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**Wolfgang Schneider, Azoren, 2008. Photo: Friedhelm Krupp.**

### **Wolfgang Schneider (10. August 1953 – 17. September 2019)**

In einem Leben hat man nicht viele Freunde. Wolfgang war ein Freund über fast drei Jahrzehnte. Nicht im Wochenrhythmus präsent, aber übers Jahr verteilt, und wenn man seinen Rat benötigte.

Und es gibt auch nicht viele Menschen, deren Telefonanrufe immer ohne Konflikte enden. Wolfgang Schneider war jemand, dessen Anruf man mit Freude entgegennehmen konnte. „Schneider, störe ich?“ Nein Wolfgang, du hast nie gestört. Ich habe immer noch seine Stimme im Ohr, obwohl der letzte Anruf schon viele Monate zurückliegt, und dazwischen auch seine Urnenbeisetzung im Ruhewald in Steimel. Ich konnte mit Wolfgang ausgiebig über Libellen reden, aber auch über so viele andere Themen. Wolfgang war ein Quell der Information und Inspiration weit über die Libellen hinaus. Er war Ratgeber.

Auf ihn konnte ich mich immer verlassen, IDF ebenso. Wenn es im Verein knirschte war er vermittelnd tätig, wenn auch nicht immer erfolgreich. Aber das lag dann an den anderen, nicht an seinem Bemühen, auszugleichen und Lösungen zu finden.

Wie oft hat er die Mitgliederversammlungen des IDF - erst in Darmstadt im Hessischen Landesmuseum und später in Frankfurt im Senckenbergmuseum, auch in seinem Haus in Woldert - ausgerichtet. Es waren für die Anwesenden immer zwar kurze, aber intensive Auseinandersetzungen mit den Aufgaben, Erfolgen und Misserfolgen des IDF, und immer moderiert von Wolfgang. Bis auf eine Sitzung, äußerst konfliktgeladen in Darmstadt, waren die Treffen friedlich, kooperativ und von Freundschaft getragen.

Der Gesundheitszustand von Wolfgang gab immer Anlass zur Sorge, aber irgendwie ist es immer gut gegangen. Bis auf den September 2019, als alles anders war.

Ja Wolfgang, Du warst einer von den Guten. Und ich verstehe nicht, warum man immer das Gefühl hat, dass die Guten zuerst gehen müssen.

Martin

## Odonata collected in Napo province, Ecuador, in January of 2020

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### Abstract

A ten-day collecting trip to Napo province was conducted between January 13 and 23, 2020, visiting localities where W. C. Macintyre originally collected *Argia schneideri* Garrison & von Ellenrieder, 2017 between 1935 and 1942, with the intention of documenting its life habits and obtaining photographs in life. A total of 65 odonate species in 36 genera were collected, including four new records for Napo province, but the target species was not found. A list of species recorded and color scans of species that have so far not been photographed are included. Color photographs and notes on the habitat of *Argia schneideri* are made available through the courtesy of colleagues who found it elsewhere, and its current known distribution is discussed.

