

ODONATA RECORDS FROM NATURA 2000 NETWORK SITE ALVÃO-MARÃO (PORTUGAL)

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Abstract: Records of 28 dragonfly species from Site of Community Importance (SCI) PTCON0003, Alvão-Marão, of the Natura 2000 network, are presented. Special mention is made of *Coenagrion mercuriale* (Charpentier, 1840) and *Oxygastra curtisii* (Dale, 1834), included in Annex B-II of the Habitats Directive.

Key words: Odonata, SCI, Habitats Directive, new records, Portugal, Alvão-Marão.

Odonata del sitio de la Red Natura 2000 Alvão-Marão (Portugal)

Resumen: Se presentan registros de 28 especies de Odonata del Lugar de Importancia Comunitaria (LIC) PTCON0003, Alvão-Marão, de la Red Natura 2000. Hay que hacer mención especial de *Coenagrion mercuriale* (Charpentier, 1840) y *Oxygastra curtisii* (Dale, 1834), recogidas en el anexo B-II de la Directiva Comunitaria Hábitats.

Palabras clave: Odonata, LIC, Directiva Hábitats, nuevas citas, Portugal, Alvão-Marão.

Natura 2000 is a network of nature protection areas in the territory of the European Union; its aim is to contribute significantly to maintenance or restoration of favourable conservation status in the biogeographic region in which it occurs. In 2006 the European Commission (2006/613/EC of 19 July 2006) adopted, pursuant to Council Directive 92/43/EEC, Sites of Community Importance (SCI) list for the Mediterranean biogeographical region, SCI Alvão-Marão included.

The SCI Alvão-Marão has 58788 ha and is characterized by: high zones (the Alvão Mountain ridge, the Lamas de Olo plateau and the Marão Mountain ridge) and basal zones (the lands of Ermelo, Fervença and Régua). The Mountain ridge of Alvão and Marão are the main mountainous formations of the site, with maximum altitudes of 1330 and 1416 m, respectively. The lowest altitude in the SCI occurs near Rio Douro with 50 m. However, in average the Alvão-Marão altitude is rarely lower than 500 m.

The area of this SCI is traversed through by numerous rivers and streams (making up 443 km), resulting in a hydrologic net with an average density of 754 m/km². The main rivers that cross the Alvão-Marão are, from north to south: Torno, Poio, Corgo, Cabril, Cabrão, Olo, Sordo and Marão. All those rivers belong to the river Douro watershed.

The SCI Alvão-Marão has a privileged position for the study of the Odonata communities, because it is situated in a transition zone between the Mediterranean and the Atlantic influence which confers to the zone a high diversity of habitats. Considering that this SCI represents less than 1% (0.66%) of the Portuguese continental territory, the Odonata fauna showed a considerable diversity. The present study reports the presence of 28 species of Odonata of the 63 species that occur in the Portuguese continental territory (Ferreira *et al.*, 2006). From the registered species, *Coenagrion mercuriale* and *Oxygastra curtisii* are included in the Annex B-II of the Habitats Directive (Directive

92/43/CEE). Furthermore, the specie *Orthetrum cancellatum* was recorded for the first time from SCI PTCON0003-Alvão-Marão of Natura 2000 network.

The specimens listed below include field observations (Moreira observations in 2006 and Barros observations in 2007) and observations included in others fields works such as “Mammals Survey in Natural Park of Alvão 2003” (Bekker *et al.*, 2004), “Odonata Characterization of Natural Park of Alvão” (Moreira, 2006) and the “Report of Scientific Field Work of Natural Park of Alvão 2007” (Barros *et al.*, unpubl. data) where the authors participated. Specimens are listed by zones: location and observation date and number of exemplars were indicated between brackets.

All specimens were captured for identification and released afterwards. Identification was based on Aguilar & Dommanget (1998), Askew (2004) and Dijkstra & Lewington (2006).

Species list

Calopterygidae Buchecker, 1876

Calopteryx haemorrhoidalis (Vander Linden, 1825)

Arnal: L2 29-07-2003 (1); **Ermelo:** L12 28-07-2003 (3), L13 24-07-2006 (3), L14 25-07-2006 (1); **Fervença Stream:** L41 29-07-2003 (2).

