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DEGLI STUDI DI TRIESTE
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REGIONE AUTONOMA DELLA SARDEGNA

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UNIVERSITÀ DEGLI STUDI DI SASSARI

# A guide to the vascular plants of the temporary ponds of Sardinia (Italy)

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**Images by Andrea Moro**

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# Introduction

The Mediterranean temporary ponds are small bodies of freshwater which are fed almost exclusively by rain, and hence ephemeral and highly dependent on annual rainfall. Under these unstable and unpredictable conditions a unique and highly specialized flora is developed, that includes many rare species of conservation interest, also called 'dwarf flora' to emphasize the small size of the species. The dominant species are annual plants with a short life cycle, able to bloom and fruit even within a few weeks after germination; they also produce many seeds that germinate in an opportunistic way, ensuring the survival of the species during particularly dry years. Important are also several slow-growing and stress-tolerant geophytes (e.g. *Isoëtes* sp. pl.). Along with this highly specialized flora, temporary ponds are also home to more generalist, terrestrial opportunistic species, that mainly appear in the peripheral areas and spread to the central area during dry periods.
The Mediterranean temporary ponds are habitats of high biological and biogeographical interest. The Habitat Directive recognizes them as Habitats of Community Interest, included in the group of freshwater stagnant vegetation with the codes 3120, 3130 and 3170*.
In Sardinia, the Mediterranean temporary ponds, locally referred to as *paulis* and *pischinas*, are mainly located in the plateaus and in the lowlands at altitudes ranging from 10 and 1200 m, in bioclimatic conditions which vary from the meso-Mediterranean belt (mean annual temperature: 15 °C, annual precipitation: 946 mm) to the temperate-sub-Mediterranean belt (mean annual temperature: 10 °C, annual precipitation 1000 mm). They occupy small depressions on hydromorphic soils and on impermeable bedrock with poor drainage (e.g. granite). The maximum depth of the water varies in relation to the morphology of the substrate, and often it is possible to recognize a zonation of vegetation into three belts: an external belt, an intermediate belt and a central belt.
The surrounding vegetation is diversified in relation to the type of substrate: neutro-acidophilous forests with cork oak (*Quercus suber*), often converted into wooded pastures, on the plateaus; oak forests dominated by the deciduous oak of Sardinia (*Q. ichnusae*) on siliceous substrates in central-northern Sardinia; mixed-mesophilous evergreen forests (*Q. suber*, *Q. ilex*) in lowland areas. The use of these habitats is characterized by extensive agro-pastoral activities that contribute to their conservation by controlling the colonization of trees and shrubs.
The list of plants included into this identification tool was created in the framework of the project 'Vascular plants, bryophytes and aquatic fauna of the Mediterranean temporary ponds of Sardinia: biodiversity, ecology and conservation. - Acronym: Paulis', funded by the Region of Sardinia - Regional Law 7 August 2007, n. 7: 'Promotion of scientific research and technological innovation in Sardinia'.
The field surveys were integrated with literature data and with information deriving from herbarium specimens of the University of Cagliari (CAG), Florence (FI), Sassari (SS and SASSA) and Torino (TO). The list includes all entities which were hitherto found in the temporary ponds of Sardinia, including xerophilous herbaceous plants and some woody plants that colonize these habitats especially in areas that are no longer used for extensive agro-pastoral activities.

# Field guide

| | | | |
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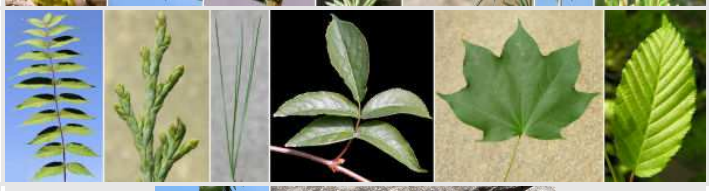
| **1** | Trees, woody climbers, or > 50 cm tall shrubs |  | **2** |
| **1** | Herbaceous plants, or < 50 cm tall shrubs |  | **26** |
| **2** | Plants without true leaves, with pungent modified stems (phyllocladia) |  | **3** |
| **2** | Plants with true leaves | | **4** |
| **3** | Phyllocladia flattened |  | ***Ruscus aculeatus* L.** |
| **3** | Phyllocladia not flattened, needle-like |  | ***Asparagus acutifolius* L.** |
| **4** | Leaves needle-like |  | **5** |
| **4** | Leaves not needle-like |  | **7** |
| **5** | Leaves (they are actually modified stems!) not flattened. Petals free. Calyx absent. Fruit fleshy |  | ***Asparagus acutifolius* L.** |

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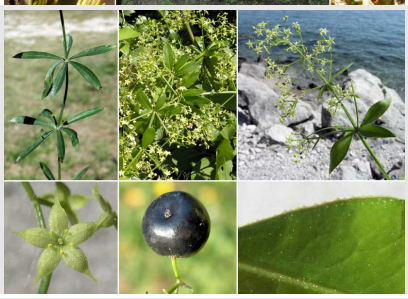
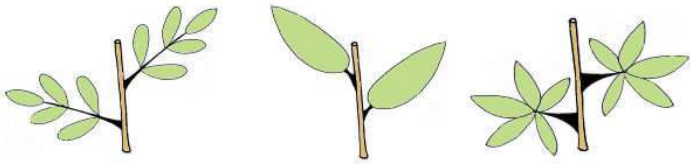
|---|---|---|---|
| **5** | Leaves flattened. Petals fused. Calyx present. Fruit dry |  | **6** |
| **6** | Young branches hairless. Anthers without basal outgrowths (lens!) |  | ***Erica scoparia* L. subsp. *scoparia*** |
| **6** | Young branches white-hairy. Anthers with 2 basal outgrowths |  | ***Erica arborea* L.** |
| **7** | Leaves arranged in whorls |  | ***Rubia peregrina* L. subsp. *peregrina*** |
| **7** | Leaves alternate or opposite | | **8** |
| **8** | Leaves opposite |  | **9** |
| **8** | Leaves alternate |  | **17** |
| **9** | Woody climber |  | ***Lonicera implexa* Aiton subsp. *implexa*** |

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| **9** | Trees or shrubs |  | **10** |
| **10** | Flowers blue-violet, bilaterally symmetrical, arranged in dense terminal spikes. Leaves smelling of lavender |  | ***Lavandula stoechas* L. subsp. *stoechas*** |
| **10** | Flowers not blue-violet, radially symmetrical, not arranged in spikes. Leaves not smelling of lavender | | **11** |
| **11** | Flowers > 2 cm across. Fruit dry |  | **12** |
| **11** | Flowers < 2 cm across. Fruit fleshy | | **14** |
| **12** | Leaves > 4 times as long as wide |  | ***Cistus monspeliensis* L.** |
| **12** | Leaves < 4 times as long as wide | | **13** |
| **13** | Flowers white |  | ***Cistus salviifolius* L.** |
| **13** | Flowers pink |  | ***Cistus creticus* L. subsp. *eriocephalus* (Viv.) Greuter & Burdet** |

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| **14** | Leaves with a strong aromatic scent when bruised |  | ***Myrtus communis* L. subsp. *communis*** |
| **14** | Leaves without aromatic scent |  | **15** |
| **15** | Leaves silvery grey beneath, or twigs ending in a spine. Fruit with a woody seed (olive) |  | ***Olea europaea* L.** |
| **15** | Leaves green on both surfaces and twigs not ending in a spine. Fruit with a cartilaginous seed |  | **16** |
| **16** | Leaves with 6-12 pairs of thick lateral veins. Calyx-lobes acute. Fruit rounded or slightly flattened at apex |  | ***Phillyrea latifolia* L.** |
| **16** | Leaves with 4-6 pairs of weak secondarty veins. Calyx-lobes rounded at apex. Fruit pointed |  | ***Phillyrea angustifolia* L.** |
| **17** | Leaves compound (divided into separate leaflets) |  | **18** |
| **17** | Leaves simple |  | **20** |

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| **18** | Plant without prickles. Leaves with an aromatic smell when bruised |  | ***Pistacia lentiscus* L.** |
| **18** | Plants with prickles. Leaves almost odourless |  | **19** |
| **19** | Leaves palmate (or 3-foliate). Fruit blackberry-like |  | ***Rubus ulmifolius* Schott** |
| **19** | Leaves pinnate. Fruit different |  | ***Rosa sempervirens* L.** |
| **20** | Woody climber |  | ***Smilax aspera* L.** |
| **20** | Trees or shrubs | | **21** |
| **21** | Leaves lobed |  | **22** |
| **21** | Leaves not lobed |  | **23** |

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| **22** | Thorny shrub. Flowers with petals. Fruit fleshy |  | ***Crataegus monogyna* Jacq.** |
| **22** | Tree without thorns. Flowers without petals. Fruit dry (an acorn) |  | ***Quercus pubescens* Willd. subsp. *pubescens*** |
| **23** | Plant usually < 1.5 m tall. Leaves (they are actually modified stems!) ending in a spine |  | ***Ruscus aculeatus* L.** |
| **23** | Plants > 1.5 m tall. Leaves not ending in a spine | | **24** |
| **24** | Leaves deciduous, not leathery. Branches ending in a spine |  | ***Pyrus spinosa* Forssk.** |
| **24** | Leaves evergreen, leathery. Branches not ending in a spine | | **25** |
| **25** | Leaves grey-hairy beneath. Flowers without petals. Fruit dry (acorn) |  | ***Quercus suber* L.** |

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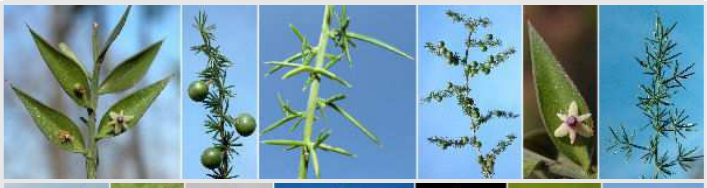
| **25** | Leaves green on both surfaces. Flowers with petals. Fruit fleshy |  | ***Daphne gnidium* L.** |
| **26** | Plant not green, without chlorophyll (a parasite on Cistus) |  | ***Cytinus hypocistis* (L.) L.** |
| **26** | Plant green, with chlorophyll |  | **27** |
| **27** | Plants without well-developed leaves (photosynthesis carried out by green stems) |  | **28** |
| **27** | Plants with well-developed leaves | | **36** |
| **28** | Plants with pungent, flattened or needle-like phyllocladia resembling leaves |  | **29** |
| **28** | Plants without phyllocladia resembling leaves |  | **30** |
| **29** | Phyllocladia flattened |  | ***Ruscus aculeatus* L.** |

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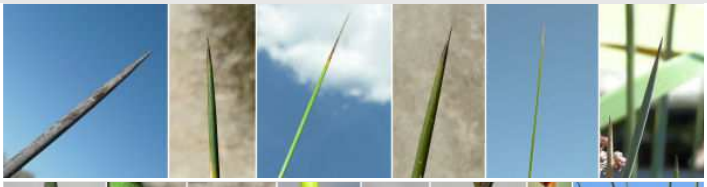
| **29** | Phyllocladia needle-like |  | ***Asparagus acutifolius* L.** |
| **30** | Stems jointed, with a brown sheath at the base of each joint. Flowers with petals |  | ***Polygonum scoparium* Loisel.** |
| **30** | Stems smooth. Flowers without petals (or with brown/greenish tepals) | | **31** |
| **31** | Stems not ending in a spike of flowers. Flowers radially symmetrical (lens!) |  | **32** |
| **31** | Stems ending in a spike of flowers. Flowers not radially symmetrical |  | **34** |
| **32** | Basal sheaths brown/black, shiny. Capsule ovoid, pointed at apex. Stems flexible, with an interrupted pith |  | ***Juncus inflexus* L.** |
| **32** | Basal sheaths yellow-brown, not shiny. Capsule club-shaped, truncate or concave at apex. Stems rigid and fragile, with an almost continuous pith | | **33** |

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| **33** | Inflorescence contracted. Stems ridged |  | ***Juncus conglomeratus* L.** |
| **33** | Inflorescence wide. Stems smooth |  | ***Juncus effusus* L. subsp. *effusus*** |
| **34** | Stigmas 2. Stems usually > 1.5 mm wide |  | ***Eleocharis palustris* (L.) Roem. & Schult. subsp. *palustris*** |
| **34** | Stigmas 3. Stems < 1.5 mm wide |  | **35** |
| **35** | Stems hair-like, 0.2-0.4 mm wide. Achenes short (0.7-1.1 mm including the stylopodium) |  | ***Eleocharis acicularis* (L.) Roem. & Schult.** |
| **35** | Stems cylindrical, 0.5-1 mm wide. Achenes 1.5-2.5 mm long |  | ***Eleocharis multicaulis* (Sm.) Desv.** |
| **36** | Leaves arranged in whorls along the stem (more than 2 leaves originating at the same point along the stem) |  | **37** |

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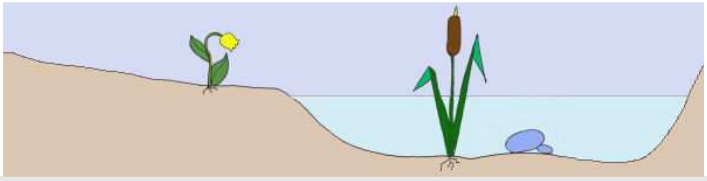
| **36** | Leaves opposite, alternate, or all basal | | **51** |
| **37** | Leaves compound |  | **38** |
| **37** | Leaves simple |  | **39** |
| **38** | Submerged leaves arranged in whorls of 5. Flowering stems leafy (flowers arranged in leaf-axils) |  | ***Myriophyllum verticillatum* L.** |
| **38** | Submerged leaves arranged in whorls of 4. Flowering stems leafless |  | ***Myriophyllum spicatum* L.** |
| **39** | Plant usually totally submerged into water |  | ***Elatine alsinastrum* L.** |
| **39** | Plants terrestrial, or, if aquatic, with stems emerging from water (except in periods of maximum flooding) |  | **40** |
| **40** | Flowers with herbaceous tepals |  | ***Glinus lotoides* L.** |
| **40** | Flowers with non-herbaceous petals | | **41** |

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| **41** | Petals 5 or 6 | | **42** |
| **41** | Petals 3 o 4 | | **45** |
| **42** | Leaves needle-like, pungent (they are not leaves, but modified stems!). Petals 6 |  | ***Asparagus acutifolius* L.** |
| **42** | Leaves different, not pungent. Petals 5 | | **43** |
| **43** | Leaves evergreen, leathery. Petals fused at the base. Fruit fleshy |  | ***Rubia peregrina* L. subsp. *peregrina*** |
| **43** | Leaves not evergeen, soft. Petals free. Fruit dry | | **44** |
| **44** | Leaves linear, at least 10 times as long as wide |  | ***Spergula arvensis* L.** |
| **44** | Leaves ovate, to 2.5 times as long as wide |  | ***Polycarpon tetraphyllum* (L.) L. subsp. *tetraphyllum*** |
| **45** | Flowers pale blue, the corolla-tube longer than the lobes |  | ***Sherardia arvensis* L.** |

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| **45** | Flowers white or yellowish white, the corolla-tube much shorter than the lobes |  | **46** |
| **46** | Leaves arranged in whorls of 4 |  | ***Galium debile* Desv.** |
| **46** | Leaves arranged in whorls of more than 4 |  | **47** |
| **47** | Annual plants, with stems and leaves rough for dense hooked hairs |  | **48** |
| **47** | Perennial plants, with stems and leaves not rough (hooked hairs absent or very sparse) | | **50** |
| **48** | Leaves with teeth pointing towards the leaf-base (lens!) |  | ***Galium aparine* L.** |
| **48** | Leaves with teeth pointing towards the apex | | **49** |
| **49** | Fruit at least 4 mm across. Leaves usually > 3 mm wide |  | ***Galium verrucosum* Huds. subsp. *verrucosum*** |

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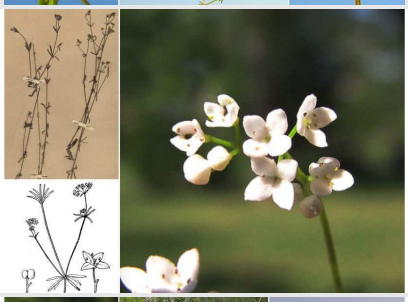
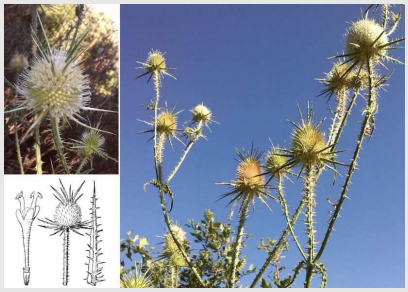
| **49** | Fruit < 2 mm across. Leaves usually < 3 mm wide |  | ***Galium parisiense* L.** |
| **50** | Fruiting pedicels not spreading. Leaves to 2 mm wide, the margin revolute |  | ***Galium debile* Desv.** |
| **50** | Fruiting pedicels spreading. Leaves 2-6 mm wide, the margin not revolute |  | ***Galium palustre* L. subsp. *palustre*** |
| **51** | Leaves opposite |  | **52** |
| **51** | Leaves alternate (or all basal) |  | **115** |
| **52** | Leaves not entire (compound or divided by more than half of the blade) |  | **53** |
| **52** | Leaves entire, at most weakly lobed |  | **57** |
| **53** | Plant spiny. Flowers arranged in compact heads surrounded by an involucre of spiny bracts |  | ***Dipsacus ferox* Loisel.** |

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| **53** | Plants without spines. Flowers not arranged in heads | | **54** |
| **54** | Leaves pinnately divided. Fruits beakless |  | ***Verbena supina* L.** |
| **54** | Leaves palmately divided. Fruits with a long beak |  | **55** |
| **55** | Petals rounded at apex. Leaves pentagonal in outline |  | ***Geranium robertianum* L.** |
| **55** | Petals notched at apex. Leaves rounded in outline |  | **56** |
| **56** | Leaves almost completely divided |  | ***Geranium dissectum* L.** |
| **56** | Leaves divided only on 2/3-4/5 of the blade |  | ***Geranium molle* L.** |

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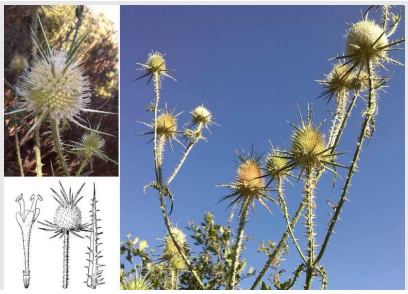
| **57** | Plant spiny |  | ***Dipsacus ferox* Loisel.** |
| **57** | Plant not spiny | | **58** |
| **58** | Flowers greenish, without petals or with sepal-like petals |  | **59** |
| **58** | Flowers not greenish, with white or coloured petals |  | **68** |
| **59** | Plant with a milky sap (break a stem!) |  | ***Chamaesyce canescens* (L.) Prokh. subsp. *canescens*** |
| **59** | Plants without milky sap | | **60** |
| **60** | Leaves cyllindrical. Plant of dry, disturbed sites |  | ***Sagina apetala* Ard. subsp. *apetala*** |
| **60** | Leaves flattened. Plants submerged or occurring in wet sites | | **61** |
| **61** | Leaves distrinctly pinnately-veined |  | **62** |
| **61** | Leaves with a single vein, or with indistinct pinnate veins |  | **64** |

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| **62** | Leaves usually > 1 cm wide. Stamens 4 (magnifying glass!) |  | ***Ludwigia palustris* (L.) Elliott** |
| **62** | Leaves 2-10 mm wide. Stamens 6 | | **63** |
| **63** | Calyx (in fruit) > capsule. Leaves stalked |  | ***Peplis portula* L.** |
| **63** | Calyx (in fruit) < capsule. Leaves almost stalkless |  | ***Middendorfia borysthenica* (Schrank) Trautv.** |
| **64** | Leaves all submerged and linear, with parallel edges |  | **65** |
| **64** | Leaves not all submerged, or at least the upper ones not linear and arranged in a rosette |  | **67** |
| **65** | Leaves transparent. Fruits longer than wide. Styles falling early |  | ***Callitriche truncata* Guss. subsp. *truncata*** |

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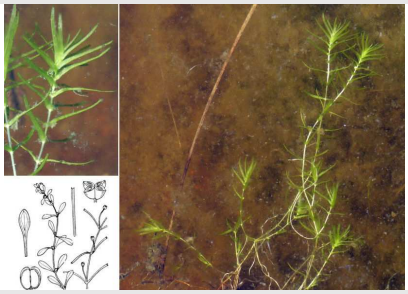
| **65** | Leaves opaque. Fruits rounded or wider than long. Styles persistent, curved | | **66** |
| **66** | Leaves slightly widened towards the apex. Fruit about 1.4 mm wide |  | ***Callitriche hamulata* Kütz. ex W.D.J. Koch** |
| **66** | Leaves not widened towards the apex. Fruit 1-1.2 mm wide |  | ***Callitriche brutia* Petagna** |
| **67** | Flowers submerged. Pollen grains colourless. Styles persistent, curved |  | ***Callitriche hamulata* Kütz. ex W.D.J. Koch** |
| **67** | Flowers emerging from water. Pollen grains yellow. Styles falling early or persistent, but straight |  | ***Callitriche stagnalis* Scop.** |
| **68** | Corolla pink or pale blue, with 4 petals fused into a short tube, the lower petal slightly narrower than the others. Stamens 2 |  | **69** |
| **68** | Corolla different | | **70** |
| **69** | Flowers pink-violet, arranged in lateral racemes |  | ***Veronica anagalloides* Guss.** |

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| **69** | Flowers pale blue, arranged in leaf-axils in the upper part of stem |  | ***Veronica arvensis* L.** |
| **70** | Flowers bilaterally symmetrical |  | **71** |
| **70** | Flowers radially symmetrical |  | **74** |
| **71** | Calyx with 5 teeth. Flowers pale blue |  | ***Gratiola officinalis* L.** |
| **71** | Calyx with 4 teeth. Flowers of other colours | | **72** |
| **72** | Calyx swollen. Plant with simple hairs. Seeds with longitudinal grooves (stereo-microscope!) |  | ***Bartsia trixago* L.** |
| **72** | Calyx cylindrical. Plants with glandular hairs. Seeds reticulately ridged | | **73** |
| **73** | Flowers yellow, 16-24 mm long. Calyx-teeth as long as 2/3 of the tube |  | ***Parentucellia viscosa* (L.) Caruel** |

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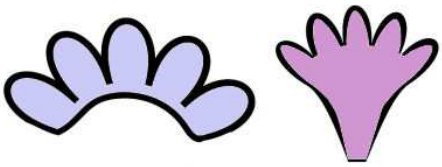
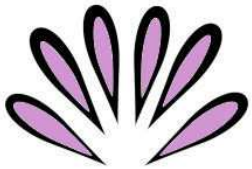
| **73** | Flowers purple, 8-10 mm long. Calyx-teeth not longer than 1/4 of the tube |  | ***Parentucellia latifolia* (L.) Caruel** |
| **74** | Petals fused at least at the base |  | **75** |
| **74** | Petals free |  | **87** |
| **75** | Petals 4 | | **76** |
| **75** | Petals 5 or more | | **78** |
| **76** | Leaves strongly smelling of mint when bruised |  | ***Mentha pulegium* L. subsp. *pulegium*** |
| **76** | Leaves not smelling of mint | | **77** |
| **77** | Flowers yellow |  | ***Cicendia filiformis* (L.) Delarbre** |
| **77** | Flowers pink |  | ***Exaculum pusillum* (Lam.) Caruel** |

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| **78** | Flowers yellow |  | ***Centaurium maritimum* (L.) Fritsch** |
| **78** | Flowers not yellow | | **79** |
| **79** | Flowers white |  | **80** |
| **79** | Flowers not white | | **82** |
| **80** | Leaves >1 cm wide. Plant with a milky sap |  | ***Vincetoxicum hirundinaria* Medik. subsp. *hirundinaria*** |
| **80** | Leaves < 1 cm wide. Plants without milky sap | | **81** |
| **81** | Ripe seeds dull, completely covered by large obtuse warts (stereo-microscope!) |  | ***Montia fontana* L. subsp. *chondrosperma* (Fenzl) Walters** |
| **81** | Ripe seed shiny, with small warts only along the margin, or arranged in rows |  | ***Montia fontana* L. subsp. *amporitana* Sennen** |
| **82** | Stems prostrate or long-creeping |  | **83** |
| **82** | Stems erect |  | **86** |

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| **83** | Flowers pale pink |  | ***Lysimachia tenella* L.** |
| **83** | Flowers deep blue or brigh red-orange |  | **84** |
| **84** | Corolla < 7 mm wide, the petals about as long as sepals |  | ***Lysimachia arvensis* (L.) U. Manns & Anderb. subsp. *parviflora* (Hoffmanns. & Link) Peruzzi** |
| **84** | Corolla > 7 mm wide, the petals longer than sepals | | **85** |
| **85** | Petals contiguous at least toward the base, the margin almost entire and with numerous glandular, 3-cellular hairs (lens!). Flower pedicels longer than the corresponding leaf |  | ***Lysimachia arvensis* (L.) U. Manns & Anderb. subsp. *arvensis*** |
| **85** | Petals separated also at the base, the margin toothed-fringed, with scarce 4-cellular glandular hairs. Flower pedicels usually shorter than the corresponding leaf |  | ***Lysimachia foemina* (Mill.) U. Manns & Anderb.** |
| **86** | Flowers arranged in spikes |  | ***Schenkia spicata* (L.) G. Mans.** |

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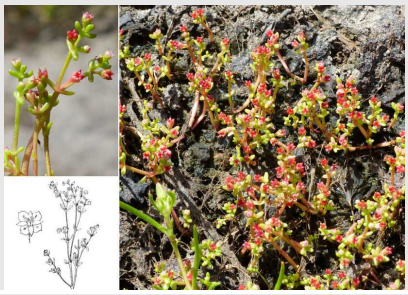
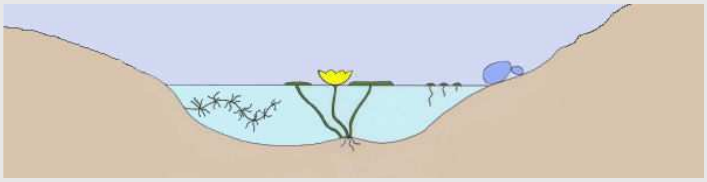
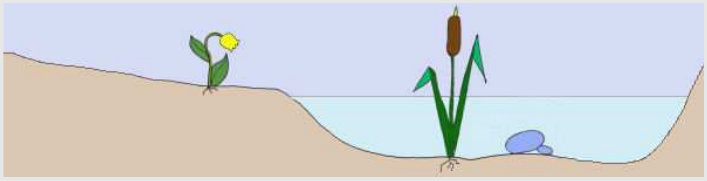
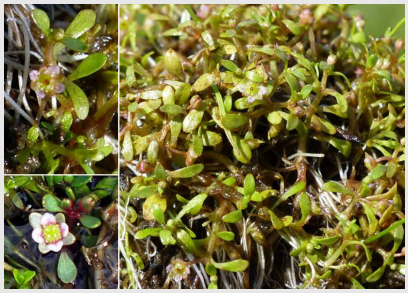
| **86** | Flowers arranged in corymbs |  | ***Centaurium pulchellum* (Sw.) Druce subsp. *pulchellum*** |
| **87** | Plant succulent, with fleshy leaves |  | ***Bulliarda vaillantii* (Willd.) DC** |
| **87** | Plants not succulent | | **88** |
| **88** | Petals 4 | | **89** |
| **88** | Petals 5 or more | | **94** |
| **89** | Leaves cylindrical |  | ***Sagina apetala* Ard. subsp. *apetala*** |
| **89** | Leaves flattened | | **90** |
| **90** | Plants usually submerged at least in part. Flowers arranged in leaf-axils |  | **91** |
| **90** | Plants usually not submerged (except in periods of high flooding). Flowers not arranged in leaf-axils |  | **93** |
| **91** | Sepals and petals 4. Stamens 8. Capsule with 4 valves. Seeds often curved, U-shaped or J- shaped (strong lens!) |  | ***Elatine macropoda* Guss.** |

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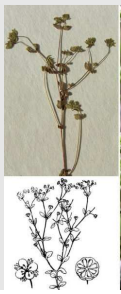
| **91** | Sepals and petals 3. Stamens 3-6. Capsule with 3 valves. Seeds straight or hooked |   | **92** |
| **92** | Stamens 6. Flower pedicels 1-10 mm long |  | ***Elatine hexandra* (Lapierre) DC.** |
| **92** | Stamens 3. Flower pedicels < 1.5 mm long |  | ***Elatine triandra* Schkuhr** |
| **93** | Inflorescences branched. Sepals with 3 acute teeth along the margin (lens!) |   | ***Linum radiola* L.** |
| **93** | Flowers ususally solitary at the top of stems. Sepals with an entire margin |    | ***Moenchia erecta* (L.) G. Gaertn., B. Mey. & Scherb. s.l.** |
| **94** | Flowers yellow |  | **95** |
| **94** | Flowers not yellow | | **98** |

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| **95** | Sepals apparently 3 (actually 5, but 3 much larger than the others) |  | **96** |
| **95** | Sepals 5, all similar |  | **97** |
| **96** | Basal leaves 2-5 cm long, arranged in a rosette. Plant perennial |  | ***Tuberaria lignosa* (Sweet) Samp.** |
| **96** | Basal leaves shorter, dry at flowering time. Annual plant |  | ***Tuberaria guttata* (L.) Fourr.** |
| **97** | Stems prostrate. Plant annual or biennial |  | ***Hypericum humifusum* L.** |
| **97** | Stems erect. Plant perennial |  | ***Hypericum perfoliatum* L.** |
| **98** | Small shrubs |  | **99** |
| **98** | Herbaceous plants | | **101** |

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| **99** | Leaves > 4 times as long as wide |  | ***Cistus monspeliensis* L.** |
| **99** | Leaves < 4 times as long as wide | | **100** |
| **100** | Petals white |  | ***Cistus salviifolius* L.** |
| **100** | Petals pink |  | ***Cistus creticus* L. subsp. *eriocephalus* (Viv.) Greuter & Burdet** |
| **101** | Flowers arranged in leaf-axils. Petals usually 6 | | **102** |
| **101** | Flowers not arranged in leaf-axils. Petals 5 | | **103** |
| **102** | Calyx (in fruit) < capsule. Leaves almost stalkless |  | ***Middendorfia borysthenica* (Schrank) Trautv.** |
| **102** | Calyx (in fruit) > capsule. Leaves stalked |  | ***Peplis portula* L.** |

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| **103** | Sepals free, or fused only at the base |  | **104** |
| **103** | Sepals fused for at least half of their length |  | **112** |
| **104** | Flowers pink, orange-red or deep blue |  | **105** |
| **104** | Flowers white |  | **108** |
| **105** | Flowers pale pink |  | ***Lysimachia tenella* L.** |
| **105** | Flowers deep blue or orange-red |  | **106** |
| **106** | Corolla < 7 mm wide, the petals about as long as sepals |  | ***Lysimachia arvensis* (L.) U. Manns & Anderb. subsp. *parviflora* (Hoffmanns. & Link) Peruzzi** |
| **106** | Corolla > 7 mm wide, the petals longer than sepals | | **107** |
| **107** | Petals contiguous at least toward the base, the margin almost enire and with numerous glandular, 3-cellular hairs (lens!). Flower pedicels longer than the corresponding leaf |  | ***Lysimachia arvensis* (L.) U. Manns & Anderb. subsp. *arvensis*** |

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| **107** | Petals separated also at the base, the margin toothed-fringed, with scarce 4-cellular glandular hairs. Flower pedicels usually shorter than the corresponding leaf |  | ***Lysimachia foemina* (Mill.) U. Manns & Anderb.** |
| **108** | Petals notched to deeply 2-lobed |  | **109** |
| **108** | Petals entire at apex | | **111** |
| **109** | Capsule globose or ovoid, not exceeding the calyx. Stems glabrous or with a single row of hairs |  | ***Stellaria media* (L.) Vill. subsp. *media*** |
| **109** | Capsule cylindrical, about 2 times as long as the calyx. Stems densely hairy at least in the upper part |  | **110** |
| **110** | Margin of sepals hairy at least in the upper part (lens!) |  | ***Cerastium glomeratum* Thuill.** |
| **110** | Margin of sepals hairless, the apex membranous |  | ***Cerastium palustre* Moris** |
| **111** | Flowers crowded in leaf-axils along the stem. Plant of wet sites |  | ***Illecebrum verticillatum* L.** |

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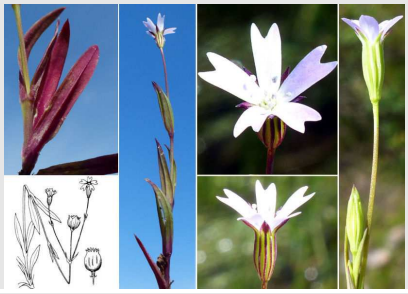
| **111** | Flowers crowded at the top of stem. Plant of dry, disturbed sites |  | ***Polycarpon tetraphyllum* (L.) L. subsp. *tetraphyllum*** |
| **112** | Styles 3-5 (lens!) | | **113** |
| **112** | Styles 2 | | **114** |
| **113** | Styles 5, Calyx hairless |  | ***Eudianthe laeta* Rchb. ex Willk.** |
| **113** | Styles 3. Calyx hairy |  | ***Silene gallica* L.** |
| **114** | Calyx not surrounded by brown bracts |  | ***Gypsophila muralis* L.** |
| **114** | Calyx surrounded by brown bracts |  | ***Petrorhagia prolifera* (L.) P.W. Ball & Heywood** |
| **115** | Leaves not entire (compound or divided by more than half of the blade) |  | **116** |

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| **115** | Leaves entire, at most weakly lobed |  | **219** |
| **116** | Leaves 3-foliate (with 3 leaflets) |  | **117** |
| **116** | Leaves not 3-foliate | | **153** |
| **117** | Flowers and fruits arranged in compound umbels |  | ***Smyrnium olusatrum* L.** |
| **117** | Flowers and fruits not arranged in compound umbels | | **118** |
| **118** | Flowers radially symmetrical |  | **119** |
| **118** | Flowers bilaterally symmetrical |  | **120** |
| **119** | Flowers about 1 cm across, the sepals about 2 mm long. Plant annual |  | ***Ranunculus sardous* Crantz s.l.** |
| **119** | Flowers about 2 cm across, the sepals > 4 mm long. Plant perennial |  | ***Ranunculus neapolitanus* Ten.** |

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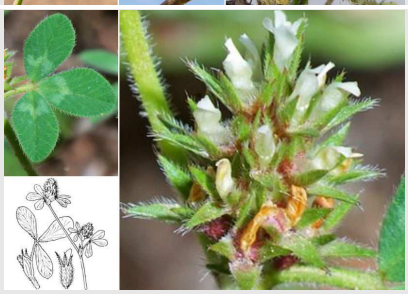
| **120** | Flowers white, red, pink or blue-violet |  | **121** |
| **120** | Flowers yellow |  | **143** |
| **121** | Flowers white or yellowish white |  | **122** |
| **121** | Flowers red, pink or blue-violet |  | **130** |
| **122** | Inflorescences sessile or almost so |  | **123** |
| **122** | Inflorescences with a > 5 mm long pedicel |  | **124** |
| **123** | Lateral veins of leaflets curved and often thicker at the end |  | ***Trifolium scabrum* L. subsp. *scabrum*** |
| **123** | Lateral veins of leaflets straight and uniformly thin |  | ***Trifolium striatum* L. subsp. *striatum*** |
| **124** | Flowers with a short pedicel subtended by a small bract (lens !). Calyx hairless o sparsely hairy at the mouth. Legume with 2-8 seeds |  | **125** |

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| **124** | Flowers sessile, without basal bract. Calyx-mouth obstructed by a ring of hairs. Legume with 1(-2) seeds |  | **127** |
| **125** | Perennial plant, the stems creeping and rooting at nodes |  | ***Trifolium repens* L.** |
| **125** | Annual plants, the stems not rooting at nodes | | **126** |
| **126** | Upper calyx-teeth as long as, or only slightly longer than the tube (lens!) |  | ***Trifolium nigrescens* Viv. subsp. *nigrescens*** |
| **126** | All calyx-teeth 2-4 times as long as the tube |  | ***Trifolium michelianum* Savi** |
| **127** | Calyx with 20 veins (lens!) |  | ***Trifolium cherleri* L.** |
| **127** | Calyx with 10 veins (a few flowers may have 14 veins) | | **128** |
| **128** | Perennial plant |  | ***Trifolium ochroleucon* Huds.** |

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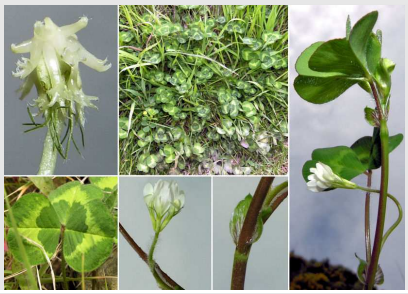
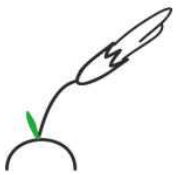
| **128** | Annual plants | | **129** |
| **129** | Inflorescences with less than 8 fertile flowers, at fruiting touching the soil or subterranean |  | ***Trifolium subterraneum* L.** |
| **129** | Inflorescences with more than 8 fertile flowers, never touching the soil |  | ***Trifolium arvense* L. subsp. *arvense*** |
| **130** | Flowers with a short pedicel subtended by a small bract (lens !). Calyx hairless o sparsely hairy at the mouth. Legume with 2-8 seeds |  | **131** |
| **130** | Flowers sessile, without basal bract. Calyx-mouth obstructed by a ring of hairs. Legume with 1(-2) seeds |  | **135** |
| **131** | Inflorescences sessile or almost so |  | ***Trifolium glomeratum* L.** |
| **131** | Inflorescences with a > 5 mm long pedicel |  | **132** |
| **132** | Perennial plant |  | ***Trifolium fragiferum* L. subsp. *fragiferum*** |

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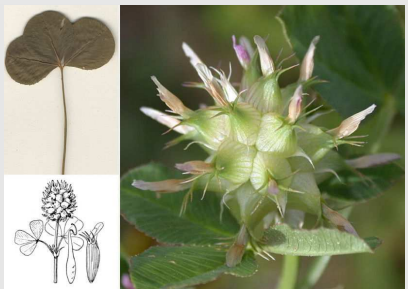
|---|---|---|---|
| **132** | Annual plants | | **133** |
| **133** | Inflorescences terminal. Fruiting calyx hairless. Inflorescences with well-developed bracts |  | ***Trifolium spumosum* L.** |
| **133** | Inflorescences lateral. Fruiting calyx hairy. Inflorescences with poorly developed bracts | | **134** |
| **134** | Pedicels of inflorescences about as long as the corresponding leaves. Fruiting calyx about 2 times as long as wide |  | ***Trifolium resupinatum* L.** |
| **134** | Pedicels of inflorescences much shorter than the corresponding leaves. Fruiting calyx only slightly longer than wide |  | ***Trifolium tomentosum* L.** |
| **135** | Perennial plant |  | ***Trifolium pratense* L. subsp. *pratense*** |
| **135** | Annual plants | | **136** |
| **136** | Inflorescences sessile, more or less globose |  | **137** |
| **136** | Inflorescences with a long pedicel, much longer than wide |  | **138** |

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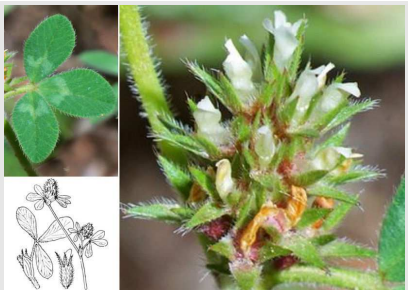
| **137** | Fruiting calyx somehow swollen, star-shaped (the teeth radiating) |  | ***Trifolium striatum* L. subsp. *striatum*** |
| **137** | Fruiting calyx not swollen, with erect teeth |  | ***Trifolium bocconei* Savi** |
| **138** | Inflorescences globose or only slightly longer than wide |  | ***Trifolium stellatum* L.** |
| **138** | Inflorescences much longer than wide |  | **139** |
| **139** | Leaflets < 3 times as long as wide |  | **140** |
| **139** | Leaflets 3-10 times as long as wide |  | **142** |
| **140** | Corolla not exceeding the calyx |  | ***Trifolium ligusticum* Loisel.** |
| **140** | Corolla exceeding the calyx | | **141** |

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| **141** | Corolla pink to white, about 13 mm long, much longer than calyx. Calyx-teeth twice as long as tube. Leaflets usually < 9 mm long |  | ***Trifolium incarnatum* L. subsp. *molinerii* (Hornem.) Ces.** |
| **141** | Corolla bright red, 8-10 mm long, usually shorter than calyx. Calyx-teeth about as long as tube. Leaflets to 2 cm long |  | ***Trifolium incarnatum* L. subsp. *incarnatum*** |
| **142** | Inflorescences 2-8 cm long, usually solitary or few in number. Calyx teeth usually not exceeding the corolla |  | ***Trifolium angustifolium* L. subsp. *angustifolium*** |
| **142** | Inflorescences 10-25 mm long, numerous. Calyx teeth much exceeding the corolla |  | ***Trifolium arvense* L. subsp. *arvense*** |
| **143** | Leaves with 2 large leaf-like stipules at the base of the petiole (hence apparently with 5 leaflets) |  | **144** |
| **143** | Leaves with stipules not resembing the leaflets, and hence clearly 3-foliate | | **149** |
| **144** | Annual plants | | **145** |
| **144** | Perennial plants | | **147** |

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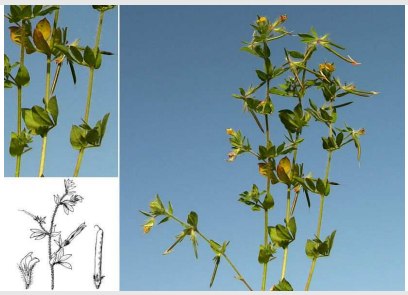
| **145** | Calyx-teeth 3-4 times as long as tube |  | ***Lotus parviflorus* Desf.** |
| **145** | Calyx-teeth < 1.5 times as long as tube | | **146** |
| **146** | Legume > 3 times as long as calyx (16-60 mm) |  | ***Lotus angustissimus* L.** |
| **146** | Legume 2-3 times as long as calyx (10-16 mm) |  | ***Lotus hispidus* DC.** |
| **147** | Piant < 10 cm tall. Inflorescence with 1-3(-5) flowers |  | ***Lotus corniculatus* L. subsp. *alpinus* (DC.) Rothm.** |
| **147** | Plants usually > 10 cm tall. Inflorescence with 4-12 flowers | | **148** |
| **148** | Stems tubular (hollow inside), 30-60 cm tall. Inflorescence with 5-12 flowers |  | ***Lotus pedunculatus* Cav.** |

