

## DATA TO THE DRAGONFLY FAUNA OF LOWER NERETVA RIVER

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We present the first list of dragonfly fauna of Lower Neretva river comprising 48 species. During the period from June – September from 2003 to 2005 the first systematic investigations of dragonflies of the Lower Neretva river were carried out at 6 locations. The following methods were used: the method of collecting by entomological nets, the method of strolling and observing and the method of taking photographs. On the basis of the collected individuals at different life stages (larvae - exuvia and adult individuals), a total of 48 species, 23 genera, 8 families and 2 suborders of the order Odonata were established. 12 species are newly registered for the fauna of the area: *Calopteryx virgo*, *Ceriagrion tenellum*, *Aeshna cyanea*, *Brachytron pratense*, *Onychogomphus forcipatus*, *Corulia aenea*, *Somatochlora flavomaculata*, *Somatochlora meridionalis*, *Orthetrum albostylum*, *Orthetrum coerulescens*, *Sympetrum flaveolum* and *Sympetrum fonscolombii*. The established qualitative structure of the dragonflies of the Lower Neretva river represents 65 % of the total number of species in Croatia which proves that the investigated area is significant for the protection of the biodiversity of the dragonfly fauna.

### **Neretva river delta, dragonfly, wetland, biodiversity.**

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Prikazali smo prvu listu podataka faune vretenaca donjega toka rijeke Neretve koja obuhvaća ukupno 48 vrste. Od lipnja do rujna od 2003. do 2005. godine obavljana su prva sustavna istraživanja vretenaca donjega toka rijeke Neretve na 6 lokaliteta. Korištene su sljedeće metode: metoda prikupljanja entomološkom mrežicom, metoda obilaženja i promatranja te metoda fotografiranja. Temeljem prikupljenih jedinki koje su bile različitih životnih stadija (ličinke, svlakovi i odrasle jedinke) utvrđeno je 44 vrste, 23 roda, 8 porodica, i 2 podreda unutar reda Odonata. Ukupno je 12 novoutvrđenih vrsta za istraživano područje: *Calopteryx virgo*, *Ceriagrion tenellum*, *Aeshna cyanea*, *Brachytron pratense*, *Onychogomphus forcipatus*, *Corulia aenea*, *Somatochlora*

*flavomaculata*, *Somatochlora meridionalis*, *Orthetrum albostylum*, *Orthetrum coerulescens*, *Sympetrum flaveolum* i *Sympetrum fonscolombii*. Utvrđeni kvalitativni sastav faune vretenaca donjega toka rijeke Neretve obuhvaća 65 % od ukupnog broja vrsta u Hrvatskoj, što dokazuje da je istraživano područje važno za zaštitu biološke raznolikosti faune vretenaca.

**delta rijeke Neretve, vretenca, močvarno područje, biološka raznolikost**

### Introduction

There are little published records about dragonfly fauna in the wider area of the Neretva delta. Before this investigation there are only 13 published papers with records of 32 species of dragonfly (Brauer 1856; Frauenfeld 1856; Frauenfeld 1860; Fudakowski 1930; St. Quentin 1944; Adamović 1949; Schmidt 1964; Adamović 1967; Dumont 1977; Harz 1978; Deliry & Loose 1987; Mauersberger 1994; Adamović & Vijatov 1996). Although dragonflies have been researched in the past 140 years (Frauenfeld 1856; Adamović & Vijatov 1996), most paper give a small number of species (Table 1.), and the number of areas studied is also insufficient. Lots of existing data are very old so they had to be reconfirmed.

Table 1. Overview of the sources and the species published for the Neretva river delta until the year 2003.

Author(s)	Published species
Brauer 1856	<i>Crocothemis erythraea</i>
Frauenfeld 1856	<i>Anaciaeschna isosceles</i> , <i>Libellula fulva</i> , <i>Orthetrum cancellatum</i> , <i>Crocothemis erythraea</i>
Frauenfeld 1860	<i>Calopteryx splendens</i> , <i>Chalcolestes viridis</i> , <i>Lestes barbarus</i> , <i>L. dryas</i> , <i>Sympecma fusca</i> , <i>Platycnemis pennipes</i> , <i>Erythromma viridulum</i> , <i>Coenagrion mecuriale</i> , <i>C. puella</i> , <i>Cercion lindeni</i> , <i>Ischnura elegans</i> , <i>Aeshna affinis</i> , <i>Anax imperator</i> , <i>Gomphus vulgatissimus</i> , <i>Lindenia tetraphylla</i> , <i>Libellula quadrimaculata</i> , <i>L. depressa</i> , <i>Orthetrum ramburi</i> , <i>Sympetrum striolatum</i> , <i>S. meridionale</i>
Fudakowski 1930	<i>Calopteryx splendens</i>
St. Quentin 1944	<i>Anaciaeschna isosceles</i>
Adamović 1949	<i>Cercion lindeni</i> , <i>Ischnura elegans</i> , <i>Orthetrum cancellatum</i> , <i>Crocothemis erythraea</i> , <i>Sympetrum sanguineum</i>
Schmidt 1964	<i>Coenagrion pulchellum</i>

Adamović 1967	<i>Selysiothemis nigra</i>
Dumont 1977	<i>Chalcolestes viridis</i> , <i>Lestes barbarus</i> , <i>Sympetma fusca</i> , <i>Platycnemis pennipes</i> , <i>Cercion lindeni</i> , <i>Enallagma cyathigerum</i> , <i>Ischnura elegans</i> , <i>Aeshna mixta</i> , <i>Anaciaeschna isosceles</i> , <i>Anax imperator</i> , <i>A. parthenope</i> , <i>Lindenia tetraphylla</i> , <i>Somatochlora meridionalis</i> , <i>Libellula fulva</i> , <i>L. depressa</i> , <i>Orthetrum cancellatum</i> , <i>O. brunneum</i> , <i>Crocothemis erythraea</i> , <i>Sympetrum sanguineum</i>
Harz 1978	<i>Lindenia tetraphylla</i>
Deliry & Loose 1987	<i>Sympetrum sanguineum</i>
Mauersberger 1994	<i>Orthetrum ramburi</i>
Adamović & Vijatov 1996	<i>Calopteryx splendens</i>
Bukvić 1998	<i>Calopteryx virgo</i> , <i>C. splendens</i> , <i>Chalcolestes viridis</i> , <i>Lestes barbarus</i> , <i>Lestes dryas</i> , <i>Syrnpechna fusca</i> , <i>Platycnemis pennipes</i> , <i>Erythronna viridulum</i> , <i>Coenagrion mercuriale</i> , <i>C. puella</i> , <i>C. pulchellum</i> , <i>Cercion lindeni</i> , <i>Enallagma cyathigerum</i> , <i>Ischnura elegans</i> , <i>Ceriatrion tenellum</i> , <i>Aeshna mixta</i> , <i>A. affinis</i> , <i>A. isosceles</i> , <i>Anax imperator</i> , <i>A. parthenope</i> , <i>Gomphus vulgatissimus</i> , <i>Lindenia tetraphylla</i> , <i>Somatochlora meridionalis</i> , <i>Somatochlora flavomaculata</i> , <i>Libellula quadrimaculata</i> , <i>L. fulva</i> , <i>L. depressa</i> , <i>Orthetrum cancellatum</i> , <i>O. brunneum</i> , <i>O. ramburi</i> , <i>Crocothemis erythraea</i> , <i>Sympetrum striolatum</i> , <i>S. meridionale</i> , <i>S. flaveolum</i> , <i>S. sanguineum</i> , <i>Selysiothemis nigra</i>