Calopteryx virgo (Linnaeus, 1758) ssp. *meridionalis* Selys, 1873

Arnal: L2 24-07-2003 (10), 27-07-2003 (2), 28-07-2003 (1), 29-07-2003 (1), 20-07-2003 (1), 24-07-2003 (2), 27-07-2003 (10), L3 06-06-2006 (6), 06-06-2006 (11), 08-08-2006 (2), 08-08-2006 (2), 28-07-2007 (5), L4 28-07-2007 (3) (Barros *et al.*, unpubl. data); **Assureira:** 27-07-2003 (10), 27-07-2003 (7), L6 22-06-2006 (21); **Campeã:** L7 06-07-2006 (2); **Covas:** L8 27-07-2003 (4); **Dornelas:** L9 28-07-2003 (3) 20-06-2006 (6), L10 20-06-2006 (11), L11 26-07-2006 (2); **Ermelo:** L13 24-07-2006 (2), 24-07-2006 (6), L15 28-07-2003 (1), L16 24-07-2006 (2), L17 24-07-2006 (2); **Fervença:** L20 19-07-2006 (6), 19-07-2006 (2); **Fervença**

Stream: L41 29-07-2003 (5); **Galegos da Serra:** L24 28-07-2007 (1) (Barros *et al.*, unpubl. data); **Giesteira:** L25 27-07-2003 (20); **Mafômedes:** L37 03-08-2006 (2); **Marquês Stream:** L43 08-06-2003 (11), 29-07-2007 (3) (Barros *et al.*, unpubl. data), L45 24-07-2003 (10); **Muas:** L38 28-07-2007 (1) (Barros *et al.*, unpubl. data); **Lamas de Olo:** L10 24-07-2003 (2), 24-07-2003 (10), 20-06-2006 (21), 06-07-2006 (2), L27 24-07-2003 (10), 07-08-2006 (6), 05-09-2006 (1), L28 24-07-2003 (10), L29 05-06-2006 (6), 25-07-2003 (10), L30 27-07-2006 (1), L36 09-08-2006 (2), L33 27-07-2007 (1) (Barros *et al.*, unpubl. data); **Teixeiró:** L48 03-08-2006 (2); **Trás-das-Bouças:** L49 23-08-2006 (1); **Varzigueto:** L50 01-06-2006 (2), 21-06-2006 (2), L51 22-06-2006 (6), 01-08-2006 (2).

Calopteryx xanthostoma (Charpentier, 1825)

Ermelo: L12 28-07-2003 (5), L16 24-07-2006 (2), L17 01-06-2006 (2); **Guilhado:** L18 21-07-2007 (5) (Barros *obs.*); **Varzigueto:** L50 01-08-2006 (6); **Vila Real:** L52 17-07-2007 (15) (Moreira *obs.*).

Lestidae Selys, 1840

Lestes virens (Charpentier, 1825)

Lamas de Olo L30 05-09-2006 (2); L31 27-07-2006 (2).

Lestes viridis (Vander Linden, 1825)

Lamas de Olo: L33 27-07-2007 (1) (Barros *et al.*, unpubl. data); **Trás-das-Bouças:** L49 23-08-2006 (2); **Vila Real:** L53 17-07-2007 (6) (Moreira *obs.*).

Coenagrionidae Kirby, 1890

Coenagrion mercuriale (Charpentier, 1840)

Campeã: L7 10-08-2006 (2).

Coenagrion puella (Linnaeus, 1758)

Campeã: L7 06-07-2006 (21), 10-08-2006 (21), 04-07-2007 (21) (Moreira *obs.*).

Erythromma lindenii (Selys, 1840)

Trás-das-Bouças: L49 23-08-2006 (2).

Pyrrhosoma nymphula (Sulzer, 1776)

Assureira: L6 22-06-2006 (2), 27-07-2003 (1), 31-07-2003 (1); **Arnal:** L2 29-07-2003 (1), L3 06-06-2006 (2), 06-06-2006 (2), 28-07-2007 (1) (Barros *et al.*, unpubl. data); **Campeã:** L7 06-07-2006 (6), 02-08-2006 (11); **Dornelas:** L9 20-06-2006 (2); **Foz do Corgo:** L22 03-07-2007 (1) (Barros *obs.*); **Lamas de Olo:** L29 05-06-2006 (6); L32 30-05-2006 (2); **Marquês Stream:** L43 08-06-2006 (2); **Teixeiró:** L48 02-08-2006 (1); **Varzigueto:** L50 21-06-2006 (2); L51 22-06-2006 (2).