**Key words:** Dragonflies and damselflies, new provincial records, *Argia schneideri*, Macintyre, color scans

### Introduction

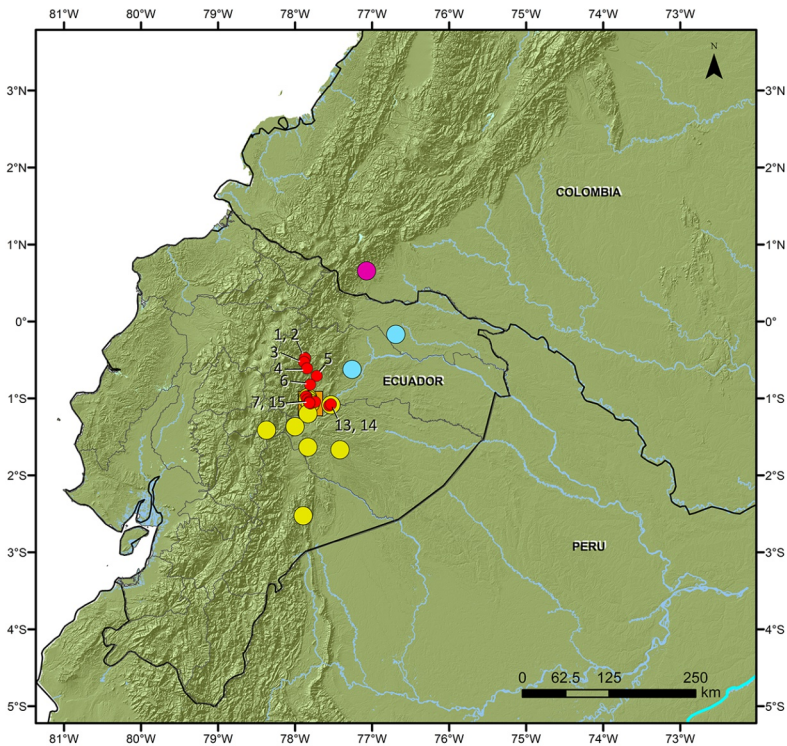
The odonate fauna of Ecuador is relatively well known compared to that of other Neotropical countries, and a comprehensive account of its knowledge was recently provided by Mauffray & Tennesen (2019). However, numerous new species are still being described from this country, in some cases based on specimens collected many decades ago. One such example is that of *Argia schneideri* Garrison & von Ellenrieder, 2017, described based on specimens collected by William Clarke Macintyre back in the years 1935 through 1942 (Garrison & von Ellenrieder 2017). This species was named in honor of the German odonatologist Dr. Wolfgang Schneider; his unfortunate recent passing (Dumont 2019) prompted the desire to further honor him by

rediscovering this species and documenting its habits and life colors, and a trip to Napo, the Ecuadorian province where its type locality and majority of its past records are concentrated, was planned.

## Methods

Our visit took place January 13-23, 2020, with a total of seven days of collecting; two days were spent acquiring permits and travelling to and from the field and two days with no collecting due to rain. Photographing and sampling of odonates with entomological aerial nets was carried out in various localities along trails, streams, and ponds, under collecting permit DNB-CB-2018-0106. Specimens will be deposited at the entomological collection (ZSFQ) of the Universidad San Francisco de Quito (USFQ).

The localities visited (Figure 1), all located in Napo Province, Ecuador, included some of the localities where as far as we could pin-point *Argia schneideri* was originally collected by Macintyre, including its type locality.



**Figure 1: Map showing localities visited (numbered red circles) and known *Argia schneideri* Garrison & von Ellenrieder localities from: W. C. Macintyre 80 years ago = yellow circles, and type locality = partially hidden orange square; Bota Sierra et al. 2018 = purple circle; Mauffray & Tennesen 2019 = blue circles.**

## Locations

In the following list, localities visited that were likely in the vicinity of *Argia schneideri*'s Macintyre collecting sites are indicated with one asterisk; *Argia schneideri*'s type locality with two:

