersadili - Ruderal places, common.

Arum pictum L. - Hrh - Sardinian-Corsican-Tyrrhenian- Iberian (Endemic) - Anulù - Ruderal places, sporadic.

Arisarum vulgare Targ.-Tozz. - Hrh - Med.- Genne`Iacca - Maquis and grassland, common.

Cyperaceae

Carex divulsa Stoches - HiP- Eur.-Med. - Arqueri - Grassland, common.

Carex pendula Huds - HiP - Tetid.-Eur. - Canali - Middai - Humid places.

Carex flacca Schreb. - Hrh - Tetid.-Macar.- Canali - Middai - Humid places.

Orchidaceae

Epipactis helleborine (L.) Crantz - Hrg - Tetid.-Eur. - Arqueri - Canali - Oak wood. Rio San Girolamo, Montarbu. Oak wood, frequent.

Epipactis microphylla (Ehrh.) Swartz -Hrh - Eur.-Med. - Cerasia Oak wood, rare.

Cephalanthera damasonium (Mill.) Druce - Hrh - Eur.-Med. - Sa ucca de su oe -Canali - Oak wood. Reported also by Barbey (1884) and Martelli (1896) sub *C. pallens* L.C.Rich. for the Seui mountains.

Cephalanthera longifolia (L.) Fritsch - Hrg - Eur.-Med. - Cengia del Tonneri - Oak wood, common. Reported by Barbey (op. cit.: 186) and Martelli (op. cit.: 10) sub *C. ensifolia* L.C. Rich. for the Seui mountains.

Limodorum abortivum (L.) Sw. - Hrg - Eur.-Med. - Arqueri - Montarbu - Oak wood, frequent.

Orchis longicornu Poir. - Hrg - W Med. - Arqueri - Grassland, common. Specimens of the *O. albi-flora* were found sporadically in the same locality.

Orchis lactea Poir.- Hrg - Med. - Anulù - Grassland, sporadic.

Orchis collina Banks & Solander - Hrg - Med. - San Pietro- Grassland, sporadic.

Orchis mascula subsp. *ichnusae* Corrias - Hrg - Sardinian-Corsican (Calcareous mountains of central-eastern Sardinia: north-eastern and "tacchi" districts; coastal and hilly subsector; south-western district) (Endemic) - Canali - Maquis, common. Reported also by Corrias (1982) for the Montarbu State Forest.

Aceras antropophorum (L.) R. Br.- Hrg - Eur.-Med. - Cengia del Tonneri, rare.

Barlia robertiana (Loisel) Greuter - Hrg - Med.- Arqueri - Grassland, common.

Anacamptis pyramidalis (L.) L.C.M. Richard - Hrg - Eur.-Med. - Arqueri - Grassland, sporadic.

Ophrys lutea Cav. Subsp. *lutea* - Hrg.- Med. - Margiani Pubusa - Stony places, sporadic.

Ophrys lutea Cav. subsp. *minor* (Tod.) O. & E. Danesch - Hrg - Med. - Ardasai – Stony places, sporadic.

Ophrys tenthredinifera Willd. - Hrg - Med. - Arqueri - Margiani Pubusa - Maquis and garrigue, sporadic.

Discussion

The accorded floristic component is made up of 508 taxa belonging to 305 genera and 76 families. The most represented families are *Leguminosae*, *Compositae* and the *Graminaceae* with 60, 54, and 43 species respectively. M.te Arqueri alone, though on an extremely small area (10 ha), showed great floristic diversity: as many as 246 species belonging to 183 genera and 55 families: this was likely to be related to the different extension of open areas between M.te Tonneri and M.te Arqueri.

From the growth forms summarised in Table 2, herbaceous species account for 78.5% of the entire flora, phanerophytes and chamaephytes 18.3%, pteridophytes 2.5%, and parasites 0.59%. Therophytes (cfr. Raunkiaer, 1934) and hemicryptophytes account for

Tab. 2. Distribution of the growth forms in the flora of M.te Tonneri and M.te Arqueri.