Enallagma cyathigerum (Charpentier, 1840)

Lamas de Olo: L33 30-05-2006 (21), 27-07-2007 (1), L31 27-07-2007 (1), L34 27-07-2007 (1) (Barros *et al.*, unpubl. data).

Ischnura pumilio (Charpentier, 1825)

Campeã: L7 04-07-2007 (21) (Moreira *obs.*); 10-08-2006 (6); **Lamas de Olo:** L30 27-07-2006, L31 27-07-2006 (2), 27-07-2007 (1) (Barros *et al.*, unpubl. data).

Ceriagrion tenellum (Villers, 1789)

Campeã: L7 06-07-2006 (2); **Guilhado:** L19 21-07-2007 (1) (Barros *obs.*).

Platycnemidae Tylliard, 1938

Platycnemis acutipennis Selys, 1841

Ermelo: L13 24-07-2006 (2), L17 24-07-2006 (2); **Varzigueto:** L50 21-06-2006 (2), 01-08-2006 (2), L51 22-06-2006 (2), 01-08-2006 (2).

Platycnemis latipes Rambur, 1842

Arnal: L3 28-07-2007 (1) (Barros *et al.*, unpubl. data); **Ermelo:** L12 28-07-2003 (4), L16 24-07-2006 (2); **Foz do Corgo:** L22 03-07-2007 (3) (Barros *obs.*); **Vila Real:** L53 17-07-2007 (2) (Moreira *obs.*); **Varzigueto:** L50 01-08-2006 (2).

Aeshnidae Selys, 1850

Aeshna cyanea (Müller, 1764)

Lamas de Olo: L27 05-09-2005 (1), L30 05-09-2005 (2).

Aeshna isoceles (Müller, 1767)

Lamas de Olo: L27 23-07-2003 (1).

Anax imperator Leach, 1815

Campeã: L7 06-07-2006 (6), 10-08-2006 (2); **Lamas de Olo:** L29 23-07-2003 (1), L30 27-07-2006 (1), L31 27-07-2007 (3), L33 30-05-2006 (2), 11-07-2006 (6), 27-07-2007 (2), L34 27-07-2007 (2), 27-07-2007 (1); **Marquês Stream:** L44 29-07-2007 (1) (Barros *et al.*, unpubl. data); **Varzigueto:** L50 21-06-2006.

Boyeria irene (Fonscolombe, 1838)

Arnal: L2 21-07-2003 (1), L3 21-07-2003 (1); **Covas:** L8 27-07-2003 (2), 27-07-2003 (5); **Lamas de Olo:** L27 24-07-2003 (1), 07-08-2006 (1), 05-09-2006 (1); **Giesteira:** L25 31-07-2003 (1); **Mafômedes:** L37 03-08-2006 (2), L41 29-07-2003 (2); **Lamas de Olo:** L36 09-08-2006 (1); **Trás-das-Bouças:** L49 23-08-2006 (1); **Varzigueto:** L5 01-08-2006 (2).

Gomphidae Selys, 1850

Onychogomphus uncatus (Charpentier, 1840)

Anta: L1 28-07-2003 (1), 31-07-2003 (1); **Arnal:** L2 24-07-2003 (10), L3 24-07-2003 (10), 28-07-2007 (1), 08-08-2006 (1); L4 28-07-2003 (1); 28-07-2007 (1) (Barros *et al.*, unpubl. data); **Assureira:** L6 22-06-2006 (1), 27-07-2003 (10); **Ermelo:** L13 24-07-2006 (1), 24-07-2006 (2), L14 25-07-2006 (2), L16 24-07-2006 (2), L17 24-07-2006 (6); **Fervença:** L20 19-07-2006 (1); **Galegos da Serra:** L23 26-07-2003 (1); **Giesteira:** L25 27-07-2003 (20); **Dornelas:** L9 28-07-2003 (1); **Lamas de Olo:** L10 25-07-2003 (10), 25-07-2003 (5), 24-07-2003 (10), L27 07-08-2006 (1), L28 25-07-2003 (10), L29 25-07-2003 (10), L36 09-08-2006; **Mafômedes:** L37 03-08-2006 (2); **Marquês Stream:** L45 24-07-2003 (10) 29-07-2007 (1) (Barros *et al.*, unpubl. data); **River Cabrão:** L41 29-07-2003 (1), L46 27-07-2003 (10); **Varzigueto:** L50 01-08-2006 (11), L51 22-06-2006 (1), 01-08-2006 (21).

