

UPDATED CHECKLISTS OF PLANT AND INSECT SPECIES OF ILGANII DE SUS (TULCEA COUNTY, ROMANIA)

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Abstract

Floristic and terrestrial insect checklists were compiled following the biological exploration of Ilganii de Sus area, Tulcea County (September 2017) and - which is valid only for plants - according to the already published literature, especially the monograph of the above-mentioned village. We report the species in an alphabetical order of the genera, then of species within the genera. The plant habit (herb, shrub or tree) is also mentioned for each record of vascular flora. Summing up all data sources, of the 135 plant species, 11.11% belongs to Asteraceae, 8.15% to Fabaceae, 5.92% to Salicaceae and the rest to other families. Coleoptera was found to be the leading taxa in the analyzed sample of 28 insect species. The present report brings a contribution to the actual state of knowledge about plant and arthropod species listed for Ilganii de Sus, a settlement from Danube Delta Biosphere Reserve.

Key words: species checklists, Danube Delta, Ilganii de Sus, sampling, plant, insect.

INTRODUCTION

Ciocârlan (2011) drew attention to the richness of species in the wild flora characteristic of the Danube Delta.

In spite of few research papers that have reported some flora and fauna species for Ilganii de Jos and Ilganii de Sus, there is currently no available information about more accurate checklists of plant or insect species only for Ilganii de Sus.

Ilganii de Sus is a village from Maliuc commune (Tulcea County), located on the left shore of Sulina Branch. Along with other localities like Partizani, Vulturu, Gorgova, Crișan and Caraorman, Ilganii de Sus is part from apiarian rout no. 4 with melliferous potential in Danube Delta Biosphere Reserve (D.D.B.R.) (Covaliov et al., 2012). With respect to biodiversity, Moțoc and Manole (2015) have made an extensive documentation in the monograph of Ilganii de Sus and Partizani (the village from the opposite side of Sulina Branch). In a previous study (Dobrin et al., 2013), we mentioned a list of plant and associated insect species encountered in Ilganii de Jos, Nufăru commune, on Sfântu Gheorghe

Branch. Since both villages are protected localities on the territory of D.D.B.R., the aim of this study was to collect and identify new biological material in order to contribute to the current state of knowledge concerning the floristic and invertebrate biodiversity of these close regions.

MATERIALS AND METHODS

The selected areas for collecting both plants and insects at Ilganii de Sus, Tulcea County ranged from 45°11'31.60"N/28°56'1.59"E and 45°11'39.83"N/28°58'10.33"E geographical coordinates, along Sulina branch of the Danube and Arhipenco channel. The chosen habitats for sampling biological material included grazing meadows, floodplains, forest plantations, sandy shores or ruderal areas on the country road (Figure 1).

Plants were harvested by hand pulling for further determination, while insects were observed and captured with the aid of an entomological net. Some of the arthropods were whole preserved in alcohol 95% and transported to the Faculty of Agriculture from USAMV Bucharest laboratories for identify-

cation (Dobrin et al., 2013). Identification guides of Cozari (2008), Leraut (2012) and Rakosy (2013) were used for insect taxonomy. We have completed our plant species checklists of what was already known in the floristic literature from the monograph of Ilgani de Sus and Partizani villages (Moțoc and Manole, 2015) and also from the work of Doroftei et al. (2011) concerning the vascular wild flora of D.D.B.R.



Figure 1. Natural landscapes of Ilgani de Sus area - habitats for plants and insects, on Sulina Branch

Species name for both plants and insects were arranged for convenience in alphabetical order, rather than phylogenetic, as in similar papers concerning checklists (Abbate, 2005; Ahmed et al., 2017).

Mushrooms, ferns, bryophytes, lichens and algae species were excluded from this report. For plant habit, we used the following abbreviations: H (herb); S (shrub); T (tree). The name of a species is followed by the corresponding family name.

The nomenclature and also the taxonomic position for plant species mostly followed The Plant List (<http://www.theplantlist.org/>), Invasive Species Compendium (<http://www.cabi.org/isc/>) and Plants For A Future (<http://pfaf.org/>) data base.

RESULTS AND DISCUSSIONS

The biological explorations in the Ilgani de Sus village area have produced two checklists of floristic and entomological species, respectively.