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| **148** | Stems not tuibular, 10-30 cm tall. Inflorescence with (3-)4-7 flowers |  | ***Lotus corniculatus* L. subsp. *corniculatus*** |
| **149** | Standard (upper petal) finely folded (lens!). Legume straight, hidden by the dry brownish corolla at maturity |  | **150** |
| **149** | Standard smooth. Legume curved or wound into a spiral | | **151** |
| **150** | Central leaflet sessile or almost so |  | ***Trifolium micranthum* Viv.** |
| **150** | Central leaflet clearly stalked |  | ***Trifolium campestre* Schreb.** |
| **151** | Legume smooth |  | ***Medicago polymorpha* L.** |
| **151** | Legume with prickles |  | **152** |

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| **152** | Stipules entire |  | ***Medicago minima* (L.) L.** |
| **152** | Stipules toother to fringed |  | ***Medicago polymorpha* L.** |
| **153** | Plants with spiny stems and/or leaves |  | **154** |
| **153** | Plants without spines | | **158** |
| **154** | Inflorescences surrounded by radiating spiny bracts. Petals free (lens!) |  | **155** |
| **154** | Plants with different characters |  | **156** |
| **155** | Bracts subtending the flowers 3-furcate (lens!) |  | ***Eryngium tricuspidatum* L.** |
| **155** | Bracts subtending the flowers simple |  | ***Eryngium corniculatum* Lam.** |

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| **156** | Flowers yellow |  | ***Carlina corymbosa* L.** |
| **156** | Flowers pink (sometimes almost white) |  | **157** |
| **157** | Peripheral flowes much longer than the central ones and clearly radiating. Pappus of feathery hairs |  | ***Galactites tomentosus* Moench** |
| **157** | Peripheral flowers not much longer than the others. Pappus of simple hairs |  | ***Carduus pycnocephalus* L. subsp. *pycnocephalus*** |
| **158** | Leaves divided into 4 leaflets (resembling a lucky clover) |  | **159** |
| **158** | Leaves different | | **160** |
| **159** | Leaves hairless. Sporocarps on pedicels of 1-2 cm. Rhizome only slightly hairy at the nodes |  | ***Marsilea quadrifolia* L.** |

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| **159** | Leaves sparsely hairy. Sporocarps subsessile. Rhizome densely hairy at the nodes |  | ***Marsilea strigosa* Willd.** |
| **160** | Perennially submerged plants with white flowers and palmately-divided leaves |  | **161** |
| **160** | Plants with different characters (if submerged, with pinnately divided leaves or with yellow flowers) | | **164** |
| **161** | Leaves (at least the upper ones) with a well-developed flattened blade |  | **162** |
| **161** | Leaves all divided into hair-like segments |  | **163** |
| **162** | Ripe fruits surrounded by a wing-like ridge, the unripe ones hairless. Petals 6-10 mm long |  | ***Ranunculus peltatus* Schrank subsp. *baudotii* (Godr.) C.D.K. Cook** |
| **162** | Ripe fruits, without such a ridge, the unripe ones finely hairy. Petals 4-6 mm long |  | ***Ranunculus peltatus* Schrank subsp. *fucoides* (Freyn) Muñoz Garm.** |
| **163** | Petals 6-10 mm long. Ripe fruits surrounded by a wing-like ridge. Sepals often blue-spotted |  | ***Ranunculus peltatus* Schrank subsp. *baudotii* (Godr.) C.D.K. Cook** |

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| **163** | Petals 3-5.5 mm long. Ripe fruits without such a ridge. Sepals never blue-spotted |  | ***Ranunculus trichophyllus* Chaix subsp. *trichophyllus*** |
| **164** | Plants without flowers, reproducing by means of spores (ferns) |  | **165** |
| **164** | Plants with flowers, reproducing by means of seeds | | **166** |
| **165** | Leaves 1-pinnate. Sori circular |  | ***Polypodium cambricum* L.** |
| **165** | Leaves 2-4-pinnate. Sori longer than wide |  | ***Asplenium onopteris* L.** |
| **166** | Flowers arranged in heads surrounded by an involucre of scales or bracts |  | **167** |
| **166** | Flowers not arranged in heads surrounded by an involucre | | **174** |
| **167** | Tubular flowers absent (all flowers strap-shaped) |  | **168** |
| **167** | Tubular flowers present, strap-shaped flowers absent or limited to the edge of the head |  | **172** |

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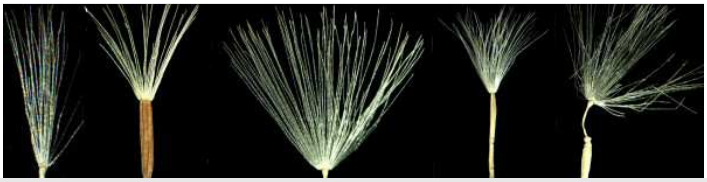
| **168** | Flowers pale blue |  | ***Cichorium intybus* L.** |
| **168** | Flowers yellow |  | **169** |
| **169** | Pappus of feathery hairs (lens!). Fruits with a long beak |  | **170** |
| **169** | Pappus of simple hairs. Fruit beakless |  | **171** |
| **170** | Leaves pinnately-lobed but not compound |  | ***Hypochaeris radicata* L.** |
| **170** | Leaves compound, imparipinnate |  | ***Hypochaeris cretensis* (L.) Bory & Chaub.** |
| **171** | Scales of the involucre of the head with a white margin. Fruits warty in the upper part (lens!) |  | ***Reichardia picroides* (L.) Roth** |

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| **171** | Scales of the involucre without a white margin. Fruits not warty |  | ***Sonchus oleraceus* L.** |
| **172** | Heads with tubular flowers only |  | ***Senecio vulgaris* L.** |
| **172** | Heads with tubular flowers in the centre, strap-shaped flowers along the margin (daisy-like) |  | **173** |
| **173** | Scales of the involucre with a dark margin. Receptacle with obtuse scales (extract all flowers and observe the receptacle with a hand-lens!) |  | ***Chamaemelum fuscatum* (Brot.) Vasc.** |
| **173** | Scales of the involucre with a pale margin. Receptacle with acute scales |  | ***Anthemis arvensis* L. subsp. *arvensis*** |
| **174** | Flowers and fruits arranged in compound umbels |  | **175** |
| **174** | Flowers and fruits not arranged in compound umbels | | **187** |

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| **175** | Stem leaves entire, rounded, clasping the stem with the base |  | ***Smyrnium perfoliatum* L. subsp. *rotundifolium* (Mill.) Hartvig** |
| **175** | Stem leaves different | | **176** |
| **176** | Fruits covered by spine-like outgrowths |  | **177** |
| **176** | Fruits not covered by spine-like outgrowths | | **178** |
| **177** | Base of umbels with entire bracts (or bracts absent) |  | ***Torilis nodosa* (L.) Gaertn.** |
| **177** | Base of umbel with deeply divided bracts |  | ***Daucus carota* L. subsp. *carota*** |
| **178** | Flowers yellow to greenish yellow |  | **179** |
| **178** | Flowers white (rarely pink) |  | **182** |
| **179** | Fruit strongly flattened and winged at margin |  | **180** |

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|---|---|---|---|
| **179** | Fruit not strongly flattened |  | **181** |
| **180** | Wings of fruit free, hence fruit with 4 wings (lens!) |  | ***Thapsia garganica* L. subsp. *garganica*** |
| **180** | Wings of fruit fused together, hence fruit with 2 wings only |  | ***Ferula communis* L.** |
| **181** | Leaf-segments to 5 mm wide |  | ***Oenanthe pimpinelloides* L.** |
| **181** | Leaf-segments > 5 mm wide |  | ***Smyrnium olusatrum* L.** |
| **182** | Submerged leaves completely divided into hair-like segments, the others with oval segments |  | ***Helosciadium crassipes* W.D.J. Koch ex Rchb.** |
| **182** | All leaves emerging from water (except in periods of maximum flooding), the lower ones not divided into hair-like segments | | **183** |

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|---|---|---|---|
| **183** | Umbels terminal, with a long peduncle |  | **184** |
| **183** | Umbels lateral, opposite to the leaves, with a short peduncle |  | **186** |
| **184** | Stems and leaf stalks tubular, hollow inside. Umbels with 2-3 rays |  | ***Oenanthe fistulosa* L.** |
| **184** | Stems and leaf stalks not tubular. Umbels with 4-40 rays | | **185** |
| **185** | Basal leaves divided into ovate or wedge-shaped segments. Stem not hollow |  | ***Oenanthe pimpinelloides* L.** |
| **185** | Basal leaaves divided into linear or linear-lanceolate segments. Stem hollow |  | ***Oenanthe silaifolia* M. Bieb.** |
| **186** | Stem grooved. Styles abot 2/3 as long as fruit, the latter about 5 mm long |  | ***Oenanthe globulosa* L.** |
| **186** | Stem striated. Styles about 1/3 as long as fruit, the latter 3-3.5 mm long |  | ***Oenanthe lisae* Moris** |

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| **187** | Flowers without petals and arranged in globose inflorescences at the top of stems |  | ***Poterium sanguisorba* L. subsp. *balearicum* (Bourg. ex Nyman) Stace** |
| **187** | Flowers different (if without petals, then arranged in spikes) | | **188** |
| **188** | Flowers bilaterally symmetrical |  | **189** |
| **188** | Flowers radially symmetrical |  | **202** |
| **189** | Leaves palmately compound |  | ***Lupinus gussoneanus* Agardh** |
| **189** | Leaves pinnately lobed or pinnately compound |  | **190** |
| **190** | Corolla with a sac-like outgrowth. Leaves 2-3-pinnate. Fruit a capsule |  | ***Fumaria officinalis* L. subsp. *officinalis*** |
| **190** | Corolla without a sac-like outgrowth. Leaves 1-pinnate. Fruit a legume |  | **191** |

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| **191** | Leaves paripinnate (sometimes ending with a tendril) |  | **192** |
| **191** | Leaves imparipinnate, ending with a leaflet |  | **195** |
| **192** | Stem winged. Flowers red |  | ***Lathyrus cicera* L.** |
| **192** | Stem not winged. Flowers not red (purple, blue or violet-pink) | | **193** |
| **193** | Flowers solitary or arranged in groups of 2-3 in leaf axils, sessile or almost so. Stipules often with a dark patch (nectary) |  | ***Vicia sativa* L. subsp. *sativa*** |
| **193** | Flowers arranged in racemes whose pedicel is longer than a flower. Stipules green, without a dark nectary |  | **194** |
| **194** | Corolla 4-7 mm long |  | ***Vicia disperma* DC.** |
| **194** | Corolla 8-12 mm long |  | ***Vicia villosa* Roth subsp. *villosa*** |

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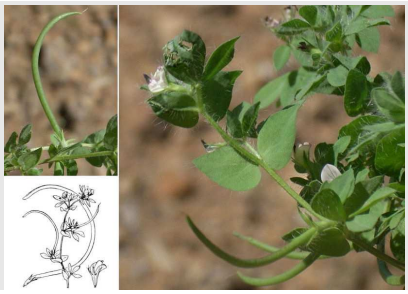
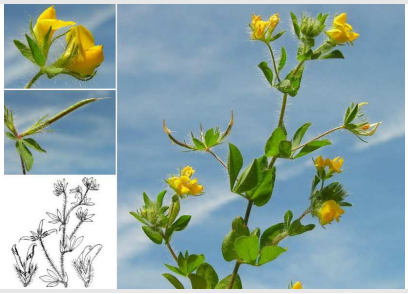
| **195** | Flowers not yellow |  | ***Lotus conimbricensis* Brot.** |
| **195** | Flowers yellow |  | **196** |
| **196** | Leaves with 2 large leaf-like stipules at the base of the petiole (hence apparently with 5 leaflets) |  | **197** |
| **196** | Leaves with more than 5 leaflets |  | **201** |
| **197** | Annual plants | | **198** |
| **197** | Perennial plants | | **199** |
| **198** | Calyx-teeth 3-4 times as long as tube |  | ***Lotus parviflorus* Desf.** |
| **198** | Calyx-teeth < 1.5 times as long as tube |  | ***Lotus hispidus* DC.** |

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| **199** | Piant < 10 cm tall. Inflorescence with 1-3(-5) flowers |  | ***Lotus corniculatus* L. subsp. *alpinus* (DC.) Rothm.** |
| **199** | Plants usually > 10 cm tall. Inflorescence with 4-12 flowers | | **200** |
| **200** | Stems not tuibular, 10-30 cm tall. Inflorescence with (3-)4-7 flowers |  | ***Lotus corniculatus* L. subsp. *corniculatus*** |
| **200** | Stems tubular (hollow inside), 30-60 cm tall. Inflorescence with 5-12 flowers |  | ***Lotus pedunculatus* Cav.** |
| **201** | Upper leaves stalkiless. Flowers subtended by a small bract |  | ***Ornithopus compressus* L.** |
| **201** | Upper leaves stalked. Flowers not subtended by a bract |  | ***Ornithopus pinnatus* (Mill.) Druce** |
| **202** | Petals 4 | | **203** |
| **202** | Petals 5 or more | | **206** |

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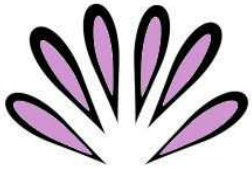
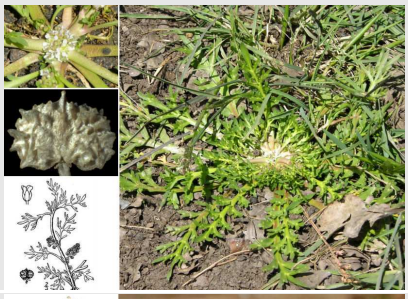
| **203** | Petals fused at base. Flowers arranged in compact spikes at the top of leafless stems |  | ***Plantago coronopus* L.** |
| **203** | Petals free |  | **204** |
| **204** | Flowers yellow |  | ***Morisia monanthos* (Viv.) Asch.** |
| **204** | Flowers white or whitish |  | **205** |
| **205** | Flowering stems abundantly leafy. Fruit covered by warts |  | ***Lepidium coronopus* (L.) Al-Shehbaz** |
| **205** | Flowering stems leafless or with 1-2 reduced leaves (most leaves arranged in a basal rosette). Fruit smooth |  | ***Teesdalia coronopifolia* (J.P. Bergeret) Thell.** |
| **206** | Flowers pink. Stamens 10 (lens) |  | **207** |
| **206** | Flowers yellow. Stamens numerous, more than 10 |  | **209** |

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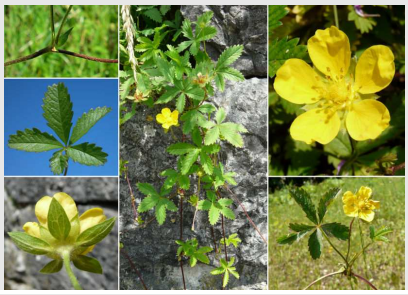
| **207** | Petals rounded at apex. Leaves pentagonal in outline |  | ***Geranium robertianum* L.** |
| **207** | Petals notched at apex. Leaves rounded in outline |  | **208** |
| **208** | Leaves almost completely divided |  | ***Geranium dissectum* L.** |
| **208** | Leaves divided only on 2/3-4/5 of their length |  | ***Geranium molle* L.** |
| **209** | Leaves with stipules |  | ***Potentilla reptans* L.** |
| **209** | Leaves without stipules | | **210** |
| **210** | Fruits gathered into a cylindrical or oval spike |  | **211** |
| **210** | Fruits gathered into a globose head |  | **212** |

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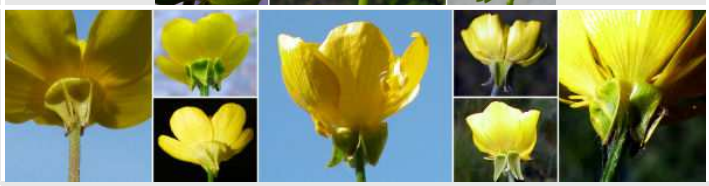
| **211** | Sepals pointing upwards, adpressed to the petals |  | ***Ranunculus paludosus* Poir.** |
| **211** | Sepals pointing downwards, adpressed to the flower pedicel |  | ***Ranunculus monspeliacus* L. subsp. *monspeliacus*** |
| **212** | Annual plants | | **213** |
| **212** | Perennial plants | | **216** |
| **213** | Sepals pointing upwards, adpressed to the petals |  | ***Ranunculus muricatus* L.** |
| **213** | Sepals pointing downwards, adpressed to the flower pedicel |  | **214** |
| **214** | Petals twice as long as sepals. Fruits smooth or finely dotted (lens!) |  | ***Ranunculus sardous* Crantz s.l.** |
| **214** | Petals max.1/3 longer than the sepals. Fruits warted or spiny (lens!) | | **215** |

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| **215** | Receptacle hairy (eliminate all fruits and observe the receptacle with a lens!) |  | ***Ranunculus trilobus* Desf.** |
| **215** | Receptacle hairless |  | ***Ranunculus chius* DC.** |
| **216** | Receptacle hairless (eliminate all fruits and observe the receptacle with a lens!) |  | ***Ranunculus cymbalariifolius* Moris** |
| **216** | Receptacle hairy | | **217** |
| **217** | Sepals pointing upwards, adpressed to the petals |  | ***Ranunculus macrophyllus* Desf.** |
| **217** | Sepals pointing downwards, adpressed to the flower pedicel |  | **218** |
| **218** | Stem leaves not divided into linear segments |  | ***Ranunculus neapolitanus* Ten.** |

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| **218** | Stem leaves divided into linear segments similar to bracts, measuring 2-4 mm x 1-2 cm |  | ***Ranunculus pratensis* C. Presl** |
| **219** | Plants with spines or prickly |  | **220** |
| **219** | Plants not prickly | | **225** |
| **220** | Leaves needle-like (they are actually modified stems) |  | ***Asparagus acutifolius* L.** |
| **220** | Leaves not needle-like | | **221** |
| **221** | Leaves heart-shaped at base. Woody climber |  | ***Smilax aspera* L.** |
| **221** | Leaves not heart-shaped at base. Not a woody climber | | **222** |
| **222** | Flowers and fruits borne on the blade of leaves (they are not leaves, but modified stems!). Fruit fleshy |  | ***Ruscus aculeatus* L.** |
| **222** | Flowers arranged in heads. Fruit dry |  | **223** |

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| **223** | Inflorescence surrounded by more than12 bracts |  | ***Eryngium barrelieri* Boiss.** |
| **223** | Inflorescence surrounded by maximum 8 bracts | | **224** |
| **224** | Bracts subtending the flowers 3-furcate (lens!) |  | ***Eryngium tricuspidatum* L.** |
| **224** | Bracts subtending the flowers simple |  | ***Eryngium corniculatum* Lam.** |
| **225** | Plant perennially submerged, with linear-cylindrical leaves and unisexual flowers with four c. 2 mm long tepals, the male flowers isolated, the female ones paired |  | ***Plantago uniflora* L.** |
| **225** | Plants with other characters | | **226** |
| **226** | Flowers arranged into a cylindrical spike surrounded by a petal-like bract |  | **227** |
| **226** | Inflorescences different | | **228** |
| **227** | Leaves arrow-shaped at base |  | ***Arisarum vulgare* O. Targ. Tozz. subsp. *vulgare*** |

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|---|---|---|---|
| **227** | Leaves not arrow-shaped at base |  | ***Ambrosina bassii* L.** |
| **228** | Plants always without flowers (Pteridophytes), with flowers without petals, or with inconspicuous, greenish or brownish flowers (the petals sepaloid) |  | **229** |
| **228** | Plant with flowers bearing well-developed petals |  | **331** |
| **229** | Flowers arranged in terminal spikes, with 4 membranous tepals and 4 stamens (Plantago) |  | **230** |
| **229** | Flowers different (or plant without flowers, reproducing by means of spores) | | **232** |
| **230** | Plant perennial, with thick roots, usually > 30 cm tall |  | ***Plantago lanceolata* L.** |
| **230** | Plant annual, with thin roots, usually < 30 cm tall | | **231** |
| **231** | Leaves 1-5 mm weed. Inner face of seeds flat (stereo-microscope!) |  | ***Plantago weldenii* Rchb.** |

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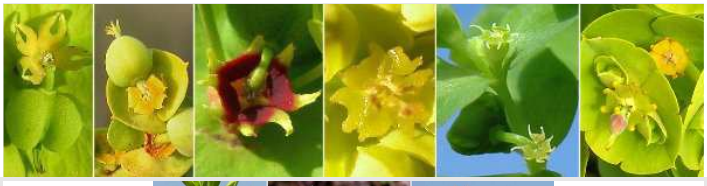
| **231** | Leaves > 5 mm wide. Inner face of seeds concave, boat-like |  | ***Plantago lagopus* L.** |
| **232** | Plants producing a milky sap (CAREFUL! Wash hands after touching: the sap is irritating) |  | **233** |
| **232** | Plants without a milky sap | | **235** |
| **233** | Glands on the margin of the flower-cups elliptical. Capsule winged on the back of the 3 valves |  | ***Euphorbia pterococca* Brot.** |
| **233** | Glands sickle-shaped. Capsule not winged |  | **234** |
| **234** | Bracts at the base of the inflorescence narrowly linear |  | ***Euphorbia exigua* L. subsp. *exigua*** |
| **234** | Bracts at the base of the inflorescence ovate or triangular |  | ***Euphorbia peplus* L.** |
| **235** | Leaves pinnately- or palmately-veined, clearly stalked |  | **236** |

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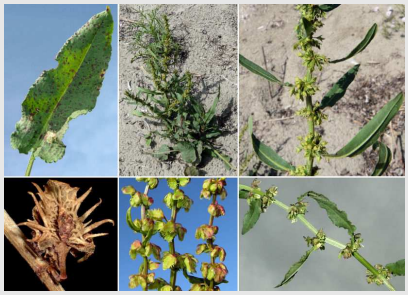
| **235** | Leaves parallel-veined or with indistinct veins, stalkless |  | **241** |
| **236** | Plant with an unpleasant smell when bruised. Leaves without a membranous basal bract surrounding the stem |  | ***Theligonum cynocrambe* L.** |
| **236** | Plants without unpleasant smell. Leaves with a membranous bract at the base of the stalk, surrounding the stem |  | **237** |
| **237** | Stems zig-zagging. Fruit with an toothed wing |  | ***Rumex pulcher* L. subsp. *pulcher*** |
| **237** | Stems not zig-zagging. Fruit with an entire wing |  | **238** |
| **238** | Leaves arrow-shaped. Plant acid-tasting. Inflorescence leafless |  | ***Rumex acetosella* L. subsp. *acetosella*** |
| **238** | Leaves not arrow-shaped. Plant not acid-tasting. Inflorescence leafy | | **239** |

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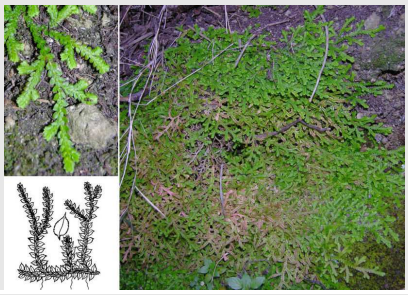
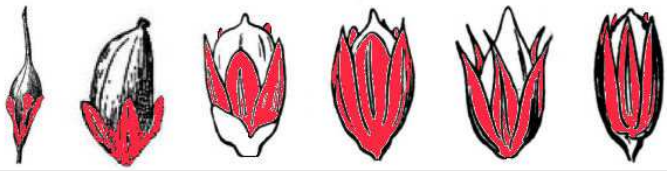
| **239** | Fruit clearly notched at apex |  | ***Rumex thyrsoides* Desf.** |
| **239** | Fruit rounded to pointed at apex | | **240** |
| **240** | Fruit about 1.5 times al long as wide |  | ***Rumex conglomeratus* Murray** |
| **240** | Fruit about as long as wide |  | ***Rumex crispus* L.** |
| **241** | Leaves scale-like, arranged in 2 opposite ranks on creeping and flattened stems |  | ***Selaginella denticulata* (L.) Spring** |
| **241** | Leaves different | | **242** |
| **242** | Flowers radially symmetrical (carefully observe a flower with a lens!) |  | **243** |
| **242** | Flowers not radially symmetrical, or plants without flowers reproducing by means of spores | | **260** |

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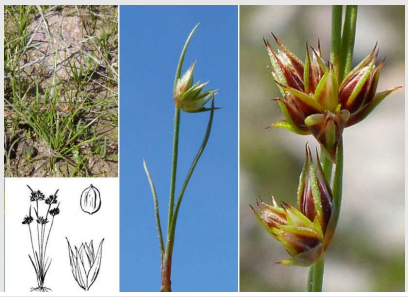
|---|---|---|---|
| **243** | Leaves flattened, with long white hairs along the margin |  | ***Luzula campestris* (L.) DC.** |
| **243** | Leaves cylindrical or thread-like, hairless | | **244** |
| **244** | Annual plants of wet disturbed sites, with thin stems which are < 30 cm tall |  | **245** |
| **244** | Perennial plants with stout stems which (usually) are > 30 cm tall |  | **250** |
| **245** | Stems leafless (leaves all basal). Flowers arranged in globose heads |  | ***Juncus capitatus* Weigel** |
| **245** | Stems with at least one well-developed leaf. Flowers not arranged in globose heads | | **246** |
| **246** | Leaves hollow inside, separated into sections by transversal septa (press a leaf between fingers) |  | **247** |
| **246** | Leaves thread-like or flat, without transversal septa | | **248** |
| **247** | Inflorescences 1-5, < 1 cm wide, with less than 8 flowers |  | ***Juncus pygmaeus* Rich. ex Thuill.** |

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|---|---|---|---|
| **247** | Inflorescences 2-3, to 1.5 cm wide, with more than 8 flowers |  | ***Juncus tingitanus* Maire & Weiller** |
| **248** | Leaf-sheaths ending in 2 rounded auricles (ear-like appendages) |  | ***Juncus tenageja* Ehrh.** |
| **248** | Leaf-sheaths without such auricles | | **249** |
| **249** | Inner tepals acute, longer than the capsule |  | ***Juncus bufonius* L.** |
| **249** | Inner tepals usually obtuse, as long as the capsule or shorter |  | ***Juncus hybridus* Brot.** |
| **250** | All leaves basal, similar to stems, cylindrical, stinging at the top (plant apparently without leaves) |  | **251** |

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| **250** | Leaves inserted on the stem or basal, but in this case different from stems, the apex not stinging | | **254** |
| **251** | Basal bract about as long as the inflorescence |  | ***Juncus acutus* L. subsp. *acutus*** |
| **251** | Basal bract much longer than the inflorescence | | **252** |
| **252** | Basal sheaths brown/black, shiny. Capsule ovoid, pointed at apex. Stems flexible, with an interrupted pith |  | ***Juncus inflexus* L.** |
| **252** | Basal sheaths yellow-brown, not shiny. Capsule club-shaped, truncate or concave at apex. Stems rigid and fragile, with an almost continuous pith | | **253** |
| **253** | Inflorescence contracted, with very short branches |  | ***Juncus conglomeratus* L.** |
| **253** | Inflorescence wide, with long branches |  | ***Juncus effusus* L. subsp. *effusus*** |

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| **254** | Infiorescence a lax, irregular cyme. Flowers subtended by 2 small bracts (lens!) |  | ***Juncus subulatus* Forssk.** |
| **254** | Inflorescence formed by one or more bundles with 2-50 flowers. Flowers not subtended by bracts | | **255** |
| **255** | Aquatic, at least partially submerged plants with very different leaves: basal leaves thread-like, upper leaves absent or much wider and reed-like | | **256** |
| **255** | Terrestrial (occasionally amphibious) plants, the basal leaves not thread-like (often reduced to the sheath only), the upper ones reed-like | | **257** |
| **256** | Outer tepals 3.5-6.2 mm long. Style 0.7-2 mm long |  | ***Juncus heterophyllus* Dufour** |
| **256** | Outer tepals 2.2-3.5 mm long. Style 0.2-0.5 mm long |  | ***Juncus articulatus* L.** |
| **257** | Basal leaves reduced to the sheath, without blade. Lower branches of inflorescence pointing downwards. Capsule 3-locular |  | ***Juncus subnodulosus* Schrank** |

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|---|---|---|---|
| **257** | Basal leaves with a well-developed blade. Inflorescence with erect branches (the lower ones sometimes horizontally spreading). Capsule 1-locular | | **258** |
| **258** | Plant with a creeping, 50-200 cm long rhizome, bearing erect fertile stems and sterile creeping stems |  | ***Juncus fontanesii* J. Gay s.l.** |
| **258** | Plant with a < 50 cm long rhizome, without creeping stems | | **259** |
| **259** | Tepals straight, of equal length |  | ***Juncus articulatus* L.** |
| **259** | Tepals bent outwards, the inner tepals longer than the outer ones |  | ***Juncus acutiflorus* Ehrh. ex Hoffm.** |
| **260** | Plant with a stem bearing 1-3 leaves and ending in a sporiferous spike |  | ***Ophioglossum lusitanicum* L.** |
| **260** | Plant different | | **261** |

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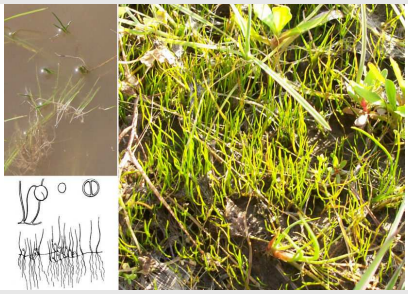
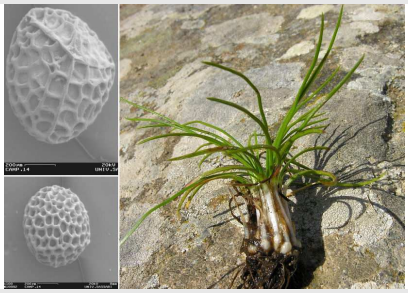
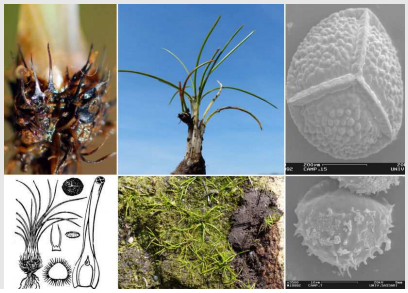
|---|---|---|---|
| **261** | Plants without flowering stems, reproducing by means of spores |  | **262** |
| **261** | Plants with flowering stems, reproducing by means of seeds | | **267** |
| **262** | Stem creeping, the leaves sparse along the stem |  | ***Pilularia minuta* Durieu ex A. Braun** |
| **262** | Stem thickened into a sort of bulb, the leaves forming dense tufts (WARNING: the species of this difficult group cannot be identified without a microscope) |  | **263** |
| **263** | Plants growing on wet soils at the margin of ponds, with shining black phyllopodia | | **264** |
| **263** | Aquatic plants, without shining black phyllopodia | | **266** |
| **264** | Megaspores grooved (microscope!) |  | ***Isoëtes duriei* Bory** |
| **264** | Megaspores warted or fimbriate-warted | | **265** |
| **265** | Megaspores warted, but not fimbriate |  | ***Isoëtes histrix* Bory** |

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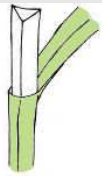
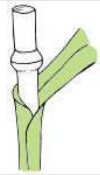
| **265** | Megaspores warted-fimbriate |  | ***Isoëtes gymnocarpa* (Gennari) A. Braun** |
| **266** | Leaves stiff, shiny, the membranous basal margin > 1 mm wide. Sporangium almost completely covered by the velum |  | ***Isoëtes velata* A. Braun subsp. *velata*** |
| **266** | Leaves flaccid, matt, the membranous basal margin < 1 mm wide. Sporangium covered by the velum for 2/3 only |  | ***Isoëtes velata* A. Braun subsp. *tegulensis* Batt. & Trab.** |
| **267** | Stems full, not interrupted by thicker nodes. Flowers with a single bract at the base (Cyperaceae) |  | **268** |
| **267** | Stems hollow, interrupted by thicker nodes. Flowers with two bracts at the base (Poaceae) |  | **279** |
| **268** | Flowers hermaphrodite (magnifying glass), always arranged in similar inflorescences |  | **269** |
| **268** | Flowers unisexual, arranged in inflorescences that differ between each other (male and female) or in different parts of the same inflorescence |  | **275** |

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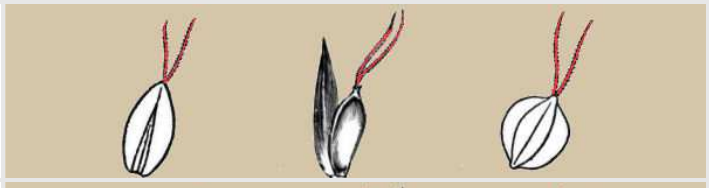
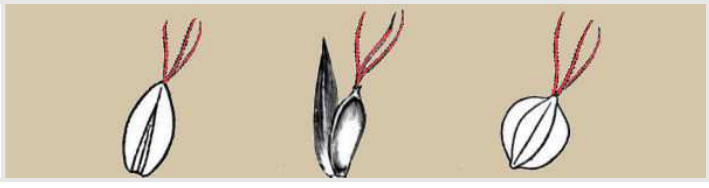
|---|---|---|---|
| **269** | Plant with a single terminal spike |  | ***Isolepis cernua* (Vahl) Roem. & Schult.** |
| **269** | Plants with at least 2 spikes |  | **270** |
| **270** | Glumes arranged all around the axis of inflorescence |  | **271** |
| **270** | Glumes arranged along 2 opposite rows |  | **272** |
| **271** | Plant 20-120 cm tall. Stem triangular in cross section (at least in the upper part) |  | ***Bolboschoenus maritimus* (L.) Palla** |
| **271** | Plant 3-15 cm tall. Stem circular in cross-section |  | ***Isolepis cernua* (Vahl) Roem. & Schult.** |
| **272** | Stigmas 2 (carefully observe the flowers from more spikes: the stigmas tend to fall early!) |  | **273** |
| **272** | Stigmas 3 |  | **274** |

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|---|---|---|---|
| **273** | Spikes gathered into compact heads. Flowers irregularly arranged along the spike axis |  | ***Cyperus michelianus* (L.) Delile** |
| **273** | Spikes not gathered into compact heads. Flowers regularly arranged on opposite sides of the spike axis |  | ***Pycreus flavescens* (L.) P. Beauv. ex Rchb.** |
| **274** | Plant annual, < 40 cm tall |  | ***Cyperus fuscus* L.** |
| **274** | Plant perennial, > 50 cm tall |  | ***Cyperus badius* Desf.** |
| **275** | Spikes all similar, with both male and female flowers |  | **276** |
| **275** | Spikes different from each other, the upper ones with male flowers only (sometimes androgynous), the lower ones with female flowers |  | **278** |

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| **276** | Stigmas 3 (carefully observe the flowers from more spikes: the stigmas tend to fall early!) |  | ***Carex distachya* Desf.** |
| **276** | Stigmas 2 |  | **277** |
| **277** | Spikes crowded at the top of stem. Plant with creeping stolons, not forming dense tufts |  | ***Carex divisa* Huds.** |
| **277** | Spikes arranged along the stem. Plant without stolons, forming dense tufts |  | ***Carex divulsa* Stokes subsp. *divulsa*** |
| **278** | Inflorescence with a single male spike at the top of stem, Female spikes compact |  | ***Carex caryophyllea* Latourr.** |
| **278** | Inflorescence with more than 1 male spike at the top of stem. Female spikes lax |  | ***Carex flacca* Schreb. subsp. *erythrostachys* (Hoppe) Holub** |

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| **279** | Inflorescence viviparous (instead of flowers it bears numerous bulbils which germinate on the inflorescence itself) |  | ***Poa bulbosa* L. subsp. *bulbosa*** |
| **279** | Inflorescence not viviparous, with well-developed flowers | | **280** |
| **280** | Inflorescence with multiple linear spikes diverging at the apex of the stem |  | **281** |
| **280** | Inflorescence a single spike or a raceme (panicle) |  | **282** |
| **281** | Inflorescence with more than 2 spikes. Ligule substituted by a tuft of hairs |  | ***Cynodon dactylon* (L.) Pers.** |
| **281** | Inflorescence with 2 spikes only. Ligule membranous or absent |  | ***Paspalum distichum* L.** |
| **282** | Inflorescence spike-like, the spikelets sessile or almost so |  | **283** |
| **282** | Inflorescence a raceme (panicle) |  | **307** |
| **283** | Spikelets awnless, at most with a very short rigid tip |  | **284** |

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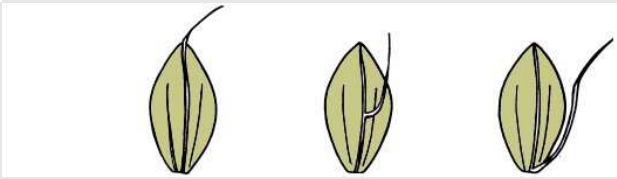
|---|---|---|---|
| **283** | Spikelets awned |  | **290** |
| **284** | Spikelets arranged on opposite sides of the stem |  | **285** |
| **284** | Spikelets arranged all around the stem |  | **287** |
| **285** | Spikelets with 2 well-developed glumes |  | ***Cynosurus cristatus* L.** |
| **285** | Spikelets with a single glume (except the terminal spikelet) | | **286** |
| **286** | Plant perennial, with both fertile and sterile shoots |  | ***Lolium perenne* L.** |
| **286** | Plant annual, without sterile shoots |  | ***Lolium rigidum* Gaudin subsp. *rigidum*** |
| **287** | Ligule membranous, 5-10 mm long |  | ***Phalaris coerulescens* Desf.** |

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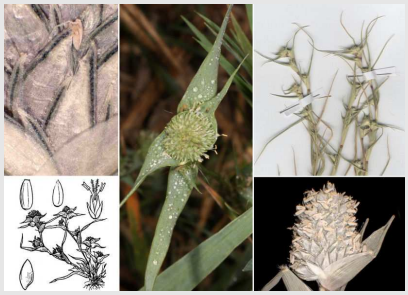
| **287** | Ligule substituted by a tuft of hairs |  | **288** |
| **288** | Leaf-sheaths cylindrical, not swollen. Inflorescence surrounded at the base by a single leaf |  | ***Crypsis alopecuroides* (Piller & Mitterp.) Schrad.** |
| **288** | Leaf-sheaths swollen. Infflorescence surrounded at the base by 2 or more leaves | | **289** |
| **289** | Inflorescence wider than long. Upper leaves reduced to a sheath ending in an acute point |  | ***Crypsis aculeata* (L.) Aiton** |
| **289** | Inflorescence longer than wide. Upper leaves with a well-developed blade |  | ***Crypsis schoenoides* (L.) Lam.** |
| **290** | Spikelets tending to point in a sigle direction (unilateral spike) |  | **291** |
| **290** | Spikeletes pointing in all directions, or arranged on 2 opposite sides of the stem | | **293** |
| **291** | Inflorescence oval, < 2 times as long as wide. Spikelets arranged in pairs, one sessile and fertile, the other stalked and sterile (or with male flowers only) |  | ***Cynosurus echinatus* L.** |

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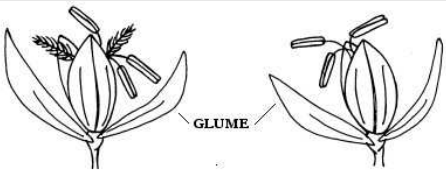
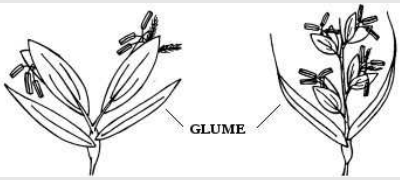
|---|---|---|---|
| **291** | Inflorescence > 2 times as long as wide. Spikelets not arranged in pairs, all similar | | **292** |
| **292** | Inflorescence 10-20 cm long, often curved, surrounded at the base by the sheath of the upper leaf |  | ***Vulpia myuros* (L.) C.C. Gmel. subsp. *myuros*** |
| **292** | Inflorescence 2-8 cm long, erect, not surrounded at the base by the sheath of the upper leaf |  | ***Vulpia bromoides* (L.) Gray** |
| **293** | Spikelets arranged on opposite sides of the stem |  | **294** |
| **293** | Spikelets arranged all around the stem |  | **300** |
| **294** | Spikelets with a single fertile flower |   | **295** |
| **294** | Spikelets with 2-many fertile flowers |   | **296** |
| **295** | Spikelets arranged in pairs |  | ***Taeniatherum caput-medusae* (L.) Nevski** |

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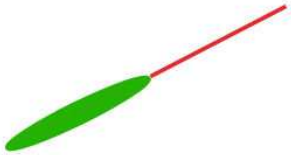
|---|---|---|---|
| **295** | Spikelets arranged in groups of 3 |  | ***Hordeum geniculatum* All.** |
| **296** | Awn bent |  | ***Gaudinia fragilis* (L.) P. Beauv.** |
| **296** | Awn straight |  | **297** |
| **297** | Spikelets touching the stem with the narrow, convex side. Spikelets with a single glume (except the terminal one) |  | **298** |
| **297** | Spikelets not touching the stem with the narrow, convex side. Spikelets with 2 glumes |  | **299** |
| **298** | Plant forming loose tufts, with a few basal shoots. Spikelets erect or slightly bent at flowering |  | ***Lolium multiflorum* Lam.** |
| **298** | Plant forming dense tufts, with many basal shoots. Spikelets pressed against the rhachis at flowering |  | ***Lolium perenne* L.** |

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| **299** | Inflorescence with 2-3 spikelets. Awn > 1 cm long |  | ***Trachynia distachya* (L.) Link** |
| **299** | Inflorescence with more than 3 spikelets. Awn < 1 cm long |  | ***Brachypodium retusum* (Pers.) P. Beauv.** |
| **300** | Spikelets surrounded by long, soft, woolly hairs |  | ***Lagurus ovatus* L. subsp. *ovatus*** |
| **300** | Spikelets not surrounded by long, soft, woolly hairs | | **301** |
| **301** | Spikelets 6-12 mm long, with a fertile and a sterile flower |  | ***Anthoxanthum aristatum* Boiss.** |
| **301** | Spikelets < 6 mm long, with a single fertile flower | | **302** |
| **302** | Glumes winged on the back (lens!) |  | ***Phalaris paradoxa* L.** |
| **302** | Glumes not winged on the back | | **303** |

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| **303** | Inflorescence lax, usually lobed. Awn longer than the glumes. Spikelets falling early | | **304** |
| **303** | Inflorescence compact. Awns shorter than the glumes. Spikelets persisting at maturity | | **306** |
| **304** | Glumes weakly 2-toothed at apex (magnifying glass!). Lemma awned |  | ***Polypogon monspeliensis* (L.) Desf.** |
| **304** | Glumes deeeply 2-lobed at apex. Lemma awnless | | **305** |
| **305** | Upper part of the pedicel of spikelets 3-4 times as long as wide, longer than the lower part |  | ***Polypogon subspathaceus* Req.** |
| **305** | Upper part of the pedicel as long as wide, shorter than the lower part |  | ***Polypogon maritimus* Willd. subsp. *maritimus*** |
| **306** | Inflorescence oval, < 3 times as long as wide |  | ***Alopecurus rendlei* Eig** |