Cordulegastridae Fraser, 1940

Cordulegaster boltonii (Donovan, 1807)

Arnal: L2 24-07-2003 (10), 27-07-2003 (10), 28-07-2003 (1), L3 06-06-2006 (1), 24-07-2003 (10), 28-07-2007 (4), 08-08-2006 (1), L4 28-07-2007 (1) (Barros *et al.*, unpubl. data), L5 26-07-2003 (1); **Assureira:** L6 22-06-2006 (1), 27-07-2003 (11), 31-07-2003 (1); **Covas:** L8 27-07-2003 (1); **Dornelas:** L9 27-07-2003 (1), 26-07-2006 (1); **Eido Stream:** L40 26-07-2003 (4); **Ermelo:** L13 24-07-2006 (1), L14 25-07-2006 (1), L17 24-07-2006 (2); **Fervença:** L20 19-07-2006 (1), L20 19-07-2006 (1), L21 26-07-2003 (1); **Galegos da Serra:** L23 26-07-2003 (2), L24 28-07-2007 (1); **Giesteira:** L25 27-07-2003 (20); **Lajedo:** L26 31-07-2003 (1); **Lamas de Olo:** L10 20-06-2006 (1), 06-07-2006 (1), 25-07-2003 (10), 27-07-2003 (1), L27 24-07-2003 (10), 07-08-2006 (1), L28 25-07-2003 (10), L29 25-07-2003 (10), L33 27-07-2007 (1) (Barros *et al.*, unpubl. data), L36 09-08-2006 (1); **Mafômedes:** L37 03-08-2006 (2); **Muas:** L38 28-07-2007 (1), L39 28-07-2007 (1); **Marquês Stream:** L45 24-07-2003 (10), L42 29-07-2007 (5); L43 29-07-2007 (1) (Barros *et al.*, unpubl. data); **River Cabrão:** L46 27-07-2003 (1); **Trás-das-Bouças:** L49 23-08-2006 (2); **Varzigueto:** L51 22-06-2006 (2), L51 01-08-2006 (2).

Corduliidae Tillyard, 1926

Oxygastra curtisii (Dale, 1834)

Ermelo: L15 28-07-2003 (1); **Varzigueto:** L50 21-06-2006 (1).

Libellulidae Selys, 1850

Crocothemis erythraea (Brullé, 1832)

Campeã: L7 06-07-2006 (2), 10-08-2006 (2); **Ermelo:** L15 28-07-2003 (1); **Lamas de Olo:** L33 27-07-2007 (2) (Barros *et al.*, unpubl. data); **Vila Real:** L53 17-07-2007 (2) (Moreira *obs.*).

Libellula depressa Linnaeus, 1758

Lamas de Olo: L33 30-05-2006 (1).

Orthetrum brunneum (Fonscolombe, 1837)

Arnal: L3 20-07-2003 (1).

Orthetrum cancellatum (Linnaeus, 1758)

Lamas de Olo: L31 27-07-2007 (1)* (Barros *et al.*, unpubl. data).

*First Record for Site Alvão-Marão

Orthetrum coerulescens (Fabricius, 1798)

Ermelo: L14 25-07-2006 (1); **Lamas de Olo:** L10 21-07-2003 (1), 13-07-2006 (2), L27 24-07-2003 (1), L30 27-07-2006 (2), L31 27-07-2007 (1), L33 27-07-2007 (1), L34 27-07-2007 (1) (Barros *et al.*, unpubl. data); **River Cabrão:** L47 28-07-2003 (1); **Varzigueto:** L51 01-08-2006 (1).

Sympetrum fonscolombii (Selys, 1840)

Lamas de Olo: L31 27-07-2006 (1), L33 30-05-2006 (11), 11-07-2006 (21), 28-07-2007 (1) (Barros *et al.*, unpubl. data), L36 09-08-2006 (1).

Sympetrum sanguineum (Müller, 1764)

Lamas de Olo: L10 24-07-2003 (1), L27 24-07-2003 (1), L31 05-09-2006 (2), 28-07-2007 (1), L33 28-07-2007 (1), L34 28-07-2007 (2), L35 31-07-2003 (1), 28-07-2007 (1) (Barros *et al.*, unpubl. data); **Trás-das-Bouças:** L49 23-08-2006 (2).