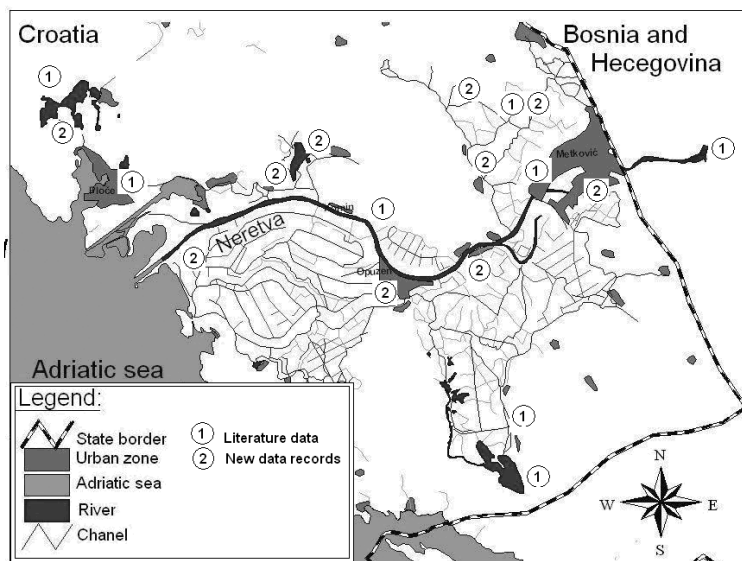


Figure 1. Map of the researched area.

Only with systematic research we can get to know the biodiversity of the species, their biology and ecology, and the habitats in which they reside, and in that way create a basic condition for their protection and conservation from extinction. Therefore the purpose of this study is to try to include all the studies published, as well as the unpublished data about findings of dragonfly species in the wider delta of Neretva river area, to determine their number and distribution. That will allow better insight and tracking of the state of dragonfly fauna in the researched area (Figure 1). This study has the purpose to serve as the basic starting point for all further research of the Neretva river delta dragonfly fauna, all the more because the written data about this group of insects on the one of most important river delta in Croatia are modest and old.

### **Materials and methods**

The data about dragonflies researched in this study are collected in the wider area of the Neretva river delta, those are: (1) Literature data: Bačinska jezera lakes, Deransko jezero lake, Gabela, Metković, Neretva, Ploče, Svitavsko jezero lake, Sv. Vid, Duvrat, Glibuša, Klada, Mislina, Otok and (2) New data records: Bačinska jezera lakes, Desne jezero lake, Derani, Dodigovi stanovi, Duvrat, Glibuša, Klada, Kuti lake, Metković, Mislina, Modro oko lake, Momići, Neretva, Opuzen, Otok, Sv. Vid and Neretva river delta. (Figure 1)

The collected data can be sorted into four groups: 1. literature data, 2. data from the research diary, 3. specimens of dragonflies in larger collections and 4. newly collected data. Literature data consists of written studies which mention dragonfly findings in the Neretva river delta. The data which is found in the research diary are mostly not published; therefore the data in them present a novelty in the research of the dragonfly fauna in the wider area of the river Neretva delta. Used data from the research diary or parts of them in which the findings of dragonflies are described, are found in the CROdonata database of the Croatian Odonatological Society. Those are data from a research diary of Richard Sedenbusch and the data from the given database which come from these collectors: Dragan Radović (DR), Milorad Mrakovčić (MM) and Ognjen Vukadinović (OV). The data about the dragonfly fauna of the Neretva river delta was also found in the entomological collection of the Croatian Nature Museum in Zagreb (HPM). From the author of the newly collected specimen are stored in two private dragonfly collections – “Zbirka Franković” and “Zbirka Bogdanović”. The significant part

of data is using from undergraduate dissertation work (Bukvić 1998). The latest new data originated from 2003 to 2005 (Bogdanović 2006).

The adults caught by standard method with the entomological net of wider radius and longer holder. The binocular magnifier with magnification of 18 X was used in determining newly collected records, as well as the keys for dragonfly determination: Conci and Nielsen (1956), d'Aguilar et al. (1986), Askew (1988), Franković (1990a, 1990b) and Djikstra (2006). Newly caught specimens are stored in the dragonfly collection in cellophane bags with data about inventory numbers, date of capturing, finding site, habitat, collector, species and determinator.

## Results and discussion

In wider area of the Neretva river delta both suborder of European dragonflies are registered, 8 family, 23 genus and 48 species (Table 2).

Table 2. Systematic list of dragonflies in wider area of the Neretva river delta

Order **ODONATA**

Suborder **ZYGOPTERA**

Family **CALOPTERYGIDAE**

Genus *Calopteryx* Leach, 1815

**1. *Calopteryx virgo*** (Linnaeus, 1758)

Published records: Derani July 1<sup>st</sup> 1986 (OV) (Bukvić, 1998)

New records: Modro oko lake May 25<sup>th</sup> 2003, June 5<sup>th</sup> 2004, Neretva July 1<sup>st</sup> 2005 (Bogdanović, 2006)

**2. *Calopteryx splendens*** (Harris, 1782)

Published records: Neretva (\*) (Frauenfeld, 1860); Metković June 15<sup>th</sup> 1929 (Fudakowski, 1930); Sv. Vid June 15<sup>th</sup> 1929 (Fudakowski, 1930); Gabela - Metković June 29<sup>th</sup> 1949 (Adamović & Vijatov, 1996); Metković June 15<sup>th</sup> 1973 (Adamović & Vijatov, 1996); Derani June 1<sup>st</sup> 1986 (OV); Modro oko lake June 23<sup>rd</sup> 1994 (DR); Modro oko lake June 19<sup>th</sup> 1995; Modro oko lake June 8<sup>th</sup> 1995 (VB); Modro oko lake June 1<sup>st</sup> 1997 (MM) (Bukvić, 1998);