1. Small stream 4.9 km S of Baeza (0.47440 S, 77.87056 W, 1,836 m), 15.i.2020, R.W. Garrison & N. von Ellenrieder leg.
2. Small stream 5 km S of Baeza (0.47613 S, 77.87202 W, 1,856 m), 15.i.2020, R.W. Garrison & N. von Ellenrieder leg., permit DNB-CB-2018-0106 (Figure 2).
3. Stream S of Bermejo (0.52757 S, 77.88284 W, 1,870 m), 15.i.2020, R.W. Garrison & N. von Ellenrieder leg.
4. Rocky stream on dirt road to Reserva Antisana (0.60906 S, 77.84534 W, 2,090 m), 15.i.2020, R.W. Garrison & N. von Ellenrieder leg. (Figure 3).
5. Marshy area by route E20 E of Cascada de Hollín (0.70746 S, 77.71980 W, 1,128 m), 16.i.2020, R.W. Garrison & N. von Ellenrieder leg.
6. Rocky stream at Comunidad 9 de Junio near Cotundo on dirt road to Huasquila Amazon Lodge (0.82165 S, 77.80452 W, 837 m), 16.i.2020, 22.i.2020, R.W. Garrison & N. von Ellenrieder leg.
- 7\*. Ishpinga-yacu, rocky stream and forest patch N of Muyuna (0.97391 S, 77.85323 W, 541 m), 17.i.2020, R.W. Garrison & N. von Ellenrieder leg. (Figure 4).
8. Pond and small vegetated tributary stream to Río Lupi at El Establo de Tomás Lodge (0.97629 S, 77.85888 W, 559 m), 17.i.2020, R.W. Garrison & N. von Ellenrieder leg. (Figure 5).
- 9\*. Cushillo-yacu, gravel and sand bed stream W of road Tena to Pano (1.02068 S, 77.83684 W, 532 m), 18.i.2020, R.W. Garrison & N. von Ellenrieder leg. (Figure 6).
10. Small roadside pond near Cushi-yacu stream (1.01631 S, 77.83884 W, 535 m), 18.i.2020, R.W. Garrison & N. von Ellenrieder leg.
- 11\*\*. Rushing deep stream amidst agricultural fields near Las Palmas, on Río Anzu (1.0667 S, 77.8 W, 448 m), 19.i.2020. Vicinity of type locality of *Argia schneideri*. No odonates seen.
- 12\*. Small tributary to Jatun Yacu, volcanic rock and silt bottomed stream (1.04419 S, 77.81238 W, 452 m), with mining and muddy waters, 19.i.2020, 22.i.2020, R.W. Garrison & N. von Ellenrieder leg. (Figure 7).
- 13\*. Pond and rocky stream at Parador Grand Selva (1.09301 S, 77.55695 W, 371 m), 21.i.2020, R.W. Garrison & N. von Ellenrieder leg. (Figure 8).
- 14\*. Small gravel and sand stream tributary to Río Arajuno opposite Puerto Barantilla (1.07681 S, 77.53618 W, 349 m), 21.i.2020, R.W. Garrison & N. von Ellenrieder leg.
15. Río Sindy 2, small muddy stream (1.04668 S, 77.74225 W, 427 m), 21.i.2020, R.W. Garrison & N. von Ellenrieder leg.
16. Small rocky rivulet an associated pond 3.5 km SW of Puerto Napo (1.059167 S, 77.81583 W, 454 m), 22.i.2020, R.W. Garrison & N. von Ellenrieder leg.



Figure 2: Rosser Garrison at small stream 5 km S of Baeza, habitat of *Ormenophlebia imperatrix* McLachlan and *Teinopodagrion croizati* De Marmels.



Figure 3: Rocky stream on dirt road to Reserva Antisana, where *Mesamphiagrion dunklei* von Ellenrieder & Garrison and *M. ecuatoriale* von Ellenrieder & Garrison coexist.





**Figure 4:** Forest patch by Ishpinga-yacu stream, prime habitat for *Metaleptobasis* spp. and *Pa-laemnema clementia* Selys.



**Figure 5:** Pond near Río Lupi at El Establo de Tomás Lodge.



**Figure 6: Cushillo-yacu, gravel and sand bed stream W of road Tena to Pano.**



**Figure 7: Small tributary to Jatun Yacu, volcanic rock and silt bot-tomed stream.**



Classification follows Dijkstra et al. (2013). Within each sub-order, families and species are listed alphabetically. Numbers immediately following a species name (e. g.: **1**, **2**) refer to numbered localities listed above.

**Figure 8: Rocky stream at Parador Grand Selva.**

## Results

Unfortunately, we did not find *Argia schneideri* at any locality visited presenting what appeared to be appropriate habitats for it. Kenneth Tennessen and Jim Johnson (pers.



comm.) collected this species in Loreto and Shushufindi Provinces, Ecuador, at small slow streams in the forest, with limited sun exposure but with some openings in the tree canopy so that sunlight was partial along the stream. Photographs of a live specimen (Figure 9) kindly made available by Jim

**Figure 9: *Argia schneideri* Garrison & von Ellenrieder. Live male photographed in hand by Jim Johnson in Loreto Province, Ecuador.**

Johnson show its live color pattern as well as the very characteristic long forcipate cerci of the male.