References

- ASKEW, R.R. 2004. *The dragonflies of Europe (revised edition)*. Harley Books. Colchester.
- BEKKER, H., J.P.BEKKER, J. BOSHAMER, J. BUYS, A. HUNIA, E. KOSTEN, K. MOSTERT, F. RIENKS, J. VERBEEK & A. WAL 2004. *Mammal Survey Alvão Natural Park (Portugal)*. Uitgave van de Vereniging voor Zoogdierkunde en Zoogdierbescherming (VZZ). Arnhem.
- D'AGUILAR, J. & J.L. DOMMANGET 1998. *Guide des libellules d'Europe et d'Afrique du Nord: l'identification et la biologie de toutes les espèces*. Delachaux et Niestlé, Lausanne, Paris.
- DIJKSTRA, K.D.B. & R. LEWINGTON 2006. *Field Guide to the Dragonflies of Britain and Europe*. British Wildlife Publishing. Dorset.
- FERREIRA, S., J.M. GROSSO-SILVA, M. LOHR, F. WEIHRACH & R. JÖDICKE 2006. Critical checklist of the odonata of Portugal. *International Journal of Odonatology*, 9(2): 133-150.
- MOREIRA, J.P. 2006. *Caracterização da Fauna Odonatológica na Zona do Parque Natural do Alvão*. Relatório de Estágio da Licenciatura de Ecologia Aplicada. Universidade de Trás-os-Montes e Alto Douro. Vila Real.

Appendix I – Description of the sampling locations (L) used in this work.

Zone	L	UTM Coordinates	Location	Altitude	Stretch of water	Habitat*
Anta	1	29TNF9883	Anta village	1110	Anta stream	Oak forest and <i>Castanea sativa</i>
Arnal	2	29TNF9976	Arnal village	720	Arnal stream	Pasture and ripicolous vegetation
	3	29TPF0076	East of Arnal village	810	Arnal stream	Pasture and ripicolous vegetation
	4	29TPF0077	NE of Arnal village	900	Small affluent of Arnal stream	Shrubs and rocks (Granite)
	5	29TNF9876	West of Arnal village	950	Fonte das Carmendas stream	Pine forest and shrubs
Assureira	6	29TNF9782	Assureira village	800	River Olo	Shrubs and rocks (Granite)
Campeã	7	29TNF9671	East of Campeã village	690	Artificial pond	Pasture
Covas	8	29TNF9482	Covas village	390	River Cabrão	Pine forest
Dornelas	9	29TNF9982	Dornelas village	990	Stream affluent of river Olo	Pasture, oak forest and <i>C. sativa</i>
	10	29TNF9981	South of Dornelas village	960	Pond & artificial channel	Pasture, oak forest and <i>C. sativa</i>
	11	29TNF0082	East of Dornelas village	1050	Stream affluent of River Olo	Pasture
Ermelo	12	29TNF9280	NW Ermelo village (Abelheira bridge)	290	River Olo	Ripicolous vegetation
	13	29TNF9380	North of Ermelo village	330	River Olo	Ripicolous vegetation
	14	29TNF9378	South of Ermelo village	420	Artificial channel	Pine forest
	15	29TNF9379	Ermelo village	490	Artificial channel	Farmland
	16	29TNF9381	North of Ermelo village	530	River Olo	Ripicolous vegetation
	17	29TNF9279	West of Ermelo village	240	River Olo	Ripicolous vegetation