Growth forms	n	%
PT	13	2,56
W	15	2,95
WA	12	2,36
WB	3	0,59
WL	7	1,38
WF	26	5,12
WS	30	5,91
HiA	148	29,13
HiP	99	19,49
HiB	27	5,32
HgA	20	3,94
HgP	14	2,76
HcrA	2	0,39
HcrP	3	0,59
HscP	2	0,39
HstP	5	0,98
HreA	7	1,38
HreP	7	1,38
HpsP	2	0,39
HceP	6	1,18
HpuP	1	0,2
Hbu	21	4,13
Htu	1	0,20
OP	1	0,2
OA	2	0,39

34.84% and 27.36% respectively. Finally the geophytes account for 11.02% of the total flora.

By comparing our data with others from calcareous areas, (Tab. 3), we observed that the percentage of therophytes is lower due to the fact that they find difficulty to settle, because large open glades can only be found in a few areas at the edge of woods or in the topmost upland plains. Nevertheless, compared to the total floristic contingent this percentage is not too low. The high percentage of hemicryptophytes and geophytes reflects the edaphic context of the examined area, while the values of the woody species chamaephytes and phanerophytes, especially sub-shrubs and shrubs, are typical of extended areas of woods and maquis and of snow-line vegetation particularly exposed to the winds. M.te Tonneri is particularly covered by vast areas of woods, especially *Quercus ilex* and *Ostrya carpinifolia* in the cooler slopes, within which *Ilex aquifolium*, *Taxus baccata*, *Crataegus monogyna*, *Acer monspessulanum*, *Sorbus aria* and *Amelanchier ovalis* occasionally occur.

Figure 3 shows the geographical elements that define the flora of the studied area: it is clear that they are numerous and belong to the Mediterranean region with 413 species or 81.3% of the entire flora.

In particular we can distinguish these species into strictly Mediterranean (156 species, 30.7%), European Mediterranean (96 species, 18.9%), and broadly Mediterranean (70 species, 13.7%). It must be underlined that the broadly Mediterranean group is prevalently western and Atlantic (18 species, 5.5%), the presence of oriental species being negligible.

The orophilous Mediterranean elements are represented in very low percentage (21 species or 4.1%), but they testify the very marked specialisation of entities that occupy limited, well defined areas often relegated to extreme habitats such as rocky ravines, small crevices in the rock, topmost areas: *Juniperus communis* subsp. *nana*, *Rhamnus alpina*, *Daphne oleoides* and *Prunus prostrata* are the most significant.

The endemic component is what most specifically defines the flora of the studied area. It is made up of 62 species, i.e. 12.2% of the total number of the recorded entities, that belong entirely to the Sardinian sector of the Sardinian-Corsican domain.

Table 4 shows that the highest percentages refer to exclusive species of Sardinia (29 species, or 46.7%) and of Sardinia and Corsica (16 species, or 25.8 %). The most numerous connections relate to the Iberian domain (Balearic Islands) with 11 species, 28%, and the Tuscan Islands with 12 species, 19.35%, confirming connections between the two territories that existed in remote geological times. Superimpositions with the Apulian Sicilian domain (3 species, 4.48%) and the Italic Provençal domain (1 species, 1.61%) are far less.

Tab. 3. Comparison among the biological spectra of the floras of a few areas of calcareous substrate.

Locality	Altitude	n° species	T	G	H	Ch	P	Varh
M.te Albo - Camarda, 1984	1050	659	43,00	12,30	26,50	7,60	9,80	0,80
M.te Tuttavista - Martinoli, Piroddi, 1956	805	224	54,00	9,40	17,40	7,60	11,20	0,40
Tacchi di Tice - Ballero, 1993	756-866	442	37,00	11,00	33,00	7,00	12,00	
Marganai - Ballero, Angiolino, 1991	906	597	38,00	14,00	29,00	6,00	12,00	1,00
M.te Tonneri and M.te Arqueri	1110-1324	508	34,84	11,02	32,68	7,28	11,03	3,15
Sardinia		2013	38,90	10,80	28,90	9,70	8,80	2,80

Tab. 4. Chorological spectrum of the endemic entities of the flora of M.te Tonneri and M.te Arqueri.