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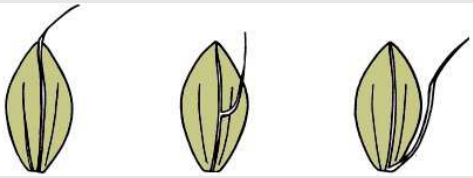
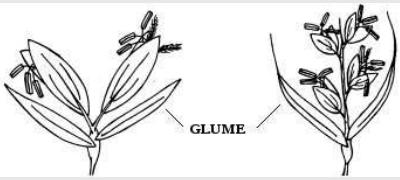
|---|---|---|---|
| **306** | Inflorescence cylindrical, much longer than wide |  | ***Alopecurus bulbosus* Gouan subsp. *bulbosus*** |
| **307** | Spikelets awnless, at most with a very short rigid tip |  | **308** |
| **307** | Spikelets awned |  | **320** |
| **308** | Spikelets with a single fertile flower |  | ***Agrostis stolonifera* L. subsp. *stolonifera*** |
| **308** | Spikelets with at least 2 fertile flowers |  | **309** |
| **309** | Spikelets more or less heart-shaped, c. as long as wide, pendulous on thin peduncles |  | **310** |
| **309** | Spikelets different | | **311** |
| **310** | Inflorescence poor, with 3-8 spikelets which are >12 mm long |  | ***Briza maxima* L.** |

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|---|---|---|---|
| **310** | Inflorescence rich, with more than 8 spikelets which are < 7 mm long |  | ***Briza minor* L.** |
| **311** | At least one of the glumes as long as, or longer than, the lemma |  | **312** |
| **311** | Both glumes clearly shorter than the lemma | | **314** |
| **312** | Ligule substituted by a tuft of hairs |  | ***Danthonia decumbens* (L.) DC. subsp. *decumbens*** |
| **312** | Ligule membranous or absent |  | **313** |
| **313** | Spikelets with 1-2 ermaphrodite flowers and 1-2 sterile o male flowers |  | ***Melica minuta* L. subsp. *latifolia* (Coss.) W. Hempel** |
| **313** | Spikelets without sterile or male flowers |  | ***Antinoria insularis* Parl.** |

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| **314** | Spikelets more or less pointing in the same direction, subsessile and crowded in dense bundles |  | ***Dactylis glomerata* L. subsp. *hispanica* (Roth) Nyman** |
| **314** | Spikelets pointing in all directions, not crowded in dense bundles, clearly stalked | | **315** |
| **315** | Spikelets ovate, at most 2-3 times as long as wide, usually with (3-)4- 5(-6) flowers, and shorter than 4 mm |  | **316** |
| **315** | Spikelets > (2-)3 times as long as wide, usually with more than 5 flowers, and longer than 4 mm |  | **319** |
| **316** | Plant annual, without sterile shoots | | **317** |
| **316** | Plant perennial, usually with both fertile and sterile shoots | | **318** |
| **317** | Spikelets with crowded flowers. Anthers 0.6-1.2 mm long |  | ***Poa annua* L.** |
| **317** | Spikelets with widely spaced flowers (the axis of the spikelet is often visible). Anthers to 0.3 mm long |  | ***Poa infirma* Kunth** |

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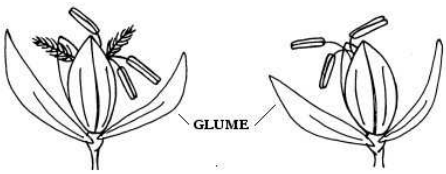
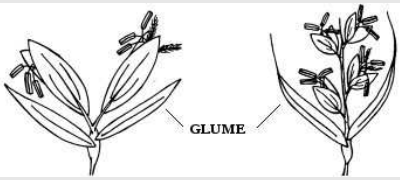
| **318** | Inflorescence with 3-8 branches on the lower whorl |  | ***Poa trivialis* L. subsp. *trivialis*** |
| **318** | Inflorescence with 1 or 2 branches in the lower whorl |  | ***Poa bulbosa* L. subsp. *bulbosa*** |
| **319** | Lemma 5.5-7.5 mm long, acute, clearly veined. Spikelets of the shortest branches and lateral spikelets of the longest branches clearly stalked. Anthers 1.5-2.5(-3) mm long |  | ***Glyceria fluitans* (L.) R. Br.** |
| **319** | Lemma 5-6 mm long, rounded-truncate, obscurely veined. Spikelets of the shortest branches and lateral spikelets of the longest branches almost sessile. Anthers 1.1-1.6 mm long |  | ***Glyceria spicata* Guss.** |
| **320** | Spikelets 1-flowered |  | **321** |
| **320** | Spikelets with at least 2 fertile flowers |  | **323** |
| **321** | Glumes swollen, clearly restricted in the lower third (lens!) |  | ***Gastridium ventricosum* (Gouan) Schinz & Thell.** |

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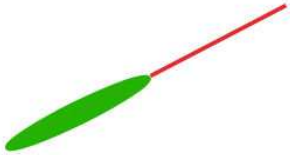
|---|---|---|---|
| **321** | Glumes not swollen and not restricted in the lower third | | **322** |
| **322** | Plant perennial, with long creeping stolons |  | ***Agrostis stolonifera* L. subsp. *stolonifera*** |
| **322** | Plant annual, without creeping stolons |  | ***Neoschischkinia pourretii* (Willd.) Valdés & H. Scholz** |
| **323** | Awns strongly and abruptly bent (geniculate), originating from the back or from the base of the glumes or the lemma |  | **324** |
| **323** | Awns straight or almost so, originating from the apex of the glumes or of the lemma |  | **325** |
| **324** | Spikelets 2-flowered, < 5 mm long |  | ***Aira caryophyllea* L. subsp. *caryophyllea*** |
| **324** | Spikelets 3-many-flowered, > 5 mm long |  | ***Avena barbata* Pott ex Link subsp. *barbata*** |
| **325** | Glumes very different from one another, the lower glume at least half as long as the upper one |  | **326** |

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|---|---|---|---|
| **325** | Glumes not so different, the lower glume more than half as long as the upper one |  | **328** |
| **326** | Plant perennial, with sterile shoots |  | ***Vulpia sicula* (C. Presl) Link** |
| **326** | Annual plants without sterile shoots | | **327** |
| **327** | Upper glume much longer and wider than the lemma |  | ***Vulpia ligustica* (All.) Link** |
| **327** | Upper glume about as large as the lemma |  | ***Vulpia geniculata* (L.) Link** |
| **328** | Glumes linear-lanceolate, > 9 mm long, the lower glume with 1 vein, the upper one with 3 veins |  | **329** |
| **328** | Glumes different, < 9 mm long |  | **330** |

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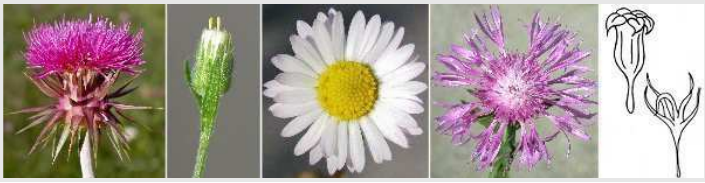
| **329** | Inflorescence contracted, with short (1-3 cm), more or less erect branches. Spikelets more or less erect. Lemma < 20 mm long, the awn 20-25 mm long |  | ***Anisantha madritensis* (L.) Nevski subsp. *madritensis*** |
| **329** | Inflorescence wide, the lower branches 1-8 cm long, spreading. Lower spikelets more or less horizontal. Lemma > 20 mm long, the awn > 25 mm long |  | ***Anisantha diandra* (Roth) Tutin** |
| **330** | Annual plant. Spikelets spindle-shaped, the awns diverging from the spikelet |  | ***Bromus hordeaceus* L. subsp. *hordeaceus*** |
| **330** | Perennial plant. Spikeletes not spindle-shaped, the awns straight |  | ***Festuca morisiana* Parl. subsp. *morisiana*** |
| **331** | Flowers arranged in heads surrounded by an involucre of scales or bracts |  | **332** |
| **331** | Flowers not arranged in heads surrounded by an involucre of scales or bracts | | **351** |
| **332** | Tubular flowers absent, all flowers strap-shaped |  | **333** |
| **332** | Tubular flowers always present, strap-shaped flowers absent or limited to the margin of the head |  | **340** |

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|---|---|---|---|
| **333** | Flowers pale blue |  | ***Cichorium intybus* L.** |
| **333** | Flowers yellow |  | **334** |
| **334** | Pappus of feathery hairs, at least in the central fruits |  | **335** |
| **334** | Pappus of simple hairs or of thin bristles |  | **338** |
| **335** | Scales of the involucre arranged in a single series |  | ***Hypochaeris achyrophorus* L.** |
| **335** | Scales of the involucre arranged in more than 2 series | | **336** |
| **336** | Receptacle naked (remove all flowers and observe the receptacle with a lens) |  | ***Leontodon tuberosus* L.** |
| **336** | Receptacle with minute scales at the base of flowers |  | **337** |

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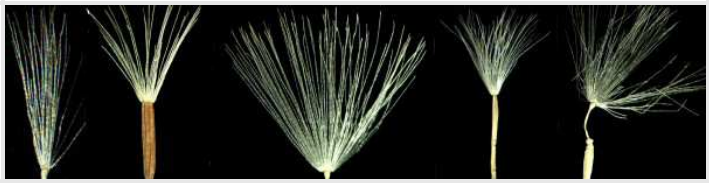
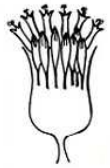
| **337** | Perennial plant with a woody rhizome |  | ***Hypochaeris radicata* L.** |
| **337** | Annual plant with thin roots |  | ***Hypochaeris glabra* L.** |
| **338** | Pappus of thin bristles |  | ***Tolpis umbellata* Bertol.** |
| **338** | Pappus of hairs |  | **339** |
| **339** | Scales of the involucre of the head with a white margin. Fruits warty in the upper part (lens!) |  | ***Reichardia picroides* (L.) Roth** |
| **339** | Scales of the involucre without a white margin. Fruits not warty |  | ***Sonchus oleraceus* L.** |
| **340** | Heads with tubular flowers only |   | **341** |

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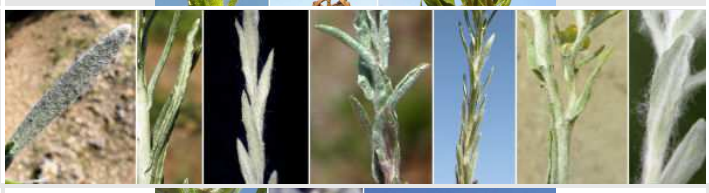
|---|---|---|---|
| **340** | Heads with tubular flowers in the centre, strap-shaped flowers along the margin (daisy-like) |  | **344** |
| **341** | Plant greren |  | ***Dittrichia graveolens* (L.) Greuter** |
| **341** | Plants grey-hairy |  | **342** |
| **342** | Plant of dry sites. Peripheral femal flowers subtended by a small scale-like bract |  | ***Filago gallica* L.** |
| **342** | Plants of wet sites. Peripheral femal flowers not subtended by a small scale-like bract | | **343** |
| **343** | Leaves not clasping the stem with base. Heads surrounded by bracts which are much longer than the heads themselves |  | ***Gnaphalium uliginosum* L.** |
| **343** | Leaves clasping the stem with base. Heads not surrounded by such bracts |  | ***Laphangium luteoalbum* (L.) Tzvelev** |
| **344** | Strap-shaped flowers white (sometimes reddish on the lower side) |  | **345** |

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| **344** | Strap-shaped flowers yellow |  | **348** |
| **345** | Fruit with a pappus of hairs (the pappus is also visible at flowering time: open the head and observe the base of flowers) |  | ***Bellium bellidioides* L.** |
| **345** | Fruit without a pappus of hairs | | **346** |
| **346** | Flowering stems leafy also in the upper part |  | ***Leucanthemum vulgare* (Vaill.) Lam. subsp. *vulgare*** |
| **346** | Flowering stems lefless or leafy only in the lower third |  | **347** |
| **347** | Annual plant. Flowering stems leafy and sometimes branched in the lower third |  | ***Bellis annua* L. subsp. *annua*** |
| **347** | Perennial plant. Flowering stems leafless (all leaves arranged in a basal rosette) |  | ***Bellis perennis* L.** |

| | | | |
|---|---|---|---|
| **348** | Leaves linear, 2-3 mm wide |  | ***Pulicaria sicula* (L.) Moris** |
| **348** | Leaves not linear, > 3 mm wide | | **349** |
| **349** | Plant glandular-sticky. Pappus of hairs only |  | ***Dittrichia viscosa* (L.) Greuter subsp. *viscosa*** |
| **349** | Plants not glandular-sticky. Pappus of hairs surrounded at the base by a crown o small membranous scales (lens!) | | **350** |
| **350** | Strap-shaped flowers very short, barely exceeding the involucre of the heads |  | ***Pulicaria vulgaris* Gaertn.** |
| **350** | Strap-shaaped flowers well-developed, clearly radiating |  | ***Pulicaria odora* (L.) Rchb.** |
| **351** | Basal leaves compound and stalked, stem leaves simple, sessile, rounded and clasping the stem with base |  | ***Smyrnium perfoliatum* L. subsp. *rotundifolium* (Mill.) Hartvig** |
| **351** | Basal leaves and stem leaves not so different | | **352** |

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|---|---|---|---|
| **352** | Plants with rounded or kidney-shaped leaves and flowers arranged in compound umbels |  | **353** |
| **352** | Plants different, the flowers not arranged in compound umbels | | **354** |
| **353** | Leaves rounded, the petiole originating from the center of the blade |  | ***Hydrocotyle vulgaris* L.** |
| **353** | Leaves kidney-shaped, the petiole originating from the margin |  | ***Hydrocotyle ranunculoides* L. f.** |
| **354** | Flowers bilaterally simmetrical |  | **355** |
| **354** | Flowers radially symmetrical |  | **368** |
| **355** | Corolla with a basal spur |  | **356** |
| **355** | Corolla without a basal spur | | **360** |
| **356** | Corolla of 6 (3+3) petaloid tepals. one of which (labellum) is very different form the others. Leaves parallel-veined (Orchidaceae) |  | **357** |
| **356** | Corolla different. Leaves not parallel-veined or with indistinct veins | | **359** |

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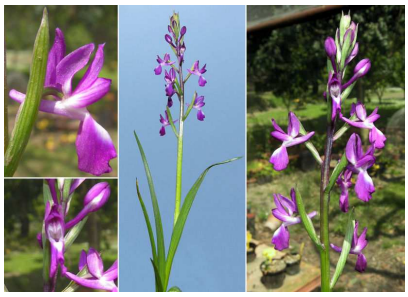
|---|---|---|---|
| **357** | Labellum (lower petal) entire |  | ***Anacamptis papilionacea* (L.) R.M. Bateman, Pridgeon & M.W. Chase** |
| **357** | Labellum 3-lobed |  | **358** |
| **358** | Outer petals divergent, not forming a helm |  | ***Anacamptis laxiflora* (Lam.) R.M. Bateman, Pridgeon & M.W. Chase** |
| **358** | Outer tepals close together to form a sort of helm |  | ***Anacamptis longicornu* (Poir.) R.M. Bateman, Pridgeon & M.W. Chase** |
| **359** | Flowering stems prostrate. Leaves arrow- or spear-shaped. Flowers pale lilac |  | ***Kickxia cirrhosa* (L.) Fritsch** |
| **359** | Flowering stems erect. Leaves linear. Flowers deep violet |  | ***Linaria pelisseriana* (L.) Mill.** |
| **360** | Calyx absent (or formed by petaloid sepal) |  | **361** |

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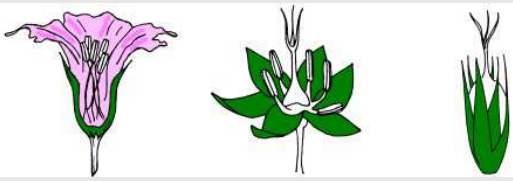
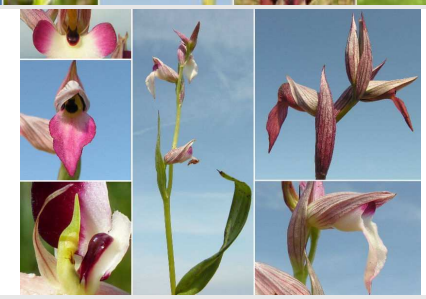
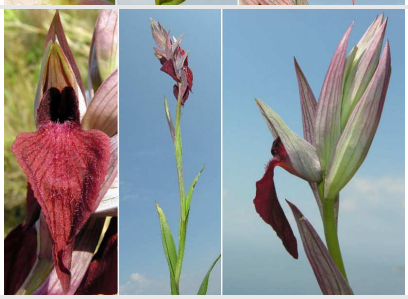
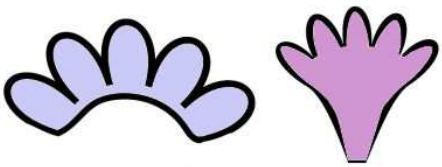
|---|---|---|---|
| **360** | Calyx present, formed by green sepals |  | **363** |
| **361** | Labellum (lower petal) not triangular nor pointed, not divided into an upper and a lower part by a restriction |  | ***Ophrys tenthredinifera* Willd.** |
| **361** | Labellum triangular, pointed, divided into two parts by a restriction |  | **362** |
| **362** | Lower part of labellum (epichile) narrowed towards the base, and narrower than the upper part (hypochile) |  | ***Serapias lingua* L.** |
| **362** | Lower part of labellum usually heart-shaped, at least as wide as the upper part |  | ***Serapias cordigera* L.** |
| **363** | Petals white, free |  | ***Sesamoides interrupta* (Boreau) G. López** |
| **363** | Petals blue or violet-blue, fused at least at the base |  | **364** |
| **364** | Plants hairless or with soft hairs. Leaf margin clearly toothed |  | **365** |

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|---|---|---|---|
| **364** | Plants with stiff, stinging hairs. Leaf margin entire or obscurely toothed |  | **367** |
| **365** | Leaves present also on the flowering stems, the blade usually at least twice as long as the stalk. Annual plant |  | ***Solenopsis laurentia* (L.) C. Presl** |
| **365** | Leaves all arranged in a basal rosette, the blade usually less than twice as long as the stalk. Plants usually perennial and with stolons | | **366** |
| **366** | Calyx-lobes 3-4 mm long. Corolla 9-12 mm long. Leaves at least 1 x 4 cm. Papillae of corolla 0.25-0.45 mm long (stereo-microscope!) |  | ***Solenopsis minuta* (L.) C. Presl subsp. *nobilis* (Wimm.) Meikle** |
| **366** | Calyx-lobes 1-3 mm. long Corolla 3.5-6 mm long. Leaves smaller than 1 x 4 cm. Papillae of corolla 0.18-0.3 mm long |  | ***Solenopsis minuta* (L.) C. Presl subsp. *corsica* Meikle** |
| **367** | Corolla hairy only on the veins and along the margin |  | ***Echium plantagineum* L.** |
| **367** | Corolla homogeneously hairy |  | ***Echium vulgare* L. subsp. *vulgare*** |

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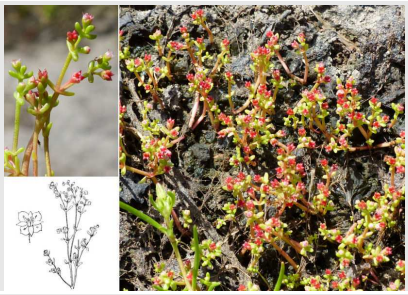
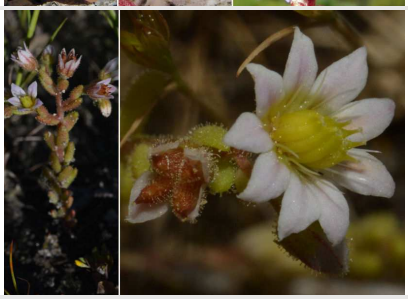
|---|---|---|---|
| **368** | Plant succulent, with fleshy leaves |  | **369** |
| **368** | Plant not succulent | | **371** |
| **369** | Petals 4 |  | ***Bulliarda vaillantii* (Willd.) DC** |
| **369** | Petals 5 or more | | **370** |
| **370** | Flowers pale blue |  | ***Sedum caeruleum* L.** |
| **370** | Flowers pink or white |  | ***Sedum villosum* L. subsp. *glandulosum* (Moris) P. Fourn.** |
| **371** | Base of leaf-stalks with a membranous sheath surrounding the stem |  | ***Polygonum aviculare* L. subsp. *aviculare*** |
| **371** | Leaf-stalk absent, or base of the stalk without such a sheath | | **372** |
| **372** | Petals 3 |  | **373** |

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|---|---|---|---|
| **372** | Petals more than 3 | | **376** |
| **373** | Fruits 6-8, diverging like the rays of a star |  | **374** |
| **373** | Fruits 9-12, not diverging like the rays of a star | | **375** |
| **374** | Flower pedicels 2-3 cm long (much longer than the carpels). Plant stout |  | ***Damasonium alisma* Mill. subsp. *alisma*** |
| **374** | Flower pedicels 8-15 mm long (about as long as the carpels). Plant gracile |  | ***Damasonium alisma* Mill. subsp. *bourgaei* (Coss.) Maire** |
| **375** | Inflorescence umbel-like. Fruits gathered into a globose head |  | ***Baldellia ranunculoides* (L.) Parl.** |
| **375** | Inflorescence a raceme with whorled branches. Fruits not gathered into a globose head |  | ***Alisma plantago-aquatica* L.** |
| **376** | Petals 4, membranous |  | **377** |

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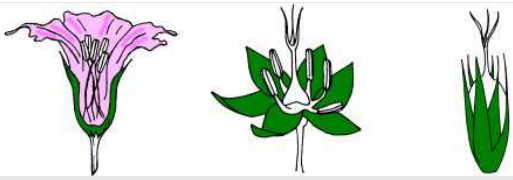
|---|---|---|---|
| **376** | Petals more than 4, not membranous | | **379** |
| **377** | Plant perennial, with thick roots, usually > 30 cm tall |  | ***Plantago lanceolata* L.** |
| **377** | Plant annual, with thin roots, usually < 30 cm tall | | **378** |
| **378** | Leaves 1-5 mm weed. Inner face of seeds flat (stereo-microscope!) |  | ***Plantago lagopus* L.** |
| **378** | Leaves > 5 mm wide. Inner face of seeds concave, boat-like |  | ***Plantago weldenii* Rchb.** |
| **379** | Calyx absent | | **380** |
| **379** | Calyx present |  | **395** |
| **380** | Flowers erect, originating directly from the ground or borne on very short pedicels |  | **381** |
| **380** | Flowers different | | **388** |

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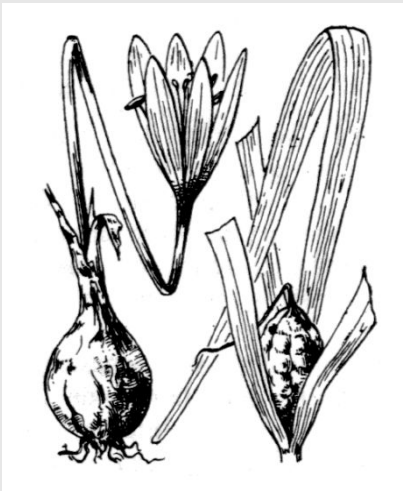
|---|---|---|---|
| **381** | Stamens 6 |  | ***Colchicum verlaqueae* Fridl.** |
| **381** | Stamens 3 | | **382** |
| **382** | Corolla with a long tube which reaches the ground. Stigmas widened at the apex, fan- or trumped-shaped |  | ***Crocus minimus* DC.** |
| **382** | Corolla with a short tube inserted on an aboveground pedicel. Stigmas thread-like | | **383** |
| **383** | Pistil longer than stamens | | **384** |
| **383** | Pistil as long as stamens, or shorter | | **386** |
| **384** | Petals spatulate, rounded at apex. Corolla with a purple or violet throat |  | ***Romulea requienii* Parl.** |
| **384** | Petals elliptical, acute (rarely rounded). Corolla with a white or yellow throat | | **385** |
| **385** | Corolla with a white throat and violet lobes. Pollen (anthers) white |  | ***Romulea ligustica* Parl.** |

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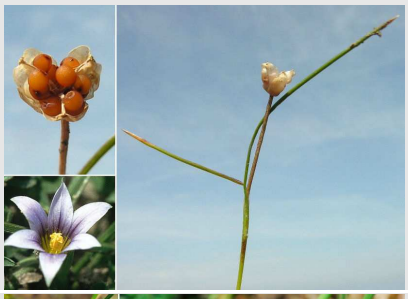
|---|---|---|---|
| **385** | Corolla with a yellow throat and white lobes. Pollen (anthers) yellow |  | ***Romulea bocchierii* Frignani & Iriti** |
| **386** | Both flower bracts membranous at least at the margin |  | ***Romulea revelieri* Jord. & Fourr.** |
| **386** | Lower bract of flowers green, upper one green or more or less membranous | | **387** |
| **387** | Corolla hairless, < 13 mm long. Upper flower bract widely membranous |  | ***Romulea columnae* Sebast. & Mauri** |
| **387** | Corolla with a hairy throat, > 13 mm long. Upper flower bract green or narrowly membranous |  | ***Romulea ramiflora* Ten. subsp. *ramiflora*** |
| **388** | Plants strongly smelling of garlic when bruised. Flowers arranged in simple umbels |  | **389** |
| **388** | Plants not smelling of garlic | | **392** |
| **389** | Flowers pink |  | ***Allium roseum* L.** |

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|---|---|---|---|
| **389** | Flowers white |  | **390** |
| **390** | Leaves clearly hairy |  | ***Allium subhirsutum* L.** |
| **390** | Leaves hairless or almost so |  | **391** |
| **391** | Stems with 3 acute angles, flaccid after flowering. Stigma 3-lobed (lens!) |  | ***Allium triquetrum* L.** |
| **391** | Stems cylindrical or with 3 obtuse angles, erect after flowering. Stigma not lobed |  | ***Allium subhirsutum* L.** |
| **392** | Petals blue-violet |  | ***Prospero autumnalis* (L.) Speta subsp. *autumnalis*** |
| **392** | Petals white or yellowish white at least on one face |  | **393** |

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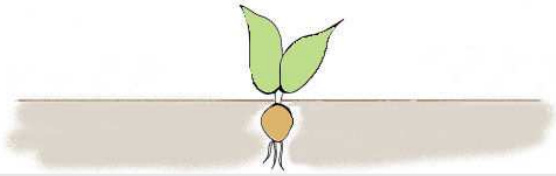
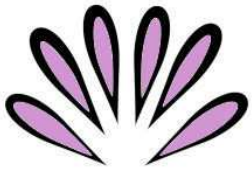
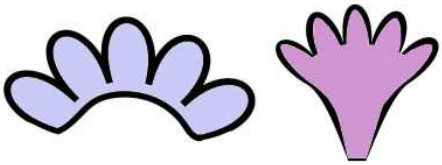
|---|---|---|---|
| **393** | Plant with a rhizome |  | ***Asphodelus ramosus* L. subsp. *ramosus*** |
| **393** | Plants with a bulb |  | **394** |
| **394** | Leaves > 3 cm wide. Stamens with cylindrical filaments (sometimes flattened only at the base) |  | ***Charybdis pancration* (Steinh.) Speta** |
| **394** | Leaves < 2 cm wide. Stamens with flattened filaments |  | ***Ornithogalum corsicum* Jord. & Fourr.** |
| **395** | Petals free |  | **396** |
| **395** | Petals fused at least at the base |  | **409** |
| **396** | Stamens numerous (more than 12) |  | **397** |
| **396** | Stamens less than 12 | | **404** |

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|---|---|---|---|
| **397** | Petals 8-13 |  | ***Ficaria verna* Huds. s.l.** |
| **397** | Petals 5 |  | **398** |
| **398** | Leaves all entire or weakly lobed | | **399** |
| **398** | At least the upper leaves deeply divided | | **402** |
| **399** | Perennial plant |  | ***Ranunculus flammula* L.** |
| **399** | Annual plants | | **400** |
| **400** | Flowers < 4 mm across, sessile |  | ***Ranunculus lateriflorus* DC.** |
| **400** | Flowers > 4 mm across, borne on a pedicel | | **401** |
| **401** | Lower leaves more or less rounded, the base acute |  | ***Ranunculus revelierei* Boreau** |

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|---|---|---|---|
| **401** | Lower leaves oval, the base more or less heart-shaped |  | ***Ranunculus ophioglossifolius* Vill.** |
| **402** | Perennial plant |  | ***Ranunculus cordiger* Viv. subsp. *diffusus* (Moris) Arrigoni** |
| **402** | Annual plants | | **403** |
| **403** | Sepals pointing upwards, adpressed to the petals |  | ***Ranunculus muricatus* L.** |
| **403** | Sepals pointing downwards, adpressed to the flower pedicel |  | ***Ranunculus chius* DC.** |
| **404** | Petals 5 |  | **405** |
| **404** | Petals 6 |  | **406** |
| **405** | Flowers yellow |  | ***Linum trigynum* L.** |

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|---|---|---|---|
| **405** | Flowers pale blue |  | ***Linum bienne* Mill.** |
| **406** | Leaves not linear, widest in the upper half |  | ***Middendorfia borysthenica* (Schrank) Trautv.** |
| **406** | Leaves linear to elliptical, widest in the middle | | **407** |
| **407** | Calyx -teeth of equal length |  | ***Lythrum tribracteatum* Salzm. ex Spreng.** |
| **407** | Calyx teeth alternately longer and shorter | | **408** |
| **408** | Stamens 4-8. Petals 2-3 mm long |  | ***Lythrum hyssopifolia* L.** |
| **408** | Stamens 2-3. Petals 1-2 mm long |  | ***Lythrum thymifolia* L.** |

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|---|---|---|---|
| **409** | Flowers white or whitish |  | **410** |
| **409** | Flowers pale pink or pale blue | | **411** |
| **410** | Plant hairless |  | ***Lysimachia minima* (L.) U. Manns & Anderb.** |
| **410** | Plant hairy |  | ***Heliotropium supinum* L.** |
| **411** | Flowers pale pink |  | ***Lysimachia minima* (L.) U. Manns & Anderb.** |
| **411** | Flowers pale blue |  | **412** |
| **412** | Stems hairless. Calyx hairless or with straight hairs (lens!) |  | ***Myosotis gussoni* Jan** |
| **412** | Stems hairy. Calyx with hooked hairs |  | ***Myosotis arvensis* (L.) Hill subsp. *arvensis*** |

# Notes to the species

## *Agrostis stolonifera* L. subsp. *stolonifera*

This widely distributed, circumboreal species, is present in all regions of Italy. It grows in open, often trampled vegetation on wet and compacted clay soils, that is able to colonise thanks to the stolons, e.g. along the edges of ponds and marshes, along shores, in river beds and in uncultivated wet sites, from sea level to 2500 m. In the temporary ponds of Sardinia it is uncommon. The genus name, from the Greek 'agros' (field), in ancient Greek designated different *Poaceae* ; the species name comes from the Latin 'stolo' (shoot) and 'fero' (I bear), referring to the creeping stolons. Flowering period: May to August.

## *Aira caryophyllea* L. subsp. *caryophyllea*

This annual grass, common in subtropical areas of the Eurasian and African continents (presently almost cosmopolitan in regions with a Mediterranean climate), is present in all regions of Italy, but is more common in Central and Southern Italy. It grows in dry fields, in thickets and open garrigue vegetation, mainly on siliceous substrates, from sea level to the lower montane belt, with optimum in the Mediterranean belt. The species is sporadic in the outer belt of the Sardinian temporary ponds during the period of desiccation. The genus name was used by the ancient Greeks for a plant similar to ryegrass, the species name comes from the Greek 'karyon' (hard, woody), and 'phyllon' (leaf), indicating the stiff consistency of leaves. Flowering period: April to May.

## *Alisma plantago-aquatica* L.

The aquatic plantain is a species with an almost cosmopolitan distribution, present in all regions of Italy, but now in decline because of the reclamation of wet areas. It grows in marshy areas (margins of ponds, ditches, etc.), on muddy, perennially or at least periodically inundated soils with stagnant or very slow-flowing water, from sea level to the montane belt. In the temporary ponds of Sardinia the species was found only in the pond of Paule Longa (Ghilarza). Fresh leaves and rhizomes are poisonous. The genus name was the Greek-Latin name of an aquatic plant; the species name reefers to the leaves, which are vaguely similar to those of some *Plantago*. Flowering period: May to August.

## *Allium roseum* L.

The pink garlic is a species with a strictly Mediterranean distribution, present in all regions of Italy except in the Valle d'Aosta, Trentino-Alto Adige, and perhaps in Piedmont. It grows in disturbed sites, in arid grasslands and garrigues, from sea level to about 700 m. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with dry grasslands and garrigue vegetation. The intact cells of all *Allium* contain alliin, an odourless aminoacid which, by action of the enzyme allinase, produced by the breaking of the bulb, is transformed into allicin, a strongly scented compound; all species of *Allium* have several medicinal properties; bulbs and leaves are edible. The genus name, already in use among the Romans, comes from an Indo-European root meaning 'hot', 'burning', because of the smell and pungent taste of the bulbs; the species name, which in Latin means 'pink', refers to the colour of the flowers. Flowering period: April to May.

## *Allium subhirsutum* L.

The hairy garlic is a species with a mainly western, strictly Mediterranean distribution, present in all regions of Southern Italy, in Sardinia, and all along the Tyrrhenian coast. It grows in dry fields, in uncultivated grasslands, in scrublands and open woodlands, from sea level to about 600 m. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with dry grasslands and garrigue vegetation. The intact cells of all *Allium* contain alliin, an odourless aminoacid which, by action of the enzyme allinase, produced by the breaking of the bulb, is transformed into allicin, a strongly scented compound; all species of *Allium* have several medicinal properties; bulbs and leaves are edible. The juice is used as a repellent for moths, and the popular belief is that it works also against other insects. The genus name, already in use among the Romans, comes from an

Indo-European root meaning 'hot', 'burning', because of the smell and pungent taste of the bulbs; the species name refers to the hairiness of the leaves. Flowering period: March to May.

## *Allium triquetrum* L.

The triangular garlic is a species with a strictly Mediterranean distribution, present in all regions of Southern Italy, in Sardinia, and all along the Tyrrhenian coast. It grows in relatively moist and shady places, in open woodlands, in hedges, but sometimes also in disturbed sites such as along streets, from sea level to about 600 m. The species is sporadic on the edge of the Sardinian temporary ponds, mainly in shaded areas. The intact cells of all *Allium* contain alliin, an odourless aminoacid which, by action of the enzyme allinase, produced by the breaking of the bulb, is transformed into allicin, a strongly scented compound; all species of *Allium* have several medicinal properties; bulbs and leaves are edible. The juice is used as a repellent for moths, and the popular belief is that it works also against other insects. The genus name, already in use among the ancient Romans, comes from an Indo-European root meaning 'hot', 'burning', because of the smell and pungent taste of the bulbs; the species name refers to the stem, which is triangular in cross-section. Flowering period: December to April.

## *Alopecurus bulbosus* Gouan subsp. *bulbosus*

This species, which has a sub-Atlantic-Mediterranean distribution, is present in almost all the regions of Italy (missing in Valle d'Aosta, Lombardy and Trentino-Alto Adige, and not found since a long time in Liguria and Calabria). It grows in marshy meadows and ephemeral pools, sometimes even on weakly saline soils, below the lower montane belt. In the temporary ponds of Sardinia the species is common in the intermediate and outer belts. The genus name is derived from two Greek words, 'alopes' (fox) and 'ura' (tail), because of the shape of the inflorescence of some species; the species name refers to the pear-shaped, bulb-like swelling at the base of the stems. Flowering period: March to July.

## *Alopecurus rendlei* Eig

This species with a broadly Mediterranean distribution is present in all regions of Italy except in the Valle d'Aosta (as a weed also in Trentino-Alto Adige, not rediscovered in recent times in Liguria), but is more common in Central and Southern Italy. It grows in wet meadows and in riparian marshes, below the lower montane belt. In the temporary ponds of Sardinia it is sporadic, being known only from Campeda and Alà dei Sardi. The genus name is derived from two Greek words, 'alopes' (fox) and 'ura' (tail), because of the shape of the inflorescence of some species; the species is dedicated to the Canadian botanist Alfred Barton Rendle (1865-1938). Flowering period: April to June.

## *Ambrosina bassii* L.

This species, with a mainly western, strictly Mediterranean distribution, is present with certainty in Sardinia and Sicily (of uncertain occurrence in Calabria and not found since a long time in Lazio). It grows in maquis vegetation and in Mediterranean garrigues, in the shade of shrubs, on soils which are fresh at least in winter and spring, from sea level to about 600 m. The species is sporadic on the edge of the Sardinian temporary ponds, in shaded areas. The genus is dedicated to the brothers Bartolomeo Ambrosini (1588-1657) and Giacinto Ambrosini (1605-1671): the former was responsible for the Botanical Garden of Bologna, the latter succeeded his brother in the same role; the species is dedicated to the botanist Ferdinand Bassi of Bologna (1710-1774), who collaborated with Linnaeus in the description of this species. Flowering period: December to March.

## *Anacamptis laxiflora* (Lam.) R.M. Bateman, Pridgeon & M.W. Chase

This aquatic orchid with a broaadly Mediterranean distribution is present in all regions of Italy except in the Valle d'Aosta and perhaps in Trentino-Alto Adige. It grows in wet meadows and marshes, in swamps, along the edges of ponds, on fresh and slightly acidic soils, from sea level to the lower montane belt. In the temporary ponds of Sardinia it is common, and can occupy large areas from the outer belt to the center. The genus name derives from the Greek 'anakamptéin' (fold) for the outer tepals which are bent outwards or for the two raised and spreading structures which

are located at the entrance of the spur; the species name is derived from the Latin words 'laxus' (loose) and 'flos' (flower), referring to the lax inflorescence with relatively few flowers. The species was recently transferred into the genus *Anacamptis* on the basis of molecular data; before it was placed into the genus *Orchis* , which in Greek means 'testicles', referring to the two paired tubers of different sizes. Flowering period: April to June. Syn.: *Orchis laxiflora* Lam.

## *Anacamptis longicornu* (Poir.) R.M. Bateman, Pridgeon & M.W. Chase

This orchid with a mainly western, strictly Mediterranean distribution is present only in western Sardinia and in Sicily (doubtfully reported also from Calabria). It grows in woods and meadows, on siliceous substrates, below the lower montane belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with grasslands and garrigue vegetation.The genus name derives from the Greek 'anakamptéin' (fold) for the outer tepals which are bent outwards or for the two raised and spreading structures which are located at the entrance of the spur; the species name, from the Latin 'longus' (long) and 'cornus' (horn) refers to the particularly long spur. The species was recently transferred into the genus *Anacamptis* on the basis of molecular data; before it was placed into the genus *Orchis* , which in Greek means 'testicles', referring to the two paired tubers of different sizes. Flowering period: March to April. Syn.: *Orchis longicornu* Poir.

## *Anacamptis papilionacea* (L.) R.M. Bateman, Pridgeon & M.W. Chase

The butterfly orchid is a species with a mainly Mediterranean distribution, present in all regions of Italy except Trentino-Alto Adige. It grows in dry meadows and uncultivated grasslands, from sea level to the colline belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with grasslands and garrigue vegetation. The genus name derives from the Greek 'anakamptéin' (to fold) for the outer tepals which are bent outwards, or for the two raised and spreading structures which are located at the entrance of the spur; the species name comes from the Latin 'papilio' (butterfly), for the similarity of the flower with a butterfly. The species was recently transferred into the genus *Anacamptis* on the basis of molecular data; before it was placed into the genus *Orchis* , which in Greek means 'testicles', referring to the two paired tubers of different sizes. Flowering period: April to May. Syn: *Orchis papilionacea* L.

## *Anisantha diandra* (Roth) Tutin

This annual grass with a broadly Mediterranean distribution is present in all regions of Italy except in the Valle d'Aosta. It grows in disturbed sites, on ruins and along the streets, or as a weed in cereal crops, below the montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in sites with ruderal vegetation. The genus name derives from the Greek 'an-isos' (different, unequal) and 'anthos' (flower) and therefore means 'with unequal spikelets '; the species name comes from the Greek 'dis' (two) and 'anèr-andros' (male) for the presence of two stamens only in the flower. Flowering period: April to May.

## *Anisantha madritensis* (L.) Nevski subsp. *madritensis*

This annual grass with a broadly Mediterranean distribution is present in all regions of Italy except in the Valle d'Aosta. It grows in ruderal sites, on arid primitive soils rich in nitrogenous compounds and calcareous skeleton, such as along railway embankments and roadsides, on gravelly slopes, in cracks of stone walls, below the montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation: it is very evident in late summer for the inflorescences which become reddish. The genusc name derives from the Greek 'an-isos' (different, unequal) and 'anthos' (flower) and therefore means 'with unequal spikelets'; the species name refers to the city of

Madrid. The genus name of the synonym, from the Greek 'broma' (food), was mentioned by Theophrastus for a grass whose seeds were used as food. Flowering period: March to April. Syn.: *Bromus madritensis* subsp.*madritensis* L.

## *Anthemis arvensis* L. subsp. *arvensis*

The false chamomile is an annual plant with a strictly Mediterranean distribution, of ancient introduction into the northernmost part of its present range, where it is known since Neolithic times, being present in all regions of Italy. It forms dense populations in cultivated fields and in disturbed sites, on slightly acidified soils, below the upper montane belt; today it seems to be in decline because of the intensive modern agriculture. The species is common in the outer belt of the Sardinian temporary ponds, especially in the presence of grazing sheep. The genus name, deriving from the Greek 'anthos' (flower), is that of chamomile in ancient Greek; the species name in Latin means 'of plowed fields'. Flowering period: April to August.

## *Anthoxanthum aristatum* Boiss.

This annual grass with a mainly western Mediterranean distribution is present in the Tyrrhenian regions of Italy, from Tuscany to Campania, and in Sardinia. It grows in uncultivated grassy sites, on soils which are rather moist at least in the spring, usually on siliceous substrates, below the lower montane belt. The species is common in the outer belt of the Sardinian temporary ponds. The genus name derives from the Greek 'anthos' (flower) and 'xanthos' (yellow), the species name refers to the awned spikelets. Flowering period: April to June.

## *Antinoria insularis* Parl.

This annual grass with a strictly Mediterranean distribution is present in Lazio, Molise, Sardinia and Sicily. The life-cycle can be spent part in water, part on moist to dry soil. It grows in moist environments, especially at the edges of ponds, on muddy soils, from sea level to about 1300 m. In Sardinia the species is found exclusively in the Mediterranean temporary ponds; it is not very common, but where present, it forms dense populations that occupy large areas subject to long-lasting flooding. The genus is dedicated to O. Antinori (1811-1882) of Perugia, naturalist and explorer of Africa; the species name refers to the distribution, which is largely limited to two islands, Sicily and Sardinia. Flowering period: June to July.

## *Arisarum vulgare* O. Targ. Tozz. subsp. *vulgare*

This species with a strictly Mediterranean distribution is present in all regions of Southern Italy, all along the Tyrrhenian coast from Liguria, and in Sardinia (no longer found in the Marche). It grows on uncultivated ground, sometimes even on walls, on soils that are rather rich in humus, in usually shaded sites, from sea level to about 800 m. The species sporadically occurs on the edges of the Sardinian temporary ponds, mainly in shaded areas. All parts of the plant are poisonous. The genus name was already in use among the ancients for a similar plant, the species name in Latin means 'common'. Flowering period: October to May.

