

OBSERVATIONS ABOUT FLORA AND PLANT ASSOCIATIONS FROM ENISALA NATURAL RESERVE (TULCEA COUNTY)

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INTRODUCTION

Enisala Reserve is a nature reserve situated in Dobrogea province, in the Babadag Plateau, on the territory of Sarichioi village (Tulcea county), about 12 km east from the Babadag town (Fig. 1). It was legally established by Ministerial Order no. 2151/2004 and covers an area of 57 hectares. The main access way towards Enisala Reserve is the road DJ223A Babadag-Enisala.

Enisala Reserve is represented by an approx. 90 m elevation rocky hill and it is bounded in the east by Razelm Lake and in the rest by farmlands. The Nature Reserve provides very nice views towards Razelm Lake, Babadag oak forest (in the south), Babadag Lake (in the north) and rural surrounding areas. At the top of the hill there are spectacular limestone rocks (Fig. 2). The rocks are covered at the base of the hill by loess deposits accumulated in time as a result of erosion processes.



Fig. 1. Geographic position of Enisala Natural Reserve



Figs. 2-3. General view upon Enisala Natural Reserve

On the rocky plateau of the hill, there are the ruins of medieval fortress Enisala (Heraclea) (Fig. 3), built about 700 years ago during the Byzantine Empire, by the Genovese merchants, in order to control the travel routes that passed through the region, in a time when the Razelm was still a bay of the Black Sea which communicated with the sea through the Dunavăț and Cernet apertures.

The soils from natural reserve are represented by the chernozems and lithosols in the rocky zones of the hill.

Enisala Reserve area has a littoral climate characterized by the average of annual temperatures above 11 degrees C and average of rainfall of less than 400 mm/year (Popovici et al. 1984).

The largest part of the natural reserve is occupied by the rocks with saxicolous vegetation (29,47 ha) and Ponto-Sarmatic steppic meadows (27,09 ha) (Petrescu, 2007). Small surfaces with steppe shrubs (especially *Paliurus spina christi* and *Crataegus monogyna*) can be found at the base of the western slope of the hill.

In the natural reserve there are plant species and plant associations specific to rocky steppes and loess steppes, in the frame of some habitats of European interest (Ponto-Sarmatic steppes – habitat 6290* and Ponto-Sarmatic deciduous thickets-habitat 40A0*). The plant associations with conservation significance from the rocky surfaces belong mainly to the alliance *Pimpinello - Thymion zygotidi* Dihoru (1969) 1970. The plant communities specific to loess steppes are most common and belong to alliances *Festucion valesiacae* Klika 1931 and *Artemisio - Kochion* Soó 1959 and to order *Festucetalia valesiacae* Br.-Bl. et Tx. 1949.

On the rocks and limestone outcrops of the upper half of the hill, a rich steppe flora developed, consisting of over 20 rare species of flora, including protected or vulnerable species in Europe (*Campanula romanica*, *Dianthus nardiformis*, *Ornithogalum amphibolum*) or threatened plant species at national level (Dihoru et Negrean, 2009).

MATERIAL AND METHODS

The first floristic and phytocoenologic inventory from the Enisala Natural Reserve has been achieved by Petrescu (2007) and updated by us as a consequence of field studies carried out between years 2012-2013.

The nomenclature of plant taxa is according to "Illustrated Flora of Romania. Pteridophyta et Spermatophyta" (Ciocârlan, 2009), "Critically List of Romanian vascular plants" (Oprea, 2005) and "Flora Europaea" (Tutin et al., 1964-1980; 1993). The phytogeographical elements are given in accordance with Ciocârlan (2009) and "Conspectus of spontaneous higher flora of Romania" (Popescu et Sanda, 1998). The IUCN Red Data categories is in accordance with the "Red Book of the vascular plants

in Romania" (Dihoru et Negrean, 2009), the "Red List of higher plants in Romania" (Oltean et al., 1994), European Red List of Globally Threatened Animals and Plants (1991), the annexes of European Community Directive 92/43/EEC and the Bern Convention.