New records: Modro oko lake June 10<sup>th</sup> 2003, Dodigovi stanovi June 4<sup>th</sup> 2004, Neretva rivermouth July 6<sup>th</sup> 2004, Desne jezero lake June 5<sup>th</sup> 2005 (Bogdanović, 2006)

Family **LESTIDAE**

Genus *Chalcolestes* Kennedy 1920

**3. *Chalcolestes viridis*** (Vander Linden, 1825)

Published records: Neretva (\*) (Frauenfeld, 1860); Bačinska jezera lakes July 22<sup>nd</sup> - 25<sup>th</sup> 1970 (Dumont, 1977); Derani July 1<sup>st</sup> 1986 (OV); Modro oko lake July 23<sup>rd</sup> 1994 (DR); Modro oko lake June 19<sup>th</sup> 1995; Modro oko lake June 8<sup>th</sup> 1995 (Bukvić, 1998)

New records: Desne jezero lake May 20<sup>th</sup> 2003, Neretva rivermouth June 8<sup>th</sup> 2003, Dodigovi stanovi

July 3<sup>rd</sup> 2003, Modro oko lake June 5<sup>th</sup> 2004, July 8<sup>th</sup> 2004, Neretva rivermouth May 17<sup>th</sup> 2005, June 2<sup>st</sup> 2005 (Bogdanović, 2006)

Genus *Lestes* Leach 1815

**4. *Lestes parvidens*** Artobolevskii, 1929

Published records: 0

New records: Desne jezero lake May 20<sup>th</sup> 2003, Neretva rivermouth June 8<sup>th</sup> 2003, Dodigovi stanovi July 3<sup>rd</sup> 2003, Modro oko lake June 5<sup>th</sup> 2004, July 8<sup>th</sup> 2004, Neretva rivermouth May 17<sup>th</sup> 2005, June 2<sup>st</sup> 2005 (Bogdanović, 2006)

**5. *Lestes barbarus*** (Fabricius, 1798)

Published records: Neretva (\*) (Frauenfeld, 1860); June 22<sup>nd</sup> – 25<sup>th</sup> 1970 Bačinska jezera lakes (Dumont, 1977); Klada September 9<sup>th</sup> 1995; Glibuša September 10<sup>th</sup> 1995 (Bukvić, 1998)

New records: Modro oko lake June 10<sup>th</sup> 2003, Dodigovi stanovi July 3<sup>rd</sup> 2003, Modro oko lake June 5<sup>th</sup> 2004, July 4<sup>th</sup> 2004, Desne jezero lake August 5<sup>th</sup> 2004, Modro oko lake June 3<sup>rd</sup> 2005, Desne jezero lake July 4<sup>th</sup> 2005, Neretva rivermouth August 5<sup>th</sup> 2005 (Bogdanović, 2006)

**6. *Lestes dryas*** Kirby, 1890

Published records: Neretva (\*), (Frauenfeld, 1860)

New records: 0

**7. *Lestes virens*** (Charpentier, 1825)

Published records: 0

New records: Desne jezero lake June 5<sup>th</sup> 2003, July 1<sup>st</sup> 2003, August 6<sup>th</sup> 2003, Dodigovi stanovi June 4<sup>th</sup> 2004, Neretva rivermouth July 6<sup>th</sup> 2004, June 2<sup>nd</sup> 2005, Dodigovi stanovi July 3<sup>rd</sup> 2005, Neretva rivermouth August 5<sup>th</sup> 2005 (Bogdanović, 2006)

Genus *Sympecma* Burmeister 1839

**8. *Sympecma fusca*** (Vander Linden, 1820)

Published records: Neretva (\*) (Frauenfeld, 1860); Bačinska jezera lakes July 22<sup>th</sup> - 25<sup>th</sup> 1970 (Dumont, 1977); Otok July 17<sup>th</sup> 1995, Klada September 11<sup>th</sup> 1995 (Bukvić, 1998)

New records: Modro oko lake June 10<sup>th</sup> 2003, Dodigovi stanovi July 3<sup>rd</sup> 2003, Desne jezero lake August 2<sup>nd</sup> 2003, June 2<sup>nd</sup> 2004, Modro oko lake July 8<sup>th</sup> 2004, Dodigovi stanovi June 4<sup>th</sup> 2005, Neretva rivermouth July 5<sup>th</sup> 2005, August 1<sup>st</sup> 2005 (Bogdanović, 2006)

Family **PLATYCNEMIDIDAE**

Genus *Platycnemis* Burmeister, 1839

**9. *Platycnemis pennipes*** (Pallas, 1771)

Published records: Neretva (\*) (Frauenfeld, 1860); Metković July 25<sup>th</sup> 1970 (Dumont, 1977); Neretva July 1978 (RS); Modro oko lake June 23<sup>rd</sup> 1994 (DR); Klada July 17<sup>th</sup> 1995, Glibuša August 11<sup>th</sup> 1995, Klada August 14<sup>th</sup> 1995, Otok August 17<sup>th</sup> 1995, Modro oko lake September 2<sup>nd</sup> 1995, Glibuša September 10<sup>th</sup> 1995, Otok September 14<sup>th</sup> 1995, Duvrat September 18<sup>th</sup> 1995, Otok September 20<sup>th</sup> 1995 (VB), Modro oko lake July 1<sup>st</sup> 1997 (MM) (Bukvić, 1998)

New records: Modro oko lake June 6<sup>th</sup> 2003, Dodigovi stanovi July 3<sup>rd</sup> 2003, Desne jezero lake August 2<sup>nd</sup> 2003, Neretva rivermouth June 3<sup>rd</sup> 2004, July 6<sup>th</sup> 2004, Desne jezero lake June 5<sup>th</sup> 2005, Modro oko lake July 2<sup>nd</sup> 2005, August 2<sup>nd</sup> 2005 (Bogdanović, 2006)

Family **COENAGRIONIDAE**

Genus *Erythromma* Charpentier, 1840

**10. *Erythromma viridulum*** (Charpentier, 1840)

Published records: Neretva (\*), (Frauenfeld, 1860); Bačinska jezera lakes August 1990 (RS) (Bukvić, 1998)

New records: Dodigovi stanovi June 7<sup>th</sup> 2003, Neretva rivermouth July 4<sup>th</sup> 2003, Desne jezero lake August 6<sup>th</sup> 2003, Modro oko lake June 5<sup>th</sup> 2004, Neretva ušće July 6<sup>th</sup> 2004, Dodigovi stanovi June 4<sup>th</sup> 2005, July 3<sup>rd</sup> 2005, Neretva rivermouth August 1<sup>st</sup> 2005 (Bogdanović, 2006)