I. Plant species checklist

For the studied area, the following plants represent a collection of species recorded before in the specialist literature and/or identified by us in September 2017 and also species recorded only in the specialist literature but not encountered in the present short survey (*):

1. *Acorus calamus* L. (sweet flag), H, Araceae*;
2. *Abutilon theophrasti* Medik. (velvetleaf), H, Malvaceae;
3. *Aldrovanda vesiculosa* L. (waterwheel), H, Droseraceae*;
4. *Alisma plantago-aquatica* L. (common water-plantain), H, Alismataceae*;
5. *Althaea officinalis* L. (marshmallow), H, Malvaceae;
6. *Amaranthus hybridus* L. (green amaranth), H, Amaranthaceae;
7. *A. powelli* S. Watson (Powell's amaranth), H, Amaranthaceae*;
8. *Ambrosia artemisiifolia* L. (common ragweed), H, Asteraceae;
9. *Amporpha fruticosa* L. (indigo bush), S, Fabaceae;
10. *Anthemis ruthenica* M. Bieb., H, Asteraceae*;
11. *A. tinctoria* L. ssp. *tinctoria* (golden marguerite), H, Asteraceae*;
12. *Apera spica-venti* L. (P. Beauv.) (common windgrass), H, Poaceae;
13. *Artemisia annua* L. (sweet sagewort), H, Asteraceae;
14. *Azolla caroliniana* Willd. (mosquito fern), H, Salviniaceae*;
15. *Bromus arvensis* L. (field brome), H, Poaceae*;
16. *B. sterilis* L. (barren brome), H, Poaceae*;
17. *Butomus umbellatus* L. (flowering rush), H, Butomaceae;
18. *Camelina rumelica* Velen., H, Brassicaceae*;
19. *Carduus nutans* L. (nodding thistle), H, Asteraceae;
20. *Carex* sp. (sedges), H, Cyperaceae;

21. *C. divisa* Huds., H, Cyperaceae*;
22. *Cephalaria transylvanica* (L.) Roem. & Schult., H, Caprifoliaceae*;
23. *Ceratocephala testiculata* (Crantz) Roth (bur buttercup), H, Ranunculaceae*;
24. *Chenopodium pumilio* R.Br., H, Amaranthaceae*;
25. *C. strictum* Roth, H, Amaranthaceae*;
26. *C. urbicum* L. (city goosefoot), H, Amaranthaceae;
27. *Cichorium intybus* L. (chicory), H, Asteraceae;
28. *Cicuta virosa* L. (cowbane), H, Apiaceae*;
29. *Cirsium acaule* (L.) A. A. Weber ex Wigg. (dwarf thistle), H, Asteraceae;
30. *Consolida orientalis* (J. Gay) Schrödinger, H, Ranunculaceae;
31. *C. regalis* Gray (forking larkspur), H, Ranunculaceae;
32. *Cuscuta campestris* Yunck. (field dodder), H, Convolvulaceae;
33. *Cynodon dactylon* (L.) Pers. (bermuda grass), H, Poaceae;
34. *Cyperus glomeratus* L., H, Cyperaceae*;
35. *Datura stramonium* L. (jimsonweed), H, Solanaceae;
36. *Dipsacus fullonum* L. (common teasel), H, Dipsacaceae;
37. *Eleagnus angustifolia* (Russian olive), T, Elaeagnaceae;
38. *Elodea canadensis* Michx. (pondweed), H, Hydrocharitaceae*;
39. *E. nuttallii* (Planch.) H.St.John (western waterweed), H, Hydrocharitaceae*;
40. *Equisetum palustre* L. (marsh horsetail), H, Equisetaceae*;
41. *Erigeron annuus* (L.) Pers. (annual fleabane) syn. *Stenactis annua* (L.) Ness., H, Asteraceae;
42. *Euphorbia* sp. (spurge), H, Euphorbiaceae;
43. *Euphorbia salicifolia* Host, H, Euphorbiaceae*;
44. *Fraxinus* sp. (ash), T, Oleaceae;
45. *Galega officinalis* L. (goat's rue), H, Fabaceae;
46. *Galium palustre* L. (marsh-bedstraw), H, Rubiaceae*;
47. *Glycyrrhiza glabra* L. (liquorice), H, Fabaceae;
48. *Helianthus annuus* L. (sunflower), H, Asteraceae;
49. *Hydrocharis morsus-ranae* L. (frogbit), H, Hydrocharitaceae*;
50. *Inula britannica* L. (meadow fleabane), H, Asteraceae;
51. *Iris variegata* L., H, Iridaceae*;
52. *Lamium purpureum* L. (purple dead-nettle), H, Lamiaceae*;
53. *Leonorus marrubiastrum* L., H, Lamiaceae*;
54. *Lemna* sp. (duckweed), H, Araceae;
55. *Limonium latifolium* (Sm.) Kuntze (sea lavender), H, Plumbaginaceae*;
56. *Linaria vulgaris* Mill. (yellow toadflax), H, Plantaginaceae;
57. *Lithospermum purpureocaeruleum* L. (purple gromwell), H, Boraginaceae;
58. *Lotus corniculatus* L. (bird's-foot trefoil), H, Fabaceae;
59. *Lycopsis arvensis* L. syn. *Anchusa arvensis* (L.) M. Bieb., H, Boraginaceae*;
60. *Lythrum salicaria* L. (purple loosestrife), H, Lythraceae;
61. *Malus sylvestris* L. (crab apple), T, Rosaceae;
62. *Matricaria perforata* L. (false chamomile), H, Asteraceae;
63. *Medicago lupulina* L. (black medick), H, Fabaceae;
64. *Melilotus albus* Medik. (white melilot), H, Fabaceae;
65. *Mentha aquatica* L. (water mint), H, Lamiaceae;
66. *M. longifolia* L. (Huds.) (horsemint), H, Lamiaceae;
67. *M. pulegium* L. (pennyroyal), H, Lamiaceae;
68. *Myriophyllum* sp. (watermilfoil), H, Haloragaceae*;
69. *Morus alba* L. (mulberry), T, Moraceae;
70. *Nigella arvensis* L. (wild fennel), H, Ranunculaceae*;
71. *Nuphar lutea* (L.) Sm. (yellow water-lily), H, Nymphaeaceae*;
72. *Nymphaea alba* L. (European white water lily), H, Nymphaeaceae*;
73. *Nymphoides peltata* (Gmelin.) Kuntze. (water fringe), H, Menyanthaceae;
74. *Oenanthe aquatica* (L.) Poir. (water dropwort), H, Apiaceae*;
75. *Ononis spinosa* L. (spiny restharrow), H, Fabaceae;
76. *Orchis laxiflora* Lam., H, Orchidaceae*;