The name and classification of plant associations are in accordance with the book „Phytocoenosis from Romania” (Sanda et al., 2008). The name and the code of habitats with European conservative value are concordant with Habitats Directive (Directive 92/43/EEC) and the book „Romanian Habitats” (Doniță et al., 2005).

RESULTS AND DISCUSSIONS

From the area of Enisala Natural Reserve, a total of 49 species of vascular plants (Table 1), 3 of which are of international importance and 17 of national interest are mentioned in the book "Dobrogea and the Danube Delta - flora and habitat conservation" (Petrescu, 2007).

In addition to the 49 species above mentioned by Petrescu (2007), we identified 116 other species, thus completing the floristic inventory of the natural reserve up to 165 plant species (Table 1).

Even though a high proportion of new taxa identified are ruderal and segetal (about 55%), the percentage of steppe species identified in the studied area is important (about 45%). Infiltration of ruderal and segetal species in the reservation is facilitated by the tourists and proximity of agricultural land. The majority of these species were recorded in Heraclea fortress area and its surroundings.

A big problem is the abundance in the natural reserve of some invasive species such as *Ailanthus altissima* and *Conyza canadensis*. *Conyza canadensis* develops especially in the fortress, along the access way and at the base of the hill, while *Ailanthus altissima* on the rocks and rocky surfaces, especially on the northern slope of the hill threatening the survival of some rare steppe species, including *Campanula romanica* and *Dianthus nardiformis*. The tourists who visit the natural reserve are few and do not contribute significantly in the spreading of invasive species.

Besides the rare species mentioned by Petrescu (2007), other 12 rare plants have been identified in the natural reserve (Table 2), in accordance with the Romanian Red Book of vascular plants (Dihoru and Negrean, 2009) and the Romanian Red List of higher plants (Oltean et al., 1994: *Bufonia tenuifolia*, *Campanula grosseki*, *Centaurea salonitana*, *Centaurea tenuiflora*, *Erysimum cuspidatum*, *Euphorbia glareosa* subsp. *dobrogensis*, *Galium verticillatum*, *Linum flavum* subsp. *tauricum*, *Scandix pecten-veneris*, *Seseli campestre*, *Seseli tortuosum*, *Silene exaltata*.

From the total species inventoried in the reserve, 32 are rare and threatened plants (Table 2) which represents 19,39 %; most of them occurring on rocks and in steppe meadows, especially on the western and the northern slopes of the hill.

The percentage of floristic rarities in Enisala Reserve (19,39 %) is high compared to the total number of taxa and reported to small area of the reservation (57 ha). This percentage is higher than that of other zones with rare plant concentration (Camena, Adamclisi) from central and south area of Dobrogea but it is lower than that from Cotu Văii area (in the south of Dobrogea) where developing of numerous rare species is favoured by the Submediterranean influences of the climate (Table 3).

Table 3. Comparative data regarding rare and threatened taxa from Enisala Reserve and other areas of Dobrogea with high phytodiversity

Compared data	Enisala Natural Reserve	Hills of Camena (Făgăraș, 2010)	Adamclisi (Negrean, Anastasiu, 2002)	Cotu Văii (Negrean, Anastasiu, 2002)
No. of taxa	165	216	164	247
Nr. of floristic rarities	32	39	21	73
Percentage of floristic rarities (%)	19,39%	18,05%	12,80%	29,55%

According to the "Romanian Red Book of vascular plants which is more selective than Romanian Red

List, only 15 taxa from Enisala Reserve are threatened: 1 taxa is critically endangered (6,66%), 6 taxa are endangered (40%) and 8 taxa are vulnerable (53,33%) (Fig. 4).

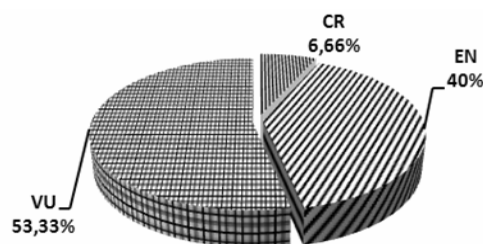


Fig. 4. IUCN Red Data categories spectrum from Enisala Natural Reserve

One of the species of international interest from Enisala Reserve is *Campanula romanica* (Fig. 5), endemic taxa for Europe (Tutin et al., 1976), protected through Habitats Directive and Bern Convention. This species has an important local population in the reserve area, on the rocks and lithosols from western and northern slopes of the Enisala Hill.