Genus *Coenagrion* Kirby, 1890

**11. *Coenagrion mercuriale*** (Charpentier, 1840)

Published records: Neretva (\*) (Frauenfeld 1860)

New records: 0

**12. *Coenagrion puella*** (Linnaeus, 1758)

Published records: Neretva (\*) (Frauenfeld, 1860); Otok July 17<sup>th</sup> 1995, Klada September 11<sup>th</sup> 1995 (Bukvić, 1998);

New records: Desne jezero lake June 5<sup>th</sup> 2003, Neretva rivermouth July 4<sup>th</sup> 2003, Modro oko lake August 3<sup>rd</sup> 2003, June 1<sup>st</sup> 2004, Neretva rivermouth July 6<sup>th</sup> 2004, Desne jezero lake June 5<sup>th</sup> 2005, Neretva rivermouth July 5<sup>th</sup> 2005, August 5<sup>th</sup> 2005 (Bogdanović, 2006)

**13. *Coenagrion pulchellum*** (Vander Linden, 1825)

Published records: Metković (Schmidt, 1964); Modro oko July 1<sup>st</sup> 1995 (MM) (Bukvić, 1998)

New records: Desne jezero lake June 9<sup>th</sup> 2003, Neretva ušće July 4<sup>th</sup> 2003, Modro oko jezero lake August 3<sup>rd</sup> 2003, June 5<sup>th</sup> 2004, Neretva rivermouth July 6<sup>th</sup> 2004, Desne jezero lake June 5<sup>th</sup> 2005, Modro oko lake July 2<sup>nd</sup> 2005, Desne jezero lake August 4<sup>th</sup> 2005 (Bogdanović, 2006)

**14. *Coenagrion scitulum*** (Rambur, 1842)

Published records: 0

New records: Desne jezero lake June 5<sup>th</sup> 2003, Neretva rivermouth July 4<sup>th</sup> 2003, Modro oko lake August 3<sup>rd</sup> 2003, June 1<sup>st</sup> 2004, Neretva rivermouth July 6<sup>th</sup> 2004, Desne jezero lake June 5<sup>th</sup> 2005, Neretva rivermouth July 5<sup>th</sup> 2005, August 5<sup>th</sup> 2005 (Bogdanović, 2006)

**15. *Coenagrion ornatum*** (Selys, 1850)

Published records: 0

New records: Desne jezero lake June 5<sup>th</sup> 2003, Neretva rivermouth July 4<sup>th</sup> 2003, Modro oko lake August 3<sup>rd</sup> 2003, June 1<sup>st</sup> 2004, Neretva rivermouth July 6<sup>th</sup> 2004, Desne jezero lake June 5<sup>th</sup> 2005, Neretva rivermouth July 5<sup>th</sup> 2005, August 5<sup>th</sup> 2005 (Bogdanović, 2006)

Genus *Cercion* Navas, 1907

**16. *Cercion lindenii*** (Selys, 1840)

Published records: Neretva (\*) (Frauenfeld, 1860); August 17<sup>th</sup> 1946 Svitavsko jezero lake (Adamović, 1949); July 22<sup>nd</sup> -25<sup>th</sup> 1970 Bačinska jezera lakes (Dumont, 1977); July 25<sup>th</sup> 1970 Metković (Dumont, 1977); Bačinska jezera lakes August 1978 (RS); Bačinska jezera lakes August 1990 (RS); Glibuša September 18<sup>th</sup> 1995 (Bukvić, 1998);

New records: Modro oko lake June 6<sup>th</sup> 2003, Dodigovi stanovi July 3<sup>rd</sup> 2003, Desne jezero lake August 2<sup>nd</sup> 2003, Modro oko lake June 5<sup>th</sup> 2004, July 4<sup>th</sup> 2004, Neretva rivermouth June 2<sup>nd</sup> 2005, July 1<sup>st</sup> 2005, Desne jezero lake August 4<sup>th</sup> 2005 (Bogdanović, 2006)

Genus *Enallagma* Charpentier, 1840

**17. *Enallagma cyathigerum*** (Charpentier, 1840)

Published records: Metković July 25<sup>th</sup> 1970 (Dumont, 1977); Otok July 17<sup>th</sup> 1995, Klada September 11<sup>th</sup> 1995 (Bukvić, 1998)

New records: Dodigovi stanovi June 7<sup>th</sup> 2003, Neretva rivermouth July 4<sup>th</sup> 2003, August 5<sup>th</sup> 2003, Modro oko lake June 5<sup>th</sup> 2004, Dodigovi stanovi July 7<sup>th</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005, Modro oko lake July 2<sup>nd</sup> 2005, Dodigovi stanovi August 3<sup>rd</sup> 2005 (Bogdanović, 2006)

Genus *Ischnura* Charpentier, 1840

**18. *Ischnura elegans*** (Vander Linden, 1820)

Published records: Neretva (\*) (Frauenfeld, 1860); Svitavsko jezero lake August 17<sup>th</sup> 1946 (Adamović, 1949); Metković July 25<sup>th</sup> 1970 (Dumont, 1977); Neretva rivermouth September 8<sup>th</sup> 1948 (HPM); Bačinska jezera lakes August 1978 (RS); Bačinska jezera lakes August 1990 (RS); Modro oko lake June 23<sup>rd</sup> 1994 (DR); Klada August 7<sup>th</sup> 1995 (VB); Kuti lake August 15<sup>th</sup> 1995 (DR); Sv. Vid August 17<sup>th</sup> 1995, Otok September 14<sup>th</sup> 1995, Glibuša September 18<sup>th</sup> 1995 (Bukvić, 1998)

New records: Modro oko lake June 6<sup>th</sup> 2003, Desne jezero lake July 1<sup>st</sup> 2003, Modro oko lake August 4<sup>th</sup> 2003, Dodigovi stanovi June 4<sup>th</sup> 2004, Desne jezero lake July 5<sup>th</sup> 2004, Modro oko lake August 8<sup>th</sup> 2004, Desne jezero lake September 2<sup>nd</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005, July 1<sup>st</sup> 2005, August 1<sup>st</sup> 2005, Modro oko lake September 2<sup>nd</sup> 2005 (Bogdanović, 2006)

**19. *Ischnura pumilio*** (Charpentier, 1825)

Published records: 0

New records: Modro oko lake June 6<sup>th</sup> 2003, Desne jezero lake July 1<sup>st</sup> 2003, Bačinska jezera lakes July 24<sup>th</sup> 2003, Modro oko lake August 4<sup>th</sup> 2003, Dodigovi stanovi June 4<sup>th</sup> 2004, Desne jezero lake July 5<sup>th</sup> 2004, Modro oko lake August 8<sup>th</sup> 2004, Desne jezero lake September 2<sup>nd</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005, July 1<sup>st</sup> 2005, August 1<sup>st</sup> 2005, Modro oko lake September 2<sup>nd</sup> 2005 (Bogdanović, 2006)