A total of 65 odonate species in 36 genera were found, including four new records for Napo Province:

## Zygoptera

### Calopterygidae

*Hetaerina occisa* Hagen in Selys, 1853

12. A single male was seen at a rocky stream.

*Hetaerina sanguinea* Selys, 1853

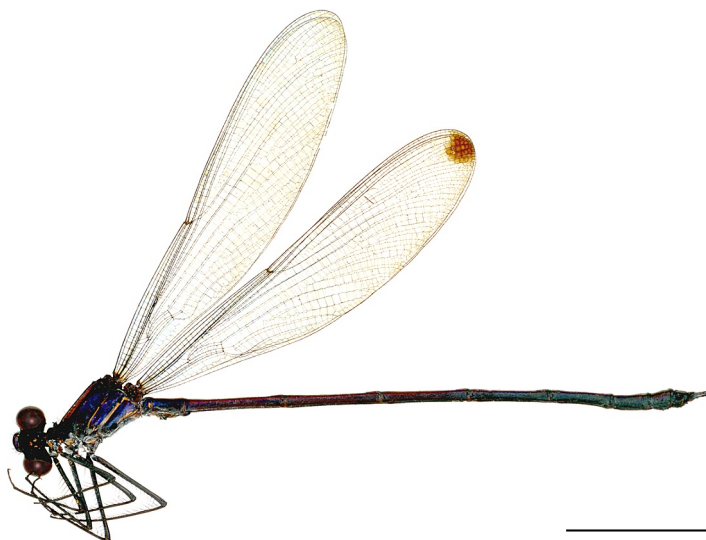
6-9, 12-16. This was the most widespread and abundant species during the trip, encountered at all streams visited at elevations under 1,000 m a.s.l.

*Mnesarete devillei* (Selys, 1880)

9, 12, 14. Males were frequent along gravel and sandy streams.

*Mnesarete hauxwelli* (Selys, 1869)

6 (Figure 10). A single male was found at a rocky stream.



**Figure 10:** *Mnesarete hauxwelli* (Selys). Color scan of male from rocky stream at Comunidad 9 de Junio near Cotundo. Scale bar 10 mm.

*Ormenophlebia imperatrix* (McLachlan, 1878)

2. Both males and females were perching along vegetation overhanging secluded and steep portions of the banks of a narrow mountain creek.

## Coenagrionidae

*Acanthagrion cuyabae* Calvert, 1909

**13, 16.** This species was relatively abundant when present, and as other species in this genus, found at lentic habitats.

*Acanthagrion floridense* Fraser, 1946

**8, 10, 13, 16.** Most commonly encountered species from this genus at the ponds visited.

*Acanthagrion obsoletum* (Förster, 1914)

**8, 15, 16.** Relatively abundant when present.

*Acanthagrion yungarum* Ris, 1918

**10.** Found only at one small marshy pond.

*Argia adamsi* Calvert, 1902

**12, 16.** Found at two small rocky streams.

*Argia infrequentula* Fraser, 1946

**8, 9, 14.** Present at three small gravel and sand bottomed streams.

*Argia limitata* Navás, 1924

**7, 12.** Encountered at two rocky streams.

*Argia medullaris* Hagen in Selys, 1865

**1-4.** Found at two rocky streams in the higher elevation areas visited.

*Argia pulla* Hagen in Selys, 1865

**7.** Found only at a medium size open rocky stream.

*Argia selysi* Garrison & von Ellenrieder, 2018

**8, 15.** Found at two very small vegetated streams.

*Drepanoneura tennesse* von Ellenrieder & Garrison, 2008

**13.** Only present at the shaded margin of a medium sized rocky stream.

*Enallagma novaehispaniae* Calvert, 1907

**15.** Found perching on marginal vegetation of a small stream.

*Mesamphiagrion dunklei* von Ellenrieder & Garrison, 2008

**4.** Encountered at a medium size rocky stream above 1000 m. a.s.l., perching and flying along sunny banks on rocks and vegetation.