Other rare species such as *Dianthus nardiformis* (Fig. 6) and *Ornithogalum amphibolum* are mentioned in the older version of European Red List of Globally Threatened Animals and Plants (1991) as vulnerable plants (Table 2).



Fig. 5. *Campanula romanica*



Fig. 6. *Dianthus nardiformis*

Other important plant at national level is *Euphorbia myrsinites* subsp. *myrsinites* (Table 2), critically endangered taxa mentioned in the botanical literature only in a few points from Dobrogea (Agighiol, Enisala, dealul Slovan Bair, Niculițel, Caramanchioi, Greci - Măcin Mountain, Independența) and south-west of Romania (the Caraș-Severin and Mehedinți counties) (Dihoru et Negrean, 2009). Enisala Reserve is one of the most important site of this taxa in Romania.

Some authors (Ciocârlan, 2009; Oprea, 2005) mention from Enisala Reserve another taxa -

Euphorbia myrsinites subsp. *litardierei* (*Euphorbia fontqueriana*) but in accordance with Flora Europaea, vol. II (Tutin et al., 1968) and opinion of Negrean (2012) this taxa is endemic in Balearic Islands, is not identical with collected plants within Enisala Reserve and probably is wrong indicated in Dobrogea.

Another species wrong indicated in the flora of Enisala Reserve is *Agropyron cristatum* subsp. *brandzae* (*Agropyron brandzae*) mentioned by Petrescu (2007) through confusion with *Agropyron cristatum* subsp. *ponticum* (*Agropyron ponticum*).

The analysis of phytogeographic elements from Enisala Natural Reserve (Table 4) revealed high proportion of Eurasian elements (36,53%), European (13,45%) and Pontic (29,80%), confirming the Pontic character of the steppe meadows from northern Dobrogea. This province has a flora with European-Eurasian base with transgression of Pontic-Mediterranean elements (Dihoru, 1970). The phytogeographic elements with southern origin (Mediterranean, Submediterranean and Balcanic) are also well represented (15,38%) in the natural reserve. The percentage of phytogeographic elements from Enisala Reserve is very close to that of Babadag Plateau (Fig. 7) where according to Dihoru (1969) of the total identified taxa (1230 taxa) 27% are

Eurasian, 30% are different Pontic elements, 11 % are Mediterranean, 10% are continental and 6% are Balkan elements (Fig. 7). Compared with other natural reserves from central and north Dobrogea (Gura Dobrogei, Măcin Mountains - Culmea Pricopanului) Enisala Reserve has a percentage of European elements almost similar, higher proportion of Pontic elements and lower percentage of Balkan, Mediterranean and Submediterranean elements (Table 4). The dry climate and the predominance of steppe meadows in Enisala Reserve facilitates development of the Pontic elements.

Table 4. Comparative analysis of the main phytogeographical elements of Enisala Reserve and other protected areas in central and northern Dobrogea

Phytogeographical elements	Enisala Natural Reserve	Babadag Plateau (Dihoru, 1969)	Gura Dobrogei Natural Reserve (Andrei, Popescu, 1966; Stefureac, 1968)	Măcin Mountains - Culmea Pricopanului (Andrei, Popescu, 1967)
Eurasian	36,53%	27%	28,72%	41,1%
European	13,45%	10%	10,21%	13,9%
Pontic	29,80%	30%	18,51%	7,1%
Submediterranean and Mediterranean	8,65%	11%	16,20%	13,34%
Balkan	6,73%	6%		1,4%
No. of taxa	165	1230	470	562

