Report of the ECOO 2022 Mid-congress field trip to Ljubljansko barje Nature Park

The sixth European Congress on Odontology (ECOO 2022) was held in city Kamnik, Slovenia, officially from 27th to 30th June, organized by the Slovene Dragonfly Society – *Slovensko odonatološko društvo (SOD)*. Altogether, 74 odonatologist or other nature enthusiasts participated at the congress, coming from 25 countries from Europe and around the world – Albania, Australia, Austria, Belarus, Belgium, Bosnia and Herzegovina, Colombia, Croatia, Cyprus, Czech Republic, Finland, France, Germany, Hungary, India, Italy, the Netherlands, North Macedonia, Poland, Slovakia, Spain, Sweden, Ukraine, United Kingdom and Slovenia (Vinko & Bedjanič, 2022). During the 5-day congress also a mid-congress field trip was organized, which all the ECOO 2022 participants attended.

The ECOO 2022 was supported by (in alphabetical order): Association Hyla (Croatia); Centre for Cartography of Fauna and Flora (Slovenia); Cyprus Dragonfly Study Group (Cyprus); Diversity Editorial office (Switzerland); Dutch Dragonfly Society (the Netherlands); Flemish Dragonfly Society (Belgium); Gesellschaft deutschsprachiger Odonatologen (Germany); International Dragonfly Fund (Germany); The Italian Society for the study and conservation of dragonflies – ODONATA.IT (Italy); The Mekinje Monastery – a public institution (Slovenia); Osmylus Scientific Publishers (Germany); OŠ Frana Albrehta Kamnik (Slovenia); Scientific and Research Association for Art, Cultural and Educational Programmes and Technology EPEKA, Social Enterprise (Slovenia); Slovene Dragonfly Society (Slovenia); Spaceship earth (Slovenia); Swedish Dragonfly Society (Sweden); Zavod ŠOLT (Slovenia); Quelle & Meyer Verlag GmbH & Co. (Germany); and was a part of the projects "SDGYOU: Sustainable digitalization goals with youth", co-financed by the European Commission under the Erasmus + program and whose Slovenian partner is the Fundacija Študentski tolar, ustanova ŠOU v Ljubljani (Slovenia), project leader: Knowledge Infusion (Serbia) and "Kačji pastirji in podnebne spremembe", implemented by SOD within the Plan B za Slovenijo network (the climate program of the Plan B for Slovenia network is co-financed by the Eco Fund, Slovenian Environmental Public Fund and the Ministry of the Environment and Spatial Planning with funds from the Climate Change Fund; all Slovenia). We thank all our supporters for making this congress possible!

The one-day **ECOO 2022 Mid-congress field trip** was made to **Ljubljansko barje Nature Park** on Wednesday, **29th June 2022**. During the field trip we visited two areas (Tab. 1): ditches near Matena (Fig. 1, left) and Ribniki v dolini Drage pri Igu Nature Reserve (Fig. 1, right). Gathered data are to be included in the odonatological database of the Centre for Cartography of Fauna and Flora and the Slovene Dragonfly Society.

Just a few kilometres south of the Slovenian capital city Ljubljana (Central Slovenia), there is one of the most interesting areas for odonates in the country. Once the most famous marshland in southern Europe, the Ljubljana Moors (Ljubljansko barje) is today characterised by an extensive but beautiful agricultural landscape, criss-crossed by a dense and ecologically diverse network of drainage channels, ditches and streams. The Ljubljansko barje is relatively well odonatological studied (Kiauta 1954a, 1954b, 1961, Kotarac 1997, Pirnat 1998, Bedjanič 2000, Kotarac et al. 2000, Govedič et al. 2012, Tratnik 2012, Vrhovnik 2016, Vinko 2017a, Šalamun 2017, Bedjanič et al. 2017, Vinko et al. 2017, 2020, Šalamun & Govedič 2019, Šalamun et al. 2019,Tratnik et al. 2020) and it actually represents the cradle of odontology in Slovenia, as one of the first published data on Slovenian dragonflies comes from this area from species descriptions and copper engravings in *Entomologia carniolica* (Scopoli 1763). Among the 51 species recorded for Ljubljansko barje, the largest Slovene population of *Somatochlora flavomaculata* and *Coenagrion ornatum* are of special interest (Vinko et al. 2022). At the south-eastern outskirts of Ljubljansko barje, extensively managed fishponds in the Valley of Draga pri Igu (Ribniki v dolini Drage pri Igu Nature Reserve) are also part of Natura 2000 site and Ljubljansko barje Landscape Park. Of the 73 species of Odonata known for Slovenia (Vinko et al. 2022), no less than 49 dragonfly species have been listed for this Nature Reserve, including *Leucorrhinia pectoralis* and several other endangered or rare species (VINKO et al. 2020). Of these, 17 species are endangered and 5 protected in Slovenia, 2 are listed in the appendices to the Habitats Directive, while 15 species are rare in the wider area or in Slovenia.