Endemisms	n°	%
SA	29	46,78
SA CO	16	25,81
SA SI	2	3,23
SA CO SI	1	1,61
CA CO AT	7	11,29
SA CO BL	1	1,61
SA CO AT BL	5	8,06
SA CO BL GA	1	1,61
SA	Sardinia	
CO	Corsica	
SI	Apulian Sicilian	
AT	Tuscan archipelago	
BL	Iberian (Balearic Islands)	
GA	Italic Provençal (Ilyeres Islands)	

The finding of *Plantago subulata* subsp. *insularis* among the Sardinian-Corsican species is worthy of note, as it has only been reported on the granitic mountain tops around the Gennargentu: thus the distribution area of this orophilous species is extended to the calcareous areas south of the Gennargentu.

We should also mention the presence of *Cistus incanus* subsp. *Corsicus*, an endemic species reported by Rizzotto (1979) for the Montes Forest at Orgosolo, for M.te Ortobene, for the woods and track edges at M.te Oddeu, Riu Flumineddu and the banks of the Cedrino at Dorgali. Therefore, our finding extends the distribution area of this species to areas of calcareous substrate, while maintaining habitats such as garrigues or edges of woods as also reported by Contandriopulos for Corsica (1962).

The list of flora includes a short note on *Biscutella morisiana*, a species that probably should be considered endemic, which was also found at Arqueri.

Though slight, the connections with the Apulian Sicilian domain testify to the presence in Sardinia, and exclusively for the Seui limestones, of *Minuartia verna* subsp. *grandiflora*, a rare endemic relegated to the cliffs of Pizzu Margiani Pubusa and S'arcu de su Pirastru Trotto.

Table 5 shows in greater detail the floristic subsectors and districts proposed by Arrigoni for the flora of Sardinia (1983), to which the exclusive Sardinian endemics belong. Of the 29 species, 14 (42.8%) are exclusive of the subsector of the limestone mountains of centre-eastern Sardinia, 6 species (20.6%) are typical of the "tacchi" district, only one (3.45%) belongs to the north-eastern district, and 7 (24.14%) are present both in the "tacchi" and in the north-eastern districts. There are also a few connections with the subsector of the siliceous mountains, Gennargentu district (3 species, 10.34%), and with the coastal and hilly subsector, south-western district (2 species, 6.89%). Only one species is exclusive of the siliceous mountains, Gennargentu district (3.45%).

Most of these species were already reported for M.te Tonneri (see references in the floris-

Tab. 5. Membership of the species of the Sardinian sector to the subsectors and districts as proposed by Arrigoni (1983a).

Subsectors and districts	n°
Calcareous mountains of centre-eastern Sardinia: north eastern districs	1
Calcareous mountains of centre-eastern Sardinia: tacchi district	6
Calcareous mountains of centre-eastern Sardinia: north-eastern and tacchi districts	7
Calcareous mountains of centre-eastern Sardinia: tacchi district: siliceous mountains: Gennargentu district:	2
Calcareous mountains of centre-eastern Sardinia: north-eastern and tacchi districts:	
coastal and hilly: south-eastern district	1
Calcareous mountains of centre-eastern Sardinia: north-eastern and tacchi districts:	
coastal and hilly: south eastern district	3
Calcareous mountains of centre-eastern Sardinia: tacchi district: siliceous mountains: Gennargentu district:	
coastal and hilly: south-eastern district	1
Siliceous mountains: Gennargentu district	1
Wide distribution	7

tic list). A few findings require a comment: the distribution area of *Cerastium sopramontanum* is extended to the "tacchi" district, *Hieracium iolai*, whose locus classicus is Bruncu Arraschiele, is also found at Arqueri as well as *Sesleria insularis* subsp. *barbaricina*.