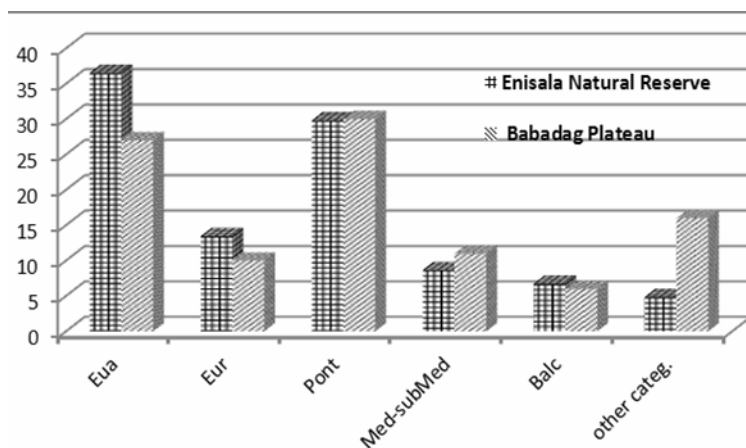


Fig. 7. Comparative analysis of phytogeographical elements from Enisala Reserve and Babadag Plateau

Habitats and plant communities of Enisala Reserve

In the first description of vegetation from the Enisala Reserve (Petrescu, 2007) are mentioned 9 plant associations (without association tables), majority of them belong to the habitat Ponto-Sarmatic steppes (62C0*). Of these, three plant associations belonging to the alliance *Pimpinello - Thymion zygoidi* Dihoru (1969) 1970 grow on the rocky substrate and lithosols: *Sedo hillebrandtii-*

Polytrichetum piliferi Horeanu et Mihai 1974, *Agropyro brandzae-Thymetum zygoidi* Dihoru (1969) 1970 (with characteristic species *Agropyron ponticum*), *Festucetum callieri* Serbănescu 1965 apud Dihoru (1969) 1970 (with *Agropyron ponticum* as characteristic species). *Teucrio polii-Melicetum ciliatae* Pușcaru et al. 1978 is another plant association belonging to the alliance *Pimpinello - Thymion zygoidi* which has been identified by us on the lithosols of the northern slope of the Enisala hill.

Other five herbaceous plant associations are characteristic to loess steppe and belong to the alliances *Festucion valesiace* Klika 1931 si *Artemisio-Kochion* Soo 1959: *Stipetum capillatae* (Hueck 1931) Krausch 1961, *Medicagini minimae-Festucetum valesiacae* Wagner 1941, *Agropyro cristati-Kochietum prostratae* Zolyomi 1958, *Botriochloetum ischaemi* (Kist. 1937) Pop 1977, *Artemisio austriacae-Poetum bulbosae* Pop 1970. The first three mentioned plant communities have conservation value and are representative for the habitat Ponto-Sarmatic steppes.

Paliuretum spinae-christi (Borza 1931) Dihoru (1969) 1970 is the only woody plant association identified at the base of the western slope of the Enisala hill and belong to (in accordance with Doniță et al., 2005) priority habitat Ponto-Sarmatic deciduous thickets (40C0*).

CONCLUSIONS

Field studies achieved between years 2012-2013 led to update of the floristic inventory of the Enisala Natural Reserve with other 116 vascular taxa, 12 of which are rare, so that the number of known plants in the reserve reaches to 165 taxa.

The rare and threatened species in the Enisala Reserve represents 19,39 % of the total number of the taxa and emphasize the conservative significance of this area from floristic point of view.

The proportion of floristic rarities in Enisala Reserve is higher than in the case of other areas of Dobrogea well known for their high phytodiversity (Camena, Adamclisi).

Analysis of phytogeographic elements indicate high percentages of Eurasian, European and Pontic species and reveals the Pontic character of the steppe meadows in Enisala Reserve.

In the natural reserve there were observed ten plant associations belonging to priority habitats "Ponto-Sarmatic steppes" and "Ponto-Sarmatic deciduous thickets". The association *Teucrio polii-Melicetum ciliatae* Pușcaru et al. 1978 is new reported for Enisala Natural Reserve.

High conservation value have the plant associations of the alliance *Pimpinello - Thymion zygoidi* Dihoru (1969) 1970 mainly spread on the northern and western rocky slopes of the Enisala Hill. The conservation status of the natural habitats is in generally favorable in the reserve in the absence of grazing and other significant human activities. Enisala Reserve is an area still little frequented by tourists.