## *Asparagus acutifolius* L.

The Mediterranean asparagus is a species with a strictly Mediterranean distribution, which is present in all regions of Italy except in the Valle d'Aosta and Piedmont. It grows in the Mediterranean maquis, sometimes even in the warmest aspects of deciduous woodlands, from sea level to about 1300 m. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with garrigue and maquis vegetation. The young shoots are edible after cooking; after consumption a methyilcaptane is formed, which is excreted in the urine, giving a pungent smell. The fruits are toxic. The genus name probably derives from the Persian 'asparag' (shoot, point), or from the Greek 'speìro' (I sow), which, preceded by the privative alpha, indicates the ease with which the plant

is multiplied by vegetative means; the species name refers to the stiff and prickly phyllocladia. Flowering time: August to September.

## *Asphodelus ramosus* L. subsp. *ramosus*

The branched asphodel is a species with a strictly Mediterranean distribution which is present in all regions of Central and Southern Italy, in Emilia-Romagna and Liguria (no longer found in recent times in the Marche). It grows in uncultivated ground, scrubland and grasslands, on dry soils rich in skeleton; its presence is indicative of degradation of the pastures. The species is very common in the pastures of Sardinia and sporadically colonizes the outer belt of the Mediterranean temporary ponds. The plant is toxic for the presence of several alkaloids: in Greek mythology it was the symbol of the dead. The generic name derives from the Greek 'a' (not), 'spodos' (ash), and 'elos' (valley) and therefore means 'the plant which has not been reduced to ashes in the valleys'; the species name refers to the branched inflorescences. Flowering period: March to May.

## *Asplenium onopteris* L.

This widely distributed fern with subtropical affinities is present in all regions of Italy except in the Valle d'Aosta and perhaps in Lombardy. It grows in damp and shady sites in the crevices of the rocks, sometimes on stone walls, or rooting directly into the ground, in the undergrowth of thermophilic forests, especially oak woods, from sea level to the lower montane belt. The species sporadically occurs also on the edges of the Sardinian temporary ponds, in contact with shaded and rocky sites. The genus name derives from the Greek 'a' (against) and 'splen' (spleen), for the ancient and unjustified use of *A. ceterach* against stones of the spleen; the species name comes from the Greek 'onos' (donkey) and 'pteris' (fern) and therefore means 'fern of the donkeys'. Sporulation period: May to August.

## *Avena barbata* Pott ex Link subsp. *barbata*

The bearded oats is an annual grass with a broad Mediterranean-Turanian distribution, present in all regions of Italy except in the Valle d'Aosta, but more frequent south of the Po River. It grows in dry, often disturbed places, along the streets, on embankments, in gardens and cultivated fields, also in the periphery of large urban areas, below the montane belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, especially in areas grazed by sheep. The genus name, the same used by the Romans, perhaps derives from the Sanskrit 'avasa' (food, fodder); the species name refers to the two bristles present on the lemma, which give the spikelet a bearded appearance. Flowering period: April to June.

## *Baldellia ranunculoides* (L.) Parl.

This species with a broad Mediterranean-Atlantic distribution is present in many regions of Italy, but appears to be in sharp decline; in some regions, such as Piedmont, is now extinct. It grows in ponds and marshes, submerged in shallow waters, from sea level to about 200 m; the species has become very rare almost everywhere: it seems that its survival is also linked to the mowing of marsh grass. Quite common in the temporary ponds of Sardinia, it is indicated in the Regional Red Lists as a species at risk (Conti et al., 1997). The genus is dedicated to Bartolomeo Bartolini Baldelli (XIX cent.) Minister of the Grand Duchy of Tuscany; the species name refers to the fruits, which are vaguely similar to those of buttercups (genus *Ranunculus*. Flowering period: April to June.

## *Bartsia trixago* L.

This annual plant with a broadly Mediterranean distribution is present in Veneto, Emilia-Romagna, and in all regions of Central, Southern and Insular Italy (since a long-time no longer observed in Liguria). It grows in pastures, uncultivated ground and Mediterranean garrigues, from sea level to about 1200 m, with optimum in the Mediterranean belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands and garrigue vegetation. It occurs in individuals with flowers of very different colours: the most common form has pink or purple

flowers, but there is also a form with bright yellow flowers. The genus is dedicated to the botanist and physician of Königsberg J. Bartsch (1710-1738), a friend of Linnaeus who advised him to move to Surinam, where he died at a young age; the species name is that of a plant cited by Pliny. Flowering period: April to May.

## *Bellis annua* L. subsp. *annua*

This annual plant with a Mediterranean-Macaronesian distribution is present, with two subspecies, in all regions of Central and Southern Italy, in Emilia-Romagna and in Liguria (of dubious presence in the Marche). The life-cycle can be spent part in water, part on moist to dry soil. It grows in meadows and uncultivated ground, sometimes even at the edges of ephemeral ponds, below the lower montane belt, with optimum in the Mediterranean belt. The species is very common in the outer and intermediate belts of the Sardinian temporary ponds, where it gives rise to abundant blooms in early spring and is adapted to prolonged periods of flooding. The genus name derives from the Latin 'bellus' (beautiful), the species name refers to the annual life cycle that differentiates this species from *B. perennis*. Flowering period: November to April.

## *Bellis perennis* L.

This species with an originally European-Caucasian distribution has now become subcosmopolitan and is present in all regions of Italy. It grows in meadows and pastures, in flower beds, parks, gardens, on fresh to moist silty-clayey soils which are rich in humus and nitrogen compounds, from sea level to the subalpine belt. The species is sporadic on the edge of the Sardinian temporary ponds in shaded areas. The young leaves are edible in salads or cooked. The generic name derives from the Latin 'bellus' (beautiful), the species name refers to the prolonged flowering throughout the year, or to the perennial life-cycle which differentiates this species from *B. annua*. Flowering period: January to December.

## *Bellium bellidioides* L.

This endemic species is found only in Sardinia, Corsica and the Balearic Islands. It grows in meadows and in rocky areas, usually on soils which are moist at least in spring, from sea level to the upper montane belt. In the temporary ponds the species forms small mosaics with the Mediterranean vegetation, on granitic substrates with sandy, shallow soils. Both the genus and the species names refer to its similarity to species of the genus *Bellis*. Flowering period: April to August.

## *Bolboschoenus maritimus* (L.) Palla

This species with a wide Eurasian-Mediterranean distribution is present in all regions of Italy. It grows in swamps and along the edges of ponds, often forming dominant populations along the banks of lakes and in depressions with fluctuating water levels, on mainly alkaline soils which are often salty and sometimes disturbed, from sea level to about 600 m. In the temporary ponds of Sardinia it is sporadic (eg. Paule Longa, Ghilarza). The genus name derives from the Greek 'bolbos' (bulb) and 'schoinos' (reed), and therefore means 'bulbous reed'; the species name refers to the maritime habitat. Flowering period: June to September.

## *Brachypodium retusum* (Pers.) P. Beauv.

This grass with a mainly western, strictly Mediterranean distribution, is present in almost all regions of Central and Southern Italy (missing in the Marche and in Umbria), in Liguria and (as an ephemeral weed) in Friuli Venezia Giulia, but is more frequent and locally abundant along the Tyrrhenian coast. It grows in the gaps of Mediterranean garrigue

and degraded maquis vegetation, on soils which are dry in summer, from sea level to about 600 m. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands and garrigue vegetation. The genus name derives from the Greek 'brachys' (short) and 'podon' (foot), in reference to the subsessile spikelets, the species name in Latin means 'notched'. Flowering period: April to June.

## *Briza maxima* L.

This annual grass with a wide subtropical distribution is present in all regions of Italy except in the Valle d'Aosta, Lombardy and Trentino-Alto Adige, but it becomes very rare north of the Po River, while it is common in Southern Italy. It grows in openings of garrigue vegetation, mainly on siliceous substrates, on soils which are dry in summer, below the montane belt (but in the South it can reach 1700 m). The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with ruderal vegetation. The genus name designated a cereal by the ancient Greeks, the species name refers to the large size of the spikelets. Flowering period: April to June.

## *Briza minor* L.

This annual grass with an almost cosmopolitan distribution in warm areas is present in all regions of Central and Southern Italy, in Emilia-Romagna, Liguria and Veneto; the species is very common in Mediterranean Italy, while elsewhere it behaves as an ephemeral weed. It grows in openings of garrigue vegetation and in clearings of Mediterranean maquis, from sea level to the hill belt. The species is sporadic in the outer belt of the Sardinian temporary ponds. The inflorescences are often used in dried flower arrangements. The genus name designated a cereal by the ancient Greeks; the species name refers to the size of the spikelets, which are smaller than those of other congeneric species. Flowering period: April to May.

## *Bromus hordeaceus* L. subsp. *hordeaceus*

This annual grass with an originally Eurasian-south European distribution has now become almost cosmopolitan in temperate parts of the Globe and is present in all regions of Italy, with several subspecies. It grows in mowed grasslands with *Arrhenatherum* and in dry meadows, on clay soils which are rather dry but not really arid in summer, rather rich in nitrogen compounds, from sea level to the montane belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with ruderal vegetation. The genus name, from the Greek 'broma' (food), was mentioned by Theophrastus for a grass used for food; the species name means 'similar to barley'. Flowering period: May to July.

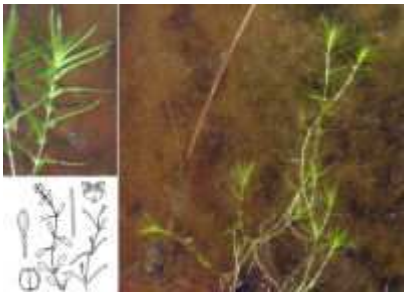
## *Bulliarda vaillantii* (Willd.) DC

Vaillant's fat grass is an annual plant with a sub-Atlantic distribution that extends into the western part of the Mediterranean Region, including North Africa; the species appears sporadically also along the Tyrrhenian coast of Italy, from Liguria to Lazio, Puglia, Basilicata, Sicily and Sardinia (Lampedusa). The life-cycle can be spent part in water, part on moist to dry soil. It grows on the margins of temporary pools and ponds ,on siliceous substrates, from sea level to about 500 m. This species, characteristic of the Mediterranean temporary ponds, is widespread in Sardinia, where it forms dense populations on rocky substrates with a thin layer of soil. The genus is dedicated to the French botanist Jean Baptiste Francois Bulliard (1752-1793); the species is dedicated to the Parisian botanist Sébastien Vaillant (1669-1722). Flowering period: February to May.

## *Callitriche brutia* Petagna

This aquatic plant with a sub-Atlantic distribution is present in several regions of Italy (never reported from Valle d'Aosta, Trentino-Alto Adige, Friuli Venezia Giula, Emilia-Romagna, Liguria and Molise, not found since a long time

in Campania and Calabria), but is in decline, probably due to the general eutrophication of the waters. It grows in ponds and in slowly flowing waters, from sea level to about 1200 m. In the temporary ponds of Sardinia it is very rare. The genus name derives from the Greek and means 'beautiful hairs' alluding to the thin stems; the species name refers to the region of Brutium, which more or less corresponds to today's Calabria. Flowering period: August to October.



## *Callitriche hamulata* Kütz. ex W.D.J. Koch

This aquatic plant with a sub-Atlantic distribution is present in Northern and Central Italy and in Sicily. It grows in rapidly flowing, well oxygenated, meso-eutrophic freshwaters that are poor in calcium and are often subject to strong seasonal variations, from sea level to about 1200 m. The species is sporadic in the central belt of the Sardinian temporary ponds. The genus name derives from Greek and means 'beautiful hairs' alluding to the thin stems; the species name comes from the Latin 'hamulus' (small hook) and means 'with small hooks'. Flowering period: May to October.

## *Callitriche stagnalis* Scop.

This aquatic plant with a wide Eurasian distribution is present in all regions of Italy. It grows in stagnant or slowly flowing, shaded, meso-eutrophic freshwaters that are poor in calcium, from sea level to about 1200 m. The species is common in the temporary ponds of Sardinia, where it forms dense, generally monospecific populations. The genus name derives from Greek and means 'beautiful hairs' alluding to the thin stems, the species name, from the Latin 'stagnum' (pond) refers to the habitat. Flowering period: April to September.

## *Callitriche truncata* Guss. subsp. *truncata*

This aquatic plant with a sub-Atlantic distribution, is present, with two subspecies, in Tuscany, Lazio, Sardinia and Sicily (not found since a long time in Campania); the species seems to be in decline, probably due to the general eutrophication of the waters. It grows in ponds and stagnant waters, from sea level to about 500 m. In Sardinia it has been reported from a single temporary pond in the National Park Arcipelago di La Maddalena. The genus name derives from Greek and means 'beautiful hairs', alluding to the thin stems; the species name refers to the leaves, which are often truncated at apex. Flowering period: March to May.

## *Carduus pycnocephalus* L. subsp. *pycnocephalus*

This biannual thistle with a Mediterranean-Turanian distribution is present in all regions of Italy. It grows in disturbed sites, such as arid and sunny slopes and margins of roads and railways, on both calcareous and siliceous substrates, on primitive soils which are rich in skeleton but rich in bases and very dry in the summer, from sea level to the lower montane zone. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The genus name was already in use among the Romans; from it derives the expression 'carding wool', an operation in which, until recently, the heads of several thorny *Asteraceae* and *Dipsacus* were used; the species name comes from the Greek 'pyknos' (thick), referring to the flower heads which are crowded at the apex of stems. Flowering period: April to June.

## *Carex caryophyllea* Latourr.

This sedge with a wide Eurasian distribution is present in all regions of Italy. It grows in dry, steppe-like meadows and pastures, on subneutral to subacid, rather dry soils rich in nitrogen compounds, both on limestone and on siliceous substrata, from sea level to the upper montane belt (sometimes even at higher altitudes). In the temporary ponds of Sardinia the species is represented by subsp. *insularis*, that is endemic to Sardinia and Corsica. The genus name derives from the Greek 'keiro' (to cut), because of the sharp edges of the leaves of some species; the species name in Greek means 'with hard leaves'. Flowering period: March to May.

## *Carex distachya* Desf.

This sedge with a strictly Mediterranean distribution is present in all regions of Central and Southern Italy (including the Islands), in Liguria, Piedmont and Veneto. It grows in oak woods and in their clearings, on soils which are rather dry in summer, below the lower montane belt, with optimum in the Mediterranean belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with Mediterranean garrigues and grasslands. The genus name derives from the Greek 'keiro' (to cut), because of the sharp edges of the leaves of some species, the species name in Greek means 'with two ears'. Flowering period: April to June.

## *Carex divisa* Huds.

This sedge with a Mediterranean-Atlantic distribution is present in all regions of Italy except in Valle d'Aosta. It grows in wet meadows, sometimes even on saline soils, from sea level to about 600 m. The species is common in the outer and intermediate belts of the Sardinian temporary ponds. The genus name derives from the Greek 'keiro' (to cut), because of the sharp edges of the leaves of some species. Flowering period: April to June.

## *Carex divulsa* Stokes subsp. *divulsa*

This sedge with a broadly Mediterranean distribution is present in all regions of Italy. It grows in woods and shrublands, sometimes along the margin of streets, on fresh soils, below the lower montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with Mediterranean garrigues and grasslands. The genus name derives from the Greek 'keiro' (to cut), because of the sharp edges of the leaves of some species. Flowering period: April to June.

## *Carex flacca* Schreb. subsp. *erythrostachys* (Hoppe) Holub

This sedge is a very polymorphic species with a wide ecological amplitude and a mainly European distribution, present, with two subspecies, in all regions of Italy. It grows in the clearings of woods at the edge of ponds, but also in dry meadows, on compact clay soils that retain water, from sea level to the alpine belt. The species is sporadic on the edge of Sardinian temporary ponds, in contact with Mediterranean garrigues and grasslands. The genus name derives from the Greek 'keiro' (to cut), because of the sharp edges of the leaves of some species; the species name means 'weak, drooping'; the name of the subspecies derives from Greek and means 'with reddish ears'. Flowering period: March to June.

## *Carlina corymbosa* L.

This species with a Mediterranean distribution is present in all regions of peninsular and insular Italy, in Liguria, Emilia-Romagna and Friuli Venezia Giulia. It grows in openings of maquis and garrigue vegetation and in semi-arid, steppe-like grasslands, on soils that are rich in skeleton and dry in summer, from sea level to about 1200 m. This species

is very common in the pastures of Sardinia, and occasionally it colonizes the margins of the temporary ponds. The genus name derives from the Latin 'cardulina', which means 'little thistle'; the species name refers to the heads that are arranged in corymb-like inflorescences. Flowering period: July to September.

## *Centaurium maritimum* (L.) Fritsch

This annual plant with a mainly eastern, strictly Mediterranean distribution, is present in Liguria, in Romagna and in all the regions of Central and Southern Italy except in Molise, but is more common in the Tyrrhenian regions and in Sardinia. It grows in dry fields, especially in communities of annual plants interspersed in the openings of Mediterranean garrigues, mainly on siliceous substrates, from sea level to about 900 m. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands and garrigue vegetation. The genus name is derived from the centaur Chiron, in Greek mythology an expert on medicinal plants; the species name refers to the fact that the species is often present along the coast, although it is not a strictly coastal species. Flowering period: April to May.

## *Centaurium pulchellum* (Sw.) Druce subsp. *pulchellum*

This annual plant with a wide Eurasian-Mediterranean distribution is present in all regions of Italy. It grows in open vegetation on muddy or silty-clay soils, sometimes on wet gravel, below the montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with dry grasslands and garrigue vegetation. The plant contains bitter substances, and, as other congeneric species, it is still used as a digestive. The genus name is derived from the centaur Chiron, in Greek mythology an expert on medicinal plants; the species name in Latin means 'little, small'. Flowering period: May to September.

## *Cerastium glomeratum* Thuill.

This annual plant with an originally Mediterranean distribution has now become almost cosmopolitan and is of ancient introduction into the northernmost part of its distributional range, being present in all regions of Italy. It grows in cultivated fields, along trails, in disturbed sites, on silty and clayey, subarid to moist soils which are rich in nitrogen compounds but usually decalcified, from sea level to about 1400 m. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The genus name derives from the Greek 'keras' (horn), due to the elongated shape of the capsules; the species names refers to the flowers, which are crowded in bundles. Flowering period: January to December.

## *Cerastium palustre* Moris

This annual plant is endemic to North-Central Sardinia (Campeda, Macon, Orune etc.). It grows in wet meadows and in ephemeral ponds, between 500 and 600 m. In the IUCN regional Red List it is cited as a critically endangered species (Conti et al., 1997).The genus name derives from the Greek 'keras' (horn), due to the elongated shape of the capsules; the species name refers to the habitat. Flowering period: April to May.

## *Chamaemelum fuscatum* (Brot.) Vasc.

This annual plant with a mainly western Mediterranean distribution is present in Emilia-Romagna, Tuscany, Lazio, Campania, Sardinia and Sicily. The life-cycle can be spent part in water, part on moist to dry soil. It grows in damp

meadows, in uncultivated land and in ephemeral ponds, especially near the coast, from sea level to about 600 m. It is very common in the outer and intermediate belts of the temporary ponds of Sardinia, where it gives rise to abundant blooms in early spring and is adapted to prolonged periods of flooding. The genus name derives from the Greek 'khamai' (ground, low, creeping) and 'melon' (apple). Flowering period: November to June. Syn.: *Anthemis fuscata* Brot., *Anthemis praecox* Link

## *Chamaesyce canescens* (L.) Prokh. subsp. *canescens*

This annual plant with a broadly Mediterranean distribution is present, with two subspecies, in all regions of Italy except Trentino-Alto Adige. The nominal subspecies seems to be absent from Valle d'Aosta, Trentino-Alto Adige, Friuli Venezia Giulia, Marche, Abruzzo and Molise; the subsp. *massiliensis* is known only from Friuli Venezia Giulia, Veneto, Emilia-Romagna, Marche and Abruzzo (since a long time no more found in Tuscany). It grows in uncultivated areas and on trampled ground along the streets and sidewalks, sometimes in the cracks of paving stones, below the lower montane zone. The species is sporadic in the temporary ponds of Sardinia during the dry period. The plant is highly toxic, the sap is irritant and may trigger photoallergic reactions. The genus name derives from the Greek 'chamai' (ground, low) and 'syce' (fig), referring to the prostrate habit of most species and to the fact that, like the fig tree, all species contain a milky sap; the species name is the Latin for 'white-hairy'. Flowering time: June to October.

## *Charybdis pancration* (Steinh.) Speta

This species with a strictly Mediterranean distribution is present along the coasts of almost all the regions of Central and Southern Italy (absent from Tuscany, Marche and Molise), and on the Islands. It grows on dry slopes and in Mediterranean garrigue vegetation, from sea level to about 600 m. The plant contains toxic alkaloids. The genus name, which refers to the mythical monster Charybdis, refers to the coastal habitat; the species name comes from the Greek 'pan' (all) and 'cratys' (powerful, strong), probably due to the plant's ability to withstand the extreme conditions of the habitat, or in reference to its alleged medicinal properties. Flowering period: September to October. Syn.: *Urginea maritima* (L.) Baker, *Scilla maritima* L.

## *Cicendia filiformis* (L.) Delarbre

This annual plant with a sub-Atlantic distribution centered in southwestern Europe is present in Tuscany, Umbria, Lazio, Puglia, Sardinia and Sicily (not found since a long time in Piedmont where perhaps it is extinguished, and in Campania). It grows in moist environments, on the edge of ephemeral pools and along forest trails, on muddy soils, preferably on siliceous substrates, with optimum in the Mediterranean belt. It is a characteristic species of temporary ponds, but in those of Sardinia it appears only sporadically in the outer belt. The genus name is derived from Cicend, a city of Albania from which the species was originally described, the species name, which in Latin means 'thread-like', refers to the thin stems. Flowering period: April to May.

## *Cichorium intybus* L.

The wild chicory is a Eurasian-south European species of old introduction near the limits of its distributional range (it is the progenitor of the cultivated radish), present in all regions of Italy. It grows in more or less disturbed habitats, along the roads, in residential areas, on slopes, in uncultivated land, gardens, parks, on rather primitive soils, with optimum below the montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The young leaves are edible, especially when cooked. The use of the roasted root as a coffee substitute was introduced by the Paduan physician and botanist Prospero Alpini in 1600 for therapeutic purposes; as a result, since 1690, the chicory was grown as a coffee substitute by the Dutch, hence the name 'Dutch coffee'. The genus name is perhaps of a distant Arab origin; the species name is derived from the Greek word 'intybos', used by Galen and Aetius to designate a plant similar to chicory. Flowering time: July to October.

## *Cistus creticus* L. subsp. *eriocephalus* (Viv.) Greuter & Burdet

The red rock rose is a species with a strictly Mediterranean distribution present in all Italian regions south of the Po River, and in Veneto. It grows in Mediterranean garrigues on siliceous substrates, more rarely on limestone, from sea level to about 800 m, but it is often also cultivated as an ornamental plant, above all in the Mediterranean Region. Seed germination increases significantly after the passage of fire, an adaptation that allows the plant to colonise wide burned areas. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with Mediterranean maquis and garrigue vegetation. The genus name, from the Greek 'kìsthos' (capsule, basket), perhaps refers to the shape of the fruit and was already used by Dioscorides to designate a plant from which a resinous substance used as incense was extracted; the species name refers to the island of Crete, where the species is present, that of the subspecies comes from Greek and means 'with a woolly head'. Flowering period: April to May.

## *Cistus monspeliensis* L.

The rock rose of Montpellier is a species with a strictly Mediterranean-Macaronesian distribution present in Liguria and in all the regions of Central and Southern Italy, except in the Marche and Umbria. It grows both on calcareous and on siliceous substrates (with optimum on the latter), as a typical element of Mediterranean garrigues, forming dense populations, especially in areas subject to repeated fires. Seed germination increases significantly after the passage of fire , an adaptation that allows the plant to colonise wide areas. The species is found on the edge of the Sardinian temporary ponds, in contact with Mediterranean maquis and garrigue vegetation. The genus name, from the Greek 'kìsthos' (capsule, basket), perhaps refers to the shape of the fruit and was already used by Dioscorides to designate a plant from which a resinous substance used as incense was extracted; the species name refers to the city of Montpellier, in the surroundings of which the species is present. Flowering period: April to May.

## *Cistus salviifolius* L.

The sage-leaved rock rose is a Mediterranean shrub present in all regions of Italy except in the Valle d'Aosta and Trentino-Alto Adige. It grows in Mediterranean garrigues or in very open maquis vegetation on siliceous substrates, where it is sometimes dominant, with optimum in the Mediterranean belt. Seed germination increases considerably after the passage of fire, an adaptation that allows the plant to colonize large burned areas. The species is found on the edge of the Sardinian temporary ponds, in contact with Mediterranean maquis and garrigue vegetation. The genus name, from the Greek 'kìsthos' (capsule, basket), perhaps refers to the shape of the fruit and was already used by Dioscorides to designate a plant from which a resinous substance used as incense was extracted; the species name refers to the leaves, which are similar to those of the kitchen sage. Flowering period: April to May.

## *Colchicum verlaqueae* Fridl.

The colchicum of Régine Verlaque is endemic to Sardinia, and in particular of the La Maddalena Archipelago. It grows on the edge of small temporary ponds shaded by Mediterranean shrubs (Biondi & Bagella, 2005). It is indicated in the Regional Red Lists (as *C. corsicum*) as a threatened species (Conti et al., 1997); it is also Listed in Annex 4 of the Habitat Directive as a Species of Community Interest that requires strict protection. The plant, especially the seeds, contains colchicine and secondary alkaloids that make it highly poisonous. The genus name is derived from the Colchis, an ancient Black Sea region corresponding to today's Georgia, that was home to the sorceress Medea, an expert in poisonous potions; the species is dedicated to the French botanist Régine Verlaque. Flowering period: September to November. Syn.: *Colchicum corsicum auct. p.p.*

## *Crataegus monogyna* Jacq.

The hawthorn is a southern European-Eurasian shrub present in all regions of Italy. It is one of the main constituents of open woods and hedges, and appears in all stages of the dynamics of woody vegetation, on calcareous to weakly acidic soils, being able to root also in the fissures of the rocks, albeit with shrunken and deformed specimens, from sea level to the lower montane belt, with optimum in the sub-Mediterranean belt. The species is found in the outer belt of the Sardinian temporary ponds, in contact with mesophilic scrub vegetation. It is often used as an ornamental plant for hedges and gardens, being valued for its prolonged and fragrant flowering, and also for the bright red colour of the fruit, which persists on the plant for a long time. The leaves and fruits, which are edible but not very tasty, have medicinal properties. The genus name derives from the Greek 'kratos' (power) and is the ancient common name of the plant, the species names comes from the Greek 'monos' (single) and 'gyne' (female), referring to the fruit with a single seed. Flowering period: April to May.

## *Crocus minimus* DC.

The minor saffron is a Sardinian-Corsican endemic. It grows in dry grasslands and in thorny shrubs formations, from sea level to about 1300 m. The species sporadically appears in the outer belt of the Sardinian temporary ponds. The bulb is poisonous. The genus name derives from the Greek 'krokos' (filament) in allusion to the long thread-like stigmas that in the case of *C. sativus*, once dried constitute the spice called saffron; the species name refers to the small size of the flowers. Flowering period: March to May.

## *Crypsis aculeata* (L.) Aiton

This annual grass with a wide palaeo-subtropical distribution is present in North-Eastern Italy, in Emilia-Romagna and in almost all regions of Central and Southern Italy (missing in Umbria and Molise and not reported in recent times from Liguria and Abruzzo). It grows in brackish areas along the coasts, on muddy, more less saline soils. In Sardinia it was found only in small temporary ponds, in contact with brackish water on the island of La Maddalena. The genus name derives from the Greek 'kryptos' (hidden) in reference to the fact that the inflorescence is hidden by the leaf sheaths; the species name refers to the upper leaves, which tend to become rigid and almost prickly. Flowering period: July to September.

## *Crypsis alopecuroides* (Piller & Mitterp.) Schrad.

This annual grass with a Mediterranean-Turanian distribution is present in almost all regions of Italy (missing in Valle d'Aosta, Trentino-Alto Adige, Marche and Basilicata, and not reported since a long time from Liguria), but is generally rare and vanishing. It grows on moist, usually brackish soils, mainly along the coasts. The species is sporadic in the temporary ponds of Sardinia, in coastal areas with brackish water. The genus name derives from the Greek 'kryptos' (hidden) in reference to the fact that the inflorescence is hidden by the leaf sheaths; the species name refers to the resemblance of the inflorescence with that of species of *Alopecurus*. Flowering time: July to October.

## *Crypsis schoenoides* (L.) Lam.

This annual grass with a wide palaeo-subtropical distribution is present in all regions of Italy, but is becoming rare. It grows in moist environments, especially on weakly saline soils along the coast. The species is sporadic in the temporary ponds of Sardinia, in coastal areas with brackish water. The genus name derives from the Greek 'kryptos' (hidden) in reference to the fact that the inflorescence is hidden by the leaf sheaths; the species name refers to the resemblance to plants of the genus *Schoenus*. Flowering time: July to October.

## *Cynodon dactylon* (L.) Pers.

This sub-cosmopolitan weed is present in all regions of Italy. It grows in ruderal, strongly disturbed, often trampled sites, such as along roads, in vineyards and cultivated fields, where is can become a pest, in the cracks of paving stones, on sandy to clayey, sometimes even saline soils which are dry in summer, below the lower montane belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with ruderal vegetation. The plant is still used for the preparation of infusions with diuretic effects. The genus name is derived from two Greek words: 'kyon' (dog) and 'odon' (tooth), perhaps due to the appearance of the spikelets; the species name, from the Greek 'daktylon' (finger), refers to the shape of the inflorescence, resembling a hand with many fingers. Flowering period: June to September.

## *Cynosurus cristatus* L.

This grass with a European-Caucasian distribution is present in all regions of Italy. It grows in pastures, hay-meadows, grasslands and open shrublands, on rather fresh soils that are rich in nitrogen compounds, usually with a subneutral reaction, from sea level to approximately 2000 m. The species is found in the outer belt of the Sardinian temporary ponds, in contact with mesic grasslands. It is a good fodder plant. The genus name derives from the Greek 'kyon' (dog), and 'oura' (tail), for the appearance of the inflorescence of some species, the species name derives from the Latin word 'crista' (comb) for the appearance of the sterile spikelets. Flowering period: April to June.

## *Cynosurus echinatus* L.

This annual grass with a broadly Mediterranean distribution is present in all regions of Italy, but is more common in Central and Southern Italy. It grows in dry, disturbed habitats, with other steppic or ruderal plants, on primitive sub-acid soils which are dry in summer, from sea level to the montane belt (in the South up to 2000 m). The species is sporadic in the outer belt of the Sardinian temporary ponds. The genus name derives from the Greek 'kyon-kynos' (dog) and 'oura' (tail), because of the shape of the inflorescence; the species name comes from the Greek 'ekhinos' (hedgehog), referring to the long unilateral awns which give the ears the appearance of the back of a hedgehog or of a porcupine. Flowering period: May to June.

## *Cyperus badius* Desf.

This species with a predominantly Mediterranean distribution is present in all regions of Italy overlooking the Tyrrhenian Sea, in Abruzzo and in Molise. It grows in ditches, in stagnant waters, on the banks of marshes and waterways, with optimum in the Mediterranean belt. The species is sporadic in areas with wetlands. The genus name, already used by the ancient Greeks, is of uncertain etymology, perhaps it derives from the island of Cyprus (Kypros); the species name in Latin means 'brown' in reference to the colour of the spikes. Flowering period: June to August. Syn.: *Cyperus longus* L. subsp. *badius* (Desf.) Murb.

## *Cyperus fuscus* L.

This species with a wide Eurasian-Mediterranean distribution is present in all regions of Italy. It grows as a pioneer ephemeral plant in periodically submerged vegetation, at the edges of ponds and rivers, on sandy to silty-clayey soils that are rich in bases and nitrogen compounds, from sea level to about 1500 m. It is a characteristic species of the Sardinian temporary ponds; however, it is not very common, being mainly localized in the intermediate belt. The genus name, already used by the ancient Greeks, is of uncertain etymology, perhaps it derives from the island of Cyprus (Kypros); the species name comes from the Latin 'fuscus' (dark, black), because of the colour of the glumes. Flowering period: July to September.

## *Cyperus michelianus* (L.) Delile

This species with a wide palaeo-subtropical distribution is present in many regions of Italy, from Sicily to the Po Valley. It grows on wet, sandy, usually siliceous soils, from sea level to the hill belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, on sandy soils. The genus name, already used by the ancient Greeks, is of uncertain etymology, perhaps it derives from the island of Cyprus (Kypros); the species is dedicated to the great Florentine botanist Pier Antonio Micheli (1679-1737). Flowering time: July to October.

## *Cytinus hypocistis* (L.) L.

This parasitic plant with a Mediterranean-Macaronesian distribution is present in all regions of Southern Italy, in the Islands, and in Lazio, Umbria, Tuscany, Liguria, Lombardy and Veneto. It grows in the Mediterranean garrigues, on acidic soils, as a parasite of species of *Cistus* , but sometimes also of other Cistaceae. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with garrigues dominated by *Cistus*. The genus name derives from the Greek word 'kýtinos, -ou', that Theophrastus used to designate the buds of the pomegranate; Dioscorides wrote of a plant that 'comes attached to the roots of Cistus and looks like the pomegranate flower'; the species name comes from the Greek 'hypo' (below) and from the Latin 'cistus' (*Cistus*) and means 'growing under a *Cistus*'. Flowering period: April to May.

## *Dactylis glomerata* L. subsp. *hispanica* (Roth) Nyman

This subspecies belongs to a complex with different ploidy level which has a Eurasian-south European general distribution, with some entities that have become almost cosmopolitan in temperate zones of the Globe; the species is present in all regions of Italy, with six subspecies. The distribution of subsp. *hispanica* is mainly Mediterranean. It grows in dry grasslands and in openings of garrigue vegetation, on rather primitive soils which are dry in summer, also in disturbed environments, such as along streets, with optimum in the Mediterranean belt. This grass is sporadic in the outer belt of the Sardinian temporary ponds, in contact with Mediterranean maquis and garrigue vegetation. The genus name derives from the Greek 'daktylon' (finger), referring to the shape of the inflorescence, the species name refers to the spikelets that are arranged in dense clusters. Flowering period: May to July.

## *Damasonium alisma* Mill. subsp. *alisma*

This species has a broadly Mediterranean distribution extending up to southern Russia, and is present in Tuscany, Lazio, Puglia, Sardinia and Sicily (not found since a long time in Campania); it includes the nominal subspecies, and subsp. *burgaei*, the latter only present in Sardinia, Basilicata and Sicily. The life-cycle can be spent part in water, part on moist to dry soil. It grows in ponds and marshes, on muddy soils, from sea level to about 500 m. It is a characteristic species of Mediterranean temporary ponds; in Sardinia it is found in the central and intermediate belts with prolonged flooding during the growing season. The genus name derives from the Greek 'damasónion', the name of an aquatic plant with leaves similar to those of *Alisma*, which in turn derives from 'damázein' (to tame), in reference to the supposed properties as an antidote against the venom of toads; the species name as well refers to the similarity to species of the genus *Alisma*. Flowering period: April to May.

## *Damasonium alisma* Mill. subsp. *bourgaei* (Coss.) Maire

This species has a broadly Mediterranean distribution extending up to southern Russia, and is present in Tuscany, Lazio, Puglia, Sardinia and Sicily (not found since a long time in Campania); it includes the nominal subspecies, and subsp. *bourgaei*, the latter only present in Sardinia, Basilicata and Sicily. The life-cycle can be spent part in water, part on moist to dry soil. It grows in ponds and marshes, on muddy soils, from sea level to about 500 m. It is a characteristic species of Mediterranean temporary ponds, but in Sardinia, to date, it has been found only at Capo Sant'Elia. The genus name derives from the Greek 'damasónion', the name of an aquatic plant with leaves similar to those of *Alisma*, which in

turn derives from 'damázein' (to tame), in reference to the supposed properties as an antidote against the venom of toads; the species name as well refers to the similarity to species of the genus *Alisma*; the subspecies is dedicated to the French botanist Eugene Bourgeau (1813-1877). Flowering period: April to May.

## *Danthonia decumbens* (L.) DC. subsp. *decumbens*

This European species is present in all Italian regions except Sicily. It grows in grasslands and high-altitude shrublands, on siliceous substrates or on acidified soils, from sea level to about 2000 m, with optimum above the lower montane belt. In Sardinia this species was found exclusively in the outer belt of the temporary ponds of Mandra Puddatta at about 1000 m. The genus is dedicated to E. Danthoine, a French botanist of the nineteenth century; the species name refers to the stems that are often prostrate. Flowering period: May to June.

## *Daphne gnidium* L.

This species with a strictly Mediterranean-Macaronesian distribution is present in Liguria, Tuscany, in all regions of Southern Italy, and in the Islands. Ii is a typical element of the evergreen Mediterranean maquis. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with Mediterranean maquis and garrigue vegetation. This is one of the most used dyeing plants in Sardinia; the leaves or the branches are used, depending on the period in which the plant is collected, and on the colour to be achieved: the gradation ranges from pale yellow to dark yellow, brown, green, and black. The plant, for its antiseptic properties, was also used to disinfect and preserve the wool. The species of this genus were known since ancient times for their pharmacological properties, but their use is very dangerous, and often the only contact with the skin causes redness and blisters. The genus name is the ancient Greek name of laurel; the species name is derived from Knidos, an ancient Greek city in Anatolia (Latin: Cnidus, ancient Greek: Knidos), currently called Cumali. Flowering period: July to September.

## *Daucus carota* L. subsp. *carota*

The wild carrot is native to the southern part of Eurasia, but is now widespread in temperate zones around the World and is present, with several subspecies, in all regions of Italy. It grows both in the driest aspects of hay meadows and in ruderal vegetation near settlements, on rather primitive soils that are rich in nitrogenous compounds and bases, sometimes even slightly saline, from sea level to about 1400 m. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The root has been known since ancient times, and Pliny mentions it as a diuretic and digestive. 'Old' Carrots, however, were thin and bony, with an acrid taste and a whitish pulp, since the selection of carrots grown today began in the sixteenth century. The genus name derives from the Greek 'daio' (to burn, heat), perhaps for the alleged heating properties of the plant; the species name was already in use among the ancient Greeks. Flowering period: April to October.

## *Dipsacus ferox* Loisel.

This biannual plant, endemic to the Sardinian-Corsican System (Camarda, 2006), was erroneously reported also from Molise and the Marche. It grows in ruderal environments, in uncultivated, disturbed grasslands and pastures, in

landfills, along the roads, below the lower montane belt. The species sporadically appears on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The genus name derives from the Greek 'dipsa' (thirst), because of the leaves which are fused together at the base to form a sort of tank where rain water accumulates; the species name refers to the strong prickles. Flowering period: May to August.

## *Dittrichia graveolens* (L.) Greuter

This annual plant with a Mediterranean-Turanian distribution is present in all regions of Italy except Trentino-Alto Adige, but is more common in the central and southern regions. The life-cycle can be spent part in water, part on moist to dry soil. It grows in uncultivated arid sites and in waste places, even on salty soils, from sea level to about 800 m. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The plant, with a strong smell that is unpleasant to herbivores, seem to possess antimicrobial properties. The genus is dedicated to the German botanist Manfred Dittrich (1934-), a specialist in *Asteraceae*; the species name refers to the strong odour emanating from the leaves. Flowering period: August to October.

## *Dittrichia viscosa* (L.) Greuter subsp. *viscosa*

This species with a broadly Mediterranean distribution is present in all regions of Italy except in the Valle d'Aosta and Trentino-Alto Adige. It grows in the gravel beds of streams, on beaches and uncultivated wet ground, in ruderal environments; the primary stations are in coastal habitats on weakly saline soils, from which the species was able to spread on the clay soils of ruderal environments, mainly on marly-siliceous substrata (on limestone the species is rare and ephemeral), from sea level to about 800 m. The species is found on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The plant, with a strong smell that is unpleasant to herbivores, seem to possess antimicrobial properties. The genus is dedicated to the German botanist Manfred Dittrich (1934-), a specialist in *Asteraceae*; the species name refers to the stickiness of the plant. Flowering period: August to October. Syn.: *Inula viscosa* (L.) Aiton subsp. *viscosa*

## *Echium plantagineum* L.

This species with a broadly Mediterranean distribution is present in all regions of Italy except in the Valle d'Aosta, Lombardy and Trentino-Alto Adige, but is more frequent in Central and Southern Italy. It grows in uncultivated arid sites with sandy soils, in waste places and along roads, from sea level to the lower montane belt (in the North it is restricted to lowland areas). The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The genus name derives from the Greek 'echis' (snake), because of the shape of the inflorescence that is curved like the head of a snake; the species name probably refers to the broad basal leaves that are adpressed to the ground like those of the greater plantain. Flowering period: March to July.

## *Echium vulgare* L. subsp. *vulgare*

This species with a southern European-Eurasian distribution, of ancient introduction near the limits of its present distributional range, is present, with two subspecies, in all regions of Italy. It grows in ruderal vegetation along roads and railways, in landfills, quarries, often in settlements, on disturbed, gravelly to clay, subarid soils poor in humus and nitrogen compounds. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The Flemish botanist R. Dodoens (1517-1585) reported a legend in which Nicander and Alcibiades, bitten by a viper, healed the wound by applying a *Echium* after having chewed it, hence the Italian name 'viper grass' (erba viperina). The genus name derives from the Greek 'echis' (snake), perhaps because of the shape of the inflorescence, that is curved like the head of a snake; the species name comes from the Latin 'vulgus' (common people) and means 'common, widespread, frequent'. Flowering period: April to September.

## *Elatine alsinastrum* L.

This species has a wide Eurasian distribution; the distribution in Italy is still poorly known because of the frequent confusion with other related species: there are validated reports from Lombardy, Lazio, Molise, Sardinia and Sicily. It grows in stagnant and slowly flowing waters that are poor in nutrients, from sea level to about 1500 m. It is a characteristic species of Mediterranean temporary ponds, but in Sardinia it was found only in two sites, Paule Longa (Ghilarza) and Sos Fungarones (Olmedo). The genus name is that of a plant mentioned by Pliny and comes from the Greek 'elate' (fir), in reference to the similarity of the submerged leaves of some species to the needles of the fir tree; the species name refers to the vague resemblance to species of the genus *Alsine*. Flowering period: May to August.

## *Elatine hexandra* (Lapierre) DC.

This species with a mainly northern European Atlantic (sub-Atlantic) distribution is also present in the regions of the Po Valley, from Piedmont to Veneto. The life-cycle can be spent part in water, part on moist to dry soil. It grows in stagnant and slowly flowing waters, from sea level to about 500 m. In Sardinia it was found exclusively in the temporary pond of Sos Fungarones (Olmedo). The genus name is that of a plant mentioned by Pliny and comes from the Greek 'elate' (fir), in reference to the similarity of the submerged leaves of some species to the needles of the fir tree; the species name derives from Greek as well, meaning 'with 6 stamens'. Flowering period: June to September.