Particularly interesting is the finding of *Aquilegia nugorensis* at Arqueri. This species was reported by Arrigoni and Nardi (1978) exclusively for the Gennargentu. We found very few specimens in humid environments in the oak wood, but at lower altitudes than reported by the Authors. The distribution area is therefore extended to calcareous areas south of the Gennargentu massif.

The finding of *Galium schmidii* and *Galium glaucophyllum* in the same localities confirms the hypothesis by Arrigoni (1972) that the Seui *tacchi* would represent the point of superimposition of the distribution areas of the two species.

On the whole, the data suggest a few remarks on the ecology of a few of these species: they are generally specific entities of calcareous substrates, even though a few seem indifferent to the substrate and their presence on the *tacchi* could be related to exclusive ecological protective niches, optimal by exposition, humidity, and other favourable factors.

Finally a brief comment on the type of endemics recorded by us: it can be seen from Table 6 that the percentage of patroendemics and paleoendemics is lower than the percentage of neoendemics, apoendemics, schizoendemics, and endemo vicariants (33.87 and 66.13% respectively). However, if we examine only the exclusively Sardinian endemics, the difference is much greater, 17.24 % and 82.76%. Therefore next to *Psoralea morisiana*, *Limnium morisianum*, *Ranunculus cymbalarifolius*, *Ptychotis sardoa* and *Helichrysum saxatile* that represent the oldest genetic resources of conservation, we have a large group of species, that include *Aquilegia barbaricina*, *Sesleria insularis* subsp. *barbaricina*, *Galium schmidii*, *Galium glaucophyllum* and *Scorzonera callosa*, which represent the most active innovative resource (Garbari, 1989).

This contribution is intended as a first step towards the knowledge of the flora of the calcareous areas south of the Gennargentu massif: other studies are in progress that will

Tab. 6. Typology of the endemic entities of the flora of M.te Tonneri and M.te Arqueri (abbreviations as in Table 4).

Species	Distr. Area	Type of endemic
<i>Urtica atrovirens</i>	SA CO AT BL	Paleoendemic
<i>Arenaria balearica</i>	SA CO AT BL	Paleoendemic
<i>Minuartia verna</i> subsp. <i>grandiflora</i>	SA SI	Endemo vicariant
<i>Cerastium sopramontanum</i>	SA	Schizoendemic
<i>Silene nodulosa</i>	SA CO	Schizoendemic
<i>Helleborus argutifolius</i>	SA CO	Neoendemic
<i>Ranunculus cymbalarifolius</i>	SA	Paleoendemic
<i>Aquilegia barbaricina</i>	SA	Neoendemic
<i>Aquilegia nugorensis</i>	SA	Endemo vicariant
<i>Iberis integerrima</i>	SA	Endemo vicariant
<i>Morisia monantha</i>	SA CO	Paleoendemic
<i>Saxifraga cervicornis</i>	SA CO	Schizoendemic
<i>Potentilla caulescens</i> subsp. <i>nebrodensis</i>	SA SI	Vicariant neoendemic
<i>Genista corsica</i>	SA CO	Paleoendemic
<i>Psoralea morisiana</i>	SA	Paleoendemic
<i>Mercurialis corsica</i>	SA CO	Endemo vicariant
<i>Euphorbia cupani</i>	SA CO SI	Paleoendemic
<i>Euphorbia semiperfoliata</i>	SA CO	Schizoendemic
<i>Polygala sardoa</i>	SA	Endemo vicariant
<i>Hypericum hircinum</i>	SA CO AT	Endemo vicariant
<i>Cistus incanus</i> subsp. <i>corsicus</i>	SA CO	Schizoendemic
<i>Oenanthe lisae</i>	SA	Mesogenic endemic
<i>Armeria sardoa</i>	SA	Schizoendemic
<i>Limonium morisianum</i>	SA	Paleoendemic
<i>Asperula pumila</i>	SA	Schizoendemic
<i>Galium schmidii</i>	SA	Schizoendemic
<i>Galim glaucophyllum</i>	SA	Schizoendemic
<i>Galium corsicum</i>	SA CO	Patroendemic
<i>Borago pygmaea</i>	SA CO AT	Paleoendemic
<i>Stachys glutinosa</i>	SA CO AT	Paleoendemic
<i>Stachys corsica</i>	SA CO	Paleoendemic
<i>Glecoma sardoa</i>	SA	Neoendemic
<i>Acinos sardous</i>	SA	Endemo vicariant
<i>Micromeria cordata</i>	SA	Schizoendemic
<i>Tymus harba-barona</i>	SA CO	Paleoendemic
<i>Mentha requieni</i>	SA CO AT	Paleoendemic
<i>Mentha insularis</i>	SA CO AT BL	Endemo vicariant
<i>Scrophularia trifoliata</i>	SA CO AT	Schizoendemic
<i>Cymbalaria aequitriloba</i>	SA CO AT BL	Progressive endemic
<i>Cymbalaria muelleri</i>	SA	Paleoendemic
<i>Plantago subulata</i> subsp. <i>insularis</i>	SA CO	Apoendemic