*Mesamphiagrion ecuatoriale* von Ellenrieder & Garrison, 2008

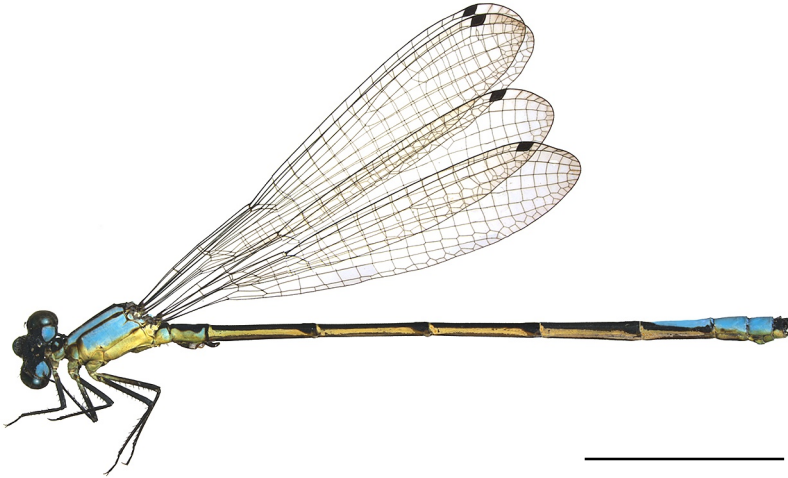
**2, 4** (Figures 11, 12). Slightly larger species coexisting with *M. dunklei* and found also at a smaller higher elevation stream.

*Metaleptobasis knopfi* Tennesen, 2012

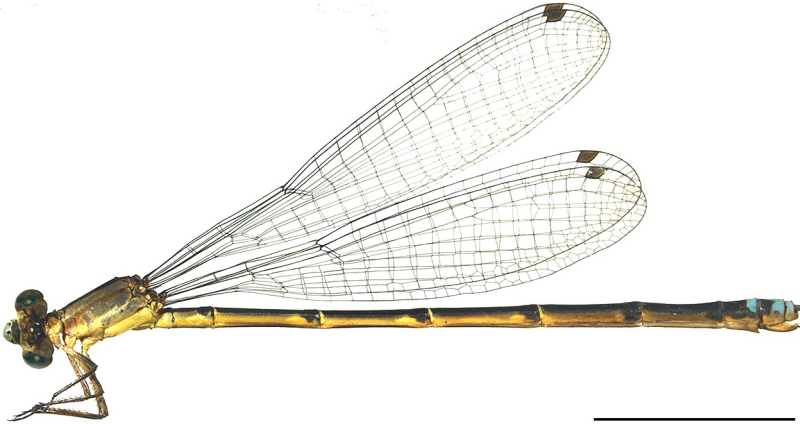
**7.** A single male was collected together with *M. mauffrayi*.

*Metaleptobasis mauffrayi* Daigle, 2000

**7.** Several specimens were found at a forest patch flying amidst the forest undergrowth.



**Figure 11:** *Mesamphiagrion ecuatoriale* von Ellenrieder & Garrison. Color scan of male from rocky stream on dirt road to Reserva Antisana. Scale bar 10 mm.



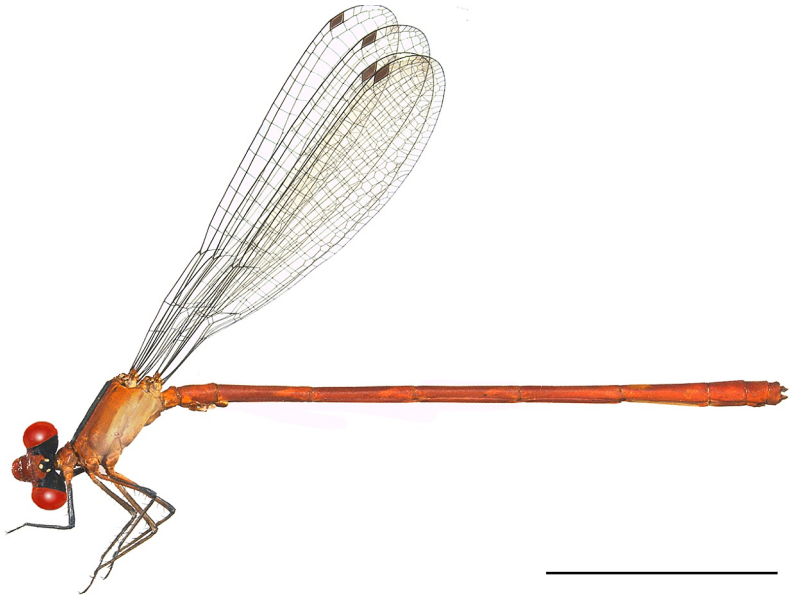
**Figure 12:** *Mesamphiagrion ecuatoriale* von Ellenrieder & Garrison. Color scan of female from rocky stream on dirt road to Reserva Antisana. Scale bar 10 mm.