Genus *Ceriagrion* Selys, 1850

**20. *Ceriagrion tenellum*** (de Villers, 1789)

Published records: Kuti lake August 15<sup>th</sup> 1995 (DR), Metković May 28<sup>th</sup> 1997 (DR) (Bukvić, 1998)

New records: Desne jezero lake June 9<sup>th</sup> 2003, July 5<sup>th</sup> 2003, Modro oko lake August 3<sup>rd</sup> 2003, Dodigovi stanovi June 4<sup>th</sup> 2004, Modro oko lake July 8<sup>th</sup> 2004, Neretva rivermouth August 6<sup>th</sup> 2004, Desne jezero lake September 2<sup>nd</sup> 2004, Dodigovi stanovi June 4<sup>th</sup> 2005, Neretva ušće July 5<sup>th</sup> 2005, Modro oko jezero lake August 2<sup>nd</sup> 2005, Neretva rivermouth September 1<sup>st</sup> 2005 (Bogdanović, 2006)

Suborder **ANISOPTERA**

Family **AESHNIDAE**

Genus *Aeshna* Fabricius, 1775

**21. *Aeshna mixta*** Latreille, 1805

Published records: Bačinska jezera lakes July 22<sup>nd</sup> - 25<sup>th</sup> 1970 (Dumont, 1977); Metković July 25<sup>th</sup> 1970 (Dumont, 1977); Klada September 9<sup>th</sup> 1995 (VB); Sv. Vid October 7<sup>th</sup> 1997 (DR) (Bukvić, 1998).

New records: Desne jezero lake July 5<sup>th</sup> 2003, August 2<sup>nd</sup> 2003, Modro oko lake July 8<sup>th</sup> 2004, August 4<sup>th</sup> 2004, Neretva rivermouth September 3<sup>rd</sup> 2004, July 1<sup>st</sup> 2005, Desne jezero lake August 4<sup>th</sup> 2005, Modro oko lake September 2<sup>nd</sup> 2005 (Bogdanović, 2006)

**22. *Aeshna affinis*** Vander Linden, 1820

Published records: Neretva (\*) (Frauenfeld, 1860); Bačinska jezera lakes August 1990 (RS) (Bukvić, 1998)

New records: Modro oko lake August 4<sup>th</sup> 2004, Neretva rivermouth September 3<sup>rd</sup> 2004, Desne jezero lake August 4<sup>th</sup> 2005, Modro oko lake September 2<sup>nd</sup> 2005 (Bogdanović, 2006)

**23. *Aeshna cyanea*** (Müller, 1764)

Published records: 0



New records: Dodigovi stanovi June 10<sup>th</sup> 2003, July 5<sup>th</sup> 2003, June 5<sup>th</sup> 2004, July 6<sup>th</sup> 2004, Bačinska jezera lakes June 5<sup>th</sup> 2005, Dodigovi stanovi July 3<sup>rd</sup> 2005 (Bogdanović, 2006)

**24. *Aeshna isosceles*** (Müller, 1767)

Published records: Neretva (Frauenfeld, 1856); Neretva (St. Quentin, 1944); August 08<sup>th</sup> 1970 Bačinska jezera lakes (Dumont, 1977); Sv. Vid July 11<sup>th</sup> 1995 (DR) (Bukvić, 1998)

New records: Modro oko lake June 6<sup>th</sup> 2003, July 2<sup>nd</sup> 2003, Neretva rivermouth August 5<sup>th</sup> 2003, Dodigovi stanovi June 4<sup>th</sup> 2004, July 7<sup>th</sup> 2004, Desne jezero lake August 5<sup>th</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005, Desne jezero lake July 4<sup>th</sup> 2005, August 4<sup>th</sup> 2005 (Bogdanović, 2006)

Genus *Anax* Leach, 1815

**25. *Anax imperator*** Leach, 1815

Published records: Neretva (\*) (Frauenfeld, 1860); Bačinska jezera lakes July 22<sup>nd</sup> – 25<sup>th</sup> 1970 (Dumont, 1977); Metković July 25<sup>th</sup> 1970 (Dumont, 1977); Bačinska jezera lakes August 1990 (RS) (Bukvić, 1998);

New records: Neretva rivermouth June 8<sup>th</sup> 2003, July 5<sup>th</sup> 2003, August 6<sup>th</sup> 2003, Dodigovi stanovi June 4<sup>th</sup> 2004, July 7<sup>th</sup> 2004, Desne jezero lake August 5<sup>th</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005, Dodigovi stanovi July 4<sup>th</sup> 2005, Modro oko lake August 2<sup>nd</sup> 2005 (Bogdanović, 2006)

**26. *Anax parthenope*** (Selys, 1839)

Published records: Bačinska jezera lakes July 22<sup>th</sup> -25<sup>th</sup> 1970 (Dumont, 1977); Bačinska jezera lakes August 1990 (RS); Sv. Vid July 11<sup>th</sup> 1995 (DR) (Bukvić, 1998)

New records: Dodigovi stanovi June 7<sup>th</sup> 2003, Desne jezero lake July 1<sup>st</sup> 2003, Dodigovi stanovi August 4<sup>th</sup> 2003, Modro oko lake June 5<sup>th</sup> 2004, July 8<sup>th</sup> 2004, Neretva rivermouth August 6<sup>th</sup> 2004, September 3<sup>rd</sup> 2004, June 6<sup>th</sup> 2005, Desne jezero lake July 4<sup>th</sup> 2005, Dodigovi stanovi August 3<sup>rd</sup> 2005, Neretva rivermouth September 5<sup>th</sup> 2005 (Bogdanović, 2006)

Genus *Brachytron* Evants, 1845

**27. *Brachytron pratense*** (Müller, 1764)

Published records: 0

New records: Dodigovi stanovi May 22<sup>nd</sup> 2003, June 7<sup>th</sup> 2003, July 5<sup>th</sup> 2003, May 19<sup>th</sup> 2004, June 4<sup>th</sup> 2004, Neretva rivermouth 17<sup>th</sup> May 2005, June 6<sup>th</sup> 2005 (Bogdanović, 2006)