Table 1: List of visited localities at the ECOO 2022 Mid-congress field trip to Ljubljansko barje Nature Park, 29.6.2022, with the number of recorded Odonata species during the trip. Number of locality corresponds to numbers on Fig. 1.

Number of locality	Locality [lat. lon. in WGS84]	GK Y	GK X	Numb. of recorded species
1	Ig, Matena: ditch Zaiška na Dolgih delih [45.9868, 14.4965]	461364	93748	19
2	Ig, Matena: SW ditch Matenski jarek [45.9846, 14.4939]	461162	93508	14
3	Ig, Draga: fishpond - Prvi (Mali) ribnik [45.9422, 14.5487]	465382	88764	22
4	Ig, Draga: fishpond - Veliki ribnik [45.9405, 14.5490]	465401	88578	26
5	Ig, Draga: fishpond - Srednji ribnik [45.9376, 14.5500]	465476	88258	25
6	Ig, Draga: fishpond - Rezani ribnik [45.9362, 14.5509]	465546	88093	13
7	Ig, Draga: fishpond - Mali trikotni ribnik [45.9356, 14.5503]	465501	88028	15
8	Ig, Draga: stream Draščica W from Zadnji ribnik [45.9342, 14.5509]	465541	87875	6
9	Ig, Draga: fishpond - Zadnji ribnik [45.9340, 14.5512]	465564	87849	14