## *Elatine macropoda* Guss.

This species with a mainly western, strictly Mediterranean distribution, is present in Sardinia, Sicily and Puglia (of dubious occurrence in Lazio). The life-cycle can be spent part in water, part on moist to dry soil. It grows in ephemeral ponds, from sea level to about 600 m. This characteristic species of the temporary ponds, which is widespread in Sardinia, is indicated in the Regional Red Lists as endangered (Conti et al., 1997). The genus name is that of a plant mentioned by Pliny and comes from the Greek 'elate' (fir), in reference to the similarity of the submerged leaves of some species to the needles of the fir tree; the species name derives from Greek as well, meaning 'with a big foot'. Flowering period: March to May.

## *Elatine triandra* Schkuhr

This species with a wide circumboreal distribution is present in Lombardy, Emilia-Romagna and Calabria (as an ephemeral weed also in Piedmont and Sardinia). It grows in rice fields and in temporary ponds, from sea level to approximately 300 m. It is a characteristic species of Mediterranean temporary ponds, but in Sardinia it occurs only sporadically. The genus name is that of a plant mentioned by Pliny and comes from the Greek 'elate' (fir), in reference to the similarity of the submerged leaves of some species to the needles of the fir tree; the species name derives from Greek as well and means 'with 3 stamens'. Flowering period: June to September.

## *Eleocharis acicularis* (L.) Roem. & Schult.

This species with a wide, almost cosmopolitan distribution was hitherto reported only from northern and central Italy (see map), but is present also in Sardinia. It grows in muddy sites, in flooded areas and in rice fields, from sea level to about 1000 m. It is a characteristic species of Mediterranean temporary ponds; in Sardinia it appears sporadically in the outer belt of the temporary ponds. The genus name derives from the Greek 'helos' (marsh) and 'charis' (ornament); the species name in Latin means 'needle-like'. Flowering period: June to September.

## *Eleocharis multicaulis* (Sm.) Desv.

This species with a sub-Atlantic distribution is known with certainty only from Piedmont, Veneto, Tuscany, Sardinia and Puglia (since a long time not found in Liguria, Emilia-Romagna and Friuli Venezia Giulia). It grows on the muddy banks of ponds and marshes, on acidic soils, from sea level to about 1000 m. The species is sporadic in the temporary ponds of Sardinia. The National Regional Red List mentions it as an endangered species (Conti et al., 1997). The genus name derives from the Greek 'helos' (marsh) and 'charis' (ornament); the species name, which in Latin means 'with many stems', refers to the fact that the plant tends to form small, dense clumps. Flowering time: June to October.

## *Eleocharis palustris* (L.) Roem. & Schult. subsp. *palustris*

This species with a wide Eurasian distribution is present in all regions of Italy. It grows along streams and ponds, on muddy, periodically inundated soils that are rich in bases and nitrogen compounds, from sea level to about 1600 m. The species is common in the center and in the intermediate belt of the Sardinian temporary ponds. The genus name derives from the Greek 'helos' (marsh) and 'charis' (ornament); the species name refers to the habitat. Flowering period: April to June.

## *Erica arborea* L.

This heather is a Mediterranean plant, widespread in all Italian regions with the exception of Valle d'Aosta and Friuli Venezia Giulia. It grows in the evergreen Mediterranean maquis vegetation, on acidic or acidified soils (siliceous substrates). The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with Mediterranean maquis. The flowers are a good source of honey. The basal parts of the trunk, thanks to the wood rich in tannins, and hence heat-resistant, are used for the construction of pipes. The plant is also resistant to repeated fires, which destroy only the aboveground parts. The genus name comes from the Greek 'eréiko', which means 'to break', because once the decoction of the flowers was used to crush bladder stones, or because of its ability to penetrate the roots in rocky substrates; the species name refers to the large size of the plant. Flowering period: March to May.

## *Erica scoparia* L. subsp. *scoparia*

This heather is a Mediterranean species present in Central Italy, in Liguria and in Sardinia. It grows in open thermophilic woods, maquis and garrigue vegetation on siliceous substrates, especially after repeated fires, which destroy only the aboveground parts, with optimum in the Mediterranean belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with Mediterranean maquis. The genus name comes from the Greek 'eréiko', which means 'to break', because once the decoction of the flowers was used to crush bladder stones, or because of its ability to penetrate the roots in rocky substrates; the species name refers to the former usage for the construction of brooms. Flowering period: May to June.

## *Eryngium barrelieri* Boiss.

This species with a southern Mediterranean distribution is present in Sardinia, Lazio, Puglia, and Sicily. The life-cycle can be spent part in water, part on moist to dry soil. It grows in ephemeral ponds flooded only in winter, below the lower montane belt, with optimum in the Mediterranean belt. It is a characteristic species of Mediterranean temporary ponds, commonly found in Sardinia but indicated in the IUCN regional Red List as an endangered species (Conti et al., 1997). The genus name is of uncertain etymology: it could derive from the Greek 'eryngion' (hedgehog) or 'eryma' (defense), in both cases alluding to the strong prickliness of the plant; the species is dedicated to the Dominican monk and botanist Jacques Barrelier (1606-1673). Flowering period: May to June.

## *Eryngium corniculatum* Lam.

This species with a mainly western Mediterranean distribution finds in Sardinia the eastern boundary of its distributional range. The life-cycle can be spent part in water, part on moist to dry soil. It grows in pools and ponds that are flooded only in winter and spring, but are dry in summer, from sea level to approximately 300 m. It is a characteristic species of the Mediterranean temporary ponds, but in Sardinia it has so far been found in three sites only: Mt. Minerva (Villanova Monteleone), Pond of Bara (Macomer), Pauli della Giara (VS). It falls into the vulnerable category of the Italian Red Lists (Caria & Bagella, 2011). The genus name is of uncertain etymology: it could derive from the Greek 'eryngion' (hedgehog) or 'eryma' (defense), in both cases alluding to the strong prickliness of the plant; the species name refers to the shape of the bracts of the inflorescence, which are linear and horn-shaped. Flowering period: June to August.

## *Eryngium tricuspidatum* L.

This species with a mainly southern and western, strictly Mediterranean distribution, is present in Sardinia and in Sicily. It grows in dry and stony uncultivated, barren pastures, below the montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The genus name is of uncertain etymology: it could derive from the Greek 'eryngion' (hedgehog) or 'eryma' (defense), in both cases alluding to the strong prickliness of the plant; the species name refers to the bracts of the inflorescence, which are three-forked. Flowering period: June to September.

## *Eudianthe laeta* Rchb. ex Willk.

This annual plant with a mainly north-western Mediterranean distribution is present, but generally rare, in Tuscany, Lazio, Puglia and Sardinia (no longer found in the Marche, and of dubious occurrence in Campania). It is a characteristic species of Mediterranean temporary ponds; in Sardinia it is common in the outer belt of the ponds. It grows in moist meadows along the coast and at the edges of ephemeral ponds, on soils which are flooded or wet in winter and dry in summer, from sea level to about 600 m. The genus name derives from the Greek 'eu' (good) and 'dianthes' (speckled flowers). Flowering period: April to May.

## *Euphorbia exigua* L. subsp. *exigua*

This annual spurge with a broadly Mediterranean distribution (now almost cosmopolitan and perhaps of ancient introduction at the limit of its present range - archaeophyte), is present in all regions of Italy. It grows in cereal crops, more rarely in abandoned fields and along the roads, on silty-clay soils rich in skeleton, dry summer, rich in nitrogen compounds, usually on siliceous substrates, below the lower montane belt; it is locally strongly declining, due to the abandonment of cereal crops. The species is common in the outer belt of the Sardinian temporary ponds, in contact with ruderal vegetation. The sap is poisonous: very irritating, it can trigger photoallergic reactions. The genus name refers to Euphorbus, physician of King Juba II of Mauritania (I sec. BC - I century AD), which, according to Pliny, discovered the spurge and its properties; the species name refers to the small size of the plant. Flowering period: May to August.

## *Euphorbia peplus* L.

This annual spurge with a wide Eurasian-Mediterranean distribution was introduced together with crops in the northern portion of its present distributional range, and today has become almost cosmopolitan, being present in all regions of Italy. It grows in crop fields, gardens, ruderal environments and abandoned cultivations, on clay soils rich in nitrogen compounds, mostly decalcified and sub-acid, from sea level to the lower montane zone. The species is sporadic in the outer margin of the Sardinian temporary ponds, in contact with ruderal vegetation. The sap is poisonous: very irritating, it can trigger photoallergic reactions. The genus name refers to Euphorbus, physician of King Juba II of Mauritania (I sec. BC - I century AD), which, according to Pliny, discovered the spurge and its properties; the species name is the Latin for 'china', and refers to the resemblance with *Portulaca oleracea*. Flowering period: January to November.

## *Euphorbia pterococca* Brot.

This annual spurge with a mainly western, Mediterranean- Macaronesian distribution, is present in almost all the regions of Central, Southern and Insular Italy (missing only in the Marche, Umbria and Basilicata). It grows in dry uncoltivated sites, sometimes along roads, on mainly sandy soils which are dry in summer, from sea level to about 500 m. The species is sporadic in the outer margin of the Sardinian temporary ponds. The sap is poisonous: very irritating, it can trigger photoallergic reactions. The genus name refers to Euphorbus, physician of King Juba II of Mauritania (I sec. BC - I century AD), which, according to Pliny, discovered the spurge and its properties; the species name in Greek means 'with a winged capsule', in reference to the two wavy wings present on the back of the three lodges of the fruit. Flowering period: April to May.

## *Exaculum pusillum* (Lam.) Caruel

This annual species with a mainly western, broadly Mediterranean distribution, is present in Umbria, Lazio, Sardinia and Sicily (the presence in Tuscany is doubtful). The life-cycle can be spent part in water, part on moist to dry soil. It grows in rather moist habitats, sometimes along paths, on muddy soils, from sea level to approximately 600 m. This characteristic species of Mediterranean temporary ponds, in Sardinia is common, especially in the central belt of the ponds; vegetative growth occurs during flooding, flowering in the early phase of desiccation. The genus name is the diminutive of 'exacum', a plant mentioned by Pliny which probably corresponds to the genus *Centaurium*; the species name, that in Latin means 'small', refers to the small size of the plant. Flowering period: May to August.

## *Ferula communis* L.

This Mediterranean species is present in all regions of Central, Southern, and Insular Italy (where it is most frequent), in Liguria, Lombardy, Emilia-Romagna and Veneto. It grows in stony and sunny uncultivated sites, in pastures and along roadsides, below the montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation, or in areas subject to fires. The dry stem, which is tough and light, is used to build chairs, stools and other crafts. The plant is toxic: ingestion of the aerial parts by cattle and sheep causes the so-called 'Ferula illness', with severe intoxication and haemorrhage that can lead to death. The genus name in Latin means 'reed', but also 'stick, lash', as the dry stem was used for corporal punishment of unruly pupils. Flowering period: May to June.

## *Festuca morisiana* Parl. subsp. *morisiana*

The fescue of Moris is a grass endemic to Sardinia, where it grows on soils that are moist for a long time on the Gennargentu Massif and on the Marghine mountain chain.The genus name, that in Latin means 'very thin twig', already in use among the Romans, was quoted by Varro (116-27 BC) and later by Pliny the Elder (23-79 AD) for a grass; the

species is dedicated to Giuseppe Giacinto Moris (1796-1869), author of an important Flora of Sardinia. Flowering period: June to July.

## *Ficaria verna* Huds. s.l.

The aggregate of *F. verna* (formerly called *Ranunculus ficaria*) includes several entities which are rather difficult to identify; it is present throughout Italy, from sea level to montane belt. The primary habitats are hygrophilous forest edges, but today the species is more common in damp disturbed sites, where it grows on silty-clayey, fresh to moist, neutral to sub-acid soils. The species is sporadic on the edge of the Sardinian temporary ponds, mostly in shaded areas. Some forms reproduce vegetatively by stolons and bulbils, often forming almost pure clonal populations. As in all buttercups, the fresh parts are poisonous (protoanemonin). The old generic name in Latin means 'little frog' and was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the current generic name in Latin means 'fig-like' perhaps because of the large size of the leaves. Flowering period: January to May.

## *Filago gallica* L.

This annual plant with a broadly Mediterranean distribution is present in all regions of Italy except in Trentino-Alto Adige and Friuli Venezia Giulia (of dubious occurrence in Valle d'Aosta). It grows in fallow fields and on barren ground, below the montane belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands and garrigue vegetation. The genus name derives from the Latin 'filum' (thread), for the dense and tiny hairs that cover stems and leaves; the species name refers to Gaul (France), where the species is present. Flowering period: May to August.

## *Fumaria officinalis* L. subsp. *officinalis*

This annual plant with a wide south European-Eurasian distribution is present in all regions of Italy. It grows in vineyards and fields, along paths, in the crevices of stone walls, in ruderal sites, on soils which are rich in bases and nitrogen compounds, but sometimes also on decalcified and sub-acid soils, from sea level to the lower montane belt, sometimes even at higher elevations, especially in the South. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The plant contains alkaloids, fumaric acid and bitter substances, and in the past was used to treat a large number of disorders, despite its toxicity. The genus name refers to the smoke-like appearance of the grey-green leaves, or to the irritating smoke that the plant produces when burned; the species name derives from the Latin word 'officina' (pharmacy), referring to its use for medicinal purposes. Flowering period: March to August.

## *Galactites tomentosus* Moench

This species with a strictly Mediterranean distribution is present in all regions of Central and Southern Italy, in the Islands, in Liguria, Emilia-Romagna and Veneto. It grows in dry, disturbed sites, on uncultivated ground, along roadsides and in waste places, from sea level to about 1300 m (in the North it is restricted to the lowlands). The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with ruderal vegetation. Leaves, young stems, and flower heads before hatching are edible. The genus name derives from the Greek 'gala' (milk) in reference to the colour of the dense white hairs covering stems and leaves; the species name as well, deriving from Latin, refers to the dense tomentum. Flowering period: April to July.

## *Galium aparine* L.

This annual plant with an originally Eurasian distribution has now become almost cosmopolitan in the temperate zones of the Globe, and is present in all regions of Italy. It grows in ruderal vegetation, at the edge of hedges and thickets, in disturbed and cultivated land, especially in hot and arid sites, where it often forms dense tangles, on soils rich in nitrogen compounds, from sea level to the lower montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The plant is edible after cooking, and is still used in herbal medicine for different properties. The genus name derives from the Greek 'gala' (milk), which is also related to the Italian 'caglio' (rennet): different species were used to curdle milk in cheese-making; the species name, already in use by the ancient Greeks, derives from the verb 'aparein' (to attach) alluding to the hooked teeth present on stems, leaves and fruits, which can be easily fixed to clothes, or to the hairs of animals. Flowering period: March to September.

## *Galium debile* Desv.

This species with a broadly Mediterranean distribution is present in almost all regions of Italy (missing only in Piedmont, Valle d'Aosta, Trentino-Alto Adige and perhaps in Umbria). It grows in peaty meadows and sedge communities on the banks of ponds and bogs, on moist soil that is periodically flooded, from sea level to the lower montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with mesic grasslands. The genus name derives from the Greek 'gala' (milk), which is also related to the Italian 'caglio' (rennet): different species were used to curdle milk in cheese-making; the species name, that in Latin means 'weak', refers to the general frailty of the plant. Flowering period: May to July.

## *Galium palustre* L. subsp. *palustre*

This species with a wide Eurasian distribution is present in all regions of Italy; the nominal subspecies is found in north-central Italy except in Piedmont, Tuscany and Lazio. It grows in marshy reed vegetation along the banks of canals and ponds, or in wet meadows, on silty-clayey to peaty, sometimes flooded soils which are rich in bases and nitrogen compounds, from sea level to the montane belt. The species is common in the central and intermediate belts of the Sardinian temporary ponds. The genus name derives from the Greek 'gala' (milk), which is also related to the Italian 'caglio' (rennet): different species were used to curdle milk in cheese-making; the species name refers to the habitat. Flowering period: May to July.

## *Galium parisiense* L.

This annual plant with a broadly Mediterranean distribution is present in all regions of Italy, but is more frequent in Central and Southern Italy. It grows in dry grasslands and in openings of garrigue vegetation, from sea level to the lower montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with dry grasslands and garrigue vegetation. The genus name derives from the Greek 'gala' (milk), which is also related to the Italian 'caglio' (rennet): different species were used to curdle milk in cheese-making; the species name refers to the city of Paris. Flowering period: April to June.

## *Galium verrucosum* Huds. subsp. *verrucosum*

This annual species with a strictly Mediterranean distribution is present, with two subspecies, in Liguria and in all the regions of Central and Southern Italy, except in Umbria. It grows in disturbed habitats like uncultivated grasslands and fields, on soils that are arid in summer, from sea level to about 800 m. The species is sporadic on the edge of the Sardinian temporary ponds. The genus name derives from the Greek 'gala' (milk), which is also related to the Italian 'caglio' (rennet): different species were used to curdle milk in cheese-making; the species name refers to the fruit, that is covered with large warts. Flowering period: January to May.

## *Gastridium ventricosum* (Gouan) Schinz & Thell.

This annual grass with a Mediterranean-Atlantic distribution is present, but not common, in all regions of Italy except in the Valle d'Aosta, Lombardy, and Trentino-Alto Adige. It grows in uncultivated sites, in thickets and in open herbaceous vegetation, below the lower montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with dry meadows. The genus name is the diminutive of the Greek 'gaster' (belly) in reference to the swollen glumes; the species name as well derives from Latin with the same meaning. Flowering period: May to July.

## *Gaudinia fragilis* (L.) P. Beauv.

This annual grass with a broadly Mediterranean distribution is present in all regions of Italy except in Piedmont, Valle d'Aosta and Trentino-Alto Adige. It grows in wet meadows and pastures, from sea level to about 1200 m. The species is found in the outer belt of the Sardinian temporary ponds. The genus is dedicated to J.F.G. Gaudin (1766-1833) author of a Flora of Switzerland; the species name refers to the fragility of the spikelets, which disarticulate easily. Flowering period: April to June.

## *Geranium dissectum* L.

This annual plant of Mediterranean origin has now become almost cosmopolitan, and is of ancient introduction near the limits of its present distributional range; it is present in all regions of Italy except in the Valle d'Aosta. It grows in disturbed vegetation, in the vineyards, along roads, on the edge of cultivated fields, gardens and orchards, on fresh to subarid, clay soils rich in bases and nitrogen compounds, with optimum below the montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The genus name derives from the Greek 'géranos' which means 'crane', referring to the long beak that surmounts the fruit, the species name refers to the deeply divided leaves. Flowering period: April to September.

## *Geranium molle* L.

This annual plant of Mediterranean origin has now become almost cosmopolitan, and is of ancient introduction near the limits of its present distributional range; it is present in all regions of Italy except in the Valle d'Aosta. It grows in disturbed vegetation, in the vineyards, along roads, on the edge of cultivated fields, gardens and orchards, on fresh to subarid, clay soils rich in bases and nitrogen compounds, with optimum below the montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The genus name derives from the Greek 'géranos' which means 'crane', referring to the long beak that surmounts the fruit, the species name refers to the deeply divided leaves. Flowering period: April to September.

## *Geranium robertianum* L.

This plant with an originally Eurasian distribution is presently widespread also in North America and occurs in all regions of Italy. It originates from alluvial forests, from which it passed to disturbed sites, on clay soils rich in nitrogen compounds, in habitats that are more shaded and cooler than those preferred by the very similar *G. purpureum*, from the lowlands to the montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in areas shaded by Mediterranean shrubs. The genus name derives from the Greek 'géranos', which means 'crane', referring to the long beak that surmounts the fruit; the species name derives from the common Italian name (Erba di San Roberto). Flowering period: May to August.

## *Glinus lotoides* L.

This annual plant with a wide palaeo- and subtropical distribution is present as a weed in Sardinia and Sicily (since a long time no longer found in the Pontine Marshes in the Lazio, and in Calabria at Anja and Mammola). It grows in rather disturbed damp places, on muddy, sometimes weakly saline soils, exclusively along the coast. The species is very rare on the edge of the Sardinian temporary ponds. The genus name is the Greek name of a plant mentioned by Theophrastus and then by Pliny; the species name refers to the shape of the leaves, which are vaguely similar to those of the genus *Lotus*. Flowering time: July to October.

## *Glyceria fluitans* (L.) R. Br.

This grass with an originally Eurasian distribution has now become almost cosmopolitan, and is present in all regions of Italy except perhaps in Valle d'Aosta (since a long time no longer reported from Campania). It grows in marshes and reed beds along waterways, on silty-clay, flooded soils that are rather rich in bases, but sometimes poor in calcium, from sea level to the montane belt. The species is sporadic in the central belt of the Sardinian temporary ponds. The genus name derives from the Greek 'glykeros' (sweet), for the flavour of the seeds that were once used for human consumption, the species name refers to the fact that the leaves are sometimes submerged in running water. Flowering period: May to July.

## *Glyceria spicata* Guss.

This mainly Mediterranean grass is present in Lazio, Puglia, Calabria, Sicily and Sardinia (since a long time no longer found in Tuscany and Campania). It grows on the edge of ditches and swamps, along the banks of rivers, at the edge of temporary pools, on muddy, periodically flooded soils, below the lower montane belt, with optimum in the Mediterranean belt. The species is common in the central belt of the Sardinian temporary ponds. The genus name derives from the Greek 'glykeros' (sweet), for the flavour of the seeds that were once used for human consumption; the species name refers to the linear inflorescence, which resembles a spike. Flowering period: May to July.

## *Gnaphalium uliginosum* L.

This annual plant with a wide Euro-Siberian distribution is present in all regions of Italy. It grows in wet meadows, in muddy habitats on the edge of ponds, and along forest trails, on wet silty-clay soils with an acid reaction, up to the montane belt. The species is very rare on the edge of the Sardinian temporary ponds. The genus name comes from the Greek 'knaphalion' (woolly) for the dense gray hairs covering stems and leaves; the species name comes from the Latin 'ulígo' (soil moisture) with a clear allusion to its ecology. Flowering time: June to October.

## *Gratiola officinalis* L.

This species with a south European-Eurasian distribution is present in all the regions of Central and Northern Italy (except in the Valle d'Aosta), in Abruzzo, Puglia and Sardinia (not found in recent times in Campania). It grows in periodically flooded sites along the banks of streams and ponds, in vegetations dominated by amphibian sedges, in wet meadows, on moist to periodically flooded, basic but sometimes decalcified, often trampled soils, from sea level to about 800 m (sometimes even higher, up to 1470 m). In the temporary ponds of Sardinia the species is very rare; it has been reported from two sites only: Pond of Bara (Macomer), and Paule Longa (Ghilarza). The plant, which was once used as a drastic medicine, it is highly toxic. The genus name derives from the Latin 'gratia Dei' (God's grace), the ancient name of the plant, which was revered for its medicinal properties; the species name, from the Latin word 'officina' (pharmacy), refers to its medicinal properties as well. Flowering period: June to August.

## *Gypsophila muralis* L.

This annual plant with a wide Eurasian distribution is present in all regions of Northern Italy (as an ephemeral weed in Friuli Venezia Giulia), and in Sardinia. It grows in rather moist environments, in rice fields, along forest trails, on wet to moist, sandy siliceous soils, from sea level to about 500 m. The species is rare on the edge of the Sardinian temporary ponds. The genus name derives from the Greek 'gypsos' (gypsum) and 'philos' (lover), in reference to the ecology of some species; the species name might be misleading, since the species almost never occurs on walls. Flowering period: May to June.

## *Heliotropium supinum* L.

This annual plant with a wide palaeo-subtropical distribution is known with certainty from Lazio, Puglia, Sardinia and Sicily (erroneously reported from Abruzzo and Molise, of dubious occurrence in Calabria, and not observed since a long time in Campania). It grows in arid uncultivated sites, from sea level to about 600 m, with optimum in the Mediterranean belt. It is a characteristic species of the temporary ponds of Sardinia, often found in the central belt as a result of total desiccation. The genus name derives from the Greek 'helios' (sun) and 'trepo' (I turn) because the flowers follow the sun's movement; the species name refers to the stems, which are often prostrate. Flowering period: July to September.

## *Helosciadium crassipes* W.D.J. Koch ex Rchb.

The water celery of Sardinia is a Mediterranean species which is fairly common only in Sardinia and Corsica, being also present, but very rare, in Lazio (Pontine Marshes) and in Sicily. The life-cycle can be spent part in water, part on moist to dry soil. It grows in stagnant waters and along ditches, from sea level to approximately 1000 m. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, where it forms dense populations in the central and intermediate belts. The genus name comes from the Greek 'helos' (marsh) and 'skiadion' (umbrella) and therefore means 'umbrella of the marshes'; the species name, which in Latin means 'with a swollen foot' refers to the peduncles of the umbels, that are clearly swollen at the base. Flowering period: April to June.

## *Hordeum geniculatum* All.

This annual barley with a mainly Mediterranean distribution is present in Sardinia, Lazio, Basilicata, Calabria and Sicily, and has been reported as a weed also from the Friuli Venezia Giulia region. It grows in salt meadows, usually along the coast, more rarely in the interior, from sea level to approximately 700 m. The species is common in the outer belt of the Sardinian temporary ponds. The genus name, already used by the Romans, is assonant with the Latin 'fórdeum' and the Greek 'phorbé' (fodder); the species name refers to the geniculate-ascending stems; the Italian name refers to G. Gussone (1787-1866), author of important works on the flora of Sicily and Southern Italy. Flowering period: April to May.

## *Hydrocotyle ranunculoides* L. f.

The floating marshpennywort is a species with a wide distribution, now almost cosmopolitan in tropical and subtropical regions, reported as a weed from Tuscany, Lazio and Sardinia (since a long time no longer found in Campania and Calabria). It grows in damp sites, especially along ditches and on the edge of marshes, on muddy, wet soils, usually along the coast. The species is sporadic in the central belt of the Sardinian temporary ponds. The genus name derives from the Greek 'hydor' (water) and 'kotyle' (small bowl), alluding to the habitat and to the concave, rounded leaves of some species; the species name in Latin means 'buttercup-like'. Flowering period: April to July.

## *Hydrocotyle vulgaris* L.

This species with a sub-Mediterranean-sub-Atlantic distribution is present in many regions of Italy, but is in sharp decline and has become extinct over large areas. It grows in swamps and bogs, on the edge of ponds, on wet, muddy soils, from sea level to approximately 1000 m. The species is rare on the edge of the Sardinian temporary ponds. The genus name derives from the Greek 'hydor' (water) and 'kotyle' (small bowl), alluding to the habitat and to the concave, rounded leaves of some species; the species name means 'common, widespread'. Flowering period; May to July.

## *Hypericum humifusum* L.

This species of St. John's wort with an almost cosmopolitan distribution is present in many regions of Northern and Central Italy, in Sardinia, and in Calabria. It grows in wet riparian meadows and along damp forest trails, especially in beech woods, from sea level (where it is rare) to about 1200 m. The species is rare on the edge of the Sardinian temporary ponds. The genus name derives from the Greek 'hyper' (above) and 'eikon' (image, likeness), likely referring to the ancient custom of adorning the house with the flowers on the day of the Feast of Walpurgisnacht, later replaced by that of St. John (June 24th), an auspicious day to hang bunches of hypericum on the front door as protection from devils (also the common Italian name refers to that tradition); the species name refers to the prostrate stems. Flowering period: June to September.

## *Hypericum perfoliatum* L.

This species of St. John's wort with a strictly Mediterranean distribution is present in all regions of Central, Southern and Insular Italy, except in the Marche. It grows in open woodlands, along hedgerows, sometimes in the gaps of the Mediterranean maquis, on soils which are dry in summer, from sea level to about 1200 m. The species is sporadic on the edge of the Sardinian temporary ponds , in contact with dry meadows and Mediterranean maquis. The genus name derives from the Greek 'hyper' (above) and 'eikon' (image, likeness), likely referring to the ancient custom of adorning the house with the flowers on the day of the Feast of Walpurgisnacht, later replaced by that of St. John (June 24th), an auspicious day to hang bunches of hypericum on the front door as protection from devils (also the common Italian name refers to that tradition); the species name refers to the sessile leaves that clasp the stem with the base. Flowering period: May to June.

## *Hypochaeris achyrophorus* L.

This annual plant with a strictly Mediterranean distribution is present in all regions of Italy south of the Po River. It grows in uncultivated, arid grasslands, in ruderal sites, on rooftops, and as a weed in crops, below the lower montane belt, with optimum in the Mediterranean belt; in Italy it behaves as a plant of ancient introduction (archaeophyte), often linked to pastoral activity. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands and garrigue vegetation. The genus name derives from the Greek 'hypo' (below) and 'choeros' (pig) with the meaning of 'food for pigs'; the species name, from the Greek 'ákyron' (straw, scale) and 'phorein' (to bear), refers to the presence of small bristles on the receptacle. Flowering period: February to July.

## *Hypochaeris cretensis* (L.) Bory & Chaub.

This species of the mountains of the north-eastern part of the Mediterranean Region is present in Sardinia and in all regions of peninsular Italy, with the exception of Tuscany. It grows on dry and stony slopes and in mountain pastures, from 700 to 1700 m, rarely at lower or higher altitudes (up to 2000 m). The species is rare on the edge of the Sardinian temporary ponds, in contact with dry grasslands and garrigue vegetation. The genus name derives from the Greek 'hypo' (below) and 'choeros' (pig) with the meaning of 'food for pigs'; the species name refers to the Island of Crete, where the species is present. Flowering period: April to June.

## *Hypochaeris glabra* L.

This annual plant with a broadly Mediterranean distribution is present in all regions of Italy, with the exception of Trentino Alto Adige and Molise (reported as a weed also from Friuli Venezia Giulia, and since a long time no longer observed in Valle d'Aosta). It grows in dry pastures and in crops at rest, usually on siliceous substrates, below the montane belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with the Mediterranean maquis, grasslands and garrigue vegetation. The genus name derives from the Greek 'hypo' (below) and 'choeros' (pig) with the meaning of 'food for pigs'; the species name refers to the fact that the plant is usually hairless. Flowering period: April to May.

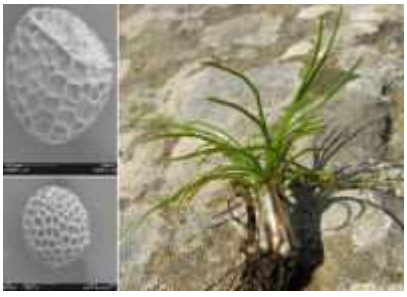
## *Hypochaeris radicata* L.

This European species is present in all regions of Italy. It grows in waste places, in parks and gardens, on silty-clayey, fresh to subarid soils that are rather rich in bases and nitrogen compounds, from sea level to the lower montane belt, where the species becomes more rare. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with the Mediterranean maquis, grassland and garrigue vegetation. The young rosettes are consumed both raw and cooked; roasted roots were used as a coffee substitute. The genus name derives from the Greek 'hypo' (below) and 'choeros' (pig) with the meaning of 'food for pigs'. Flowering period: April to July.

## *Illecebrum verticillatum* L.

This annual plant with a sub-Atlantic distribution is present in Piedmont, Lombardy, Tuscany, Lazio and Sardinia (of dubious occurence in Abruzzo, and since a long time no longer found in the Marche). The life-cycle can be spent part in water, part on moist to dry soil. It grows in periodically flooded sites, below the montane belt. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, common in the intermediate belt. The genus name, that derives from the Latin 'illicere' (to fascinate, bewitch, seduce), seems rather incongruous for such an inconspicuous plant, the species name refers to the flowers, that are arranged in whorls in the axils of leaves. Flowering period: May to August.

## *Isoëtes duriei* Bory



This species with a mainly western Mediterranean distribution is present in Sardinia and in all Tyrrhenian regions of Italy, from Liguria to Sicily. The life-cycle can be spent part in water, part on moist to dry soil. It grows in wet meadows, in pools and ephemeral ponds that are flooded in winter and spring, but generally dry in summer, on acid soils, usually on siliceous substrates, from sea level to about 900 m. In Sardinia this is the rarest species of the genus, indicated in the IUCN regional Red List as a critically endangered taxon (Conti et al., 1997). The genus name derives from the Greek 'isos' (equal) and 'ethos' (year), in reference to the leaves that persist throughout the year; the species is dedicated to the French botanist Michel Charles Durieu de Maisonneuve (1796-1878) author of a Flora of Algeria. Sporulation period: March to May.

## *Isoëtes gymnocarpa* (Gennari) A. Braun

This species, often confused with *I. hystrix* and *I. duriaei*, is endemic to Sardinia, Corsica, Tuscany, and the Balearic Islands (Bagella et al., 2014). The life-cycle can be spent part in water, part on moist to dry soil. It is characteristic of temporary ponds that are flooded in winter and spring, but generally dry in summer, on acid substrates. In the temporary ponds of Sardinia it occurs in the outer belt, often associated with *I. histrix*. The genus name derives from the Greek 'isos' (equal) and 'ethos' (year), in reference to the leaves that persist throughout the year; the species name derives from Greek as well, and means 'with naked fruits', referring to the macrosporangia that are not covered by a velum as in other congeneric species. Sporulation period: March to May.

## *Isoëtes histrix* Bory

This species with a Mediterranean-Atlantic distribution is present in Sardinia, in Puglia, and in all regions of the Tyrrhenian side of the Italian Peninsula from Tuscany to Sicily (since a long time no longer reported from Campania). The life-cycle can be spent part in water, part on moist to dry soil. It grows in ponds and ephemeral pools that are flooded in winter and spring, but generally dry in summer, usually on acid substrates, from sea level to about 1000 m. This species is reported in the Red Lists as a nationally and regionally threatened species (Conti et al., 1997). In the temporary ponds of Sardinia it is found in the outer belt, often associated with *I. gymnocarpa*. The genus name derives from the Greek 'isos' (equal) and 'ethos' (year), in reference to the leaves that persist throughout the year; the species name refers to the appearance of the phyllopodia, that are similar to the quills of a porcupine. Sporulation period: March to May.

## *Isoëtes velata* A. Braun subsp. *tegulensis* Batt. & Trab.

This subspecies is present in Sardinia, Corsica and North Africa. The life-cycle can be spent part in water, part on moist to dry soil. It grows in ponds and ephemeral pools that are flooded in winter and spring, but generally dry in the summer, usually on acidic substrates, from sea level to about 700 m. In Sardinia it occurs in the middle of the temporary ponds, where it forms dense, generally monospecific populations. The genus name derives from the Greek 'isos' (equal) and 'ethos' (year), in reference to the leaves that persist throughout the year; the species name refers to the macrosporangia, which are at least partially covered by a kind of veil; the name of the subspecies refers to Teulada, in northern Sardinia, the place from which the subspecies was originally described. Sporulation period: April to July.

## *Isoëtes velata* A. Braun subsp. *velata*

The nominal subspecies of *I. velata* has a Mediterranean-Atlantic distribution, being present in Sardinia and in some regions of peninsular Italy. The life-cycle can be spent part in water, part on moist to dry soil. It grows in ponds and ephemeral pools that are flooded in winter and spring, but are generally dry in the summer, usually on acid substrates, from sea level to about 1000 m. In Sardinia it is found in the intermediate belt of the temporary ponds. It is indicated in the Regional Red Lists as a vulnerable species (Conti et al., 1997). The genus name derives from the Greek 'isos' (equal) and 'ethos' (year), in reference to the leaves that persist throughout the year; the species name refers to the macrosporangia, which are almost completely covered by a kind of veil. Sporulation period: April to August.

## *Isolepis cernua* (Vahl) Roem. & Schult.

This annual plant with a wide, almost cosmopolitan distribution, is present in all regions of Italy except in the Valle d'Aosta and Veneto (no more reported in recent times from Lombardy). It grows on wet soils, especially on acidic substrates, below the upper montane belt. It is a characteristic species of the temporary ponds of Sardinia, where it mostly occurs in the outer belt. The genus name derives from the Greek 'isos' (equal) and 'lepis' (scale), in reference to the size of the glumes, the species name comes from the Latin 'cernuus' (prone, bent), referring to the prostrate stems. Flowering period: May to October.

## *Juncus acutiflorus* Ehrh. ex Hoffm.

This species of rush with a European distribution is present in all regions of Italy with the exception of Molise. It grows in acidic, oligotrophic bogs, from sea level to about 1500 m. The species is sporadic on the edge of the Sardinian temporary ponds. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name refers to the acute tepals. Flowering period: May to July.

## *Juncus acutus* L. subsp. *acutus*

This species of rush with a Mediterranean-Macaronesian distribution is common in Italy all along the coasts, rare in the interior. It grows on wet, often salty, sandy to clay soils. In Sardinia it is sporadic on the edge of the temporary ponds, in contact with coastal salt marshes. The species is edible, especially the rhizome. It is one of the species which were most commonly used in crafts; once it was also used in the preparation of pasta (spaghetti and bucatini), where the stems were used to spin it. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name comes from the Greek 'ake' (tip, needle), referring to the leaves which end in a sharp point. Flowering period: April to July.

## *Juncus articulatus* L.

This species of rush with a wide circumboreal distribution is present in all regions of Italy. It grows along the margins of ponds and ditches, on compact silty-clayey, flooded, basic-to subacid soils that are rather rich in nitrogen compounds, from sea level to about 1500 m (rarely up to 2400 m). The species is rare in the outer belt of the Sardinian temporary ponds. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name refers to the leaves that are divided into joints by internal cross-septa. Flowering period: May to August.

## *Juncus bufonius* L.

This annual rush with a wide, almost cosmopolitan distribution is present in all regions of Italy. The life-cycle can be spent part in water, part on moist to dry soil. It grows in wetlands, also on saline soils, from sea level to approximately 2000 m. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, where it is common in the outer belt. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name comes from the Latin 'bufo' (toad), in reference to the habitat. Flowering period: April to September.

## *Juncus capitatus* Weigel

This annual rush with a broadly Mediterranean distribution is present in most of the regions of Italy (missing in Trentino-Alto Adige, Friuli Venezia Giulia, Abruzzo and Molise). It grows on periodically flooded soils, below the montane belt. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, where it mostly occurs in the outer belt. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name, from the Latin 'caput' (head), refers to the flowers, that are clustered in dense heads located at the apex of the stems. Flowering period: April to May.

## *Juncus conglomeratus* L.

This species of rush with a European distribution is widespread in all regions of Italy, except perhaps in Puglia and Calabria. It grows in moist disturbed vegetation, on clay to peaty, alternately soaked and dry soils that are rich in bases and nitrogen compounds, but poor in calcium and therefore sub-acid, from sea level to the montane belt. The species is sporadic on the edge of the Sardinian temporary ponds. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name refers to the inflorescence, that is contracted in a kind of bundle. Flowering period: May to July.

## *Juncus effusus* L. subsp. *effusus*

This species of rush with a wide, almost cosmopolitan distribution, is present in all regions of Italy. It grows in marshes, wet meadows and shores of lakes, ponds and rivers, from sea level to about 1700 m. The species is sporadic on the edge

of the Sardinian temporary ponds. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name in Latin means 'spread around'. Flowering period: May to July.

## *Juncus fontanesii* J. Gay s.l.

The rush of Desfontaine is a species with a wide, palaeo-subtropical distribution present, with two subspecies, in Liguria and in almost all regions of Central, Southern and Insular Italy (missing in Umbria, Campania and Basilicata). It grows along the edges of pools and ponds, on wet sandy soils, from sea level to about 600 m. The species is rare in the outer belt of the Sardinian temporary ponds. It has been indicated in the Regional Red Lists as a threatened species (Conti et al., 1997). The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species is dedicated to the French botanist René Louiche Desfontaines (1750-1831), who studied the flora of North Africa and the author of a *Flora Atlantica*. Flowering period: June to July.

## *Juncus heterophyllus* Dufour

This species of rush with a Mediterranean-Atlantic distribution is present in Emilia-Romagna, Tuscany, Lazio, Sardinia and Sicily (of dubious presence in Umbria). It grows in swamps and in periodically flooded places, from sea level to approximately 700 m. In the temporary ponds of Sardinia it is not very common but, when present, it occupies large areas in the central belt. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name, which derives from Greek, meaning 'with different leaves', refers to the fact that the basal leaves are flaccid and thread-like, while the stem leaves are cylindrical and knotty-jointed. Flowering period: May to June.

## *Juncus hybridus* Brot.

This annual rush with a Mediterranean-Atlantic distribution is present in all regions of Central and Southern Italy (except in Molise), in Veneto and Emilia-Romagna. It grows on humid, sandy soils near the coast. The species is found in the outer belt of the Sardinian temporary ponds. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects. Flowering period: April to July.

## *Juncus inflexus* L.

This species of rush with a wide Eurasian distribution is present in all regions of Italy. It grows in moist pioneer vegetation at the edge of footpaths, ditches, ponds and pools, on silty-clayey, compacted and periodically inundated soils that are rich in bases and nitrogen compounds, from sea level to the montane belt. The species is sporadic in the outer belt of the Sardinian temporary ponds. The plant is toxic to livestock The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name comes from the Latin 'inflectere' (to bend), referring to the flexible stems. Flowering period: June to August.

## *Juncus pygmaeus* Rich. ex Thuill.

The pygmy rush is an annual species with a Mediterranean-Atlantic distribution, present in Tuscany, Umbria, Lazio, Puglia, Sicily and Sardinia. The life-cycle can be spent part in water, part on moist to dry soil. It grows along the edges of ephemeral pools and marshes, on moist, sandy soils, from sea level to about 700 m. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, common in the outer belt. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name refers to the small size of the plant. Flowering period: April to May.

## *Juncus subnodulosus* Schrank

This rush species with a European-Caucasian distribution is present in all regions of Italy. It grows in bogs and fens, on neutral-basic, muddy soils, from sea level to about 1000 m. The species is sporadic on the edge of the Sardinian temporary ponds. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name refers to the leaves divided into joins by cross-septa, which feel knotty to the touch. Flowering period: June to August.

## *Juncus subulatus* Forssk.

This species of rush with a mainly southern-Mediterranean distribution is present in Tuscany, Lazio, Molise, Puglia, Basilicata, Calabria, Sicily and Sardinia (since a long time no longer reported from Abruzzo). It grows in brackish marshes along the coasts, more rarely in the interior, up to about 600 m. The species is sporadic on the edge of the Sardinian temporary ponds. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name is derived from the Latin word 'subula', meaning 'awl', a pointed tool of shoemakers. Flowering period: May to June.

## *Juncus tenageja* Ehrh.

This annual rush with a wide palaeo-temperate distribution is present in almost all regions of Italy (missing in Trentino-Alto Adige, Marche and Abruzzo, not reported since a long time from Friuli Venezia Giulia); in Northern Italy the species is very rare and vanishing almost everywhere. The life-cycle can be spent part in water, part on moist to dry soil. It grows in moist, rather disturbed sites at the edge of ephemeral pools, on sandy, generally siliceous soils, from sea level to about 1000 m. It is a characteristic species of the Mediterranean temporary ponds, but in Sardinia it is rare, in the outer belt of the temporary ponds. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name derives from the Greek 'tenagos' (pond, marsh) in reference to the habitat. Flowering period: May to July.