*Oxyagrion tennesse* Mauffray, 1999

**2, 4.** Frequent along higher elevation streams.

*Protoneura woytkowskii* Gloyd, 1939

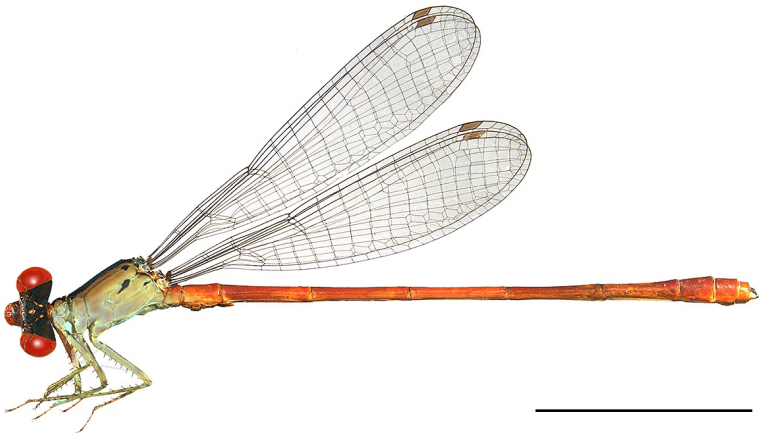
**16.** Encountered at a single small vegetated stream.



**Figure 13:** *Telebasis carota* Kennedy. Color scan of male from pond near Río Lupi at El Establo de Tomás Lodge. Scale bar 10 mm.

*Telebasis carota* Kennedy, 1936

**8, 16** (Figure 13). Pond dweller found at two of the four ponds visited.



**Figure 14:** *Telebasis griffinii* (Martin). Color scan of male from pond near Río Lupi at El Establo de Tomás Lodge. Scale bar 10 mm.

*Telebasis flammeola* Kennedy, 1936

**10, 13.** Found at the other two visited ponds.

*Telebasis griffinii* (Martin, 1896)

**8** (Figure 14). A single male was seen.

*Telebasis rubricauda* Bick & Bick, 1995

**13.** This colorful species was found flying rapidly along the sunny vegetated margins of an artificial pond near the forest. **New record for Napo Province.**

### **Dictyriidae**

*Heliocharis amazona* Selys, 1853

**13.** A pair in copula was seen at a medium rocky stream, perching on sunbathed vegetation.

### **Lestidae**

*Lestes apollinaris* Navás, 1934

**4.** A single female was found at a marshy side pool on a higher elevation stream.

*Lestes jerrilli* Tennessen, 1997

**10.** Recorded at a lower elevation marshy pond.

### **Megapodagrionidae**

*Heteragrion aequatoriale* Selys, 1886

**6.** Only one male found at a shaded small rocky stream.

*Heteragrion bariai* De Marmels, 1989

**13.** A single specimen encountered at a shaded medium rocky stream.

*Heteragrion bickorum* Daigle, 2005

**7, 9, 12, 13, 16** (Figure 15). A very common species along lower elevation forest streams.

*Teinopodagrion croizati* De Marmels, 2002

**2, 4.** Found perching on marginal vegetation and rocks at higher elevation streams.

### **Platystictidae**

*Palaemnema clementia* Selys, 1886

**7** (Figure 16). Several males and females perching and flying on the undergrowth of a forest patch near a rocky stream.

### **Polythoridae**

*Cora inca* Selys, 1873

**2** (Figure 16). One female perching on vegetation at a small rocky stream.





Figure 15: Male of *Heteragrion bickorum* Daigle, the most ubiquitous species of this genus in Ecuadorian forests.



Figure 16: Male of *Palaemnema clementia* Selys at a forest patch by Ishpinga-yacu stream.