77. *Origanum vulgare* L., H, Lamiaceae*;
78. *Orobanche ramosa* L. (branched broomrape), H, Orobanchaceae*;
79. *Papaver hybridum* L., H, Papaveraceae*;
80. *P. rhoeas* L. (field poppy), H, Papaveraceae*;
81. *Petunia parviflora* Juss., H, Solanaceae*;
82. *Phragmites australis* (common reed), H, Poaceae;
83. *Plantago major* L. (common plantain), H, Plantaginaceae;
84. *Poa trivialis* L. (rough bluegrass), H, Poaceae*;
85. *Polycnemum arvense* L., H, Amaranthaceae*;
86. *Polygonum hydropiper* L. (smartweed), H, Polygonaceae;
87. *P. mite* Schrank, H, Polygonaceae*;
88. *Potamogeton crispus* (pondweed), H, Potamogetonaceae*;
89. *P. pectinatus* L. (fennel-leaved pondweed), H, Potamogetonaceae*;
90. *P. perfoliatus* L. (claspingleaf pondweed), H, Potamogetonaceae*;
91. *Populus alba* L. (white poplar), T, Salicaceae;
92. *Pyrus pyrastrer* L. (wild pear), T, Rosaceae;
93. *Potentilla reptans* L. (cinquefoil), H, Rosaceae*;
94. *Raphanus raphanistrum* L. (wild radish), H, Brassicaceae*;
95. *Ranunculus ficaria* L. (lesser celandine), H, Ranunculaceae*;
96. *R. oxyspermus* Willd., H, Ranunculaceae*;
97. *Robinia pseudoacacia* L. (black locust), T, Fabaceae;
98. *Rorripa palustris* L. (Besser.) (common yellow-cress), H, Brassicaceae;
99. *Rubus caesius* L. (dewberry), S, Rosaceae;
100. *Rumex hydrolapathum* Huds. (water dock), H, Polygonaceae;
101. *Sagittaria sagittifolia* L. (arrowhead), H, Alismataceae*;
102. *Salix alba* L. (white willow), T, Salicaceae;
103. *S. aurita* L. (eared willow), T, Salicaceae*;
104. *S. cinerea* (grey willow), S, Salicaceae*;
105. *S. fragilis* (crack willow), T, Salicaceae*;
106. *S. petandra* (bay willow), T, Salicaceae*;
107. *S. purpurea* L. (purple willow), S, Salicaceae*;
108. *S. rubra* Huds., S, Salicaceae*;
109. *Salvinia natans* (L.) All. (floating fern), H, Salviniaceae;
110. *Setaria viridis* (L.) P.Beauv. (green foxtail), H, Poaceae;
111. *Sinapis arvensis* L. (wild mustard), H, Brassicaceae*;
112. *Sonchus oleraceus* L., H, Asteraceae;
113. *Stachys tenuifolia* Willd. (smooth hedgenettle), H, Lamiaceae;
114. *Solanum dulcamara* L. (bittersweet), H, Solanaceae*;
115. *Sparganium ramosum* Huds., H, Typhaceae*;
116. *Stellaria* sp., H, Caryophyllaceae;
117. *S. aquatica* L. (Scop.) (water chickweed), H, Caryophyllaceae*;
118. *Symphytum officinale* L. (comfrey), H, Boraginaceae*;
119. *Tamarix gallica* L. (French tamarisk), S, Tamaricaceae;
120. *Tanacetum vulgare* L. (tansy), H, Asteraceae;
121. *Thalictrum lucidum* L., H, Ranunculaceae*;
122. *Trachomitum venetum* L. (Woodson), H, Apocynaceae*;
123. *Trapana natans* L. (water caltrop), H, Lythraceae;
124. *Trifolium echinatum* M. Bieb. (hedgehog clover), H, Fabaceae*;
125. *T. pretense* L. (red clover), H, Fabaceae;
126. *T. repens* L. (white clover), H, Fabaceae;
127. *Typha angustifolia* L. (narrow-leaved cat-tail), H, Typhaceae;
128. *Utricularia vulgaris* L. (common bladderwort), H, Lentibulariaceae*;
129. *Valerianella lasiocarpa* (Steven) Betcke, H, Caprifoliaceae*;
130. *Vallisneria spiralis* L. (eel grass), H, Hydrocharitaceae*;
131. *Verbascum chaixii* Vill. ssp. orientale Hayek, H, Scrophulariaceae*;
132. *V. phlomoides* L. (orange mullein), H, Scrophulariaceae;