## *Juncus tingitanus* Maire & Weiller

The rush of Tangier is an annual species with a strictly Mediterranean, mainly western distribution, found in Sardinia (and not reported since a long time from Campania). The life-cycle can be spent part in water, part on moist to dry soil. It grows along the coasts on brackish, wet, sandy soils. It is a typical species of the Mediterranean temporary ponds, but in Sardinia it appears only sporadically, on the edges of the temporary ponds, in contact with coastal salt marshes. The genus name, from the Latin 'iúngere' (to join, to tie), refers to the ancient use of weaving the stems and leaves of rush species to create different objects; the species name refers to the city of Tangier in northern Morocco, from which the species was originally described. Flowering period: April to May.

## *Kickxia cirrhosa* (L.) Fritsch

This annual plant with a strictly Mediterranean distribution is known from Tuscany, Lazio, Puglia, Sardinia and Sicily (since a long time no longer reported from Campania). It grows in disturbed dry sites, on uncultivated ground, on rather primitive, sometimes volcanic soils rich in skeleton derived from siliceous substrates, from sea level to about 600 m. It is a characteristic species of the Mediterranean temporary ponds, but in Sardinia it is very rare, along the margins of the temporary ponds. The genus is dedicated to the Belgian botanist Jean Kickx (1775-1831); the species name is derived from the Latin word 'cirrus' (lock of hair) and therefore means 'curly'. Flowering period: May to June.

## *Lagurus ovatus* L. subsp. *ovatus*

This annual grass with a broadly Mediterranean distribution is present throughout Italy, but is more frequent in the Center-South. It grows on dry sandy soils, e.g. on maritime dunes, mainly in coastal areas, but also in the interior; sometimes, although rarely, behaving as a weed. The species is very rare along the margins of the temporary ponds of Sardinia, in contact with dry grasslands. The characteristic inflorescences are often used for dried flower arrangements. The genus name in Greek means 'hare's tail', referring to the shape of the inflorescence; the species name refers to the oval shape of the spike. Flowering period: March to June.

## *Laphangium luteoalbum* (L.) Tzvelev

This annual plant with a wide, almost cosmopolitan distribution, is present in all regions of Italy with the exception of Molise, but is generally quite rare. It grows in rather disturbed habitats, on moist soil, from sea level to about 1200 m. It is a characteristic species of the Mediterranean temporary ponds, cited in the IUCN regional Red List as an endangered species (Conti et al., 1997). In Sardinia it is very rare on the edge of the ponds. The genus name is an anagram of *Gnaphalium* the genus from which the species has been separated; the species name in Latin means 'white-yellowish', in reference to the dense hairiness of the plant and its yellow flowers. Flowering period: June to September. Syn.: *Gnaphalium luteo-album* L., *Pseudognaphalium luteoalbum* (L.) Hilliard & B.L. Burtt

## *Lathyrus cicera* L.

This annual plant with a Mediterranean distribution, of ancient introduction in the northern part of its present distributional range (archaeophyte), is present in all regions of Italy except in the Valle d'Aosta (erroneously reported from Lombardy, present as an ephemeral weed in Trentino-Alto Adige), but is more common in Mediterranean Italy, from sea level to about 1000 m. In the North it is disappearing because of the cessation of cereal crops. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with grasslands. The seeds are toxic; the plant was grown as forage and harvested before the fruit was ripe, to avoid poisoning the animals. The genus name is the Latin term for the ancient Greek word 'lathyros', which designated an unidentified plant from which an exciting substance was extracted; the species name was already used for this plant by the ancient Romans. Flowering period: March to June.

## *Lavandula stoechas* L. subsp. *stoechas*

The wild lavender is a species with a strictly Mediterranean distribution, present all along the Tyrrhenian coast of the Italian Peninsula, from Liguria to Calabria, in Sardinia and in Sicily. It grows in the most primitive aspects of the Mediterranean maquis and in garrigues dominated by *Cistus*, mainly on siliceous substrates (very rarely on limestone), especially in repeatedly burned sites, from the coast (where it is much more common) to about 600 m. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with Mediterranean maquis and garrigue vegetation. Compared to other congeneric species, this is much less used for its aromatic properties, but it is an interesting melliferous plant: the single-flower honey differs sharply from that of the common lavender, having a finer taste and being less aromatic. The species is often cultivated as an ornamental,

especially in parks and gardens of the Mediterranean Region. The genus name alludes to the ancient use of *L. angustifolia* for perfuming freshly washed clothes; the species name derives from the Greek 'stoichas' (in a row): the islands of Hyères in Provence where the species is widespread, due to their geographical position, were formerly called 'Stoichades'. Flowering period: March to May.

## *Leontodon tuberosus* L.

This species with a strictly Mediterranean distribution is present in Liguria, in Emilia-Romagna, and in all regions of peninsular and insular Italy. It grows in dry fields, in olive groves, in openings of evergreen Mediterranean garrigues, on soils which are dry in summer, below the montane belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with Mediterranean scrub, grassland and garrigue vegetation. The genus name derives from the Greek 'leon' (lion) and 'odon' (tooth), because of the sharply toothed margin of the leaves of some species; the species name refers to the spindle-shaped, swollen roots. Flowering period: October to June.

## *Lepidium coronopus* (L.) Al-Shehbaz

This annual plant with a southern European distribution is present in all regions of Italy except in the Valle d'Aosta (erroneously reported from Trentino-Alto Adige and Calabria). It grows in ruderal vegetation subject to trampling, on sidewalks, along roadsides, in cobbled squares, on primitive to silty-clayey, rather humic and fresh soils that are rich in nitrogen compounds, from sea level to about 1000 m. The species is sporadic in the intermediate and outer belts of the temporary ponds of Sardinia. The leaves are edible, both raw and cooked. The genus name derives from the Greek 'lepidion' (small scale), for the shape of the fruit; the species name means 'paw of crow', for the shape of the leaves. Flowering period: March to June.

## *Leucanthemum vulgare* (Vaill.) Lam. subsp. *vulgare*

The common daisy is an Eurasian species which presently has become almost cosmopolitan, present in all regions of Italy (in Sicily as a weed). It usually grows in ruderal vegetation, on very fresh silty-clayey soils that are rich in skeleton and humus, up to the montane belt. The species is rare in the outer belt of the Sardinian temporary ponds. The genus name derives from the Greek 'leukos' (white) and 'anthos' (flower), the species name comes from the Latin 'vulgus' (common people) and means 'common, widespread, frequent'. Flowering period: May to October.

## *Linaria pelisseriana* (L.) Mill.

This annual species with a Mediterranean-Atlantic distribution is present in Piedmont, Liguria, Emilia-Romagna, and in all regions of Central and Southern Italy, including the Islands. It grows in opening of Mediterranean garrigues, in uncultivated and barren pastures, from sea level to about 1000 m, with optimum in the Mediterranean belt. The species is very rare along the margins of the temporary ponds of Sardinia, in contact with dry meadows. The genus name refers to the resemblance of the leaves to those of flax; the species is dedicated to G. Pellicier (1490-1568), bishop of Montpellier and a student of Botany. Flowering period: June to September.

## *Linum bienne* Mill.

This biannual species with a Mediterranean-Atlantic distribution is present in all regions of Italy except in the Valle d'Aosta and Trentino-Alto Adige. It grows in dry meadows or in open pioneer vegetation, on silty-clay soils, from the sub-Mediterranean to the montane belt. The species is frequent in the outer belt of the Sardinian temporary ponds, in contact with dry meadows. The genus name derives from the Greek 'linon' (thread), for the flax fiber obtained from some species and used for fabrics; the species name refers to the two years long life cycle. Flowering period: May to August.

## *Linum radiola* L.

This annual plant with a wide palaeo-temperate distribution is present in Piedmont, Liguria, Emilia-Romagna, Sicily, Sardinia, and in all regions along the western side of the Italian Peninsula, except in Campania. It grows on damp sand and mud, on siliceous substrates, from sea level to about 1500 m. It is a characteristic species of the temporary ponds but, to date, in Sardinia it has been found only in the outer belt of the ponds of La Maddalena and Buddusò. The genus name derives from the Greek 'linon' (thread), for the flax fiber obtained from some species and used for fabrics; the species name, from the Latin 'radius' (ray), refers to the radiating branches of the inflorescence. Flowering period: June to September.

## *Linum trigynum* L.

This annual plant with a broadly Mediterranean distribution is present in all regions of Italy, except in the Valle d'Aosta and Trentino-Alto Adige. It grows in semi-natural grasslands, on the edge of open woodlands, sometimes also in highly disturbed sites, on-silty-loamy soils rich in bases, which are quite fresh in winter and spring, but dry in summer, below the lower montane belt. The species is very rare in the outer belt of the Sardinian temporary ponds, in contact with dry meadows. The genus name derives from the Greek 'linon' (thread) for the flax fiber obtained from some species (especially *L. usitatissimum*); the species name refers to the 3-lobed stigma. Flowering period: May to August.

## *Lolium multiflorum* Lam.

This grass with a sub-Mediterranean-sub-Atlantic distribution, of uncertain origin, is present in all regions of Italy. It grows in disturbed meadows, at the edge of roads, in landfills and on uncultivated ground, on silty-clayey, fresh soils which are rich in bases and nitrogen compounds, from sea level to about 1300 m. The species is common in the outer belt of the Sardinian temporary ponds. The plant provides an excellent forage. The genus name is of uncertain etymology, the species name refers to the many-flowered spikelets. Flowering period: May to July.

## *Lolium perenne* L.

This grass with an originally Eurasian distribution has now become almost cosmopolitan, and is present in all regions of Italy. It grows in disturbed vegetation, parks, flower beds, gardens, along roadsides, in sites subject to trampling, on rather fresh, silty-clay soils which are rich in nitrogen compounds, from sea level to the montane belt (sometimes even higher). The species is sporadic in the outer belt of the Sardinian temporary ponds. The genus name is of uncertain etymology, the species name refers to the perennial life-cycle. Flowering period: March to October.

## *Lolium rigidum* Gaudin subsp. *rigidum*

This annual grass with a wide subtropical distribution is present, with two subspecies, in all regions of Italy, but is much more frequent in the Center-South. It grows in open herbaceous vegetation and in ruderal environments, below the lower montane belt. The species is sporadic in the outer belt of the Sardinian temporary ponds. The genus name, already used by Pliny, is of uncertain etymology; the species name in Latin means 'stiff, rigid'. Flowering period: April to June.

## *Lonicera implexa* Aiton subsp. *implexa*

The Mediterranean honeysuckle is a species with a strictly Mediterranean distribution present in Liguria, and in all regions of Central, Southern and Insular Italy. It grows in open evergreen maquis vegetation, much more rarely in deciduous forests, from sea level to about 800 m. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with the Mediterranean maquis or with deciduous woods. The berries contain glycosides and are toxic. The genus is dedicated to the German botanist Adam Lonitzer-Lonicerus (1528-1586); the species name comes from the Latin 'implecto' (to weave, to cross) and refers to the fact that the species, especially in not excessively dry habitats, behaves like a woody climber. Flowering period: May to June.

## *Lotus angustissimus* L.

This annual plant with a broadly Mediterranean distribution is present in all regions of Central, Southern and Insular Italy, in Liguria, Veneto and Emilia-Romagna. It grows in wet meadows and along the shores of rivers, from sea level to the lower montane belt. It is a characteristic species of Mediterranean temporary ponds; in Sardinia it appears sporadically in the intermediate belt of the temporary ponds. The genus name derives from the Greek 'lotos' and the Latin 'lotus', designating different *Fabaceae* or edible forage, including clover and sweet clover; the species name in Latin means 'very narrow'. Flowering period: April to June.

## *Lotus conimbricensis* Brot.

This annual plant with a strictly Mediterranean, mainly western distribution, is present along the Tyrrhenian coasts of the Italian Peninsula from Tuscany to Calabria (since a long time no longer reported from Campania), in Sardinia, and in Sicily. It grows in wet sites, such as at the edges of temporary ponds, on siliceous substrates, from sea level to about 1300 m. The species is common in the outer belt of the Sardinian temporary ponds. The genus name derives from the Greek 'lotos' and the Latin 'lotus', designating different *Fabaceae* or edible forage, including clover and sweet clover; the species is named after the city of Coimbra in Portugal, in whose vicinity it is present. Flowering period: April to June.

## *Lotus corniculatus* L. subsp. *alpinus* (DC.) Rothm.

This entity belongs to a rather polymorphic species with a wide Eurasian-temperate distribution, present, with four subspecies, in all regions of Italy; this subspecies, which represents the diploid type that survived glaciations thanks to the adaptation to cold climates, is widespread in the mountains of southern Europe and is present throughout the Alps, the Apennines and in the north-central mountains of Sardinia. It grows in alpine meadows dominated by *Sesleria*, but sometimes also in grasslands dominated by *Nardus stricta*, from the subalpine to the alpine belt. In Sardinia it was found in the outer belt of Mediterranean temporary ponds in the Gennargentu Massif, over 1000 m (Punta Palai). The genus name derives from the Greek 'lotos' and the Latin 'lotus', designating different *Fabaceae* or edible forage, including clover and sweet clover; the species name refers to the pointed shape of the legume. Flowering time: July to August.

## *Lotus corniculatus* L. subsp. *corniculatus*

This entity belongs to a rather polymorphic species with a wide Eurasian-temperate distribution, present, with four subspecies, in all regions of Italy. It grows in rich hay meadows, lawns and flower beds, sometimes in parks and gardens, with a wide ecological range, from sea level to the upper montane belt. The species is common in the outer belt of the Sardinian temporary ponds. The plant, which in the past has often been used for medicinal purposes, is an excellent forage. The genus name derives from the Greek 'lotos' and the Latin 'lotus', designating different *Fabaceae* or edible forage, including clover and sweet clover; the species name, which means 'with small horns', refers to the pointed shape of the legume. Flowering period: April to September.

## *Lotus hispidus* DC.

This annual plant with a mainly western Mediterranean distribution is present in Liguria, Tuscany, Lazio, Puglia, Sardinia and Sicily (since a long-time no longer found in Campania). It grows in rather disturbed arid environments, on mainly sandy soils, from sea level to about 600 m. The species is common in the outer belt of the Sardinian temporary ponds, in contact with dry meadows. The genus name derives from the Greek 'lotos' and the Latin 'lotus', designating different *Fabaceae* or edible forage, including clover and sweet clover; the species name refers to the hairiness of the plant. Flowering period: April to June.

## *Lotus parviflorus* Desf.

This annual plant with a strictly Mediterranean, mainly western distribution is present in Tuscany, in Lazio, and in all regions of Southern Italy and the Islands. It grows in rather disturbed, dry habitats, on predominantly sandy soil which are arid in summer, from sea level to about 500 m. The species is very rare in the outer belt of the Sardinian temporary ponds, in contact with dry meadows. The genus name derives from the Greek 'lotos' and the Latin 'lotus', designating different *Fabaceae* or edible forage, including clover and sweet clover; the species name refers to the small size of the flowers, compared to those of other congeneric species. Flowering period: April to June.

## *Lotus pedunculatus* Cav.

This species with a wide palaeo-temperate distribution is present in almost all regions of Italy (missing in Liguria, Marche and Sicily and of dubious occurence in Umbria). It grows in wet meadows and bogs, on very fresh, often peaty soils, from sea level to about 1000 m. The species is common in the intermediate belt of the Sardinian temporary ponds. The genus name derives from the Greek 'lotos' and the Latin 'lotus', designating different *Fabaceae* or edible forage, including clover and sweet clover; the species name refers to the long pedicels of the inflorescence. Flowering period: May to July.

## *Ludwigia palustris* (L.) Elliott

This species with a wide, almost cosmopolitan distribution in temperate zones of the Globe, is widespread, but presently very rare, in almost all regions of Italy. It grows in muddy places, along ditches and in slow-moving waters, from sea level to about 800 m. In Sardinia it is present sporadically in temporarily flooded areas along the shores of Lake Coghinas (Ruggero & Calvia, 2014), and is indicated in the Regional Red Lists as a vulnerable species (Conti et al., 1997). The genus is dedicated to Ch.-G. Ludwig (1751-1823), professor at Leipzig; the species name refers to the habitat. Flowering period: June to August.

## *Lupinus gussoneanus* Agardh

This annual plant with a strictly Mediterranean distribution is present in Tuscany, in Lazio, and in all regions of Southern Italy and the Islands (since a long time no longer reported from Liguria). It grows in gaps of Mediterranean garrigues and in rather disturbed sites, sometimes even at the edges of roads, mainly on siliceous substrates, from sea level to about 600 m. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with ruderal vegetation. The genus name refers to the wolves, but it is assonant with the Greek 'lype' (pain) and 'lepo' (I open a pod), with the probable meaning of 'legume which is toxic for wolves'; the species is dedicated to Giovanni Gussone (1787-1866), a botanist at Palermo. Flowering period: April to May.

## *Luzula campestris* (L.) DC.

This species with a European-Caucasian distribution is present in all regions of Italy. It grows in dry meadows and pastures, on decalcified, sandy-loamy, fresh to moderately dry, neutral to sub-acid soils which are poor in nitrogen compounds, from sea level to the upper montane belt. The species is sporadic on the edge of the Sardinian temporary ponds, in shaded sites. The genus name derives from the Latin 'lucere' (to shine), for the flowers that glow when wet from the dew. Flowering period: April to June.

## *Lysimachia arvensis* (L.) U. Manns & Anderb. subsp. *arvensis*

This annual plant with a broadly Mediterranean distribution, of ancient introduction at the northern edge of its present distributional range, is present in all regions of Italy. It grows in crop fields and in ruderal communities in villages and urban areas, on clay soils rich in nitrogen compounds, from sea level to the montane belt. The species is very rare on the edge of the Sardinian temporary ponds, in contact with dry meadows. The form with a red flower is more common in Northern Italy. The plant contains saponins and is weakly toxic; it should be advised not to consume it in salads, especially in large quantities. The genus name *Lysimachia* comes from Lysimachus, an ancient Greek physician; the genus name of the synonym (*Anagallis*) is derived from the Greek 'ana' (again) and 'agallein' (give joy), for the continuous, bright flowering; the species name in Latin means 'of plowed fields'. Flowering period: April to October. Syn.: *Anagallis arvensis* L. subsp. *arvensis*

## *Lysimachia arvensis* (L.) U. Manns & Anderb. subsp. *parviflora* (Hoffmanns. & Link) Peruzzi

This annual plant with a strictly Mediterranean, mainly western distribution, is present in Sardinia, and in all regions of the Tyrrhenian side of the Italian Peninsula, from Tuscany to Calabria. It grows in moist habitats, such as along the edges of ephemeral pools, on soil which is moist at least in winter and spring, from sea level to about 600 m. It is a characteristic species of Mediterranean temporary ponds; in Sardinia, however, it is rare and confined to the outer belt of the ponds. The genus name *Lysimachia* comes from Lysimachus, an ancient Greek physician; the genus name of the synonym (*Anagallis*) is derived from the Greek 'ana' (again) and 'agallein' (give joy), for the continuous, bright flowering; the species name in Latin means 'of plowed fields'; the name of the subspecies refers to the flowers, which are much smaller than those of the nominal subspecies. Flowering period: May to September. Syn.: *Anagallis arvensis* L. subsp. *parviflora* (Hoffmanns. & Link) Arcang., *Anagallis parviflora* Hoffmanns. & Link

## *Lysimachia foemina* (Mill.) U. Manns & Anderb.

This annual plant with a Mediterranean distribution, of ancient introduction into the northernmost part of its present distributional range, is present in almost all regions of Italy (missing only in Valle d'Aosta), but is more frequent in Central and Southern Italy. It grows in cultivated fields and in communities of annual grasses, often in disturbed sites near settlements, on moderately dry clay soils which are rich in nitrogen compounds, below the montane belt. The species is common in the outer belt of the Sardinian temporary ponds. It is easily confused with the blue-flowered form of *A. arvensis*. The plant contains saponins and is weakly toxic; it should be advised not to use it in salads, especially in large quantities. The genus name *Lysimachia* comes from Lysimachus, an ancient Greek physician; the genus name of the synonym (*Anagallis*) is derived from the Greek 'ana' (again) and 'agallein' (give joy), for the continuous, bright flowering. Flowering period: April to October. Syn.: *Anagallis foemina* Mill.

## *Lysimachia minima* (L.) U. Manns & Anderb.

This annual plant with a wide distribution in the temperate parts of Eurasia is present in several regions of Italy, from Lombardy to Sicily, but it is rare and its distribution has many wide gaps, especially in the South. It grows in damp places along ditches, at the edges of fields and along forest trails, usually on siliceous substrates, below the montane

belt. The genus name *Lysimachia* comes from Lysimachus, an ancient Greek physician; the genus name of the synonym (*Anagallis*) is derived from the Greek 'ana' (again) and 'agallein' (give joy), for the continuous, bright flowering; the species name refers to the small size of the flowers as compared to those of other congeneric species. Flowering period: June to July. Syn.: *Anagallis minima* (L.) E.H.L. Krause

## *Lysimachia tenella* L.

This species with a sub-Atlantic distribution is present in almost all regions of Northern Italy (missing in Valle d'Aosta, Trentino-Alto Adige and Emilia-Romagna), in Tuscany and in Sardinia, but is generally rare and declining. It grows on humid, muddy soils, from sea level to about 500 m. It is indicated in the Regional Red Lists as a critically endangered species (Conti et al., 1997). The genus name *Lysimachia* comes from Lysimachus, an ancient Greek physician; the genus name of the synonym (*Anagallis*) is derived from the Greek 'ana' (again) and 'agallein' (give joy), for the continuous, bright flowering; the species name refers to the frail and delicate appearance of the plant. Flowering period: June to July. Syn.: *Anagallis tenella* (L.) L.

## *Lythrum hyssopifolia* L.

This annual plant with a wide, almost cosmopolitan distribution is present in almost all regions of Italy (since a long time not reported from Trentino-Alto Adige and of dubious occurrence in Molise). The life-cycle can be spent part in water, part on moist to dry soil. It grows in moist sites, along ditches and edges of marshes and ponds, from sea level to about 800 m. The species is common in the intermediate and outer belts of the temporary ponds of Sardinia. The genus name derives from the Greek 'lythron' (blood), for the colour of the flowers and because in the past some species of this genus were believed to be effective in healing wounds; the species name means 'with leaves similar to those of hyssop'. Flowering period: April to September.

## *Lythrum thymifolia* L.

This annual plant with a strictly Mediterranean distribution is present in Sardinia, Lazio and Puglia (of dubious occurence in Basilicata and not reported since a long time from Calabria). The life-cycle can be spent part in water, part on moist to dry soil. It grows in damp sites, on muddy soils that are moist at least in winter and spring, from sea level to about 600 m. The species is very rare in the temporary ponds of Sardinia. The genus name derives from the Greek 'lythron' (blood), for the colour of the flowers and because in the past some species of this genus were believed to be effective in healing wounds; the species name means 'with leaves similar to those of thyme'. Flowering period: April to May.

## *Lythrum tribracteatum* Salzm. ex Spreng.

This annual plant with a mainly Mediterranean distribution is present, but generally very rare, in many regions of Italy, from Lombardy and Veneto to Sicily and Sardinia. The life-cycle can be spent part in water, part on moist to dry soil. It grows in moist habitats, such as along the edges of ephemeral pools, ditches and swamps, on muddy soils, from sea level to approximately 300 m. The species is very rare in the temporary ponds of Sardinia. The genus name derives from the Greek 'lythron' (blood), for the colour of the flowers and because in the past some species of this genus were believed to be effective in healing wounds; the species name means 'with three bracts', but the flowers have only 2 small bracts at the base. Flowering period: April to June.

## *Marsilea quadrifolia* L.

The four-leaved water clover is a species with a wide circumboreal distribution which is present, but rare, in the regions of Central and Northern Italy (missing in Valle d'Aosta and Liguria), and in Sardinia, while the presence in other regions is doubtful. It grows in swamps, rice paddies and stagnant meso-eutrophic waters, below 400 m. The genus is dedicated to Luigi Ferdinando Marsili (1658-1730), founder of the Institute of Botanical Sciences of Bologna; the species name refers to the leaves that are divided into 4 leaflets. Sporulation period: March to June.

## *Marsilea strigosa* Willd.

The hairy four-leaved water clover is a species with a strictly Mediterranean, mainly western distribution which is present, but generally very rare, near Taranto in Puglia, in Basilicata, and in Sardinia. It grows in marshes and along the edge of ponds, from sea level to about 500 m. Of the 19 known Italian stations for this species, which is considered vulnerable on a national scale, 17 are located in Sardinia, mainly along the banks of the Coghinas Reservoire (Bagella & Caria, 2012) in the municipalities of Oschiri, Ozieri and Tula (OT) (Calvia & Urbani, 2007; Caria et al., 2014). The other stations are located in the Provinces of Nuoro near Dorgali (Peroni & Peroni, 2002) and Oliena, in the Province of Cagliari near Teulada and Orroli, and in the Province of Medio Campidano near Gesturi (Caria et al., 2013). The species is listed in Annexes II and IV of the Habitats Directive and Annex I of the Bern Convention, falling into the vulnerable category (Caria et al., 2013). The genus is dedicated to Luigi Ferdinando Marsili (1658-1730), founder of the Institute of Botanical Sciences of Bologna; the species name in Latin means 'skinny, thin'. Sporulation period: March to June.

## *Medicago minima* (L.) L.

This annual plant with a broadly Mediterranean distribution is present in all regions of Italy. It grows in dry grasslands and in ruderal vegetations, on primitive soils which are rich in bases and dry in summer, from sea level to the lower montane belt. The species is common at the edge of the Sardinian temporary ponds, in contact with dry meadows. The genus name refers to Media, a region of ancient Persia, that Theophrastus considered as the area of origin of alfalfa (*Medicago sativa*); the species name refers to the small size of the plant, compared to other congeneric species. Flowering period: May to July.

## *Medicago polymorpha* L.

This morphologically variable species has a wide, almost cosmopolitan distribution and is present in all regions of Italy, except in the Valle d'Aosta and Trentino-Alto Adige. It grows in fields and in dry disturbed sites, below the montane belt. The species is rare on the edge of the Sardinian temporary ponds, in contact with dry grasslands and ruderal vegetation. The genus name refers to Media, a region of ancient Persia, that Theophrastus considered as the area of origin of alfalfa (*Medicago sativa*); the species name refers to the high morphological variability of the species. Flowering period: March to May.

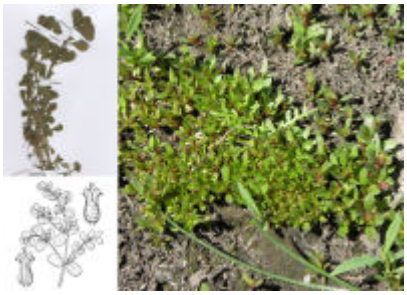
## *Melica minuta* L. subsp. *latifolia* (Coss.) W. Hempel

This grass with a strictly Mediterranean distribution is present in Liguria and in almost all the regions of Central, Southern and Insular Italy (absent from the Marche and Molise). It grows in open maquis and garrigue vegetation, sometimes also in moist ravines, from sea level to about 800 m, with optimum in the Mediterranean belt. The species is rare in the outer margin of the temporary ponds of Sardinia, in contact with the Mediterranean maquis. The genus name is of uncertain etymology: it could derive from the Latin 'milium' (millet) by a derivation in the medieval 'milica', or from the Greek 'meli' (honey), due to the sweet taste of the stem; the species name refers to the small size of the spikelets; the name of the subspecies, which means 'with broad leaves', refers to the fact that the leaves are wider than those of the nominal subspecies. Flowering period: April to May.

## *Mentha pulegium* L. subsp. *pulegium*

This species of mint with an originally Mediterranean distribution has now become almost cosmopolitan, being present in all regions of Italy. The life-cycle can be spent part in water, part on moist to dry soil. It grows along the banks of ditches and riverbeds, or near temporary ponds, in moist habitats which are flooded in the spring and dry in summer, from sea level to about 1200 m. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, common in the central and intermediate belts. As with all congeneric species, the leaves are often used to prepare drinks or to flavour food. The genus name, of ancient use, is the Latin counterpart of the Greek term: the nymph Minthe lived in the kingdom of Hades, of whom she was a lover; when Hades decided to marry Persephone, Minthe was dismembered by her rival, but Hades turned it into a fragrant plant; the species name comes from the Latin 'pulex' (flea), for the ancient use as a repellent against fleas and other insects. Flowering period: May to September.

## *Middendorfia borysthenica* (Schrank) Trautv.



This annual plant with a Mediterranean-Pontic distribution is present, but generally very rare, in Lazio, Puglia, Sardinia and Sicily (of dubious occurrence in Tuscany). The life-cycle can be spent part in water, part on moist to dry soil. It grows in moist habitats: ponds, swamps, ditches, ephemeral pools, on muddy soils which are moist at least in winter and spring, from sea level to about 500 m. It is a characteristic species of the Sardinian Mediterranean temporary ponds, common in the central and intermediate belts, where it often forms dense monospecific stands. The genus is dedicated to the Russian botanist Alexander von Middendorf Theodorowitsch (1815-1894); the species name comes from the Greek 'Borysthenes', the ancient name of the Dnieper (Dnepr) River that bathes Russia, Belarus and Ukraine, and the Greek colony of Olbia on the Black Sea, at the mouth of the river. Flowering period: June to July. Syn.: *Lythrum borysthenicum* (Schrank) Litv.

## *Moenchia erecta* (L.) G. Gaertn., B. Mey. & Scherb. s.l.

This annual plant with a sub-Mediterranean-sub-Atlantic distribution is present, but generally very rare, in almost all regions of peninsular Italy (it was never reported from Puglia), in Liguria, Emilia-Romagna and Sardinia (not reported in recent times from Piedmont and Lombardy). It grows on moist soils, from sea level to about 800 m. The species sporadically occurs on the edge of the Sardinian temporary ponds. The genus is dedicated to the German botanist Conrad Moench (1744-1805); the species name refers to the erect stems. Flowering period: May to June.

## *Montia fontana* L. subsp. *amporitana* Sennen

This species with a wide circumboreal distribution is present, with four subspecies, in all regions of Italy. The subsp. *amporitana* is known with certainty from Lombardy, Tuscany, Sardinia and Sicily. It grows in ditches, ephemeral pools, wet sandy fields, from sea level to the alpine belt; the species was more common in the past, and today is in strong decline. It is common in the outer belt of the Sardinian temporary ponds. The genus is dedicated to the Italian botanist Lorenzo Gaetano Monti (1712-1797); the species name refers to the habitat, while the name of the subspecies refers to the ancient Catalan town of Ampurias (Gerona). Flowering period: April to Augu

## *Montia fontana* L. subsp. *chondrosperma* (Fenzl) Walters

This species with a wide circumboreal distribution is present, with four subspecies, in all regions of Italy. The subspecies *chondrosperma*, which has a sub-Atlantic-Mediterranean distribution, is present in almost all regions of Italy except in the Valle d'Aosta, Friuli Venezia Giulia and perhaps Puglia and Basilicata. It grows in ditches, ephemeral pools, wet sandy fields, from sea level to the alpine belt; the species was once more common, and today is in strong

decline. It is very rare in the outer belt of the Sardinian temporary ponds. The genus is dedicated to the Italian botanist Lorenzo Gaetano Monti (1712-1797); the species name refers to the habitat, while the name of the subspecies comes from the Greek 'khondrós' (lump, grain) and 'sperma' (seed) and therefore means 'with grainy seeds'. Flowering period: April to August.

## *Morisia monanthos* (Viv.) Asch.

The Morisia is endemic to the Sardinian-Corsican System. It grows in grassy places, in pastures, sometimes on the edge of country roads and in clearings of damp woods, on very fresh, mostly siliceous sandy soils, but sometimes also on calcareous rocks, from sea level to about 1200 m. The species is rare in the outer belt of the Sardinian temporary ponds but, when present, it forms large populations. It is a geocarpic plant that is incapable of dissemination at a distance: the fruiting peduncles fold down and push the fruit into the soil, where the maturation and germination of seeds take place. The genus is dedicated to Giuseppe Giacinto Moris (1796-1869), author of an important Flora of Sardinia; the species name derives from Greek and means 'with a single flower', in reference to the unbranched flower-peduncles. Flowering period: October to December (-May).

## *Myosotis arvensis* (L.) Hill subsp. *arvensis*

The forget-me-not of the fields is a species with a wide Eurasian distribution, present in all regions of Italy. It grows in disturbed vegetation: in crops, flower beds, embankments, on rather fresh clay soils which are rich in bases and nitrogen compounds, from sea level to the montane belt (sometimes even higher, up to more than 2000 m). The species is very rare on the edge of the Sardinian temporary ponds, in contact with dry meadows. The genus name derives from the Greek 'mys-myos' (mouse) and '-ous otos' (ear), because of the shape of the leaves; the species name in Latin means 'of the plowed fields'. The common name 'forget-me-not' goes back at least to the fifteenth century and recalls the tradition for lovers to exchange a bouquet of flowers before parting. Flowering period: April to July.

## *Myosotis gussoni* Jan

The forget-me-not of Gussone is an annual plant with a mainly northern-Mediterranean distribution, which in Italy has a mainly Tyrrhenian distributional range, including Tuscany, Lazio, Campania, Sicily and Sardinia. The life-cycle can be spent part in water, part on moist to dry soil. It grows in wet meadows and along the margins of ephemeral pools, from sea level to about 1300 m. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, common in the central and intermediate belts. The genus name derives from the Greek 'mys-myos' (mouse) and '-ous otos' (ear), because of the shape of the leaves; the species is dedicated to the great botanist Giovanni Gussone (1787-1866). The common name 'forget-me-not' goes back at least to the fifteenth century and recalls the tradition for lovers to exchange a bouquet of flowers before parting. Flowering period: April to July. Syn.:*Myosotis sicula* Guss.

## *Myriophyllum spicatum* L.

This aquatic species with a wide, almost cosmopolitan distribution is present in almost all the regions of Italy (missing only in Valle d'Aosta and Molise). It grows in stagnant or slowly flowing waters which are fairly rich in nutrients, from sea level to the lower montane belt. The species is rare in the central belt of the Sardinian temporary ponds. The plant also reproduces vegetatively by rooting fragments of stems, and can become invasive, forming extensive populations. The genus name derives from the Greek 'myrios' (countless, thousands) and 'phyllon' (leaf), referring to the leaves which are divided into many segments; the species name refers to the spike-like appearance of the inflorescence. Flowering period: June to September.

## *Myriophyllum verticillatum* L.

This aquatic species with a wide circumboreal distribution is present in almost all regions of Italy. It grows in stagnant or slowly flowing waters, from sea level to about 800 m. The species is common in the central belt of the Sardinian temporary ponds. The genus name derives from the Greek 'myrios' (countless, thousands) and 'phyllon' (leaf), referring to the leaves which are divided into many segments; the species name refers to the leaves, that arranged in whorls along the stem. Flowering period: June to September.

## *Myrtus communis* L. subsp. *communis*

The Myrtle is an evergreen shrub typical of the Mediterranean maquis vegetation, of which it characterizes the most arid and hot aspects. In the wild it is present in Friuli Venezia Giulia, Liguria, and in all regions of Central, Southern and Insular Italy, especially along the coast, with a clear preference for the western ones, from sea level to about 500 m. In Sardinia it is a common shrub of the low Mediterranean maquis, and sometimes it occurs along the edges of temporary ponds, in contact with the Mediterranean maquis vegetation. The plant is exploited for the production of a liquor and of an essential oil. The genus name apparently derives from Myrsine, the legendary Greek girl killed by a young man she beat in the athletic games, which was transformed by Pallas in a bush of myrtle. From the Italian name 'mirto' derives the name of mortadella, because this typical Italian cold cut was flavored with myrtle leaves. Flowering period: June to July.

## *Neoschischkinia pourretii* (Willd.) Valdés & H. Scholz

This annual grass with a strictly Mediterranean, mainly western distribution, is present in Tuscany, Lazio, Campania, Puglia, Calabria, Sicily and Sardinia. It grows in pastures and wet meadows and at the edges of temporary ponds, on mainly siliceous substrates, from sea level to about 600 m. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, common in the outer belt, where it occupies large areas. The name of the genus, recently segregated from *Agrostis*, refers to the affinity with the genus *Schischkinia*, dedicated to the Russian botanist Boris Konstantinovich Schischkin (1886-1963); the species is dedicated to the French abbot and botanist Pierre André Pourret (1754-1818). Flowering period: April to June. Syn.: *Agrostis salmantica* (Lag.) Kunth

## *Oenanthe fistulosa* L.

This species with a wide Eurasian distribution is present in all regions of Italy with the exception of Liguria, Piedmont, Valle d'Aosta and Trentino-Alto Adige. It grows in marshes and wet meadows, usually on substrates that are rich in calcium, below the montane belt. The species is common in the central and intermediate belts of the Sardinian temporary ponds. The whole plant is poisonous for the presence of neuro- and enterotoxic active principles (oenanthetoxines). The genus name derives from the Greek 'oinos' (wine) and 'anthos' (flower), as when ingested in small doses the plant causes mental changes similar to drunkenness; the species name refers to the tubular stems. Flowering period: May to July.

## *Oenanthe globulosa* L.

This aquatic species with a strictly Mediterranean, mainly western distribution is present in Tuscany, Lazio, Basilicata, Sicily and Sardinia (since a long-time no longer found in Liguria, Abruzzo and Campania). It grows in moist sites, such as swamps and marshes, along ditches, in ephemeral pools, from sea level to about 1500 m. The species is rare in the outer belt of the Sardinian temporary ponds. The whole plant is poisonous for the presence of neuro- and enterotoxic active principles (oenanthetoxines). The genus name derives from the Greek 'oinos' (wine) and 'anthos' (flower), as when ingested in small doses the plant causes mental changes similar to drunkenness (at high doses it is highly poisonous); the species name refers to the globose shape of the contracted umbels. Flowering period: April to June.

## *Oenanthe lisae* Moris

The water fennel of Sardinia is endemic to central and northern Sardinia and the neighboring islands. It grows in marshes, ditches and temporary ponds, from sea level to about 1200 m. It is common in the outer belt of the Sardinian temporary ponds. The whole plant is poisonous, due to the presence of neuro- and enterotoxic active principles (oenanthetoxines). The genus name derives from the Greek 'oinos' (wine) and 'anthos' (flower), as when ingested in small doses the plant causes mental changes similar to drunkenness (at high doses it is highly poisonous); the species is dedicated to Domenico Lisa (1801-1867), gardener at the Botanical Garden of Turin. Flowering period: May to June.

## *Oenanthe pimpinelloides* L.

The common water fennel is a Mediterranean-Atlantic species present in all regions of Italy, except in the Valle d'Aosta and Trentino-Alto Adige. It grows along ditches and banks of ponds, and in wet meadows, on periodically flooded, muddy-clayey soils, with optimum below the montane belt. The species is rare on the edge of the temporary ponds in contact with the Mediterranean maquis vegetation. The whole plant is poisonous, due to the presence of neuro enterotoxic active principles (oenanthetoxines). The genus name derives from the Greek 'oinos' (wine) and 'anthos' (flower), as when ingested in small doses the plant causes mental changes similar to drunkenness (at high doses it is highly poisonous); the species name refers to the vague resemblance with species of the genus *Pimpinella*. Flowering period: May to July.

## *Oenanthe silaifolia* M. Bieb.

This species of water fennel with a Mediterranean-Atlantic distribution is present in Lombardy, Veneto, Trentino Alto Adige, and in all regions of Central, Southern and Insular Italy (since a long-time no longer found in Liguria). It grows near springs, along ditches and in swamps, from sea level to about 800 m. The species is rare in the outer belt of the Sardinian temporary ponds. The whole plant is poisonous, due to the presence of neuro- and enterotoxic active principles (oenanthetoxines). The genus name derives from the Greek 'oinos' (wine) and 'anthos' (flower), as when ingested in small doses the plant causes mental changes similar to drunkenness; the species name derives from *Silaum*, a genus of Apiacee, and it means 'with leaves similar to those of *Silaum*'. Flowering period: June to July.

## *Olea europaea* L.

The olive tree is the Mediterranean tree *par excellence*. Native to the Mediterranean region and Asia Minor, it has been used widely since ancient times for oil extraction and for the edible fruits. In Italy it is spontaneous or cultivated throughout the Mediterranean belt, from sea level to about 900 m. The species is found on the edge of the Sardinian temporary ponds, in contact with Mediterranean maquis vegetation. The olive tree derives from wild shrubby forms which are distinguished by the hard and thorny young branches, the smaller fruits, the smaller ovate leaves and the growth-form. The wood is very fine-grained, very hard, of a yellow-brown colour, and is suitable for turnery and engraving. The olive tree is also a beautiful ornamental plant whose use as such has spread in recent years in large part of the Po Valley, favoured by a sequence of relatively mild winters. The genus name is the same used by the Romans, and comes from the Greek 'elaia' (olive). Flowering period: April to June.

## *Ophioglossum lusitanicum* L.

This fern with a sub-Atlantic-Mediterranean distribution is present in all regions of Southern Italy facing the Tyrrhenian Sea, in the Islands, and in Puglia on the Gargano Peninsula. It grows in grassy sites, especially on siliceous substrates, on acidic, fresh soils, from sea level to about 1000 m. It is a characteristic species of the Sardinian temporary ponds, but is rare, in the outer belt. The development of the prothallus (gametophyte) requires the presence of a symbiotic fungus, and the formation of a new sporophyte takes several years. The genus name derives from the Greek 'ophis' (snake) and

'glossa' (tongue), referring to the shape of the sporiferous spike; the species name refers to the ancient region of Lusitania, corresponding to modern Portugal. Sporulation period: August to December.

## *Ophrys tenthredinifera* Willd.

This orchid with a strictly Mediterranean distribution is present in all regions of Central, Southern and Insular Italy. It grows in openings of Mediterranean garrigues, in gaps of maquis vegetation, sometimes in dry meadows and on uncultivated ground, from sea level to about 600 m, with optimum in the Mediterranean belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with grasslands and garrigues. The species of *Ophrys* have a complex mechanism of pollination, in which the labellum shape and the smell of the flowers simulate a female hymenopteran (usually of the genus *Andrena*) and attract the males that, attempting to copulate with the flower, determine the attachment of the pollinarium to their body; the capsule contains numerous small seeds that, despite the scarcity of reserve substances, germinate with the help of a symbiotic fungus of the genus *Rhizoctonia*. The genus name in Greek means 'eyebrow', perhaps from a plant mentioned by Pliny which produced a dye for eyebrows, or because of the hairiness of the labellum of some species; the species name comes from the Greek 'tenthredon' (wasp-like bee or a wasp), referring to the form of the labellum. Flowering period: April to May.

## *Ornithogalum corsicum* Jord. & Fourr.

This species is endemic to the Sardinian-Corsican System. It grows in dry grasslands, from sea level to about 1000 m. The species is sporadic in the outer belt of the Sardinian temporary ponds. The genus name derives from the Greek 'ornis' (bird) and 'gala' (milk), for the presence of a whitish sap in the stem; the species name refers to Corsica, from which the species was originally described. Flowering period: February to April.