Tab. 6. (continued).

<i>Campanula forsythii</i>	SA	Paleogenic endemovicariant
<i>Bellium bellidioides</i>	SA CO BL	Schizoendemic
<i>Helychrysum saxatile</i>	SA	Paleoendemic
<i>Santolina insularis</i>	SA	Endemo vicariant
<i>Ptilostemon casabonae</i>	SA CO AT GA	Paleoendemic
<i>Centaurea filiformis</i> subsp. <i>filiformis</i>	SA	Conservation endemic
<i>Scorzonera callosa</i>	SA	Progressive neoendemic
<i>Hieracium oliastreae</i>	SA	Endemo vicariant
<i>Hieracium iolai</i>	SA	Neoendemic
<i>Hieracium zizianum</i> subsp. <i>sardonium</i>	SA CO	Neoendemic
<i>Ornithogalum corsicum</i>	SA	Schizoendemic
<i>Allium pauciflorum</i>	SA CO	Paleoendemic
<i>Pancreatium illiricum</i>	SA CO AT	Paleoendemic
<i>Crocus minimus</i>	SA CO	Neoendemic
<i>Romulea requieni</i>	SA CO AT	Schizoendemic
<i>Poa halbisi</i>	SA CO	Neoendemic
<i>Sesleria insularis</i> subsp. <i>barbaricina</i>	SA	Neoendemic
<i>Arum pictum</i>	SA CO AT BL	Paleoendemic
<i>Orchis mascula</i> subsp. <i>hicnusae</i>	SA	Schizoendemic

eventually lead to a more complete vision of the biological diversity of these areas, a heritage to be protected because of the presence of rare species of an extreme phytogeographical interest.