133. *Verbena officinalis* L. (vervain), H, Verbenaceae;
 134. *Xanthium spinosum* L. (bathurst burr), H, Asteraceae;
 135. *X. strumarium* L. (common cocklebur), H, Asteraceae.

Among all 46 plant families, Asteraceae is the most dominant with 15 species (11.11%), followed by Fabaceae with 11 species (8.15%), Salicaceae with eight species (5.92%), Lamiaceae Poaceae and Ranunculaceae with seven species each (5.18%), Amaranthaceae with six species (4.44%), Brassicaceae, Hydrocharitaceae and Rosaceae with four species each (2.96%), Boraginaceae, Cyperaceae, Polygonaceae, Potamogetonaceae and Solanaceae with three species each (2.22%). Alismataceae, Apiaceae, Araceae, Caprifoliaceae, Caryophyllaceae, Euphorbiaceae, Lythraceae, Malvaceae, Nymphaeaceae, Papaveraceae, Plantaginaceae, Salviniaceae, Scrophulariaceae and Typhaceae plant families had two species each (1.48%). The recorded plant families including a single species (0.74%) were: Apocynaceae, Convolvulaceae, Dipsacaceae, Droseraceae, Elaeagnaceae, Haloragaceae, Iridaceae, Lentibulariaceae, Moraceae, Menyanthaceae, Orchidaceae, Oleaceae, Orobanchaceae, Plumbaginaceae, Rubiaceae, Tamaricaceae and Verbenaceae. As for the plant habit, herbaceous species represent 87.4% of the floristic composition in the study area, followed by trees (8.15%) and shrubs (4.44%).