## *Ornithopus compressus* L.

This annual species with a broadly Mediterranean distribution is present in Piedmont (where it is rare), Liguria, Emilia-Romagna, and in all regions of Central, Southern and Insular Italy. It grows in openings of garrigue and maquis vegetation, on uncultivated ground, in dry grasslands, from sea level to about 1600 m, with optimum in the Mediterranean belt. The species is found in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands and ruderal vegetation. The genus name derives from ancient Greek and means 'bird's foot' in reference to the characteristic shape of the legume, which is similar to the nails of the feet of some birds; the species name also refers to the legume, which is flattened. Flowering period: April to June.

## *Ornithopus pinnatus* (Mill.) Druce

This annual plant with a Mediterranean-Atlantic distribution is present in all regions of mainland Italy overlooking the Tyrrhenian Sea, in Sicily, and in Sardinia. It grows in the gaps of Mediterranean garrigues and on uncultivated ground, on soils that are dry in summer, from sea level to about 600 m, with optimum in the Mediterranean belt. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands and ruderal vegetation. The genus name derives from ancient Greek and means 'bird's foot' in reference to the characteristic shape of the legume, which is similar to the nails of the feet of some birds; the species name refers to the leaves, which are imparipinnate. Flowering period: April to June.

## *Parentucellia latifolia* (L.) Caruel

This annual plant with a Mediterranean distribution is present in all regions of Italy except in the Valle d'Aosta, Lombardy, Trentino-Alto Adige, and Friuli Venezia Giulia. It grows in openings of garrigue vegetation, in dry grasslands, in pastures and on stony uncultivated ground, from sea level to about 1200 m. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with dry grasslands and garrigue vegetation. The genus is dedicated to Tommaso Parentucelli (1397-1455), pope in 1447 under the name of Nicholas V, who had run a translation of Theophrastus and had founded a garden of medicinal plants in the Vatican; the species name in Latin means 'with broad leaves'. Flowering period: March to June.

## *Parentucellia viscosa* (L.) Caruel

This annual plant with a Mediterranean-Atlantic distribution is present in Liguria, in Emilia-Romagna, and in all regions of Central, Southern and Insular Italy (also reported as a weed from Friuli Venezia Giulia). It grows in openings of garrigue vegetation, in pastures, in uncultivated grasslands, on the edge of ephemeral pools, on soils which are moist at least in winter and spring, with optimum in the Mediterranean belt. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with dry grasslands and garrigue vegetation. The genus is dedicated to Tommaso Parentucelli (1397-1455), pope in 1447 under the name of Nicholas V, who had run a translation of Theophrastus and had founded a garden of medicinal plants in the Vatican; the species name refers to the presence of glands that make the plant sticky to the touch. Flowering period: March to May.

## *Paspalum distichum* L.

This grass with a wide neotropical, presently almost cosmopolitan distribution, is present as a weed in almost all regions of Italy (missing in Valle d'Aosta and no more reported since a long time from Trentino-Alto Adige). It grows in damp areas, especially along ditches and in rice paddies, on muddy or silty, periodically inundated soils, from sea level to about 600 m. The species is sporadic in the outer belt of the Sardinian temporary ponds. The genus name is one of the Greek names of millet; the species name as well derives from Greek, meaning 'with two ears'. Flowering period: July to September.

## *Peplis portula* L.

This annual plant with a wide Eurasian distribution is present in almost all the regions of Italy (missing in the Marche, Molise, Puglia and Sicily). It grows in herbaceous, riparian plant communities, on wet muddy soils, especially on siliceous substrates, from sea level to about 800 m. It is a characteristic species of the Mediterranean temporary ponds, but in Sardinia it is rare, in the outer belt. Some authors argue for the inclusion of this species into the genus *Lythrum*. The genus name is that of a plant mentioned by Dioscorides; the species name is the diminutive of the Latin 'porta' (door), referring to the opening mechanism of the capsule. Flowering time: June to October.

## *Petrorhagia prolifera* (L.) P.W. Ball & Heywood

This annual species with a broadly Mediterranean distribution is present in all regions of Italy. It grows in dry grasslands and on uncultivated ground, often even in waste places, on primitive soils that are dry in summer, with optimum below the lower montane belt. The species is very rare on the edge of the Sardinian temporary ponds, in contact with dry grasslands. The genus name, from the Greek 'petros' (stone) and 'rhagas' (slit), refers to the ecology of the species, some of which root in the fissures of the rocks; the species name, from the Latin 'prolifer', itself derived from 'proles' (offspring), refers to the many flowers grouped within the bracts of the inflorescence. Flowering period: June to September.

## *Phalaris coerulescens* Desf.

The blue canary grass is a species with a Mediterranean-Macaronesian distribution present in Friuli Venezia Giulia, Veneto, Emilia-Romagna, in almost all regions of Central and Southern Italy, and in the Islands (no more reported in recent times from Liguria). It grows as a weed at the margin of abandoned fields and along roads, on rather disturbed, dry soils, from sea level to about 1000 m. The species is rare in the outer belt of the Sardinian temporary ponds. The genus name derives from the Greek 'phalaros' (white-stained), in reference to the colour of the glumes; the species name refers to the bluish-green colour of the leaves. Flowering period: April to May.

## *Phalaris paradoxa* L.

This annual grass with a strictly Mediterranean distribution is present in all regions of Central and Southern Italy, in the major Islands, in Liguria, and, as an ephemeral weed, in Veneto and Friuli Venezia Giulia. It grows at the edge of cultivated fields, along roads, in hedges and in riverbeds, sometimes on ruins and rubble, from sea level to about 800 m. The species is very rare in the outer belt of the Sardinian temporary ponds. The genus name derives from the Greek 'phalaros' (white-stained), in reference to the colour of the glumes; the species name refers to the fact that this species is very different from the other congeneric species, to the point that for a long time it was included into a different genus. Flowering period: April to May.

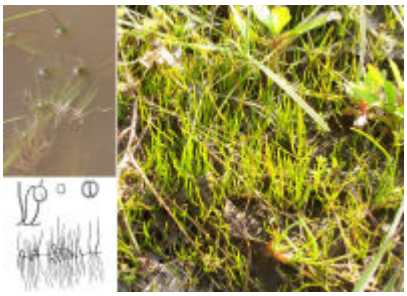
## *Phillyrea angustifolia* L.

This shrub with a Mediterranean distribution occurs in the wild in all Italian regions south of the Po River (except in the Marche, Umbria and Molise), and along the coast of Veneto and Friuli. It is one of the most typical components of the evergreen Mediterranean maquis, and is sometimes cultivated as an ornamental in parks and gardens. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with the Mediterranean maquis vegetation. The genus name comes from the Greek 'philyra', a term already used by Dioscorides and Theophrastus; the species name refers to the leaves, that on average are narrower than those of other congeneric species. Flowering period: March to May.

## *Phillyrea latifolia* L.

This shrub with a Mediterranean distribution is present in all regions of Italy except in the Valle d'Aosta and Piedmont, but is more common in Central and Southern Italy, and in the main Islands. It is one of the most typical components of the evergreen Mediterranean maquis, and is often grown as an ornamental in parks and gardens. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with Mediterranean maquis vegetation. The wood is used as fuel. The genus name comes from the Greek 'philyra', a term already used by Dioscorides and Theophrastus; the species name refers to the leaves that on average are wider than those of other congeneric species. Flowering period: March to May.

## *Pilularia minuta* Durieu ex A. Braun



This extremely rare species with a strictly Mediterranean distribution is present in Sardinia and in Puglia (since a long time no longer reported from Lazio and Campania). The life-cycle can be spent part in water, part on moist to dry soil. It grows submerged in stagnant water, or emerged along the margins of swamps and temporary pools, on wet soils, from sea level to about 800 m. The species is listed in Appendix 1 of the Bern Convention and is indicated in the Red List as a vulnerable taxon (Mascia et al., 2013). The genus name derives from the Latin 'pilula' (pill), in reference to the shape of the globular sporocarps, the species name refers to their smaller size compared to those of *P. globulifera*. Sporulation period: April to May.

## *Pistacia lentiscus* L.

The mastic is a Mediterranean shrub which is widespread in the wild all along the Italian coasts except those of the northern Adriatic. It is a sun-loving, thermo- and xerophilous species, typical of the evergreen Mediterranean maquis. The species is sporadic on the edge of the Sardinian temporary ponds, in contact with Mediterranean maquis vegetation. The mastic shrub is often used in Mediterranean rocky gardens, as it resists well to drastic pruning, and is suitable for the creation of geometrical hedges. The wood is prized for inlay work and for small turnery, due to its hardness and the beautiful red-veined colour. In the past it was used to produce charcoal, and even today is used locally to feed the wood-fired ovens of pizzerias. The leaves, rich in tannins, were used for tanning leather. By making incisions in the trunk it is possible to obtain a resin that thickens in the air (mastic); it has a characteristic odour, and is called 'Chios mastic'; the word 'mastic' derives from ancient Greek, indicating the resin produced from the mastic tree, which was used as a chewing-gum for its anti-inflammatory and antiseptic properties, and for the pleasant taste. The genus name comes from the Greek 'pistákion', assonant with the Persian 'pistáh' (rich in flour), which refers to the fruit of the true pistachio (*Pistacia vera*); the species name is the ancient Latin name of the plant. Flowering period: March to May.

## *Plantago coronopus* L.

This species of plantain with a mainly Mediterranean distribution is common in all regions of Italy except those along the Alps. The life-cycle can be spent part in water, part on moist to dry soil. It grows on dry disturbed soil, usually next to the sea, salt meadows and cliffs. The species is common in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The plant has purifying, slightly laxative properties. The genus name is derived from the Latin 'planta' (sole of the foot), since in some species the leaves have this form, or because several species are able to withstand heavy trampling; the species name derives from the Greek 'korone' (club) and 'pous' (foot, stem), and therefore means 'with a club-shaped stem'. Flowering period: April to August.

## *Plantago lagopus* L.

This annual species of plantain with a strictly Mediterranean distribution is present in Veneto (where it is rare) and in all regions of Central, Southern and Insular Italy (since a long-time no longer reported from Liguria). It grows in the gaps of Mediterranean garrigues, in uncultivated and barren pastures, from sea level to about 800 m, with optimum in the Mediterranean belt. The species is rare in the outer belt of the Sardinian temporary ponds. The plant has purifying, slightly laxative properties. The genus name is derived from the Latin 'planta' (sole of the foot), since in some species the leaves have this form, or because several species are able to withstand heavy trampling; the species name comes from the Greek 'lagos' (hare) and 'pous' (foot) and therefore means 'hare foot', the name of a plant mentioned by Galen and Dioscorides. Flowering period: April to June.

## *Plantago lanceolata* L.

This species of plantain with a wide Eurasian distribution (now it has become almost cosmopolitan) is present in all regions of Italy. It grows in semi-natural herbaceous vegetation, in hay meadows, but also along roads and in disturbed sites, on rather deep, silty-clay soils rich in nitrogen compounds, from sea level to the montane belt. The species is common in the intermediate and outer belts of the Sardinian temporary ponds. For the presence of aucubin the plant is effective against insect bites and for the care of wounds. The genus name is derived from the Latin 'planta' (sole of the foot), since in some species the leaves have this form, or because several species are able to withstand heavy trampling; the species name refers to the lanceolate shape of the leaves. Flowering period: April to August.

## *Plantago uniflora* L.

This very rare species with a sub-Atlantic distribution is known with certainty only from Lombardy and Sardinia (of dubious presence in Veneto and not seen again since a long time in Piedmont and Emilia-Romagna). The life-cycle can be spent part in water, part on moist to dry soil. It grows on the edges of lakes, ponds and marshes, 30-60 (-300) cm deep into water, from sea level to about 1000 m. The genus name is derived from the Latin 'planta' (sole of the foot),

since in some species the leaves have this form, or because several species are able to withstand heavy trampling; the species name in Latin means 'with a single flower'. Flowering period: May to July. Syn.: *Littorella uniflora* (L.) Asch.

## *Plantago weldenii* Rchb.

This species of plantain with a broadly Mediterranean distribution is present in Liguria and in all regions of Central, Southern and Insular Italy, except in Umbria. It generally grows along the coasts, on sandy or rocky shores, sometimes also on weakly saline soils. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The genus name is derived from the Latin 'planta' (sole of the foot), since in some species the leaves have this form, or because several species are able to withstand heavy trampling; the species is dedicated to the botanist Franz Ludwig von Welden (1782-1853). Flowering period: March to October.

## *Poa annua* L.

The annual bluegrass is a species with an originally Eurasian distribution that has presently become almost cosmopolitan in temperate areas of the Globe, present in all regions of Italy. It grows in trampled pioneer vegetation along the streets, on the edge of walls, in cultivated fields and gardens, on rather primitive, silty-clay, fresh soils rich in nitrogen compounds, from sea level to about 2000 m (rarely up to 2700 m). The species is rare in the outer belt of the Sardinian temporary ponds, in contact with ruderal vegetation. The plant is sometimes used for the construction of artificial turfs. The genus name is a Greek word that means 'grass', the species name refers to the short life cycle. Flowering period: January to December.

## *Poa bulbosa* L. subsp. *bulbosa*

The bulbous bluegrass is a species with a sub-Mediterranean distribution present in all regions of Italy. It grows in dry meadows, on the edge of roads, on embankments and slopes, on decalcified soils which are poor in humus and dry in summer, from sea level to the montane belt. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with sheep pastures. The genus name is a Greek word that means 'grass'; the plant reproduces vegetatively by bulbils that often appear in the place of flowers, hence the specific name. Flowering period: April to July.

## *Poa infirma* Kunth

This annual bluegrass with an originally eu-Mediterranean, presently almost cosmopolitan distribution (it was described for Colombia, where it is an alien weed), is present in all Italian regions south of the Po River, and was also reported from Piedmont. It grows in openings of garrigue vegetation and in dry grasslands, but also in disturbed sites, such as on pavements and along the roads, with optimum in the Mediterranean belt. The species is common in the outer belt of the Sardinian temporary ponds. The genus name is a Greek word that means 'grass'; the species name in Latin means 'sick' and refers to the fact that the species differs from the very similar *P. annua* by its frail look, due to the much poorer inflorescence and spikelets. Flowering period: March to September.

## *Poa trivialis* L. subsp. *trivialis*

This bluegrass with a wide Eurasian distribution is present in all regions of Italy. It grows in mowed and fertilized lawns, in disturbed vegetation, along the edges of elder thickets, on neutral to sub-acid, silty-clay soils rich in nitrogen compounds, from sea level to about 1200 m (maximum to 1900 m), but the species is rare in the Mediterranean belt. It rarely occurs in the outer belt of the Sardinian temporary ponds, in shaded areas. The genus name is a Greek word that means 'grass'; the species name comes from the Latin 'trivium', with the meaning of 'vulgar', 'trivial', 'common'. Flowering period: May to September.

## *Polycarpon tetraphyllum* (L.) L. subsp. *tetraphyllum*

This annual plant with a Mediterranean origin has now become almost cosmopolitan, and is present, with three subspecies, in all regions of Italy (as an ephemeral weed in Valle d'Aosta). It grows in ruderal pioneer vegetation, along the streets, in the cracks of paving stones, on sandy to silty-clay soils that sometimes are poor in calcium and always dry in summer, from sea level to about 600 m (in Sicily up to1000 m). The species is rare in the outer belt of the Sardinian temporary ponds, in contact with ruderal vegetation. The genus name in Greek means 'with many fruits'; the species name, deriving from Greek as well, means 'four-leaved', referring to the leaves that are arranged in whorls of 4. Flowering period: March to August.

## *Polygonum aviculare* L. subsp. *aviculare*

The common knotweed is a sub-cosmopolitan annual plant present in all regions of Italy. It grows in uncultivated crops, trampled places, roadsides and trails, in the cracks of paving stones, at the base of walls, in landfills, etc. from sea level to the subalpine belt. The species is rare on the edge of the Sardinian temporary ponds, in contact with dry grasslands. The genus name derives from the Greek 'poly' (many) and 'gony' (nodes) for the jointed stems of several species; the species name indicates that the seeds are prized by birds (from the Latin 'aves'). Flowering time: June to October.

## *Polygonum scoparium* Loisel.

This species is endemic to Sardinia, Corsica and the neighboring islands. It grows in the beds of rivers and on uncultivated wet soils which are rather moist at least in winter and spring, from sea level to approximately 300 m. It appears sporadically also in the outer belt of the Sardinian temporary ponds. The genus name derives from the Greek 'poly' (many) and 'gony' (nodes) for the jointed stems of several species; the species name refers to the use of the plant for the construction of brooms. Flowering period: July to October.

## *Polypodium cambricum* L.

This fern with a sub-Atlantic-Mediterranean distribution is present in all regions of Italy. It grows on south-facing slopes and on limestone cliffs, usually in sites with accumulation of humus in rock fissures, from sea level to the lower montane belt. The species is rare on the edge of the Sardinian temporary ponds, in contact with rocky outcrops. The rhizome has a sweet taste due to the presence of glycyrrhizin. The genus name in Greek means 'with many feet', referring to the branched rhizome; the species name refers to Cambria, the name given by the Romans to Wales. Sporulation period: from February to June.

## *Polypogon maritimus* Willd. subsp. *maritimus*

This annual grass with a strictly Mediterranean-Macaronesian distribution is present in Liguria, Tuscany, Lazio, Abruzzo, in all regions of Southern Italy, and in the Islands. It grows on weakly saline, moist soils along the coast. The species is sporadic in the outer belt of the Sardinian temporary ponds. The genus name derives from the Greek 'poly' (a lot) and 'pogon' (beard), referring to the fluffy inflorescence; the species name refers to the maritime habitat. Flowering period: March to May.

## *Polypogon monspeliensis* (L.) Desf.

This annual grass with a wide palaeo-subtropical distribution is common throughout the Italian Peninsula (except along the Adriatic coast from Trieste to Rimini), in Sicily and in Sardinia. It grows on moist, sometimes salty soils, from sea level to about 600 m. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with salt marshes. The genus name derives from the Greek 'poly' (a lot) and 'pogon' (beard), referring to the fluffy inflorescence; the species name refers to the city of Montpellier in France, where the species is present. Flowering period: March to May.

## *Polypogon subspathaceus* Req.

This annual grass with a strictly Mediterranean distribution is present in Tuscany, Lazio, Puglia, Sardinia and Sicily. It grows on moist, weakly salty soil near the coast. The species is common in the outer belt of the Sardinian temporary ponds. The genus name derives from the Greek 'poly' (a lot) and 'pogon' (beard), referring to the fluffy inflorescence; the species name means 'similar to *P. spathaceus*', another congeneric species. Flowering period: March to May.

## *Potentilla reptans* L.

This cinquefoil with a south European-Eurasian distribution has now become almost cosmopolitan in the temperate zones of the Globe, and is present in all regions of Italy. It grows in pioneer vegetation along roads and paths, on the edge of cultivated fields and gardens, in open marsh vegetations, on moist, silty-clayey, humic soils rich in nitrogen compounds and with a neutral to sub-acid reaction, from sea level to the montane belt. The species is rare in the Sardinian temporary ponds, in contact with hydric grasslands. The plant is rich in tannins and has astringent properties. The genus name is the feminine diminutive of the Latin 'potens' and means 'a small plant with a lot of force', perhaps referring to the stony habitats in which many species grow, or to their medicinal properties; the species name in Latin mean 'creeping', referring to the habit of the plant. Flowering period: May to September.

## *Poterium sanguisorba* L. subsp. *balearicum* (Bourg. ex Nyman) Stace

This entity with a mainy southeast-European distribution is present in all regions of regions of Italy, except perhaps in the Valle d'Aosta. It grows in dry meadows and pastures, but also along streets and in flower beds, on silty-clay soils rich in bases and nitrogen compounds, from sea level to the montane belt. The species is rare on the edge of the Sardinian temporary ponds, in contact with dry grasslands. The plant smells slightly of cucumber and the tender leaves can be eaten raw in salads, or used as a flavoring; once this use was much more widespread, to the point that in some regions of Italy the old saying is still common 'the salad is not nice if you do not have the pimpernel (Italian: pimpinella)' (where 'pimpinella' was the ancient vernacular name of this plant). The species name comes from the ancient and unjustified use of *Sanguisorba officinalis*, induced by the red color of the flowers, to treat bleeding wounds. Flowering time: July to August. Syn.: *Sanguisorba minor* Scop. subsp. *balearica* (Bourg. ex Nyman) Muñoz Garm. & C. Navarro

## *Prospero autumnalis* (L.) Speta subsp. *autumnalis*

This species with a mainly eastern Mediterranean distribution is present in all regions of Italy except in Valle d'Aosta (and perhaps in Piedmont). It grows in dry meadows, on calcareous, but often decalcified and then subneutral, not very deep soils that are rich in skeleton and dry in summer, below the montane belt. The species is rare in the outer belt of the Sardinian temporary ponds. The plant, especially in the bulbs, contain toxic substances. The genus name derives from the Greek 'pros' (close) and 'peráo' (I step by), probably meaning that this genus is so close to *Scilla*, from which it was segregated, that it was not recognised for a long time; the species name refers to the period of flowering. Flowering time: August to September. Syn.: *Scilla autumnalis* L.

## *Pulicaria odora* (L.) Rchb.

This species with a broadly Mediterranean distribution is present in Liguria, Emilia-Romagna, and in all regions of Central, Southern and Insular Italy. It grows in open maquis vegetation and in openings of deciduous coppiced woodlands, from sea level to about 1000 m. The species is rare on the edge of the Sardinian temporary ponds. The flowers and the other aerial parts were once used against fleas and insects in general, from which the genus name, which derives from the Latin 'pulex' (flea); the species name refers to the intense smell of the plant. Flowering period: June to July.

## *Pulicaria sicula* (L.) Moris

This annual plant with a strictly Mediterranean distribution is present in many regions of Central, Southern and Insular Italy (missing in Umbria and Molise, of doubtful occurrence in the Marche and Calabria); in the past it had also been reported from Lombardy and Emilia-Romagna, where, however, it has not been observed again since a long time. The life-cycle can be spent part in water, part on moist to dry soil. It grows in moist places, along ditches and the edges of temporary pools, from sea level to about 800 m. This characteristic species of the Sardinian temporary ponds is rare in the central and intermediate belts. Flowers and other aerial parts of some species were once used against fleas and insects in general, from which the genus name, which derives from the Latin 'pulex' (flea); the species name refers to Sicily, from which the species was originally described. Flowering period: July to October.

## *Pulicaria vulgaris* Gaertn.

This annual plant with a wide distribution in the temperate zone of Eurasia is present in almost all regions of Italy. The life-cycle can be spent part in water, part on moist to dry soil. It grows in wet meadows, on the banks of streams, rivers and canals, sometimes even in waste places, mainly on moist muddy soils, below the lower montane belt. It is a characteristic species of the Sardinian temporary ponds, common in the central and intermediate belts. Vegetative growth occurs during the phase of flood, flowering in the early phase of desiccation. The flowers and other aerial parts of the plants of this genus were formerly used against fleas and insects in general, from which the genus name, that is derived from the Latin 'pulex' (flea); the species name comes from the Latin 'vulgus' (common people), with the meaning of 'common, widespread, frequent'. Flowering time: August to September.

## *Pycreus flavescens* (L.) P. Beauv. ex Rchb.

This annual plant with a wide Eurasian-Mediterranean, rather suboceanic distribution, is present in almost all regions of Italy. It grows as an ephemeral pioneer species in periodically submerged vegetation along the edges of ponds and puddles, on sandy to silty-clayey soils rich in bases and nitrogen compounds, sometimes with a sub-acid reaction, below the montane belt. In the temporary ponds of Sardinia it is extremely rare. Flowering period: July to September. Syn.: *Cyperus flavescens* L.

## *Pyrus spinosa* Forssk.

This species of pear-tree with a mainly Mediterranean distribution is present in all regions of Peninsular Italy, in the Islands, in Emilia-Romagna, Veneto and Friuli Venezia Giulia. It grows in open deciduous woods, hedges, disturbed maquis and garrigue vegetation, in hot, sunny sites, below the lower montane belt. The species is found from the outer belt to the center of some Sardinian temporary ponds. The genus name derives from the Greek 'pyr, pyros' (fire), perhaps referring to the conical shape of the fruit; the species name refers to the branches ending in thorns. Flowering period: April to May. Syn.: *P. amygdaliformis* Vill.

## *Quercus pubescens* Willd. subsp. *pubescens*

This deciduous oak with a mainly southern European distribution is present in all regions of Italy. It grows in thermophilous deciduous woods, either on limestone or on calcium-rich sandstone, on neutral-basic clay soils that are moderately dry in summer, with optimum in the sub-Mediterranean belt. The species very rarely occurs also along the edges of the Sardinian temporary ponds. The wood, thanks to its durability, is used in the construction of railway sleepers; in the past it was used for beams, shipbuilding, etc.; the infusion of the bark and young branches was used in traditional medicine as an astringent and febrifuge. The acorns have had many uses, from food for pigs to use as a coffee substitute. The genus name was already in use among the ancient Romans, it seems to reconnect to a Indo-European root that Latin shares with the Celtic words 'kaer' and 'quer' (beautiful tree), but also with similar Greek terms that refer to the roughness of the bark and wood; the species name refers to the hairiness of the leaves. Flowering period: April to May.

## *Quercus suber* L.

The cork oak is an evergreen tree native of south-western Europe and north-western Africa, from ancient times naturalized throughout the western part the Mediterranean Region. It is a thermophilic species that prefers warm and moderately dry sites, avoiding extreme drought or frequent winter frosts. It grows mainly on soils derived from acidic siliceous rocks, becoming sporadic on basaltic and calcareous substrata. The species is frequent along the edges of the Sardinian temporary ponds. The average life span is 250-300 years, but it decreases notably in specimens exploited for cork. The most striking feature of the cork oak is the remarkable development in thickness of the rhytidome, that forms a coating called 'cork'. The cork looks gray-brown in the branches of a few years of age, first with thin pale grey crackings which become progressively larger and irregular due to the tangential traction caused by the growth in diameter of the trunk. After several years, the cork forms an uneven spongy coverage, commonly known as male cork. After removal of the male cork, the phellogen produces every year new layers of cork tissue that form a more compact and regular layer, the so-called female cork. The genus name was already in use among the ancient Romans, it seems to reconnect to a Indo-European root that Latin shares with the Celtic words 'kaer' and 'quer' (beautiful tree), but also with similar Greek terms that refer to the roughness of the bark and wood; the species name is the Latin for 'cork'. Flowering period: April to June.

## *Ranunculus chius* DC.

This annual buttercup with a Mediterranean-eastern European distribution is present in Friuli Venezia Giulia, Tuscany, Abruzzo, Campania, Calabria, Puglia and Sardinia, but with a rather sparse and erratic distribution. It grows in wet meadows and in temporary pools, from sea level to about 800 m. This characteristic species of Mediterranean temporary ponds is rare in Sardinia. The plant is toxic due to the content of anemonine. The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name refers to the Greek island of Chios. Flowering period: March to May.

## *Ranunculus cordiger* Viv. subsp. *diffusus* (Moris) Arrigoni

This buttercup is endemic to the Sardinian-Corsican System. The life-cycle can be spent part in water, part on moist to dry soil. It grows in temporary ponds, along ditches, in marshy places, from 700 to 1600 m. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, mainly occurring in the intermediate belt. The species is indicated in the Regional Red Lists as critically endangered (Conti et al., 1997). The fresh parts are poisonous (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name, from the Latin 'cor-cordis' (heart) refers to the basal leaves that have a heart-shaped base. Flowering period: June to July.

## *Ranunculus cymbalariifolius* Moris

This buttercup is endemic to Sardinia. It grows on damp muddy soils, from 600 to approximately 1800 m. It is a characteristic species of Mediterranean temporary ponds, but in those of Sardinia it is present in two areas only: Marghine and Gennargentu Mountains. The fresh parts are poisonous (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name refers to the leaves, which are rather similar to those of plants of the genus *Cymbalaria*. Flowering period: June to August.

## *Ranunculus flammula* L.

This buttercup with a wide Eurasian distribution is especially widespread in the regions of Northern and Central Italy. The life-cycle can be spent part in water, part on moist to dry soil. It grows on muddy soils in swamps and marshes, from sea level to (rarely) 2000 m. The species is sporadic in the outer belt of the temporary ponds of Sardinia, in contact with hydric grasslands. The fresh parts are poisonous (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name in Latin means 'little flame'. Flowering period: June to July.

## *Ranunculus lateriflorus* DC.

This annual buttercup with a wide palaeo-tropical distribution is present, but generally rare and localised, in Lazio, Abruzzo, Sardinia and Sicily. It grows in moist habitats, especially swamps, from 500 to 1200 m. It is a characteristic species of Mediterranean temporary ponds in Sardinia, where it is localised in the outer belt. The fresh parts are poisonous (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name refers to the characteristic arrangement of the sessile flowers, which seem to originate from one side of the stem. Flowering period: March to May.

## *Ranunculus macrophyllus* Desf.

The Italian distribution of this Mediterranean buttercup is limited to Sardinia and Tuscany. It grows in wet meadows and along the edges of ditches, rivers and waterways, from sea level to about 600 m. The species is found sporadically in the outer belt of the temporary ponds of Sardinia, in contact with hydric grasslands. The fresh parts are poisonous (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name is derived from Greek and means 'with big leaves'. Flowering period: April to May.

## *Ranunculus monspeliacus* L. subsp. *monspeliacus*

This buttercup with a mainly northwestern Mediterranean distribution is present, with 3 subspecies, in all regions of mainland Italy (except in Umbria), in Sardinia and in Sicily (where, however, it has not been observed since a long time). It grows on the shores of streams and on moist grassy slopes, from sea level to about 1500 m. The species is rare in the outer belt of the temporary ponds of Sardinia. The fresh parts are poisonous (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name refers to the city of Montpellier in southern France. Flowering period: April to June.

## *Ranunculus muricatus* L.

This annual buttercup with a mainly Mediterranean distribution is present in all regions of Italy except in Piedmont, Valle d'Aosta, Lombardy (not reported since a long time) and Trentino-Alto Adige, but is more frequent in Mediterranean Italy. It grows in wet meadows, near ponds and ephemeral pools, below the montane belt. The species is common in the outer belt of the temporary ponds of Sardinia, in contact with ruderal vegetation. The fresh parts are poisonous (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name comes from the Latin 'murex', the name of the purple shell that has many thorny spikes, in reference to the short and acute prongs of the fruit. Flowering period: March to April.

## *Ranunculus neapolitanus* Ten.

The Neapolitan buttercup is a species with a northwestern Mediterranean distribution, present in almost all the regions of Italy (missing in Piedmont, Valle d'Aosta, Emilia-Romagna and Trentino-Alto Adige), but more common in the central and southern ones. It grows in wet meadows, from which it has passed to disturbed environments, such as mowed lawns and flower beds, even in urban areas, below the montane belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with hydric grasslands. The fresh parts are poisonous (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name refers to the city of Naples, where the species is common. Flowering period: April to June. Syn.: *Ranunculus bulbosus* L. subsp. *aleae auct.*

## *Ranunculus ophioglossifolius* Vill.

This annual buttercup with a Mediterranean distribution is present in all regions of Italy located south of the Po River, in the Veneto and Friuli Venezia Giulia (no longer observed since a long time in Liguria). The life-cycle can be spent part in water, part on moist to dry soil. It grows in swamps and along the shores of lakes and streams, from sea level to about 600 m. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, found in the intermediate belt. The fresh parts are poisonous (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name refers to the leaves, which are vaguely similar to those of the fern *Ophioglossum*. Flowering period: March to July.

## *Ranunculus paludosus* Poir.

This buttercup with a Mediterranean-Turanian distribution is present in Liguria and in all the regions of Central and Southern Italy except in the Marche, but is more common along the Tyrrhenian side of the Peninsula and in Sardinia. It grows (despite the name) in dry meadows on clay soils derived from limestone or calcium-rich marl substrata, from sea level to about 800 m. The species is common in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The fresh parts are poisonous (protoanemonine). The genus name, the Latin for 'little frog', was used since

ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name, which means 'of the marshes', is rather incongruous, considering the ecology of the species. Flowering period: April to May.

## *Ranunculus peltatus* Schrank subsp. *baudotii* (Godr.) C.D.K. Cook

This aquatic buttercup is an entity whose distribution in Italy is still little known, reported with certainty for many regions of Central and Southern Italy, but probably more widespread also in the North. It grows in ditches and swamps, often in brackish waters, from sea level to about 100 m. The species is rare in the central and intermediate belts of the Sardinian temporary ponds. The plant is toxic because of the content of anemonine. The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name comes from the Latin 'pelta' (shield) for the shape of the upper leaves; the subspecies is dedicated to the botanist and magistrate Charles Joseph Auguste de Baudot, who discovered this plant in 1837, when he was procurator of the King in Sarrebourg. Flowering period: April to June.

## *Ranunculus peltatus* Schrank subsp. *fucoides* (Freyn) Muñoz Garm.

This aquatic buttercup is an entity whose distribution in Italy is still little known, because it is often confused with other species; it is reported with certainty for Friuli Venezia Giulia, Puglia, Sardinia and Sicily. It grows in pools and ponds, also in brackish waters, from sea level to about 400 m. The species is common in the central and intermediate belts of Sardinian temporary ponds, giving rise to abundant blooms in early spring. The whole plant, when fresh, is toxic for the presence of an alkaloid (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus Batrachion, also a diminutive of the Greek 'batràchos' (frog); the species name comes from the Latin 'pelta' (shield) for the shape of the upper leaves. Flowering period: April to June..

## *Ranunculus pratensis* C. Presl

This buttercup is endemic to Sardinia and Sicily. It grows in wet meadows and on the margin of woods, on fresh soils, from sea level to about 800 m. In the temporary ponds of Sardinia this species is extremely rare. The whole plant is toxic for the presence of an alkaloid (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name refers to the habitat. Flowering period: April to June.

## *Ranunculus revelierei* Boreau

This annual buttercup is endemic to the Sardinian-Corsican System. The life-cycle can be spent part in water, part on moist to dry soil. It grows in damp sites such as ditches, swamps and temporary pools, on soils that are moist at least in winter and spring, usually along the coast. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, found in the intermediate and outer belts. The species is indicated in the Regional Red Lists as a threatened (Conti et al., 1997). The whole plant, when fresh, is toxic for the presence of an alkaloid (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species is dedicated to the

French botanist Louis-Marie-Réveillère Lépeaux (1753-1824), who collected extensively in Corsica in the early nineteenth century. Flowering period: April to May.

## *Ranunculus sardous* Crantz s.l.

The Sardinian buttercup is a species with a broadly Mediterranean distribution, of ancient introduction near the northern limits of its present distributional range (archaeophyte), present in almost all regions of Italy (of doubtful occurrence in Valle d'Aosta). The life-cycle can be spent part in water, part on moist to dry soil. It grows in fields and in disturbed sites, on wet muddy soils with a sub-acid reaction, from sea level to the lower montane zone. The species is common in the intermediate and outer belts of the Sardinian temporary ponds. The whole plant, when fresh, is toxic for the presence of an alkaloid (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog). Flowering period: February to November.

## *Ranunculus trichophyllus* Chaix subsp. *trichophyllus*

This aquatic buttercup with a wide, almost cosmopolitan distribution is present in all regions of Italy. It grows in still or slowly flowing waters which are rather rich in nitrogen compounds, rooting on muddy soils that are rich in bases, but usually poor in calcium, from sea level to the montane belt. The species is rare in the central belt of the Sardinian temporary ponds. The whole plant, when fresh, is toxic for the presence of an alkaloid (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name in Greek means 'with hair-like leaves'. Flowering time: July to August.

## *Ranunculus trilobus* Desf.

This annual buttercup with a western Mediterranean-Macaronesian distribution is present in Tuscany, Sardinia, Abruzzo, and in all regions of Southern Italy except perhaps in Molise and Campania (from where it has not been reported since a long time). It grows in wet sites such as ponds, swamps, temporary pools, sometimes in irrigated crops, on muddy soils, from sea level to about 600 m. It is a characteristic, but rare species of the Mediterranean temporary ponds of Sardinia, usually found in the outer belt. The whole plant, when fresh, is toxic for the presence of an alkaloid (protoanemonine). The genus name, the Latin for 'little frog', was used since ancient times only for the aquatic species of the subgenus *Batrachion*, also a diminutive of the Greek 'batràchos' (frog); the species name refers to the shape of the leaves, which are 3-lobed. Flowering period: April to May.

## *Reichardia picroides* (L.) Roth

This species with a strictly Mediterranean distribution is present in all regions of Italy except in the Valle d'Aosta, Lombardy and Trentino-Alto Adige, but is more common in Central and Southern Italy. It grows on rocks by the sea, in uncultivated arid sites, on walls, in ruderal areas, along roads, on soils rich in skeleton and dry in the summer, from sea level to the lower montane zone. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with pastures and garrigue vegetation. The young leaves of the basal rosettes are edible, both raw and cooked. The genus is dedicated to the botanist and physician in Frankfurt Johann Jacob Reichard (1743-1782); the species name refers to a vague resemblance to plants of the genus *Picris*. Flowering period: January to December.

## *Romulea bocchierii* Frignani & Iriti

This recently described species is endemic to the south-east of Sardinia (Sette Fratelli Mountains, Sarrabus, Province of Cagliari) where it is localised in a single site at 735 m. It grows in temporary ponds that are flooded in winter and

spring, but completely dry in the summer, on granitic substrates in grazed environments. The genus name is dedicated to Romulus, the founder of Rome, the species is dedicated to Emanuele Bocchieri (1941-), botanist at the University of Cagliari. Flowering period: March to April.

## *Romulea columnae* Sebast. & Mauri

This species with a strictly Mediterranean distribution is present in Liguria and in all regions of Central, Southern and Insular Italy. It grows in grasslands and in openings of garrigue vegetation, from sea level to about 1200 m. It occurs sporadically in the outer belt of the Sardinian temporary ponds. The genus is dedicated to Romulus, founder of Rome; the species is dedicated to the Neapolitan botanist Fabio Colonna (1567-1640). Flowering period: February to April.

## *Romulea ligustica* Parl.

This species with a strictly Mediterranean, mainly western distribution is present in Sardinia and in Liguria; surprisingly, it was also found in a very restricted area of the Euganean Hills (Veneto Region in north-eastern Italy), where it occurs along with other thermophilic plants of Mediterranean origin. It grows in meadows and sunny openings of maquis vegetation, below the montane belt. The species is common in the outer belt of the Sardinian temporary ponds. The genus is dedicated to Romulus, the founder of Rome, the species name refers to Liguria, where the species was first described. Flowering period: February to March.

## *Romulea ramiflora* Ten. subsp. *ramiflora*

This species with a Mediterranean-Macaronesian distribution is present in Liguria and in almost all the regions of Central, Southern and Insular Italy (missing in Umbria and no more found since a long time in Campania). It grows in pastures and grassy areas, on sandy soils which are moist at least in winter and in spring, usually along the coast, more rarely in the interior up to 600 m. The species is common in the outer belt of the Sardinian temporary ponds, in contact with grazed areas. The genus is dedicated to Romulus, the founder of Rome, the species name refers to the stem, that is branched in the upper part and bears 2-3 flowers. Flowering period: February to March.

## *Romulea requienii* Parl.

This species is endemic to Corsica and Sardinia. It grows in grassy areas, especially in meadows and pastures near the sea, but sometimes also in the interior, up to 1200 m. The species is common in the outer belt of the Sardinian temporary ponds. The genus is dedicated to Romulus, the founder of Rome, the species is dedicated to E. Requien (1788-1851), explorer of the flora of southern France. Flowering period: February to April.

## *Romulea revelieri* Jord. & Fourr.

This species is endemic to the Sardinian-Corsican System. It grows in wet meadows and marshes and on the edge of temporary ponds, from sea level to about 400 m. It is a characteristic species of the Mediterranean temporary ponds of

Sardinia, usually found in the outer belt; it has been reported from La Maddalena and from the Plateau of Buddusò. It is indicated in the Regional Red Lists as a vulnerable species (Conti et al., 1997). The genus is dedicated to Romulus, the founder of Rome, the species is dedicated to the French botanist Eugene Reveillère-Lapeaux (1822-1892), who collected extensively in Corsica in the early nineteenth century. Flowering period: March to April.

## *Rosa sempervirens* L.

This evergreen rose with a Mediterranean distribution is present in all regions of Italy with the exception of Piedmont, Valle d'Aosta and Trentino-Alto Adige. It grows in open maquis vegetation, sometimes also in the warmer aspects of deciduous forests and their margins, both on limestone an on base-rich siliceous substrata, on rather deep clay soils that are dry in summer, below the lower montane belt, with optimum in the Mediterranean belt. The species is found on the edge of the Sardinian temporary ponds, in contact with mesophilous scrub vegetation. The false fruits, rich in vitamin C, can be used for the preparation of jams. The genus name is the common name of wild roses in Latin, deriving from the Greek 'rodon'; the species name refers to the evergreen leaves. Flowering period: May to June.

## *Rubia peregrina* L. subsp. *peregrina*

This species with a Mediterranean-Macaronesian distribution is present, with two subspecies, in all regions of Italy with the exception of Piedmont, Valle d'Aosta and Trentino-Alto Adige. It is a typical component of evergeen maquis vegetation. The species is sporadic along the margins of the Sardinian temporary ponds, in contact with Mediterranean maquis vegetation. The genus name derives from the Latin 'ruber' (red) for the dyeing properties of the roots, especially those of *Rubia tinctorum* L., which was grown for this use; the species name, which in Latin means 'pilgrim', may refer to the tendency to expand with ease. Flowering period: April to June.

## *Rubus ulmifolius* Schott

The brambles are a difficult group of species of apomictic and hybridogenous origin, which are still incompletely studied in Italy. The common bramble is a Mediterranean-Atlantic species present throughout Italy below the upper montane belt. It grows in thickets, in open black pine forests, along the edges of deciduous woods, on stone walls, often forming impenetrable tangles in the last stages of forest degradation, both on limestone and on arenaceous substrates, on fresh to moderately dry soils that are rich in nitrogen compounds. The species is found on the edge of the Sardinian temporary ponds, in contact with mesophilous scrub vegetation. The fruits are edible. The genus name, of ancient use, may derive from the Latin word 'ruber' (red) for the red colour of the fruits of some species (such as raspberry); the species name refers to the leaflets, that have a slightly asymmetric base like those of the elm (genus *Ulmus*). Flowering period: May to July.

## *Rumex acetosella* L. subsp. *acetosella*

This species with a wide, almost cosmopolitan distribution, is present in all the regions of Italy, with three subspecies. It grows in meadows and clearings of open forests, in uncultivated ground, on dry, sandy mainly siliceous soils, from sea level to the subalpine belt. The species sporadically appears in the outer band of the temporary ponds of Sardinia, in contact with ruderal vegetation. The plant contains vitamin C, potassium oxalate and oxalic acid; oxalates are toxic if ingested in high doses and for prolonged periods of time. The young leaves, however, are edible in small quantities, both raw and cooked, and can be used in the preparation of sour sauces; the juice can be used to remove rust. The genus name in Latin means 'pole', 'spear', 'arrow', referring to the shape of the leaves of some species; the species name refers to the sour taste of the plant. Flowering period: May to August.