References

- Agnesi, V., Macaluso, T. & Ulzega, A. 1990: Osservazioni geomorfologiche sul Tacco di Monte Tonneri (Sardegna centro-orientale). — *Rendiconti Seminario Fac. Sci. Univ. Cagliari* **60** (2): 233-244.
- Arrigoni, P.V. 1972: Su due *Galium* endemici della Sardegna: "*Galium schmidii*" nova sp. e "*Galium glaucophyllum* E. Schmid." — *Webbia* **27**(2):505-516.
- 1977: Le piante endemiche della Sardegna: 4. — *Boll. Soc. Sarda Sci. Nat.* **16**: 275-280.
- 1978: Le piante endemiche della Sardegna: 12-17-18. — *Boll. Soc. Sarda Sci. Nat.* **17**: 177-183, 204-214.
- 1979: Le piante endemiche della Sardegna: 46-47-48-49-53. — *Boll. Soc. Sarda Sci. Nat.* **18**: 252-272, 289-295.
- 1980: Le piante endemiche della Sardegna: 61-62-63-66-67. — *Boll. Soc. Sarda Sci. Nat.* **19**: 217-230, 241-250.
- 1981: Le piante endemiche della Sardegna: 87. — *Boll. Soc. Sarda Sci. Nat.* **20**: 249-255.
- 1982: Le piante endemiche della Sardegna: 99-103. — *Boll. Soc. Sarda Sci. Nat.* **21**: 338-343, 358-362.
- 1983 a: Aspetti corologici della flora sarda. — *Lav. Soc. Ital. Biogeogr. n.s.* **8**: 81-109.
- 1983b: Le piante endemiche della Sardegna: 119-120-123. — *Boll. Soc. Sarda Sci. Nat.* **22**: 263-276, 288-292.

- 1984: Le piante endemiche della Sardegna: 139-143-147. — Boll. Soc. Sarda Sci. Nat. **23**: 214-219, 235-239, 255-260.
- 1985: Le piante endemiche della Sardegna: 158, 161, 166. — Boll. Soc. Sarda Sci. Nat. **24**: 231-235, 245-248, 267- 271.
- 1996: A classification of plant growth forms applicable to the Floras and Vegetation types of Italy. — *Webbia* **50** (2): 193-203.
- Camarda, I., Corrias, B., Diana, S., Raffaelli, M. & Valsecchi, F. 1976-1991: Le piante endemiche della Sardegna: 1- 202. — Boll. Soc. Sarda Sci. Nat. **17-28**.
- & Di Tommaso, P.L. 1991: La vegetazione delle montagne calcaree della Sardegna centro-orientale. — Boll. Soc. Sarda Sci. Nat. **28**: 201-310.
- & Nardi, E. 1977: Le piante endemiche della Sardegna: 1. — Boll. Soc. Sarda Sci. Nat. **16**: 265-268
- & Nardi, E. 1978: Le piante endemiche della Sardegna: 20. — Boll. Soc. Sarda Sci. Nat. **17**: 220-225.
- Aru, A., Baldaccini, P. & Vacca, A. 1991: Nota illustrativa alla Carta dei Suoli della Sardegna. Regione Auton. Sardegna Univ. Cagliari.
- Bagnouls, F. & Gaussen, H. 1953: Saison sèche & indice xérothermique. — *Docum. Pour les Cartes des Prod. Végét. Serie: Généralités* **1**: 1-48.
- Ballero, M. & Angiolino, C. 1991: La flora del Massiccio del Marganai. — *Webbia* **46**(1): 81-106.
- , Scrugli, S. & Scrugli, A. 1993: La flora del Tacco di Ticci (Sardegna centrale). — *Bol. Soc. Brot., Sér. 2*, 66: 55-83.
- Barbey, W. 1884 : *Florae Sardoae Compendium*. — Lousanne.
- Camarda, I. 1978: Le piante endemiche della Sardegna: 22-23. — Boll. Soc. Sarda Sci. Nat. **17**: 232-241, 318-323.
- 1981: Le piante endemiche della Sardegna: 91 — Boll. Soc. Sarda Sci. Nat. **20**: 269-274.
- 1982: Le piante endemiche della Sardegna: 108 — Boll. Soc. Sarda Sci. Nat. **21**: 383-388.
- 1984: Studi sulla flora e sulla vegetazione del Monte Albo (Sardegna centro-orientale). 1. La Flora. — *Webbia* **37**(2): 283-327.
- Contandriopoulos, J. 1962: Recherches sur la flore endémique de la Corse & sur ses origines. — *Ann. Fac. Sci. Marseille* **32**: 1-354.
- Corrias, B. 1979: Le piante endemiche della Sardegna: 55. — Boll. Soc. Sarda Sci. Nat. **18**: 303-309.
- 1980: Le piante endemiche della Sardegna: 73. — Boll. Soc. Sarda Sci. Nat. **19**: 283-287.
- 1982: Le piante endemiche della Sardegna: 111. — Boll. Soc. Sarda Sci. Nat. **21**: 403-410.
- 1984: Le piante endemiche della Sardegna: 150. Boll. Soc. Sarda Sci. Nat. **23**: 273-278.
- Daget P. 1977: Le bioclimat méditerranéen; analyse des formes climatiques par le systeme d'Emberger. — *Vegetatio* **34** (2): 87-103.
- Della Marmora, A. 1857: *Viaggio in Sardegna*.- (trad. V. Martelli), Cagliari.
- Diana, S. 1981: Le piante endemiche della Sardegna: 95. — Boll. Soc. Sarda Sci. Nat. **20**: 293-300.
- Ferrarini, E., Ciampolini, F., Pichi Sermolli, R. & Marchetti, D. 1986: *Iconografia Palynologica Pteridophytorum Italiae*. — *Webbia* **40**(1): 1-202.
- Garbari, F. 1989: L'endemismo vegetale: genesi, tipi e significato biogeografico. — *Studi Tridentini di Scienze Naturali. Acta Biol.* **66**: 113-120.
- Greuter, W., Burdet, H.M. & Long, G. 1984-1989. - *Med-Checklist* **1,3,4** – Genève and Berlin.
- Herzog, T. 1909: Ueber Die Vegetationsverhältnisse Sardinien. — *Bot. Jahrb Syst.* **42**(5): 341-476.
- Jalas, J. & Suominen, J. (Eds.) 1972-1994 : *Atlas Florae Europaeae*. **1-10**. Helsinki.
- Martelli, U. 1896: *Monocotyledones Sardoae*. — **1-3** San Casciano.
- Martinoli, G. & Piroddi, M. 1956: Flora e vegetazione del Monte Tuttavista. — *Webbia* **12**(1): 147-