Family **GOMPHIDAE**

Genus *Onychogomphus* Selys, 1854

**28. *Onychogomphus forcipatus*** (Linnaeus, 1758)

Published records: 0

New records: Desne jezero lake June 5<sup>th</sup> 2003, Neretva rivermouth July 4<sup>th</sup> 2003, Desne jezero lake August 6<sup>th</sup> 2003, June 2<sup>nd</sup> 2004, Dodigovi stanovi July 7<sup>th</sup> 2004, Neretva rivermouth August 6<sup>th</sup> 2004, June 2<sup>nd</sup> 2005, July 5<sup>th</sup> 2005, Dodigovi stanovi August 3<sup>rd</sup> 2005 (Bogdanović, 2006)

Genus *Gomphus* Leach, 1815

**29. *Gomphus vulgatissimus*** (Linnaeus, 1758)

Published records: Neretva (\*) (Frauenfeld, 1860); : Otok July 17<sup>th</sup> 1995, Klada September 11<sup>th</sup> 1995 (Bukvić, 1998)

New records: 0

Genus *Lindenia* De Haan, 1826

**30. *Lindenia tetraphylla*** (Vander Linden, 1825)

Published records: Neretva (\*) (Frauenfeld, 1860); Bačinska jezera lakes July 22<sup>nd</sup> - 25<sup>th</sup> 1970

(Dumont, 1970); Bačinska jezera lakes July 1974 (Dumont, 1977); Bačinska jezera lakes August 1974 (Dumont, 1977); Ploče May 1974 (Harz, 1978); Ploče July 1974 (Harz, 1978); Bačinska jezera lakes August 1978 (RS) (Bukvić, 1998);

New records: Desne jezero lake July 5<sup>th</sup> 2003, Bačinska jezera lakes July 6<sup>th</sup> 2003, August 6<sup>th</sup> 2003, Modro oko lake July 8<sup>th</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005, July 5<sup>th</sup> 2005 (Bogdanović, 2006)

Family **CORDULIIDAE**

Genus *Cordulia* Leach, 1815

**31. *Cordulia aenea*** (Linnaeus, 1758)

Published records: 0

New records: Dodigovi stanovi June 7<sup>th</sup> 2003, Desne jezero lake July 1<sup>st</sup> 2003, August 2<sup>nd</sup> 2003, Modro oko lake June 5<sup>th</sup> 2004, July 4<sup>th</sup> 2004, August 4<sup>th</sup> 2004, June 4<sup>th</sup> 2005, July 2<sup>nd</sup> 2005, Neretva rivermouth August 1<sup>st</sup> 2005 (Bogdanović, 2006)

Genus *Somatochlora* Selys, 1871

**32. *Somatochlora meridionalis*** Nielsen, 1935

Published records: Metković July 25<sup>th</sup> 1970 (Dumont, 1977); Otok July 17<sup>th</sup> 1995, Klada September 11<sup>th</sup> 1995 (Bukvić, 1998)

New records: Modro oko lake June 10<sup>th</sup> 2003, Desne jezero lake July 1<sup>st</sup> 2003, Dodigovi stanovi August 4<sup>th</sup> 2003, Neretva rivermouth June 3<sup>rd</sup> 2004, Modro oko lake July 4<sup>th</sup> 2004, August 4<sup>th</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005, Modro oko lake July 2<sup>nd</sup> 2005, Neretva rivermouth August 1<sup>st</sup> 2005 (Bogdanović, 2006)

**33. *Somatochlora flavomaculata*** (Vander Linden, 1825)

Published records: Sv. Vid July 11<sup>th</sup> 1995 (DR) (Bukvić, 1998)

New records: Modro oko lake May 25<sup>th</sup> 2003, Desne jezero lake June 5<sup>th</sup> 2003, Neretva rivermouth July 4<sup>th</sup> 2003, May 18<sup>th</sup> 2004, June 3<sup>rd</sup> 2004, Modro oko lake July 4<sup>th</sup> 2004, Neretva rivermouth May 17<sup>th</sup> 2005, June 2<sup>nd</sup> 2005, Desne jezero lake July 4<sup>th</sup> 2005 (Bogdanović, 2006)

Family **LIBELLULIDAE**

Genus *Libellula* Linnaeus, 1758

**34. *Libellula quadrimaculata*** Linnaeus, 1758

Published records: Neretva (\*) (Frauenfeld, 1860)

New records: 0

**35. *Libellula fulva*** Müller, 1764

Published records: Neretva (Frauenfeld, 1856); Bačinska jezera lakes July 22<sup>nd</sup> - 25<sup>th</sup> 1970 (Dumont, 1977); Metković July 25<sup>th</sup> 1970 (Dumont, 1977); Derani July 1<sup>st</sup> 1986 (OV); Modro oko lake July 1<sup>st</sup> 1997 (MM) (Bukvić, 1998)

New records: Modro oko lake May 25<sup>th</sup> 2003, June 6<sup>th</sup> 2003, Neretva rivermouth July 4<sup>th</sup> 2003, Modro oko lake August 2<sup>nd</sup> 2003, May 20<sup>th</sup> 2004, June 5<sup>th</sup> 2004, July 8<sup>th</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005, July 1<sup>st</sup> 2005, Dodigovi stanovi August 3<sup>rd</sup> 2005 (Bogdanović, 2006)

**36. *Libellula depressa*** Linnaeus, 1758

Published records: Neretva (?) (Frauenfeld, 1860); Bačinska jezera lakes July 22<sup>nd</sup> - 25<sup>th</sup> 1970 (Dumont, 1977); Metković July 25<sup>th</sup> 1970 (Dumont, 1977).

New records: Modro oko lake May 24<sup>th</sup> 2003, June 10<sup>th</sup> 2003, Desne jezero lake July 5<sup>th</sup> 2003, June 2<sup>nd</sup> 2004, Modro oko lake July 8<sup>th</sup> 2004, Desne jezero lake June 5<sup>th</sup> 2005, Neretva rivermouth July<sup>st</sup> 1 2005 (Bogdanović, 2006)

Genus *Orthetrum* Newman, 1833

**37. *Orthetrum cancellatum*** (Linnaeus, 1758)

Published records: Neretva (Frauenfeld, 1856); Svitavsko jezero lake August 17<sup>th</sup> 1946 (Adamović, 1949); Bačinska jezera lakes July 22<sup>nd</sup> - 25<sup>th</sup> 1970 (Dumont, 1977); Metković July 25<sup>th</sup> 1970 (Dumont, 1977); Derani July 1<sup>st</sup> 1986 (OV); August 1990 Bačinska jezera lakes (RS); June 28 1995 Modro oko lake (DR); July 15<sup>th</sup> 1995 Kuti (DR); July 1<sup>st</sup> 1997 Modro oko (MM) lake (Bukvić, 1998)