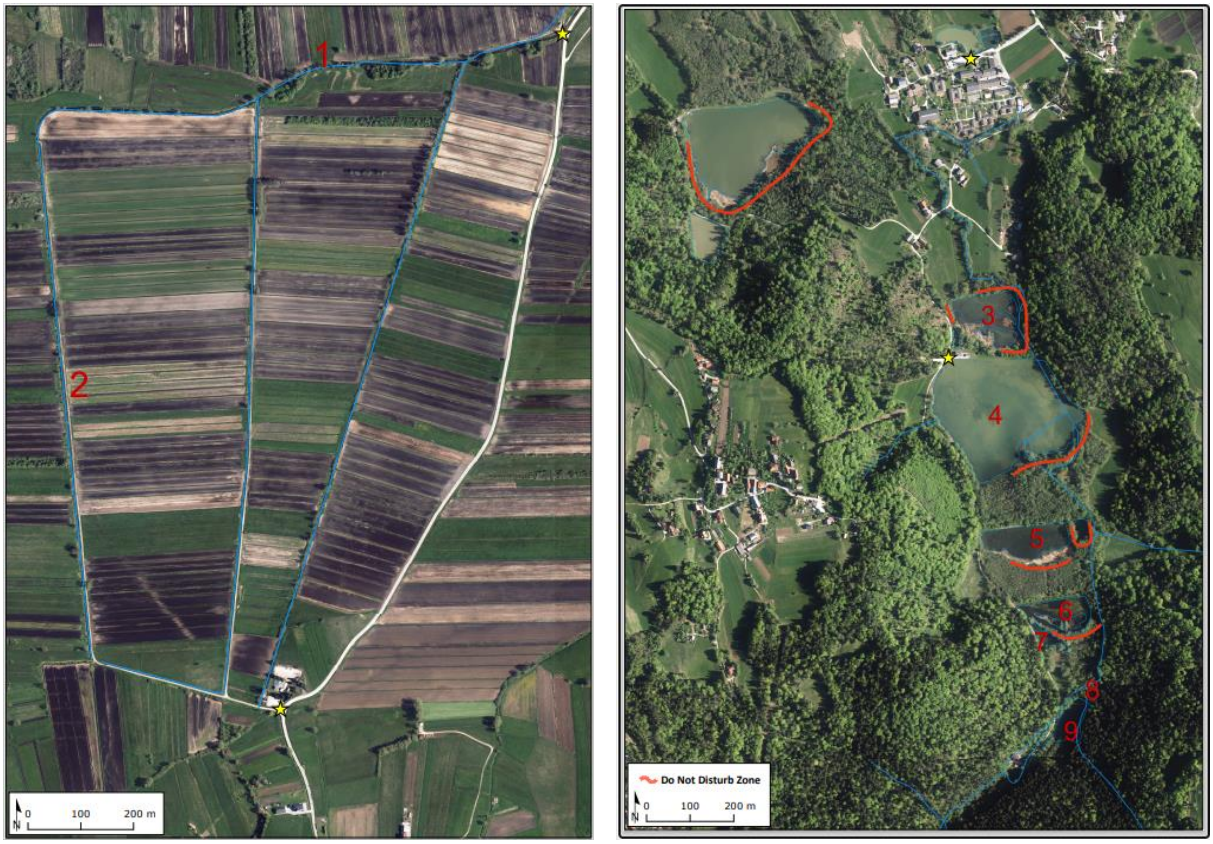

Figure 1: Map of two visited areas during the ECOO 2022 Mid-congress field trip to Ljubljansko barje Nature Park, 29.6.2022 – *left*: ditches (1, 2) near Matena; *right:* fishponds (3–7, 9) and stream (8) at Ribniki v dolini Drage pri Igu Nature Reserve.

During one-day trip we observed **37 species** of dragonflies and damselflies (Tab. 2), which represent more than half of the Slovene Odonata fauna. One species – *Cordulegaster bidentata* – was found only in the larval stage. For two species – *Aeshna mixta* and *Gomphus vulgatissimus* – we found only exuviae.

We spent the first part of the Mid-congress field trip on the ditches near Matena. The dense network of ditches and streams is suitable for *Coenagrion ornatum*, which has here the strongest known population in Slovenia (Erbida 2016). During the trip we recorded more than 50 individuals of this species at both visited sites.

The second part of the day we spent at the system of extensively managed fishponds in Ribniki v dolini Drage pri Igu Nature Reserve, one of the odonatological most diverse areas in Slovenia (Vinko et al. 2020). Also a short presentation of the Public institution Ljubljansko barje Nature Park was there given. Out of 49 species known for this area, we observed 35 species at our Mid-congress field trip. The largest number of species – 26 and 25 – was recorded on Veliki and Srednji ribnik (Loc. 4 and 5), among them also a rarely observed *Epitheca bimaculata*, where we spotted at least five males, and *Aeshna grandis* with at least one male observed at four fishponds. Congress' participants were also able to enjoy observing *Cordulegaster heros* and *Somatochlora meridionalis*, two enigmatic species where Slovenia is definitely the best place in Europe to see them. *Cordulegaster heros* is a qualifying species of the Natura 2000 site Ljubljansko barje (SI3000271). On stream Draščica (Loc. 8) we recorded at least four males, one female during the oviposition and ten larvae of this species.

It is especially necessary to highlight the observation of *Leucorrhinia pectoralis,* which is endangered and a rare species in Slovenia (Vinko et. al 2020). It is also the species from the appendices of the Habitat Directive. Srednji ribnik in the Valley of Draga pri Igu (Loc. 5) is the only confirmed present locality of the species in Central Slovenia, where it is recorded from 2017 on (Vinko 2017b, Šalamun et al. 2019). On the Mid-congress field trip we observed at least two males and one female.

From the previously recorded species of the Ribniki v dolini Drage pri Igu Nature Reserve during the trip we haven't observed 14 species – *Chalcolestes viridis, Lestes barbarus, L. dryas, L. virens, Calopteryx splendens, Coenagrion pulchellum, C. scitulum, Ischnura pumilio, Pyrrhosoma nymphula, Anax ephippiger, Brachytron pratense, Sympetrum meridionale, S. striolatum* and *S. vulgatum*.

Table 2: List of recorded Odonata species during the ECOO 2022 Mid-congress field trip, 29.6.2022. Annexes II or II and IV of the Habitats Directive species are written in bold. Nationally protected species are marked with *.