- Meusel, H., Jaeger, E., Rauschert, S. & Weinert, E. 1965, 1978, 1992: Vergleichende chorologie der Zentraleuropaischen Flora. — Jena.
- Moris, J. H. 1837-1859: Flora Sardoia. — Taurini.
- Raffaelli, M. 1991: *Biscutella* L. Ser. *Lyratae* Malin. (*Cruciferae*) in Italia. Discussione dei caratteri morfologici e tassonomia. — *Webbia* **45(1)**: 1-30.
- Raunkiaer, C. 1934: Life forms of plants and statistical plant geography. — Oxford.
- Rizzotto, M. 1979: Ricerche tassonomiche e corologiche sulle *Cistaceae*. 1. Il genere *Cistus* L. in Italia. — *Webbia* **33(2)**: 343-378.
- Scrugli, A. 1990: Orchidee spontanee della Sardegna. — Cagliari.
- Takhtajan, A. 1986: Floristic regions of the World. — Berkeley, Los Angeles and New York.
- Tutin, T. G., Heywood, V. H., Burges, N. A., Moore, D. M., Valentine, D. H., Walters, S. M. & Webb, D. A. (ed.) 1964 - 80: Flora Europaea. **1 - 5** — Cambridge.
- Valsecchi, F. 1978: Le piante endemiche della Sardegna: 34-35-36-38 — *Boll. Soc. Sarda Sci. Nat.* **17**: 295-312, 318-323.
- 1979: Le piante endemiche della Sardegna: 60. — *Boll. Soc. Sarda Sci. Nat.* **18**: 334-339.
- 1980: Le piante endemiche della Sardegna: 82-83. — *Boll. Soc. Sarda Sci. Nat.* **19**: 331-342.
- 1982: Le piante endemiche della Sardegna: 115-116-117. — *Boll. Soc. Sarda Sci. Nat.* **21**: 427-441.

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