New records: Modro oko lake June 10<sup>th</sup> 2003, Desne jezero lake July 5<sup>th</sup> 2003, August 2<sup>nd</sup> 2003, Dodigovi stanovi June 4<sup>th</sup> 2004, Neretva ušće July 6<sup>th</sup> 2004, Desne jezero lake August 5<sup>th</sup> 2004, June 6<sup>th</sup> 2005, Dodigovi stanovi July 3<sup>rd</sup> 2005, Neretva rivermouth August 1<sup>st</sup> 2005 (Bogdanović, 2006)

**38. *Orthetrum albistylum*** (Selys, 1848)

Published records: 0

New records: Desne jezero lake May 24<sup>th</sup> 2003, Modro oko lake June 10<sup>th</sup> 2003, Desne jezero lake July 1<sup>st</sup> 2003, August 2<sup>nd</sup> 2003, Modro oko lake June 5<sup>th</sup> 2004, Neretva rivermouth July 6<sup>th</sup> 2004, Modro oko lake August 4<sup>th</sup> 2004, Neretva rivermouth June 2<sup>nd</sup> 2005, July 1<sup>st</sup> 2005, Modro oko lake August 2<sup>nd</sup> 2005 (Bogdanović, 2006)

**39. *Orthetrum brunneum*** (Fonscolombe, 1837)

Published records: July 25<sup>th</sup> 1970 Metković (Dumont, 1977)

New records: Neretva rivermouth June 8<sup>th</sup> 2003, Desne jezero lake July 5<sup>th</sup> 2003, August 2<sup>nd</sup> 2003, Dodigovi stanovi June 4<sup>th</sup> 2004, July 7<sup>th</sup> 2004, Modro oko lake August 8<sup>th</sup> 2004, Dodigovi stanovi June 4<sup>th</sup> 2005, July 3<sup>rd</sup> 2005, Neretva rivermouth August 1<sup>st</sup> 2005 (Bogdanović, 2006)

**40. *Orthetrum ramburi*** (Selys, 1848)

Published records: Neretva (\*) (Frauenfeld, 1860); Metković June 21<sup>st</sup> 1959 (Mauersberger, 1994); Bačinska jezera lakes August 5<sup>th</sup> 1986 (Mauersberger, 1994); Bačinska jezera lakes August 1978 (RS); Bačinska jezera lakes August 1990 (RS); Sv. Vid August 14<sup>th</sup> 1995 (DR); Kuti lake August 15<sup>th</sup> 1995 (DR); Modro oko lake July 1<sup>st</sup> 1997 (MM) (Bukvić, 1998)

New records: Modro oko lake June 10<sup>th</sup> 2003, Dodigovi stanovi July 3<sup>rd</sup> 2003, Modro oko lake June 5<sup>th</sup> 2004, Desne jezero lake July 5<sup>th</sup> 2004, Dodigovi stanovi August 7<sup>th</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005 (Bogdanović, 2006)

**41. *Orthetrum coerulescens*** (Fabricius, 1798)

Published records: 0

New records: Modro oko lake June 10<sup>th</sup> 2003, Dodigovi stanovi July 3<sup>rd</sup> 2003, Modro oko lake June 5<sup>th</sup> 2004, Desne jezero lake July 5<sup>th</sup> 2004, Dodigovi stanovi August 7<sup>th</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005, Desne jezero lake July 4<sup>th</sup> 2005 (Bogdanović, 2006)

Genus *Crocothemis* Brauer, 1868

**42. *Crocothemis erythraea*** (Brullé, 1832)

Published records: Neretva (Brauer 1856); Neretva (Frauenfeld, 1856); Svitavsko jezero lake 30 August 1946 (Adamović 1949); Bačinska jezera lakes July 22<sup>nd</sup> - 25<sup>th</sup> 1970 (Dumont, 1977); Metković July 25<sup>th</sup> 1970 (Dumont, 1977); Neretva August 1978 (RS); August 1978 Bačinska jezera lakes (RS); ? August 1990 (RS); Modro oko lake August 8<sup>th</sup> 1995 (VB); Kuti lake August 15<sup>th</sup> 1995 (DR); Momići August 17<sup>th</sup> 1995. (VB); Modro oko lake July 1<sup>st</sup> 1997 (MM) (Bukvić, 1998)

New records: Desne jezero lake June 5<sup>th</sup> 2003, Neretva rivermouth July 4<sup>th</sup> 2003, Desne jezero lake August 2<sup>nd</sup> 2003, Modro oko lake June 1<sup>st</sup> 2004, Dodigovi stanovi July 7<sup>th</sup> 2004, Neretva rivermouth August 6<sup>th</sup> 2004, June 2<sup>nd</sup> 2005, Desne jezero lake July 4<sup>th</sup> 2005, Neretva rivermouth August 1<sup>st</sup> 2005

(Bogdanović, 2006)

Genus *Sympetrum* Newman, 1833

**43. *Sympetrum flaveolum*** (Linnaeus, 1758)

Published records: Neretva August 1978 (RS) (Bukvić, 1998)

New records:

**44. *Sympetrum fonscolombei*** (Selys, 1840)

Published records: 0

New records: Neretva rivermouth July 4<sup>th</sup> 2003, Desne jezero lake August 2<sup>nd</sup> 2003, Neretva rivermouth July 6<sup>th</sup> 2004, Modro oko lake August 8<sup>th</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005, Desne jezero lake July 4<sup>th</sup> 2005, Neretva rivermouth August 1<sup>st</sup> 2005 (Bogdanović, 2006)

**45. *Sympetrum meridionale*** (Selys, 1841)

Published records: Neretva (\*) (Frauenfeld, 1860)

New records: Modro oko lake June 10<sup>th</sup> 2003, Desne jezero July 1<sup>st</sup> 2003, August 2<sup>nd</sup> 2003, Dodigovi stanovi June 4<sup>th</sup> 2004, Modro oko lake July 8<sup>th</sup> 2004, Dodigovi stanovi August 7<sup>th</sup> 2004, September 4<sup>th</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005, Modro oko lake July 2<sup>nd</sup> 2005, Neretva rivermouth August 1<sup>st</sup> 2005 (Bogdanović, 2006)

**46. *Sympetrum sanguineum*** (Müller, 1764)

Published records: Deransko jezero August 17<sup>th</sup> 1946 (Adamović, 1949); Svitavsko jezero lake August 17<sup>th</sup> 1946 (Adamović, 1949); Bačinska jezera lakes July 22<sup>nd</sup> - 25<sup>th</sup> 1970 (Dumont, 1977); Metković July 25<sup>th</sup> 1970 (Dumont, 1977); Deransko jezero lake August 8<sup>th</sup> 1986 (Deliry & Loose, 1987); Sv. Vid August 14<sup>th</sup> 1995 (DR) (Bukvić, 1998)