	Species	Species' Slovene name	Status on the Slovene Red List	Number of locality from Table 1
1	*Lestes sponsa*	obvodna zverca		4, 5, 9
2	*Sympecma fusca*	prisojni zimnik		4, 5, 6
3	*Calopteryx splendens*	pasasti bleščavec		1, 2
4	*Calopteryx virgo*	modri bleščavec		1, 2, 3, 4, 8, 9
5	*Platycnemis pennipes*	sinji presličar		1, 2, 3, 4, 5, 6, 7, 9
6	*Coenagrion puella*	travniški škratec		1, 2, 3, 4, 5, 6, 7, 9
7	***Coenagrion ornatum***	koščični škratec		1, 2
8	*Enallagma cyathigerum*	bleščeči zmotec		1, 2, 3, 4, 5, 6, 7, 9
9	*Erythromma lindenii*	prodni paškratec	VU	1, 3, 4
10	*Erythromma najas*	veliki rdečeokec		3, 4, 5, 6, 7, 9
11	*Erythromma viridulum*	mali rdečeokec		3, 4, 5, 6, 7, 9
12	*Ischnura elegans*	modri kresničar		1, 3, 4, 5, 6, 7, 9
13	*Aeshna cyanea*	zelenomodra deva		3, 6
14	*Aeshna mixta*	bleda deva		6
15	*Aeshna grandis*	rjava deva	VU	4, 5, 6, 7
16	*Aeshna isoceles*	deviški pastir	VU	4, 5, 6
17	*Anax imperator*	veliki spremljevalec		1, 2, 3, 4, 6, 7, 9
18	*Anax parthenope*	modroriti spremljevalec		1, 4
19	*Gomphus vulgatissimus*	popotni porečnik	VU	8
20	*Onychogomphus forcipatus*	bledi peščenec		5
21	***Cordulegaster heros** **	veliki studenčar	VU	8
22	*Cordulegaster bidentata*	povirni studenčar	VU	8
23	*Cordulia aenea*	močvirski lebduh		3, 4, 5, 6, 7, 9
24	*Epitheca bimaculata*	nosna jezerka	VU	4
25	*Somatochlora flavomaculata*	pegasti lesketnik	VU	1, 2, 3, 4, 5
26	*Somatochlora meridionalis*	sredozemski lesketnik		1, 2, 3, 4, 6, 7, 8, 9
27	*Crocothemis erythraea*	opoldanski škrlatec		1, 4, 5
28	***Leucorrhinia pectoralis** **	dristavični spreletavec	EN	5
29	*Libellula depressa*	modri ploščec		1, 2, 3, 4, 5
30	*Libellula fulva*	črni ploščec	VU	1, 2, 3, 4, 5, 6, 9
31	*Libellula quadrimaculata*	lisasti ploščec		3, 4, 5
32	*Orthetrum albistylum*	temni modrač		1, 3, 4, 5
33	*Orthetrum brunneum*	sinji modrač		1, 2
34	*Orthetrum cancellatum*	prodni modrač		1, 3, 4, 5, 6, 7, 9
35	*Orthetrum coerulescens*	mali modrač		1, 2, 3, 5, 7
36	*Sympetrum fonscolombii*	malinovordeči kamenjak		4, 5
37	*Sympetrum sanguineum*	krvavordeči kamenjak		2, 3, 4, 5, 6, 7, 8, 9

The challenge of choosing a sufficiently large and interesting location for the ECOO 2022 Mid-congress trip for two buses of odonatologists can be assessed as very well done. It is difficult to access the most interesting locations by bus, which was confirmed by the broken window on one of the buses. However, we managed to present diversity of Odonata and a large part of the Slovene odonate fauna.

A short presentation of the Public institution Ljubljansko barje Nature Park was also given. Participants were satisfied with prepared field lunch – *burek*. Damjan Vinko's assertion at the ECOO that the weather in Slovenia is always beautiful was also confirmed. The predicted summer storms bypassed us and after the heat at the ditches near Matena, the shade of the forest in the Valley of Draga pri Igu was refreshing.

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Appendix: photos from the ECOO 2022 Mid-congress field trip

Photo: Bastien Louboutin

Photo: Matjaž Bedjanič

Photo: Bastien Louboutin

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Photo: Bastien Louboutin

Photo: Bastien Louboutin

Photo: Matjaž Bedjanič

Photo: Nick van Wouwen

Photo: Bastien Louboutin

Photo: Matjaž Bedjanič

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Group photo of the ECOO 2022

Photo: Matjaž Bedjanič