## Anisoptera

### Aeshnidae

*Coryphaeshna amazonica* De Marmels, 1989

**10.** Males of this species were patrolling a small roadside pond. **New record for Napo Province.**

### Gomphidae

*Aphylla dentata* Selys, 1859

**13** (Figure 17). A single male was collected patrolling an artificial pond near the forest. **New record for Napo Province.**



**Figure 17: *Aphylla dentata* Selys.** Color scan of male from pond at Parador Grand Selva. Scale bar 10 mm.

### Libellulidae

*Brechmorhoga praecox* (Hagen, 1861)

**7, 14.** Flying swiftly close to the water surface at two streams.

*Cannaphila vibex* (Hagen, 1861)

**3.** A single specimen perching by a small forest stream.

*Dasythemis esmeralda* Ris, 1910

**6, 13.** Found in the vegetation nearby two streams.

*Dythemis nigra* Martin, 1897

**6, 8, 14, 16.** Perching in the sun at ponds and stream pools.

*Erythrodiplax basalis* (Kirby, 1897)

**4, 7, 8, 13.** Only species found at both higher and lower elevation habitats during this trip, at ponds and marshy areas near streams.

*Erythrodiplax castanea* (Burmeister, 1839)

**6, 12, 14.** Found perching on sunny areas by stream pools.

*Erythrodiplax fusca* (Rambur, 1842)

**8, 10, 13.** Flying around ponds marginal marshy vegetation.

*Erythrodiplax ines* Ris, 1911

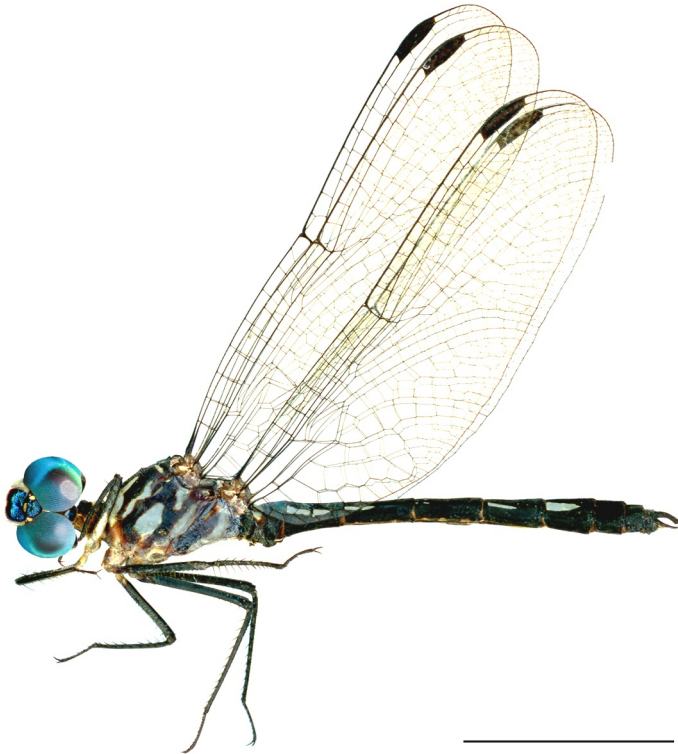
**2-4.** Seen only at marshy areas of higher elevation streams.

*Erythrodiplax melanorubra* Borror, 1942

**5.** A single specimen found at a marshy roadside area.

*Erythrodiplax tenuis* Borror, 1942

**8, 10.** Several specimens flying and perching on vegetation along ponds margins.



**Figure 18: *Micrathyria occipita* Westfall. Color scan of male from pond at Parador Grand Selva. Scale bar 10 mm.**

*Macrothemis hahneli* Ris, 1913

**3.** A single male seen at a small exposed creek.

*Macrothemis hemichlora* (Burmeister, 1839)

**12, 14-16.** Found flying along several small forest streams.

*Micrathyria atra* (Martin, 1897)