New records: Modro oko lake June 10<sup>th</sup> 2003, July 2<sup>nd</sup> 2003, August 3<sup>rd</sup> 2003, Dodigovi stanovi June 4<sup>th</sup> 2004, Desne jezero lake July 5<sup>th</sup> 2004, Modro oko lake August 8<sup>th</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005, July 5<sup>th</sup> 2005, Desne jezero lake August 4<sup>th</sup> 2005, Neretva rivermouth September 2<sup>nd</sup> 2005 (Bogdanović, 2006)

**47. *Sympetrum striolatum*** (Charpentier, 1840)

Published records: Neretva (\*), (Frauenfeld, 1860); Sv. Vid June 11<sup>th</sup> 1995 (DR); Klada August 14<sup>th</sup> 1995, Glibuša August 17<sup>th</sup> 1995, Glibuša September 11<sup>th</sup> 1995, Glibuša September 15<sup>th</sup> 1995 (Bukvić, 1998)

New records: Desne jezero lake July 5<sup>th</sup> 2003, August 6<sup>th</sup> 2003, Modro oko lake June 5<sup>th</sup> 2004, July 8<sup>th</sup> 2004, August 4<sup>th</sup> 2004, September 1<sup>st</sup> 2004, Neretva rivermouth July 5<sup>th</sup> 2005, Desne jezero lake August 4<sup>th</sup> 2005, Modro oko lake September 2<sup>nd</sup> 2005 (Bogdanović, 2006)

Genus *Selysiothemis* Ris, 1897

**48. *Selysiothemis nigra*** (Vander Linden, 1825)

Published records: Neretva July 30<sup>th</sup> 1949 (Adamović, 1967); Bačinska jezera lakes August 1990 (RS); Opuzen June 29<sup>th</sup> 1996 (HPM); August 3<sup>rd</sup> 1996 Mislina (HPM) (Bukvić, 1998)

New records: Desne jezero lake June 5<sup>th</sup> 2003, Dodigovi stanovi July 3<sup>rd</sup> 2003, Modro oko lake August 3<sup>rd</sup> 2003, June 5<sup>th</sup> 2004, July 8<sup>th</sup> 2004, Dodigovi stanovi August 7<sup>th</sup> 2004, Neretva rivermouth June 6<sup>th</sup> 2005, Dodigovi stanovi July 3<sup>rd</sup> 2005, Neretva rivermouth August 5<sup>th</sup> 2005 (Bogdanović, 2006)

\*Note: Frauenfeld (1860) for all specimen generally mentioning three localities: Neretva, Cetina and Solin.

Although there are 36 known species (49,31 % species of Croatian fauna), the knowledge of fauna had been far from satisfactory. That is seen primarily by the number of findings of certain species which have varied from one to 14. One fifth of the species is recorded only once, and often those findings are very old or even doubtful. The example is the species *Coenagrion mercuriale* which belongs to western - european faunistic element (Askew 1988) and it is almost impossible that it is recorded in the explored area. It is probably a case of wrong determination of species, given the fact of the age of the data (Frauenfeld 1860). Except that record (Frauenfeld 1860) it's hard to see on which of the three mentioned localities (Neretva, Cetina, Solin) is the finding of a certain species about.

Insufficient research is seen from the total number of findings of all species which is only 161 meaning that the average species is recorded less than five times in the last 141 years which means that once in thirty years or just about one finding per year (data = time / species / locality).

Time categorization of findings is dividing in three groups: earliest group between 1865. and 1929. (Frauenfeld 1856, Frauenfeld 1860, Fudakowski 1930), the middle group between 1944. and 1978. (St. Quentin 1944, Adamović 1949, Dumont 1977, Harz 1978, Mauersberger 1994) and the newest group of mostly unpublished findings from 1896. until today (Deliry & Loose 1987; Mauersberger 1994) also shows the difference of the research effort during time.

According to the origin of the data, recorded species are sorted into three groups: (1) species known only from literature, (2) species from literature for which there are extra records which were not published by today, and (3) new records of species for the explored area.

The first group of data includes findings of six species from which 4 are doubtful (*Lestes dryas*, *Coenagrion mercuriale*, *Libellula quadrimaculata* and *Symptetrum meridionale*) (Frauenfeld 1860), and the others are affirmed only one to three times. In those findings there are relatively known species (*Libellula depressa* – Franković pers. com.) and the other species need confirming by further study.

The second group of data is formed of the largest group of 26 species. Those are species whose presence in the wider area of the Neretva river delta is confirmed by new data collection. The largest number (22) is confirmed in the last three years, and the rest in the time from 1974 to 1990. The number of records varies from two to fourteen and the subject of research should be in their distribution (including the number increase of the explored areas) and the quantity in the researched area.

The most interesting for fauna studies are the species which we record for the first time in a certain area. In this study there are 12 species recorded for the first time in the wider Neretva delta (*Calopteryx virgo*, *Ceriagrion tenellum*, *Aeshna cyanea*, *Brachytron pratense*, *Onychogomphus forcipatus*, *Corulia aenea*, *Somatochlora flavomaculata*, *Somatochlora meridionalis*, *Orthetrum albystylum*, *Orthetrum coerulescens*, *Sympetrum flaveolum*, *Sympetrum fonscolombii*). These data are associated with modest research of the dragonfly fauna and they show potential of the Neretva delta for further deontological research of that flooded area.

### Conclusions

In the wider Neretva river delta there are 44 species of dragonfly. The exploration of the dragonfly is more than insufficient (altogether 161 record and 17 researched areas in 141 years of research history). Records of 3 species (*Lestes dryas*, *Coenagrion mercuriale*, *Libellula quadrimaculata*) should be considered doubtful. Record of the largest number of species (22 species) is confirmed during the last three years. Twelve species (*Calopteryx virgo*, *Ceriagrion tenellum*, *Aeshna cyanea*, *Brachytron pratense*, *Onychogomphus forcipatus*, *Corulia aenea*, *Somatochlora flavomaculata*, *Somatochlora meridionalis*, *Orthetrum albystylum*, *Orthetrum coerulescens*, *Sympetrum flaveolum*, *Sympetrum fonscolombii*) are recorded for the first time in the wider area of the Neretva river delta. The established qualitative structure of the dragonflies of the Lower Neretva river represents 24,44 % of the total number of species in Mediterranean (Kalkman 2008) which proves that the investigated area is significant for the protection of the biodiversity of the European dragonfly fauna. This is the first systematic investigations of dragonflies of the Lower Neretva river, and in the future we are expected encore several species of dragonfly.

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