The proliferation of invasive and ruderal plant species is the main risk factor which could threaten the floristic rarities and plant communities with conservation value within Enisala Reserve.

ABSTRACT

An updated inventory of the flora and plant associations from the Enisala Natural Reserve and some considerations about the most important steppe habitats and plant associations identified in studied area, will be given in the article. Other considerations regarding rare and threatened flora of the natural reserve, invasive plant species which threaten floristic rarities, a comparative situation of phytogeographical elements between Enisala Reserve and other protected areas of Dobrogea will be specified in the paper.

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Table 1. Vascular plants identified in Enisala Natural Reserve
by us and Petrescu (2007)

No.	Vascular plants mentioned from Enisala Reserve	Vascular plants identified by Petrescu (2007)	New recorded vascular plants (2012-2013)
1.	<i>Achillea clypeolata</i>	x	
2.	<i>Achillea coarctata</i>		x
3.	<i>Achillea collina</i>		x
4.	<i>Achillea setacea</i>	x	
5.	<i>Adonis flammaea</i>		x
6.	<i>Agropyron ponticum</i>		x
7.	<i>Agropyron brandzae</i>	x	
8.	<i>Agropyron cristatum</i> subsp. <i>pectinatum</i>	x	
9.	<i>Ailanthus altissima</i>	x	
10.	<i>Ajuga chamaepytis</i>		x
11.	<i>Allium saxatile</i>	x	
12.	<i>Allium rotundum</i>		x
13.	<i>Alcea biennis</i> (<i>Althaea pallida</i>)		x
14.	<i>Alyssum alyssoides</i>		x
15.	<i>Alyssum desertorum</i>		x
16.	<i>Anthemis austriaca</i>	x	
17.	<i>Anthemis ruthenica</i>	x	
18.	<i>Anthemis tinctoria</i>	x	
19.	<i>Artemisia absinthium</i>		x
20.	<i>Artemisia alba</i>	x	
21.	<i>Asparagus pseudoscaberr</i>		x
22.	<i>Asperugo procumbens</i>		x
23.	<i>Asperula tenella</i>		x
24.	<i>Artemisia austriaca</i>		x
25.	<i>Atriplex nitens</i>		x
26.	<i>Ballota nigra</i>		x
27.	<i>Bassia prostrata</i>		x
28.	<i>Berteroa incana</i>		x
29.	<i>Bromus squarrosus</i>		x
30.	<i>Bromus sterilis</i>		x
31.	<i>Bromus tectorum</i>		x
32.	<i>Bufonia tenuifolia</i>		x
33.	<i>Campanula gressckii</i>		x
34.	<i>Campanula romanica</i>	x	
35.	<i>Capsella bursa-pastoris</i>		x
36.	<i>Carduus acanthoides</i>		x
37.	<i>Carduus thoermeri</i>		x
38.	<i>Carthamus lanatus</i>		x
39.	<i>Centaurea orientalis</i>		x
40.	<i>Centaurea saloniitana</i>		x
41.	<i>Centaurea solstitialis</i>		x
42.	<i>Centaurea tenuiflora</i>		x
43.	<i>Cerasus mahaleb</i>		x
44.	<i>Chelidonium majus</i>		x
45.	<i>Chenopodium album</i>		x
46.	<i>Chondrilla juncea</i>		x
47.	<i>Chrysopogon gryllus</i>		x
48.	<i>Cichorium intybus</i>	x	
49.	<i>Conium maculatum</i>		x
50.	<i>Consolida regalis</i>		x
51.	<i>Convolvulus arvensis</i>		x
52.	<i>Convolvulus cantabricus</i>		x
53.	<i>Conyza canadensis</i>		x
54.	<i>Crataegus monogyna</i>	x	
55.	<i>Crepis sancta</i>		x
56.	<i>Cynodon dactylon</i>		x
57.	<i>Dactylis glomerata</i>		x
58.	<i>Daucus carota</i> subsp. <i>carota</i>		x
59.	<i>Descurainia sophia</i>		x
60.	<i>Dianthus nardiformis</i>	x	
61.	<i>Dichanthium ischaemum</i>	x	
62.	<i>Elaeagnus angustifolia</i>		x
63.	<i>Erodium cicutarium</i>	x	
64.	<i>Eryngium campestre</i>		x
65.	<i>Erysimum cuspidatum</i>		x