**10, 16.** Some males seen perching near small ponds.

*Micrathyria catenata* Calvert, 1909

**8, 10, 13.** Recorded flying and perching on marginal vegetation at ponds.

*Micrathyria occipita* Westfall, 1992

**8, 13, 16** (Figure 18). Recorded together with *M. catenata* flying and perching on marginal vegetation at ponds.

*Micrathyria pseudeximia* Westfall, 1992

**16.** Only seen at one of the ponds visited.

*Nephepeltia leonardina* Rácenis, 1953

**8, 13, 16.** Flying and perching together with the species of *Micrathyria* recorded at ponds.

*Oligoclada pachystigma* Karsch, 1890

**13.** Common perching on marginal vegetation of an artificial pond. **New record for Napo Province.**

*Orthemis cultriformis* Calvert, 1899

**13, 14.** Perching near a pond and marshy area of a stream.

*Perithemis mooma* Kirby, 1889

**13, 16.** Found at two ponds perching on emergent vegetation.

*Perithemis parzefalli* Hoffmann, 1991

**8, 16.** Found at two ponds perching on emergent vegetation.

*Sympetrum gilvum* (Selys, 1884)

**4.** Only seen at a marshy area near a higher elevation stream.

*Tauriphila argo* (Hagen, 1869)

**13.** A single specimen collected at a pond.

*Tramea binotata* (Rambur, 1842)

**10, 13.** Found flying near and over ponds.

*Uracis fastigiata* (Burmeister, 1839)

**7, 10.** Perching on the forest undergrowth.

*Uracis imbuta* (Burmeister, 1839)

**6-9.** The more ubiquitous of the two *Uracis* species found; perching on the forest undergrowth.

*Zenithoptera lanei* Santos, 1941

**8. 10.** Encountered at two of the ponds visited, perching on vegetation along its margins.

## Discussion

We believe that the extension of habitats suitable for *Argia schneideri* in Napo Province has been reduced since its original findings due to habitat alternation for human expansion and agriculture (Kalamandeen et al. 2018). Other odonate species that Macintyre collected in Napo about 80 years ago have also not been found ever since in this province. These include *Argia fraudatricula* Förster, 1914, *Argia kokama* Calvert, 1909, *Argia nigrior* Calvert, 1909, *Teinopodagrion curtum* (Selys, 1886), *Stenocora percornuta* Kennedy, 1940, *Anomisma abnorme* McLachlan, 1877, *Triacanthagyna ditzleri* Williamson, 1923 and *Progomphus pijpersi* Belle, 1966, as far as we are aware based on the subset of Macintyre's specimens that we identified in the past or which was included in publications. With the exemption of *Anomisma abnorme* and *Triacanthagyna ditzleri*, both of which are phytothelmatic, all these species are also inhabitants of forest streams, and it is well known that pristine streams house an array of more vulnerable, often localized odonate species, which show strong responses to habitat change such as thinning of forest and increased erosion (Corbet 1999; Kalkman et al. 2008; Paulson 2004).

Even though *A. schneideri* was not found in recent years in Napo Province, it is possible that this species still occurs along small forested creeks of difficult access or located in protected areas along the Ecuadorian eastern Andean foothills which are yet to be explored. After its description was published (Garrison & von Ellenrieder 2017) *A. schneideri* was found in Putumayo Department, Colombia (Bota-Sierra et al. 2018) and in Loreto Province, Ecuador (Mauffray & Tennesen 2019), its currently known geographic distribution being therefore more extensive than thought at the time of its description (Fig. 1). Its coloration and habitat are reminiscent of those of *Argia yungensis* Garrison & von Ellenrieder, 2007, which is also a mostly dark species with black eyes inhabiting small shaded creeks in the forest, where males can be found perching at isolated sunlit patches on the vegetation (Garrison & von Ellenrieder 2007). We consider that *A. schneideri* represents the ecological equivalent of *A. yungensis*, which extends farther south along the eastern slopes of the Andean cloud forest, from Peru to northwestern Argentina.

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We thank IDF for providing funds that made this trip possible. Our thanks to Jim Johnson for allowing the inclusion of his pictures of live *Argia schneideri* in hand collected at Loreto province, and to him and Ken Tennesen for sharing information about its habitat. We are grateful to the Ministerio del Ambiente from Ecuador and to the Dirección Provincial de Napo del Ministerio del Ambiente for issuing research and mobilization permits.

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