Zone	UTM		Location	Altitude	Stretch of water	Habitat*
	L	Coordinates				
Guilhado	18	29TPF1493	East of Montenegro (a)	1010	Stream affluent of River Corgo	Shrubs
	19	29TPF1492	East of Montenegro (b)	740	Peliteira Stream	Shrubs
Fervença	20	29TNF9779	South of Fervença village	760	Teixeira stream	Shrubs and rocks (Schist)
	21	29TNF9878	SE of Fervença village – Ranhadouro	1020	Small stream affluent of Teixeira stream	Shrubs
Foz do Corgo	22	29TPF0357	East of Peso da Régua	50	River Corgo	Ripicolous vegetation & vineyard
Galegos da Serra	23	29TNF9975	West of Galegos da Serra village	830	Fonte das Carmendas stream	Shrubs
	24	29TPF0075	Galegos da Serra village	780	Arnal stream	Pasture
Giesteira	25	29TNF9881	Northeast of Barreiro village	900	River Olo	Pasture, oak forest and <i>C. sativa</i>
Lajedo	26	29TNF9882	Southeast of Assureira village	820	River Olo	Pasture, oak forest and <i>C. sativa</i>
Lamas de Olo	27	29TPF0080	North of Lamas de Olo village	970	River Olo	Pasture, oak forest and <i>C. sativa</i>
	28	29TNF9980	SW of Lamas de Olo village	970	River Olo	Pasture and shrubs
	29	29TPF0180	SE of Lamas de Olo village	1000	River Olo	Pasture
	30	29TNF9978	SW of Lamas de Olo village	1130	Dam of a small stream	Shrubs and rocks (Granite)
	31	29TPF0078	S of Lamas de Olo village	1070	SW part Cimeira dam & temporary pond	Wetland
	32	29TNF9979	West of Fundeira dam	1060	Queimada stream	Shrubs
	33	29TPF0079	S of Lamas de Olo village	1070	Fundeira dam & NW of Cimeira dam	Wetland and <i>Erica</i> sp.
	34	29TPF0179	SE of Lamas de Olo village	1070	NE part Cimeira dam	Wetland
	35	29TPF0178	SE of Lamas de Olo village	1070	SE part Cimeira dam	Wetland
	36	29TPF0182	NW of Lamas de Olo village	1120	Vale Longo stream	Shrubs and rocks (Granite)
Mafômedes	37	29TNF9264	Mafômedes village	810	Weir of Teixeira river	Shrubs
Muas	38	29TPF0176	Muas village	870	Small stream	Shrubs and rocks (Granite)
	39	29TPF0177	Northwest Muas village	950	Small stream	Shrubs and rocks (Granite)
Eido Stream	40	29TNF9875	Northwest Sirarelhos village	990	Eido stream	Shrubs, oak forest and <i>C. sativa</i>
Fervença Stream	41	29TNF9580	Near of S.João chapel	450	Fervença stream	Oak forest and <i>Castanea sativa</i>
Marquês Stream	42	29TPF0279	East of Cimeira dam	1200	Marquês stream	Pine forest
	43	29TPF0278	Southeast of Cimeira dam	1030	Marquês stream	<i>Betula alba</i> forest and shrubs
	44	29TPF0276	North of Relva village	630	Marquês stream	Pine forest burned and rocks (Granite)
	45	29TPF0277	West of Relva village	800	Marquês stream	Pasture, oak forest and <i>C. sativa</i>
Cabrão River	46	29TNF9283	Near of forest ranger house	300	Cabrão River	Pine forest
	47	29TNF9282	West of Covas village	450	Affluent of Cabrão	Pine forest
Teixeiró	48	29TNF9261	Northeast of Teixeira village	630	Temporary pond	Shrubs
Trás-das-Bouças	49	29TPF0893	Trás-das-bouças site	870	Torno River	Pasture
Varzigueto	50	29TNF9581	Downstream of Varzigueto bridge	730	Olo River	Shrubs and rocks (Schist)
	51	29TNF9681	Amount of Varzigueto bridge	740	Olo River	Pasture, oak forest and <i>C. sativa</i>
Vila Real	52	29TPF0572	South of Vila Real city	310	Corgo River	Shrubs
	53	29TPF0471	South of Vila Real city	240	Corgo River Terragido dam	Wetland

* Oak forest were composed mainly by *Quercus pyrenaica* and *Q. robur*, Pasture were composed mainly by *Paradisea lusitanica*, *Dactylorhiza maculata*, *Carex* sp. and *Juncus* sp., Ripicolous vegetation were composed mainly by *Alnus glutinosa*, *Fraxinus angustifolia*, *Q. pyrenaica* and *Q. robur*, Shrubs were composed mainly by *Pterospartum tridentatum* subsp. *tridentatum*, *Erica* sp. and *Cytisus* sp., Wetland were composed by *Salix* sp., *Fraxinus* sp. *Juncus* sp. and *Alnus glutinosa*, Pine forest were composed by *Pinus pinaster* and *P. Sylvestris*.