66.	<i>Erysimum diffusum</i>		x
67.	<i>Erysimum repandum</i>		x
68.	<i>Euphorbia glareosa</i> subsp. <i>dobrogensis</i>		x
69.	<i>Euphorbia myrsinites</i>	x	
70.	<i>Festuca callieri</i>	x	
71.	<i>Festuca valesiaca</i>	x	
72.	<i>Gagea bulbifera</i>	x	
73.	<i>Galium aparine</i>		x
74.	<i>Galium mollugo</i>		x
75.	<i>Galium verum</i>		x
76.	<i>Galium verticillatum</i>		x
77.	<i>Geranium pusillum</i>		x
78.	<i>Heliotropium europaeum</i>		x
79.	<i>Herniaria incana</i>		x
80.	<i>Hordeum murinum</i>		x
81.	<i>Hypericum perforatum</i>		x
82.	<i>Inula oculus-christi</i>	x	
83.	<i>Koeleria lobata</i>	x	
84.	<i>Kohlruschia prolifera</i>		x
85.	<i>Lactuca serriola</i>		x
86.	<i>Lamium amplexicaule</i>	x	
87.	<i>Lamium purpureum</i>		x
88.	<i>Lappula squarrosa</i>		x
89.	<i>Linaria genistifolia</i>		x
90.	<i>Linum austriacum</i>	x	
91.	<i>Linum flavum</i> subsp. <i>tauricum</i>		x
92.	<i>Lithospermum arvense</i>		x
93.	<i>Malva sylvestris</i>		x
94.	<i>Marrubium peregrinum</i>		x
95.	<i>Marrubium vulgare</i>	x	
96.	<i>Medicago falcata</i>		x
97.	<i>Medicago lupulina</i>		x
98.	<i>Medicago minima</i>	x	
99.	<i>Melica ciliata</i>		x
100.	<i>Melilotus officinalis</i>		x
101.	<i>Minuartia adenotricha</i>	x	
102.	<i>Morus alba</i>		x
103.	<i>Morus nigra</i>		x
104.	<i>Myosotis stricta</i>	x	
105.	<i>Nigella arvensis</i>		x
106.	<i>Ornithogalum amphibolum</i>	x	
107.	<i>Ornithogalum fimbriatum</i>	x	
108.	<i>Paliurus spina-christi</i>	x	
109.	<i>Papaver rhoeas</i>		x
110.	<i>Paronychia cephalotes</i>	x	
111.	<i>Pimpinella thragium</i> subsp. <i>litophila</i>	x	
112.	<i>Plantago lanceolata</i>	x	
113.	<i>Plantago media</i>		x
114.	<i>Poa bulbosa</i>	x	
115.	<i>Portulaca oleracea</i>		x
116.	<i>Potentilla pedata</i>		x
117.	<i>Potentilla recta</i>		x
118.	<i>Potentilla reptans</i>		x
119.	<i>Prunus cerasifera</i>		x
120.	<i>Prunus spinosa</i>		x
121.	<i>Ranunculus illyricus</i>	x	
122.	<i>Reseda lutea</i>		x
123.	<i>Rosa canina</i>		x
124.	<i>Salvia aethiopis</i>	x	
125.	<i>Salvia nemorosa</i>		x
126.	<i>Scandix pecten-veneris</i>		x
127.	<i>Scleranthus perennis</i>		x
128.	<i>Scorzonera mollis</i>	x	
129.	<i>Sedum sartorianum</i>		x
130.	<i>Sempervivum zeleborii</i>	x	
131.	<i>Senecio vernalis</i>		x
132.	<i>Seseli campestre</i>		x
133.	<i>Seseli tortuosum</i>		x
134.	<i>Setaria viridis</i>		x
135.	<i>Sideritis montana</i>		x
136.	<i>Silene conica</i>	x	
137.	<i>Silene exaltata</i>		x