## *Rumex conglomeratus* Murray

This species with a mainly southern European distribution is present in all regions of Italy except in the Valle d'Aosta. It grows in ruderal pioneer vegetation in rather moist sites, along ditches, streams and ponds, on sandy to silty soils rich in nitrogen compounds, from sea level to the lower montane belt. The species sporadically appears also in the outer belt of the temporary ponds of Sardinia, in contact with humid grasslands. The genus name in Latin means 'pole', 'spear', 'arrow', referring to the shape of the leaves of some species; the species name reefers to the flowers gathered in dense clusters. Flowering period: June to August.

## *Rumex crispus* L.

This species with an originally Eurasian-south European distribution has presently become almost cosmopolitan, and is present in all regions of Italy. It grows in ruderal vegetations at the edge of the streets, often in urban environments, in landfills and abandoned cultivations, on compact silty-clay soils that are rich in nitrogen compounds and often humid for stagnant water, from sea level to the upper montane belt. The species sporadically appears in the outer band of the temporary ponds of Sardinia, in contact with hydric grasslands and ruderal vegetation. The leaves and root systems, rich in tannins, were used for wound care. The genus name in Latin means 'pole', 'spear', 'arrow', referring to the shape of the leaves of some species; the species name refers to the crinkled appearance of the leaves. Flowering period: May to July.

## *Rumex pulcher* L. subsp. *pulcher*

This species with a Mediterranean distribution is present in all regions of Italy, with three subspecies; the nominal subspecies is absent only from Piedmont, Liguria, Puglia, and Calabria. It grows in pioneer vegetation along roads, in landfills, harbours and railway stations, on sandy-gravelly to clay, moderately dry soils rich in nitrogen compounds, below the lower montane belt. It is common in the middle and intermediate belts of the temporary ponds of Sardinia. The genus name in Latin means 'pole', 'spear', 'arrow', referring to the shape of the leaves of some species; the species name in Latin means 'beautiful'. Flowering period: May to June.

## *Rumex thyrsoides* Desf.

This species with a mainly western Mediterranean distribution is present in Sardinia, Sicily, and in all regions of Southern Italy (of dubious occurrence in Molise). It grows in uncultivated sites, on soils that are dry at least in the summer, from sea level to about 1200 m. The species sporadically appears in the outer belt of the temporary ponds of Sardinia. The genus name in Latin means 'pole', 'spear', 'arrow', referring to the shape of the leaves of some species; the species name comes from the Greek 'thyrsos' (the staff of the Bacchae) and 'eidos' (appearance) in reference to the shape of the inflorescence. Flowering period: April to May.

## *Ruscus aculeatus* L.

This species with a mainly Mediterranean distribution is present in all regions of Italy. It grows in the Mediterranean maquis and in the warmest aspects of deciduous woodlands, on deep, neutral-basic, silty-clayey soils, below the lower montane belt. The species sporadically appears in the outer belt of the temporary ponds of Sardinia, in contact with woody vegetation. The whole plant is toxic when fresh. The popular belief considers it as an auspicious plant. Together with holly this is a traditional Christmas plant: its reckless harvesting for commercial purposes is threatening its occurrence in the wild. The young shoots are edible after cooking and are eaten like asparagus. In some regions, the prickly branches were used to protect cheese against the bites of mice, hence the Italian name 'pungitopo'. The genus name comes from the Greek 'rugchos' (beak, rostrum), for the pointed phyllocladia that resemble a bird's beak. Flowering time: February to April, September to October.

## *Sagina apetala* Ard. subsp. *apetala*

This annual plant with a mainly Mediterranean distribution is present in almost all regions of Italy. It grows in disturbed areas and in uncultivated dry sites, sometimes in the cracks of paving stones, often in urban environments, from sea level to the lower montane belt. The species is rarely found also in the outer belt of the temporary ponds of Sardinia, in contact with ruderal vegetation. The genus name, which in Latin means 'food that fattens', was borrowed by Linnaeus from Lobelius, who called 'Saginae Spergula' the plant presently called *Spergula arvensis*, that was cultivated in Brabant as food for cows; the species name refers to the fact that the flowers are often devoid of petals. Flowering period: February to June.

## *Schenkia spicata* (L.) G. Mans.

This annual plant with a Mediterranean distribution is present in Italy, but is localised, especially along the coast, but also along the Po river and in the Brescia area. It grows on muddy, wet, sometimes weakly salty soils, usually near the coast. The species is sporadically appears on the edge of the temporary ponds of Sardinia, in contact with dry grasslands and garrigue vegetation. The genus is dedicated to the German botanist J.A. Schenk (1860-1927); the species name refers to the spike-like shape of the inflorescence. Flowering time: June to October. Syn.: *Centaurium spicatum* (L.) Fritsch

## *Sedum caeruleum* L.

The blue stonecrop is an annual plant with a mainly southwestern Mediterranean distribution, present in Sardinia and in Sicily. It grows in rocky and gravelly sites, on primitive, acid or sub-acid soils that are dry in summer, on siliceous substrates, from sea level to about 800 m, with optimum in the Mediterranean belt. The species is common at the edge of the temporary ponds of Sardinia, in contact with rocky outcrops. The genus name is of uncertain etymology: it could derive from the Latin 'sedeo' (I sit down), due to the prostrate habit of many species, or from 'sedare' (to calm); the species name refers to the pale blue colour of the flowers. Flowering period: February to May.

## *Sedum villosum* L. subsp. *glandulosum* (Moris) P. Fourn.

The hairy stonecrop is a species with a mainly Central European-sub-Atlantic distribution, represented in Italy by two subspecies: the nominal subspecies in the central-western Alps, and the subspecies *glandulosum* in Sardinia. The ecology is very different from that of other congeneric species: both subspecies grow in rather moist habitats such as in bogs, marshes and near springs, on siliceous substrates, with optimum in the montane belt. Its occurrence in the temporary ponds of Sardinia is very rare. The genus name is of uncertain etymology: it could derive from the Latin 'sedeo' (I sit down), due to the prostrate habit of many species, or from 'sedare' (to calm); the species name refers to the dense hairiness of the plant, the name of the subspecies to the presence of small glands on stems and leaves. Flowering time: July to August.

## *Selaginella denticulata* (L.) Spring

This species with a strictly Mediterranean distribution is present in Liguria and in almost all regions of Central, Southern and Insular Italy (missing in Umbria and not reported since a long time from Abruzzo). It grows on rocks and cliffs, sometimes on walls, usually between mosses, from sea level to the lower montane belt. It appears sporadically also on the edge of the temporary ponds of Sardinia, in contact with shaded rocky sites. The genus name is a diminutive of the Latin word *selago* which designated plants similar to club mosses, and refers to the resemblance of some species (not this one) with a small club moss; the species name refers to the serrated margin of the leaflets. Sporulation period: April to August.

## *Senecio vulgaris* L.

The common ragweed is an annual plant with an originally Eurasian distribution which today has become almost cosmopolitan, present in all regions of Italy. It grows, often as a weed, in ruderal and segetal vegetations, on the edge of roads, in cultivated fields, orchards, gardens, landfills and forest clearings, on clay soils rich in nitrogen compounds, from sea level to the subalpine belt. The species sporadically appears on the edge of the temporary ponds of Sardinia, in contact with ruderal vegetation. The plant is toxic for the presence of alkaloids that are slow-acting, but very harmful to the liver and carcinogenic, which can also pass to honey and milk. The genus name derives from the Latin 'senex' (old), alluding to the whitish gray pappus of the fruit or to the hairiness of many species; the species name comes from the Latin 'vulgus' (common people) and it means 'common, widespread, frequent'. Flowering period: January to December.

## *Serapias cordigera* L.

This orchid with a strictly Mediterranean distribution is present in almost all the regions of Italy (missing in the North-East and in Valle d'Aosta, not found since a long time in Lombardy, and of dubious occurrence in Sicily). It grows in arid grasslands and in openings of garrigue vegetation, mostly in rather moist habitats like the edges of swamps and ephemeral pools, from sea level to about 1000 m, with optimum in the Mediterranean belt. Its occurrence in the temporary ponds of Sardinia is rare. The genus name, already used by Dioscorides and Pliny to indicate some orchids, derives from Serapis, the Egyptian god of fertility; the species name refers to the heart-shaped labellum. Flowering period: April to June.

## *Serapias lingua* L.

This orchid with a mainly western, strictly Mediterranean distribution, is present in Liguria, Emilia-Romagna and in all regions of Central, Southern and Insular Italy. It grows in the gaps of Mediterranean garrigues, in meadows and dry grasslands, but sometimes also in habitats which are humid at least in the winter or spring, as along the margins of ephemeral pools and marshes, from sea level to about 1200 m. The species is common in the outer belt of the temporary ponds of Sardinia, in contact with perennial grasslands. The genus name, already used by Dioscorides and Pliny to indicate some orchids, derives from Serapis, the Egyptian god of fertility; the species name, that in Latin means 'tongue', refers to the shape of the labellum. Flowering period: March to May.

## *Sesamoides interrupta* (Boreau) G. López

This species with a mainly western Mediterranean-montane distribution is present in Piedmont (Apennines), Liguria, Emilia-Romagna, and Sardinia. It grows in rocky habitats on acidic sandy soils, sometimes on serpentine, from 1200 to 2200 m. The species sporadically appears in the outer belt of the temporary ponds of Sardinia, in contact with rocky outcrops. The genus name is derived from *Sesamum* (sesame) and from the Greek 'eidos' (appearance) and therefore it means 'similar to sesame'; the species name refers to the inflorescence with widely spaced flowers. Flowering period: May to August.

## *Sherardia arvensis* L.

This annual plant with a Mediterranean-south European distribution, presently much more widespread in the temperate zones of the Globe, is present in all regions of Italy. It grows in cultivated fields, vineyards, orchards etc., sometimes in the gaps of garrigue vegetation, on moderately dry, silty-clayey, basic to neutral soils rich in nitrogen compounds, from sea level to the montane belt. The species sporadically appears on the edges of the temporary ponds of Sardinia, in contact with pastures and ruderal vegetation. In the past, the red color extracted from the thin roots was used for the dyeing of fabrics. The genus is dedicated to the English botanist W. Sherard (1659-1728); the species name in Latin means 'of the plowed fields'. Flowering period: April to August.

## *Silene gallica* L.

This annual plant with an originally Mediterranean, presently almost cosmopolitan distribution, is present in all regions of Italy. It grows in ruderal environments, in fields and crops, sometimes on coastal sand dunes, especially on siliceous substrates, from sea level to about 1000 m (in the South only). The species sporadically appears in the outer belt of the temporary ponds of Sardinia, in contact with pastures. The genus name derives perhaps from Silenus, the pot-bellied companion of Bacchus, and alludes to the swollen calyx of some species; the species name refers to Gaul (France). Flowering period: May to August.

## *Smilax aspera* L.

This vine with Mediterranean-subtropical affinities is present in all regions of Italy except in Piedmont, Valle d'Aosta and Trentino-Alto Adige, but is more common in the Mediterranean part of the Country. It is one of the most typical components of the evergreen Mediterranean maquis, where it often forms impenetrable tangles. The species is sporadically appears along the edges of the temporary ponds of Sardinia, in contact with Mediterranean maquis. The rhizome contains several active principles; young shoots are often consumed after cooking like the asparagus; the berries however are toxic. The genus name is the same used by the ancient Geeks to designate very different plants; in the Latin literature, it was used for woody climbers equipped with thorns; the species name in Latin means 'rough, stinging', referring to the prickliness of the plant. Flowering period: September to November.

## *Smyrnium olusatrum* L.

This biannual plant with a Mediterranean-Atlantic distribution is present in almost all the regions of Italy (missing in Valle d'Aosta and Trentino-Alto Adige, of dubious occurrence in Piedmont, and appearing only as an ephemeral weed in Friuli Venezia Giulia), but is common only in the Mediterranean parts of Country. It grows in moist and shady waste places, along hedges, on ruins and rubble, usually on rather fresh soils that are rich in nitrogen compounds, from sea level to about 800 m, with optimum in the Mediterranean belt. The species is found sporadically on the edge of the temporary ponds of Sardinia, especially in shaded areas in contact with ruderal vegetation. Since ancient times it was cultivated in gardens for food production, because of the intensely aromatic leaves and stems, reminiscent of celery; mature seeds, despite the resinous taste, were ground to flavour some dishes, especially meat. Towards the sixteenth and seventeenth centuries this plant was replaced by celery, and its use was largely forgotten. In some eastern European countries, the species is still cultivated for food (especially the young stems are steamed, boiled or candied, while roots and flowers are fried). The genus name comes from the Greek 'smyrna' (myrrh) in reference to the aroma of the seeds, the species name derives from the Latin 'olus' (grass) and 'ater/atrum' (dark, black), the colour of the fruit at maturity. Flowering period: January to May.

## *Smyrnium perfoliatum* L. subsp. *rotundifolium* (Mill.) Hartvig

This biannual plant with a Mediterranean distribution is present, with two subspecies, in all regions of Central and Southern Italy, in Emilia-Romagna, Veneto and Friuli Venezia Giulia; the subspecies *rotundifolium* is known from the Marche, Sardinia, Lazio, Abruzzo, Puglia, Basilicata, Calabria and Sicily. It grows in open deciduous or evergreen woods and uncultivated shady places, from sea level to the lower montane belt. The species is found sporadically at the outer edge of the temporary ponds of Sardinia, in shaded areas in contact with ruderal vegetation. The genus name comes from the Greek 'smyrna' (myrrh) in reference to the aroma of the seeds, the species name refers to the leaves that clasp the stem with the base. Flowering period: January to May.

## *Solenopsis laurentia* (L.) C. Presl

This annual plant with a mainly western, strictly Mediterranean distribution, is present in Tuscany, Umbria, Lazio, Campania Apulia, Sardinia and Sicily, but is generally quite rare and most widespread along the Tyrrhenian coast. The life-cycle can be spent part in water, part on moist to dry soil. It grows near springs, along ditches, on the edges of

ephemeral pools, from sea level to about 1000 m, with optimum in the Mediterranean belt. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, being commonly found in the outer belt. The genus name derives from the Greek 'solen' (channel, tube) and 'ops' (appearance, similarity), referring to the corolla fitted with a well-developed tube; The species is dedicated to M. A. Laurenti (early XIX cent.), professor of Medicine at Bologna and friend of the great botanist Pier Antonio Micheli. Flowering period: May to August. Syn.: *Laurentia gasparrinii* (Tineo) Strobl

## *Solenopsis minuta* (L.) C. Presl subsp. *corsica* Meikle

This species with a strictly Mediterranean distribution is present, with three subspecies, in Sardinia, Calabria and Sicily; the subsp. *corsica* is endemic to the Sardinian-Corsican System. The life-cycle can be spent part in water, part on moist to dry soil. It grows near springs and rivulets, on the edge of ephemeral pools, on damp rocky walls, from 300 to 1600 m. The species is very rarely found in the outer belt of the temporary ponds of Sardinia. The genus name derives from the Greek 'solen' (channel, tube) and 'ops' (appearance, similarity), referring to the corolla fitted with a well-developed tube; the species name refers to the small size of the plant; the Italian name (laurenzia di Bivona) derives from the synonym and refers to the Sicilian botanist A. de Bivona-Bernardi (1774-1837). Flowering period: April to September.

## *Solenopsis minuta* (L.) C. Presl subsp. *nobilis* (Wimm.) Meikle

This species with a strictly Mediterranean distribution is present, with three subspecies, in Sardinia, Calabria and Sicily; the subsp. *nobilis* is present in Sardinia, Calabria and Sicily. The life-cycle can be spent part in water, part on moist to dry soil. It grows near springs and rivulets, on the edge of ephemeral pools, on damp rocky walls, from 300 to 1600 m. The species is very rarely found in the outer belt of the temporary ponds of Sardinia. The genus name derives from the Greek 'solen' (channel, tube) and 'ops' (appearance, similarity), referring to the corolla fitted with a well-developed tube; the species name refers to the small size of the plant. Flowering period: April to September.

## *Sonchus oleraceus* L.

This annual plant with an originally Eurasian distribution has now become almost cosmopolitan in the temperate zones of the Globe, and is present in all regions of Italy. It grows in ruderal environments, on the edge of roads, in landfills and construction sites, on walls, also in large urban settlements, between the cracks of the sidewalks, on clay soils rich in nitrogen compounds, from sea level to the montane belt. The species is found sporadically on the edge of the temporary ponds of Sardinia into contact with ruderal vegetation. The young leaves are edible. The genus name is derived from a Greek word which means 'soft', 'spongy', in reference to the weak, hollow stems; the species name is based on the Latin root 'oler' (vegetables), referring to the fact that the young leaves can be eaten in salads. Flowering period: March to September.

## *Spergula arvensis* L.

This annual plant with a wide, presently almost cosmopolitan distribution is present, but generally not common, in almost all the regions of Italy (missing in the Valle d'Aosta, Abruzzo, Molise and Puglia, and not found since a long time in the Marche). It grows in cultivated fields and uncultivated ground, on generally sandy, rather fresh soils derived from siliceous substrates, in rather shaded sites, from sea level to about 1300 m. The species is found sporadically in the outer belt of the temporary ponds of Sardinia, in contact with ruderal vegetation. In northern Europe, the seeds were once used for baking a kind of bread. The genus name derives from the Latin word 'spargere' (to spread), because the plant produces many small seeds that disperse easily; the species name in Latin means 'of the plowed fields'. Flowering period: May to August.

## *Stellaria media* (L.) Vill. subsp. *media*

This species with an originally Mediterranean-Turanic distribution has now become almost cosmopolitan in the temperate zones of the Globe, and is present in all regions of Italy. It grows in ruderal and segetal vegetations, in cultivated fields, gardens, vineyards, along the roads, in landfills, gardens and orchards near the houses, on silty-clayey, quite deep and fresh soils rich in nitrogen compounds, from sea level to about 1600 m (exceptionally up to 2500 m). The species is found sporadically on the edge of the temporary ponds of Sardinia, in contact with pastures and ruderal vegetation. The young shoots are sometimes eaten after cooking; the plant is rich in potassium, but contains small amounts of saponins, so it is recommended not to exceed in its consummation. The genus name refers to the star-shaped flowers. Flowering period: January to December.

## *Taeniatherum caput-medusae* (L.) Nevski

This annual plant with a strictly Mediterranean-Turanian distribution is present as a weed in Piedmont (Langhe), Puglia, Basilicata, Sicily and Sardinia (since a long-time no longer observed in Liguria). It grows on uncultivated ground, in dry meadows, on stony slopes, from sea level to 1300 m. The species is very rare along the edges of the temporary ponds of Sardinia. The genus name derives from the Greek 'tainia' (bandage, tape) and 'ather' (awn), in reference to the flattened awns of the spikelets; the species name refers to the shape of the inflorescence, which resembles the head of the mythical Medusa. Flowering period: April to June.

## *Teesdalia coronopifolia* (J.P. Bergeret) Thell.

This annual plant with a mainly Mediterranean distribution is of ancient introduction along the northern edges of its present distributionals range as a result of the expansion of crops (archaeophyte), being present in Lombardy, Emilia-Romagna, Tuscany, Umbria, Lazio, Calabria, Sardinia and Sicily. It grows in cereal fields and on uncultivated ground, on soils that are dry in summer, from sea level to about 1300 m. The species is very rare along the edges of the Sardinian temporary ponds. The genus is dedicated to the English botanist Robert Teesdale (1740-1804); the species name alludes to the resemblance of the leaves to those of species of the genus *Coronopus* (now included in the genus *Lepidium*). Flowering period: February to April.

## *Thapsia garganica* L. subsp. *garganica*

This species with a southern Mediterranean distribution is present, with two subspecies, in Tuscany, Lazio, in all regions of Southern Italy and in the Islands. It grows in dry abandoned fields, from sea level to about 1400 m. The species is sporadic along the edges of the Sardinian temporary ponds, in contact with ruderal vegetation. Since ancient times this plant was used in traditional medicine: in Algeria it was used as a painkiller, even if it is deadly for the camels; the Greek colony of Cyrene was exporting a medicinal plant known as 'Silphion', used as a purgative and emetic; although its exact identity remains controversial, some believe it may have been a *Thapsia*. The plant contains various substances that make it poisonous to livestock and humans, some of which, however, have been shown to possess interesting anticancer properties. The genus name, of ancient usage, probably derives from 'Thapsos', the Greek name of the Sicilian city of Magnisi in the province of Siracusa, in the surroundings of which the plant is abundant also today; the species name refers to the Gargano Peninsula, from which the species was originally described. Flowering period: May to July.

## *Theligonum cynocrambe* L.

This annual plant with a strictly Mediterranean distribution is present in Liguria, Emilia-Romagna, and in all regions of Central, Southern and Insular Italy (reported as a weed also from Friuli Venezia Giulia). It grows in disturbed habitats, on uncultivated ground, at the base of walls, on ruins and in gravelly places, sometimes along roads, on soils that are fresh at least in winter and spring and rather rich in nitrogen compounds, from sea level to about 800 m, with optimum in the Mediterranean belt. The species is sporadic along the edges of the Sardinian temporary ponds, in contact with

ruderal vegetation. The genus name, derived from Greek but of a rather uncertain etymology, was the ancient name of the plant; the species name as well derives from Greek and means 'cabbage of the dogs', in reference to the fetid smell emanating from the plant. Flowering period: February to April.

## *Tolpis umbellata* Bertol.

This annual plant with a strictly Mediterranean distribution is present in Liguria, and in almost all the regions of Central, Southern and Insular Italy (missing in the Marche and no longer observed since a long time in Abruzzo). It grows in dry meadows and uncultivated ground, on mainly siliceous substrates, from sea level to about 1300 m, with optimum in the Mediterranean belt. The species sporadically appears along the edges of the Sardinian temporary ponds. The genus name derives from the Greek 'tolypé' (ball, bullet) for the bulging shape of the head; the species name refers to the arrangement of the heads on the stem, which simulate an umbel with 3 rays. Flowering period: April to June.

## *Torilis nodosa* (L.) Gaertn.

This annual plant with a Mediterranean-Turanian distribution is present in all regions of Italy except in the Valle d'Aosta. It grows in uncultivated sites and in waste places, along the streets and on rubble, on rather dry primitive soils, usually on limestone, below the montane belt. The species is sporadic along the edges of the Sardinian temporary ponds, in contact with ruderal vegetation. The genues name is of uncertain etymology, it could result from the merging of *Tordylium* and *Caucalis*, two other genera of the Apiacee family; the species name refers to the sharply contracted umbels. Flowering period: March to August.

## *Trachynia distachya* (L.) Link

This annual grass with a strictly Mediterranean-Turanian distribution is present in all regions of Central and Southern Italy, in Liguria, Emilia-Romagna and Friuli Venezia Giulia (north of the Po is very rare, while in Mediterranean Italy is common). It grows in uncultivated arid grasslands, in thickets and garrigue vegetation, on soils that are dry in summer, from sea level to the montane belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands and garrigue vegetation. The genus name derives from the Greek 'trachys' (rough), the species name in Greek means 'with two ears'. Flowering period: April to June.

## *Trifolium angustifolium* L. subsp. *angustifolium*

The narrow-leaved clover is an annual plant with a mainly Mediterranean distribution, present in all regions of Italy, except in the Valle d'Aosta and Trentino-Alto Adige, but most common in the Mediterranean parts of the Country. It grows in dry disturbed sites and in openings of garrigue vegetation, on acid, primitive soils rich in siliceous skeleton and dry summer, from sea level to about 1300 m. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The genus name is derived from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets, the species name, which in Latin means 'with narrow leaves' refers to the long and narrow leaflets. Flowering period: April to July.

## *Trifolium arvense* L. subsp. *arvense*

This annual clover with a Mediterranean distribution is present in all regions of Italy, but is more frequent in the central and southern regions, and in the islands. It grows in dry disturbed grasslands, in rocky sites, in openings of garrigue vegetation, on primitive soils rich in skeleton, poor in humus and dry in the summer, both on calcareous and siliceous substrates, from sea level to the lower montane belt. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name in Latin means 'of the plowed fields'. Flowering period: April to June.

## *Trifolium bocconei* Savi

This annual clover with a strictly Mediterranean distribution is present in almost all the regions of Central and Southern Italy, in Liguria, and in Veneto. It grows in dry grasslands and in disturbed dry sites, on generally acid soils, on siliceous substrates or on 'terra rossa', below the montane belt, with optimum in the Mediterranean belt. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species is dedicated to P. Boccone (1633-1703) a Cistercian monk from Palermo, explorer of the Mediterranean flora. Flowering period: April to July.

## *Trifolium campestre* Schreb.

This annual clover with a mainly Mediterranean distribution is present in all regions of Italy. It grows in arid grasslands and in openings of garrigue vegetation, sometimes in cultivated land, on dry, often decalcified clay soils that are poor in humus, from sea level to the montane belt. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets, the species name in Latin means 'of the fields'. Flowering period: April to August.

## *Trifolium cherleri* L.

This annual clover with a Mediterranean distribution is present in Liguria, and in all regions of Central, Southern and Insular Italy (of dubious occurrence in Emilia-Romagna, not found since a long time in the Marche, and reported as a weed from Friuli Venezia Giulia). It grows in uncultivated grasslands, on rather primitive, more or less acidic soils that are dry in summer, especially on siliceous substrates, but also in pockets of decalcified clay on limestone, from sea level to about 800 m, with optimum in the Mediterranean belt. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets, the species is dedicated to the Swiss botanist I.H. Cherler (1570-1610). Flowering period: March to May.

## *Trifolium fragiferum* L. subsp. *fragiferum*

This annual clover with a wide palaeo-temperate distribution is present in all regions of Italy; it is common throughout the Peninsula, in Sicily and in Sardinia, much rarer in the Alps and in the Po Valley. It grows in uncultivated meadows and pastures, along roadsides and trails, on moist, sometimes slightly salty soils, from sea level to about 800 m, rarely also at higher altitudes. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name comes from the Latin 'fragum' (strawberry) and 'fero' (I bear), referring to the shape of the inflorescence, which is somewhat similar to a strawberry. Flowering Period: (April) May to August.

## *Trifolium glomeratum* L.

This annual clover with a Mediterranean distribution is present in all regions of Italy except in the Valle d'Aosta and Trentino-Alto Adige. It grows in uncultivated dry grasslands, on rather acidic siliceous soils that are often volcanic in nature, from sea level to about 1000 m. The species sporadic in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name refers to the shape of the fruiting heads. Flowering period: April to June.

## *Trifolium incarnatum* L. subsp. *incarnatum*

This clover with a Mediterranean distribution is present (in the wild or as a weed escaped from cultivation) in all regions of Italy, except perhaps in Valle d'Aosta. It is sometimes cultivated as a forage crop on decalcified, sub-acid, fresh clay soils, from sea level to the subalpine belt. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with forage crops. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name refers to the flesh colour of the flowers. Flowering period: April to June.

## *Trifolium incarnatum* L. subsp. *molinerii* (Hornem.) Ces.

This annual clover with a Mediterranean distribution, spread by cultivation as a forage species, is present in all regions of Italy except in Trentino-Alto Adige and perhaps in Emilia-Romagna. It grows in meadows, in cultivated fields and vineyards, on decalcified, sub-acid, fresh clay soils, from sea level to the lower montane belt. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with forage crops. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name refers to the flesh colour of the flowers, the subspecies is dedicated to I.B. Molineri (1741-1818), head gardener of the Botanical Garden of Turin. Flowering period: April to July.

## *Trifolium ligusticum* Loisel.

This annual clover with a strictly Mediterranean distribution is present in Liguria, Emilia-Romagna, and in all regions of Central, Southern and Insular Italy (since a long-time no more reported from the Marche). It grows in uncultivated grasslands, on rather primitive, more or les acidic soils that are dry in summer, mainly on siliceous substrates, from sea level to about 800 m, with optimum in the Mediterranean belt. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets, the species name refers to the region of Liguria, from which the species was originally described. Flowering period: April to June.

## *Trifolium michelianum* Savi

This annual clover with a mainly western Mediterranean distribution is present, but generally quite rare, in Tuscany, Lazio, Campania and Sardinia (since a long time no longer observed in Sicily). It grows in wet meadows and at the edges of temporary ponds, from sea level to about 600 m. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, being rather common in the central and intermediate belts. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species is dedicated to the great botanist Pier Antonio Micheli (1679-1737), founder of the Botanical Society of Florence. Flowering period: May to June.

## *Trifolium micranthum* Viv.

This annual clover with a wide palaeo-temperate distribution is present in Piedmont, Emilia-Romagna, and in all regions of Central, Southern and Insular Italy (not reported since a long time from Liguria). It grows in moist uncultivated habitats, from sea level to about 1300 m. It is a characteristic species of the Mediterranean temporary ponds of Sardinia, where it appears sporadically in the outer belt. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name derives from Greek, meaning 'with small flowers'. Flowering period: May to September.

## *Trifolium nigrescens* Viv. subsp. *nigrescens*

This annual clover with a mainly Mediterranean distribution is present in all regions of Italy except in Trentino-Alto Adige. It grows in dry grasslands and disturbed sites all over Italy, on loose, often sandy soils, sometimes as a weed in ruderal environments, from sea level to the lower montane belt. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with pastures. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name refers to the fact that the plant blackens in the herbarium. Flowering period: March to June.

## *Trifolium ochroleucon* Huds.

This clover with a wide Eurasian distribution is present in all regions of Italy. It grows in dry grasslands, in hay meadows, and along the edges of thermophilic woods, on silty-clayey, deep, rather humic, subneutral soils, from the lowlands to the montane belt. The species is rare in the outer band of the temporary ponds of Sardinia, in contact with dry grasslands. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name, which means 'white-yellowish', refers to the colour of the flowers. Flowering period: June to July.

## *Trifolium pratense* L. subsp. *pratense*

This clover with a wide Eurasian distribution is present in all regions of Italy, with four subspecies. It grows in natural meadows, hay meadows and along the edges of thermophilic woods, sometimes even in the flower beds of urban areas, on silty-clayey, deep, rather humiferous, subneutral soils, from sea level to the upper montane zone. The species is rare in the outer band of the temporary ponds of Sardinia, in contact with hydric grasslands. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name refers to the habitat. Flowering period: January to December. May to August.

## *Trifolium repens* L.

This clover with an originally Euro-Siberian, presently almost-cosmopolitan distribution is widespread and common in all regions of Italy. It grows in meadows and in ruderal environments, in flowerbeds, gardens and parks, on silty-clay, fresh, fairly deep and humiferous, subneutral silty clayey soils, from the coast to the mountain area. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with meso-hygrophitic grasslands. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name in Latin means 'creeping', referring to the prostrate stems. Flowering period: April to October.

## *Trifolium resupinatum* L.

This clover with a wide palaeo-temperate distribution has been cultivated since ancient times as forage in the Middle East, and is present in all the Italian regions located south of the Po River (as an ephemeral weed also in Piedmont and in the north-eastern regions). It grows in uncultivated grasslands, along paths and waterways, on rather fresh soils, below the montane belt, with optimum in the Mediterranean belt. The species is sporadic in the outer belt of the Sardinian temporary ponds, in contact with pastures. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name refers to the characteristically twisted flowers. Flowering period: April to July.

## *Trifolium scabrum* L. subsp. *scabrum*

This annual clover with a Mediterranean distribution is present in all regions of Italy (except perhaps in the Valle d'Aosta). It grows in dry grasslands and disturbed sites, on primitive calcareous soils that are poor in humus and nitrogen compounds, and very dry in summer, from sea level to about 1300 m. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name refers to the rough texture of the fruiting inflorescences. Flowering period: April to June.

## *Trifolium spumosum* L.

This annual clover with a strictly Mediterranean, mainly eastern distribution, is present in all Italian regions overlooking the Tyrrhenian Sea, in Abruzzo and in Puglia. It grows in uncultivated grasslands, on rather primitive soils that are dry in summer, from sea level to about 600 m, with optimum in the Mediterranean belt. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with pastures. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name refers to the frothy appearance of the inflorescence. Flowering period: April to May.

## *Trifolium stellatum* L.

This annual clover with a broadly Mediterranean distribution is present in all regions of Italy except in the Valle d'Aosta and Trentino-Alto Adige; it is absent from the Po-Plain and becomes really common only in the central and southern regions of Italy. It grows in dry grasslands and on uncultivated ground, sometimes even in waste places and along roads, on primitive soils rich in skeleton, below the lower montane belt. The species is rare in the outer belt of the temporary ponds of Sardinia, in contact with dry grasslands. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name refers to the characteristic star-like shape of the calyx-teeth at fruiting time. Flowering period: April to June.

## *Trifolium striatum* L. subsp. *striatum*

This annual clover with a wide palaeo-temperate distribution is present in almost all the regions of Italy (the occurrence in Valle d'Aosta is doubtful), but is generally not common. It grows in uncultivated and barren grasslands, with optimum on siliceous substrates, from sea level to about 1500 m. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The genus name derives from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name refers to the clearly striated stems. Flowering period: May to July.

## *Trifolium subterraneum* L.

The subterranean clover is an annual plant with a Mediterranean distribution present in all regions of Italy except Trentino-Alto Adige and Friuli Venezia Giulia, but more frequent in the Mediterranean part of the Country. It grows in dry meadows and pastures, meadows, along trails, on siliceous substrates, from sea level to about 1200 m. The species is fairly common in the outer belt of the Sardinian temporary ponds. The genus name refers to the leaves divided into three leaflets; the specific name refers to the fact that after fertilization the peduncles of the inflorescence are folded toward the ground, where the fruit matures. Flowering period: May to June.

## *Trifolium tomentosum* L.

The hairy clover is an annual plant with a wide palaeo-temperate distribution, present in Liguria and in all regions of Central, Southern and Insular Italy (of dubious occurrence in Emilia-Romagna). It grows in arid uncultivated grasslands, sometimes in disturbed sites along the streets, on rather primitive soils which are arid in summer, from sea level to about 700 m, with optimum in the Mediterranean belt. The species is rare in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The genus name is derived from the Latin word 'tri' (three) and 'folium' (leaf), referring to the leaves, that are divided into 3 leaflets; the species name refers to the hairiness of the plant. Flowering period: April to June.

## *Tuberaria guttata* (L.) Fourr.

This annual plant with a Mediterranean distribution is present in all regions of Italy except in Trentino-Alto Adige and Friuli Venezia Giulia. It grows in dry grasslands and in openings of garrigue vegetation, on acid sandy soils that are dry summer, mostly on siliceous substrates, from sea level to the lower montane belt. The species sporadically appears in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands. The genus name is derived from the Latin 'tuber' (tuber); the species name derives from the Latin 'gutta' (drop), referring to the dark spot on the petals. Flowering period: March to May.

## *Tuberaria lignosa* (Sweet) Samp.

This species with a strictly Mediterranean, mainly western distribution is present in Liguria, Tuscany, Umbria, Sardinia, Apulia, Calabria and Sicily (since a long-time not reported from Campania). It grows in open garrigue vegetation on in maquis degraded by fire, on acidic soils deriving from siliceous substrates, from sea level to about 600 m, with optimum in the Mediterranean belt. The species sporadically occurs in the outer belt of the Sardinian temporary ponds, in contact with dry grasslands and Mediterranean garrigues. The genus name is derived from the Latin word 'tuber' (tuber); the species name refers to the fact that this species, unlike most of the other congeneric species, is a perennial plant with stems which are slightly woody at the base. Flowering period: April to May.

## *Verbena supina* L.

This annual plant with a strictly Mediterranean distribution is present in Sardinia, Puglia, Basilicata and Sicily (since a long time no longer observed in Campania and Calabria). It grows on moist uncultivated ground and along the margins of ephemeral pools, from sea level to about 500 m. It is a characteristic species of Mediterranean temporary ponds, but in those of Sardinia it is sporadic. The genus name, of uncertain etymology, was the Roman name for 'altar-plants', i.e. those used in religious ceremonies; the species name refers to the prostrate stems. Flowering period: May to September.

## *Veronica anagalloides* Guss.

This annual species with a broadly Mediterranean distribution is present in all regions of Italy except Piedmont, Valle d'Aosta, Liguria and Marche (not found since a long time in Umbria). It grows on damp sites, on muddy, periodically flooded soils that are rich in nitrogenous substances, below the montane belt. It is a characteristic species of Mediterranean temporary ponds, but it is very rare in Sardinia. The genus name is of uncertain etymology: some sources claim that it comes from the legend of St. Veronica, the woman who wiped Christ's face with a handkerchief before the crucifixion, alluding to the darker veins in the corolla which tends to fall early, or to the fact that many species flower during the Holy Week, while others think that it refers to St. Veronica from Binasco (1445-1497); the species name refers to the similarity with *V. anagallis-aquatica*. Flowering time: June to October.

## *Veronica arvensis* L.

This originally Mediterranean, annual species has now become almost cosmopolitan, and is present in all regions of Italy. It grows in ruderal or segetal vegetation and in open hay meadows, on subneutral clay soils that are rich in skeleton, nitrogen compounds and humus, from sea level to the lower montane belt. The species sporadically appears in the outer belt of the Sardinian temporary ponds, in contact with ruderal vegetation. The genus name is of uncertain etymology: some sources claim that it comes from the legend of St. Veronica, the woman who wiped Christ's face with a handkerchief before the crucifixion, alluding to the darker veins in the corolla which tends to fall early, or to the fact that many species flower during the Holy Week, while others think that it refers to St. Veronica from Binasco (1445-1497); the species name in Latin means 'of the plowed fields'. Flowering period: February to June.

## *Vicia disperma* DC.

The vetch with two seeds is an annual plant with a mainly western Mediterranean distribution, present in almost all the regions of Central and Southern Italy, in Liguria and in Emilia-Romagna. It grows in uncultivated meadows and in dry grasslands, mainly on siliceous substrates, from sea level to the lower montane zone. The species sporadically appears in the outer belt of the temporary ponds of Sardinia, in contact with dry grasslands or pastures. The genus name derives from the Latin 'viere' or 'vincire' (to tie), referring to the presence of tendrils with which many species cling to a support; the species name refers to the legumes, that usually include only two seeds. Flowering period: April to May.

## *Vicia sativa* L. subsp. *sativa*

The sweet vetch is a very polymorphic species with a Mediterranean-Turanian distribution, which is present in all regions of Italy with several subspecies, some of which are cultivated since Neolithic times for human consumption, below the upper montane belt. The species sporadically appears in the outer belt of the temporary ponds of Sardinia, in contact with pastures. The seed, indigestible and unappetising, was dried, ground and mixed with grain flour for making bread; the nominal subspecies was also widely cultivated by the Romans as an excellent forage plant; the subsp. *nigra* is present in all regions of Italy as an infesting weed of cereal crops. The genus name derives from the Latin 'viere' or 'vincire' (to tie), referring to the presence of tendrils with which many species cling to a support; the species name refers to the fact that in the past the plant was frequently cultivated. Flowering period: March to June.

## *Vicia villosa* Roth subsp. *villosa*

The hairy vetch is a rather polymorphic annual plant with a broadly Mediterranean distribution, present in all regions of Italy (except perhaps in Valle d'Aosta), with different subspecies. The nominal subspecies, once cultivated as fodder and now in strong decline, is absent from many regions. It grows in uncultivated arid environments, in ruderal habitats,

sometimes in crops, below the lower montane belt. The species sporadically appears on the edge of the temporary ponds of Sardinia, in contact with ruderal vegetation. The genus name derives from the Latin 'viere' or 'vincire' (to tie), referring to the presence of tendrils with which many species cling to a support; the species name refers to the hairiness of the plant. Flowering period: April to June.

## *Vincetoxicum hirundinaria* Medik. subsp. *hirundinaria*

This common Eurasian species is present, with several subspecies, in all regions of Italy except Sicily. It grows on the edges of woods, but also in rocky and shady places, on silty-clay soils rich in calcium, dry in summer, often poor in humus, from sea level to the montane belt. The species sporadically appears along the edges of the Sardinian temporary ponds, in rather shaded sites. The genus name refers to the alleged properties as an antidote against poisons, but the plant contains alkaloids and glycosides which are highly toxic; the species name refers to the V-shaped root resembling the tail of a swallow (Latin: *hirundo*). Flowering period: May to August.

## *Vulpia bromoides* (L.) Gray

This annual plant with a wide distribution in the temperate zone of Eurasia is present in all regions of Italy, except in the Valle d'Aosta, Trentino-Alto Adige, Umbria, Molise and Puglia (where perhaps it has not been observed yet). It grows in open herbaceous vegetation and in dry grasslands, below the lower montane zone. The species sporadically appears in the outer belt of the Sardinian temporary ponds, in contact with pastures. The genus is dedicated to the German pharmacist Johann Samuel Vulpius (1760-1846); the species name refers to the resemblance to some species of *Bromus*. Flowering period: April to May.

## *Vulpia geniculata* (L.) Link

This annual grass with a strictly Mediterranean, mainly western distribution, is present in almost all the regions of Central and Southern Italy (absent from the Marche and Molise, of dubious occurrence in Umbria). It grows in the gaps of the Mediterranean garrigues, from which it passed to disturbed urban environments such as walls and waysides, on soils that are rich in skeleton and dry in summer, with optimum in the Mediterranean belt. The species sporadically appears in the outer belt of the temporary ponds of Sardinia, in contact with garrigue and maquis vegetation. The genus is dedicated to the German pharmacist Johann Samuel Vulpius (1760-1846); the species name refers to the stems which are bent like a knee (Latin: *geniculum*) towards the base. Flowering period: April to June.

## *Vulpia ligustica* (All.) Link

This annual grass with a strictly Mediterranean, mainly western distribution, is present in all regions of Central and Southern Italy, in Liguria, Emilia-Romagna and Veneto. It grows in uncultivated grasslands, in barren fields and along the streets, on rather primitive soils that are dry in summer, from sea level to about 600 m. The species common in the outer belt of the temporary ponds of Sardinia, in contact with pastures. The genus is dedicated to the German pharmacist Johann Samuel Vulpius (1760-1846); the species name refers to the region of Liguria, from which the species was originally described. Flowering period: April to June.

## *Vulpia myuros* (L.) C.C. Gmel. subsp. *myuros*

This annual grass with a wide, almost cosmopolitan distribution in arid areas of the World is present in all regions of Italy. It grows in uncultivated arid grasslands, along the edges of roads, in dry pastures and in Mediterranean garrigues, on rather primitive soils that are dry in summer, below the lower montane belt. The species sporadically appears in the outer band of the temporary ponds of Sardinia, in contact with pastures. The genus is dedicated to the German pharmacist Johann Samuel Vulpius (1760-1846); the specific name is derived from the Greek 'mys, myos' (mouse) and 'oura' (tail) and therefore means 'rat's tail', referring to the shape of the inflorescence. Flowering period: April to June.

## *Vulpia sicula* (C. Presl) Link

This grass with a western Mediterranean-montane distribution is present, but generally very rare, in Liguria, Sardinia, Sicily and Abruzzo. It grows in mountain meadows and grassy clearings, from 600 to 1500 m. The species sporadically appears along the margins of the Sardinian temporary ponds, in contact with maquis vegetation. The genus is dedicated to the German pharmacist Johann Samuel Vulpius (1760-1846); the species name refers to Sicily, where the species is present. Flowering period: April to May.

# Index



## Index of the species