Species noted herein as „*” represent 50.37% from the total of 135 listed records. Most of these plants have not been identified in the field for the simple reason that we did not intend to study the aquatic plants for this stage of the report. On the other hand, it should be noted that a significant part of the herbs labeled with „*” should be regarded with caution concerning the floristic species attributed to Ilgani de Sus, since in the available Romanian literature there are plant species generally cited for the Danube Delta or for Ilgani, not necessary only for the present area of interest. As a result, new field trips over the course of a whole year could bring the light to the exact elucidation of the Ilgani de Sus flora's composition.

II. Insect species checklist

In September 2017, we identified the following insect species in the collecting sites of Ilgani de Sus:

1. *Aelia acuminata* L. (Bishop's mitre shieldbug), Heteroptera: Pentatomidae;
2. *Apion apricans* Herbst (Coleoptera: Brentidae);
3. *Bacillus rossius* Rossi (stick insect), Phasmatodea: Bacillidae;
4. *Calliptamus italicus* L. (Italian locust), Orthoptera: Acrididae;
5. *Cassida nebulosa* L. (tortoise beetle), Coleoptera: Chrysomelidae;
6. *Cantharis rufa* L., Coleoptera: Cantharidae;
7. *Catocala nupta* L. (red underwing), Lepidoptera: Erebidae;
8. *Ceresa bubalus* Fabricius (buffalo tree hopper), Hemiptera: Membracidae;
9. *Cicadella viridis* L. (green leafhopper), Hemiptera: Cicadellidae;
10. *Chrysolina polita* L. (knotgrass leaf beetle), Coleoptera: Chrysomelidae;
11. *Chrysolina virgata* Motschulsky (leaf beetle), Coleoptera: Chrysomelidae;
12. *Chrysopa* sp. (Neuroptera: Chrysopidae);
13. *Subcoccinella vigintiquatuor punctata* L. (24-spotted ladybird), Coleoptera: Coccinellidae;
14. *Coreus marginatus* L. (dock bug), Hemiptera: Coreidae;
15. *Decticus verrucivorus* L. (wart-biter), Orthoptera: Tettigonidae;
16. *Dociostaurus maroccanus* Thunberg (Moroccan locust), Orthoptera: Acrididae;
17. *Dolycoris baccarum* L. (sloe bug), Hemiptera: Pentatomidae;
18. *Graphosoma lineatum* L. (Hemiptera: Pentatomidae);
19. *Hamearis lucina* L. (Duke of Burgundy), Lepidoptera: Riodinidae;
20. *Lasius niger* L. (black garden ant), Hymenoptera: Formicidae;
21. *Meligethes aeneus* Fabricius (rape pollen beetle), Coleoptera: Nitidulidae;
22. *Musca domestica* L. (housefly), Diptera: Muscidae;
23. *Orthetrum cancellatum* L. (black-tailed skimmer), Odonata: Libellulidae;
24. *Pieris rapae* L. (small cabbage white), Lepidoptera: Pieridae;

25. *Polyommatus coridon* Poda (chalkhill blue), Lepidoptera: Lycaenidae;
26. *Polyommatus icarus* Rottemburg (common blue), Lepidoptera: Lycaenidae;
27. *Pyrrhocoris apterus* L. (firebug), Hemiptera: Pyrrhocoridae;
28. *Trichodes apiarius* L., Coleoptera: Cleridae.

Among all 28 insect species listed above, Coleoptera is the most dominant order, with eight species (28.57%), followed by Hemiptera with six species (21.42%), Lepidoptera with five species (17.85%) and Orthoptera with three species (10.71%).

The insect orders with a single identified species (3.57%) were: Diptera, Heteroptera, Hymenoptera, Neuroptera, Odonata and Phasmatodea.

Aelia acuminata, *Coreus marginatus* and *Graphosoma lineatum* were also recorded in Ilganii de Jos area (Dobrin et al., 2013).

CONCLUSIONS

A total of 135 plant species and 28 insect species were recorded for the study area.

The leading taxa in the collected biological samples were Asteraceae for floristic composition and Coleoptera for insect biodiversity, respectively.

Although we can not conclude that the two checklists of species present an exhaustive picture of the biodiversity of a well-defined region, we believe that this survey brings an important contribution to the knowledge of plant and arthropod species adjacent to Ilganii de Sus - a protected area from Danube Delta Biosphere Reserve.

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