138.	<i>Sisymbrium orientale</i>		x
139.	<i>Solanum nigrum</i>		x
140.	<i>Stachys atherocalyx</i>		x
141.	<i>Stipa capillata</i>	x	
142.	<i>Tanacetum millefolium</i>	x	
143.	<i>Taraxacum officinale</i>		x
144.	<i>Taraxacum serotinum</i>		x
145.	<i>Teucrium chamaedrys</i>	x	
146.	<i>Teucrium polium</i> subsp. <i>capitatum</i>	x	
147.	<i>Thalictrum minus</i>		x
148.	<i>Thlaspi perfoliatum</i>	x	
149.	<i>Thymus pannonicus</i>	x	
150.	<i>Thymus zygoides</i>	x	
151.	<i>Torilis arvensis</i>		x
152.	<i>Tragopogon dubius</i>		x
153.	<i>Tragus racemosus</i>		x
154.	<i>Tribulus terrestris</i>		x
155.	<i>Trifolium arvensae</i>		x
156.	<i>Trifolium echinatum</i>		x
157.	<i>Verbascum banaticum</i>		x
158.	<i>Verbascum phlomoides</i>		x
159.	<i>Verbascum thapsus</i>		x
160.	<i>Verbena officinalis</i>		x
161.	<i>Veronica dillenii</i>	x	
162.	<i>Veronica prostrata</i>	x	
163.	<i>Vitis vinifera</i>		x
164.	<i>Vulpia myuros</i>		x
165.	<i>Xeranthemum annuum</i>	x	x

Table 2 – Rare and threatened plants from Enisala Natural Reserve
(R=rare; V=vulnerable; E=endangered; I=indeterminate; CR=critically endangered; VU=vulnerable;
EN=endangered; ERL= European Red List; HD=Habitats Directive; BC=Bern Convention)

No.	Rare and threatened plants from Enisala Natural Reserve	IUCN Red Data categories (Oltean et al. 1994)	IUCN Red Data categories (Dihoru et Negrean, 2009)	ERL, 1991	HD, BC
1.	<i>Achillea clypeolata</i>	R	CR		
2.	<i>Allium saxatile</i>	R			
3.	<i>Artemisia alba</i>	R			
4.	<i>Bufonia tenuifolia</i>	R	VU		
5.	<i>Campanula grossekii</i>	R			
6.	<i>Campanula romanica</i>	V/R	EN		x
7.	<i>Centaurea saloniata</i>	R	EN		
8.	<i>Centaurea tenuiflora</i>	R	EN		
9.	<i>Dianthus nardiformis</i>	V/R	VU	V	
10.	<i>Erysimum cuspidatum</i> (<i>Syrenia cuspidata</i>)	R			
11.	<i>Euphorbia glareosa</i> subsp. <i>dobrogensis</i>	R			
12.	<i>Euphorbia myrsinites</i> subsp. <i>myrsinites</i>	V/R	EN		
13.	<i>Festuca callieri</i>	R			
14.	<i>Gagea bulbifera</i>	V/R	VU		
15.	<i>Galium verticillatum</i>	R	VU		
16.	<i>Koeleria lobata</i>	R	VU		
17.	<i>Linum flavum</i> subsp. <i>tauricum</i>	R			
18.	<i>Minuartia adenotricha</i>	R	EN		
19.	<i>Ornithogalum amphibolum</i>	V/R	VU	V/I	
20.	<i>Ornithogalum fimbriatum</i>	R			
21.	<i>Paliurus spina-christi</i>	V/R			
22.	<i>Paronychia cephalotes</i>	R			
23.	<i>Pimpinella thragium</i> subsp. <i>litophila</i>	R			
24.	<i>Salvia aethiopis</i>	E/R			
25.	<i>Scandix pecten-veneris</i>	R	VU		
26.	<i>Scorzonera mollis</i>	R	VU		
27.	<i>Sempervivum zeleborii</i>	R			
28.	<i>Seseli campestre</i>	R			
29.	<i>Seseli tortuosum</i>	R			
30.	<i>Silene exaltata</i>	R	EN		
31.	<i>Tanacetum millefolium</i>	R			
32.	<i>Thymus zygoides</i>	R			