

## Odonata Fauna of Catanduanes Island, Philippines

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### Abstract

During a two week survey in April 2011, twenty six sites on Catanduanes Island, Philippines were explored. 42 Odonata species are new island records, raising the known species of the island into 60. Among the new island records are three *Amphicnemis* species new to science.

### Introduction

Catanduanes (Figure 1) is one of the bigger islands in the archipelago with a total land area of over 1,000 square kilometres. It is situated east of southern Luzon, separated only by a narrow straight, and it belongs to the Luzon bio-geographic region. The island is broad with a sinuous coastline and is marked by mountain chain (Figure 2) that runs parallel in the western and eastern side of the island. Its highest peak is only 898m a.s.l. The island is relatively wet, receiving humid air from the Pacific and it is frequently hit by tropical typhoons. It has two main river systems, emptying in the municipalities of Virac in south and Viga in north.

Odonatologically, the island is poorly studied. Hämäläinen & Müller (1997) provided the only recent and the most informative account of the Odonata fauna of the island. They listed 18 species collected in 1996 around the municipality of Gigmoto in the eastern part of the island. The list includes two new species, of which *Drepanosticta rhamphis* van Tol, 2005 was recently described (van Tol, 2005), and *Amphicnemis* sp.n., which is currently being described by the first author in a separate manuscript reviewing the Philippine members of the genus.





**Catanduanes  
Island,  
Philippines**

**Figure 1. Map of Catanduanes Island.  
Maps taken from google maps**





**Figure 2. Eastern mountain chain.**

Recently, the first author was in communication with a local biologist (second author, RG). Fieldwork was agreed and Hilario Cahilog (HC) was sent by the first author to accompany RG and do fieldwork on the island (Figure 3). The present report lists the species encountered during the survey conducted by HC and RG in April 8 – 18, 2011 in various part of the island.

## **Results**

Twenty six sites (see Figures 4 – 17 for typical habitat situations) were explored during the entire survey that lasted for two weeks. Some of these sites were visited more than once especially those around the Municipality of Virac. There are 42 new island records, raising the known species of the island into 60. Among the new island records are three new species.





Figure 3. Survey team: in front line (RG standing, HC sitting), field assistants in back row.

### Sites visited:

1. Bahaw Falls, San Vicente, Virac
2. Gigmoto River, Gigmoto
3. Nahulugan Falls, San Pedro, Gigmoto
4. Tongao-tongao, San Pedro, Gigmoto
5. Bonggao, Gigmoto
6. Monhwok swamp, Virac
7. Loyang cave area, San Andres
8. Lektin, San Andres
9. Kabukbuk, San Vicente, Virac
10. Sto. Domingo River, Virac
11. Bagong Sirang, San Andres
12. Puting Baybay Falls, San Andres
13. Tibang, San Andres
14. Lubas, San Andres
15. Malaviga, Caramoran
16. Hilacan, Caramoran
17. Hiyok, Tariwara, Pandan
18. Bagamanok River, Bagamanok
19. Bagamanok pond, Bagamanok
20. Viga swamp, Viga
21. Pedro Vega, Viga
22. Summit, Viga
23. Kilikilian, San Miguel
24. Sibacungan, Bato
25. Danicop, Virac
26. Lantad, Virac





Figure 4. tree holes offered suitable habitat for the new *Amphicnemis* sp



Figure 5. Various river sections, the rivers in the island are typically shallow and very wide





Figure 6. Various river sections, the rivers in the island are typically shallow and very wide



Figure 7. Various river sections, the rivers in the island are typically shallow and very wide





**Figure 8. Various river sections, the rivers in the island are typically shallow and very wide**



**Figure 9. Various river sections, the rivers in the island are typically shallow and very wide**



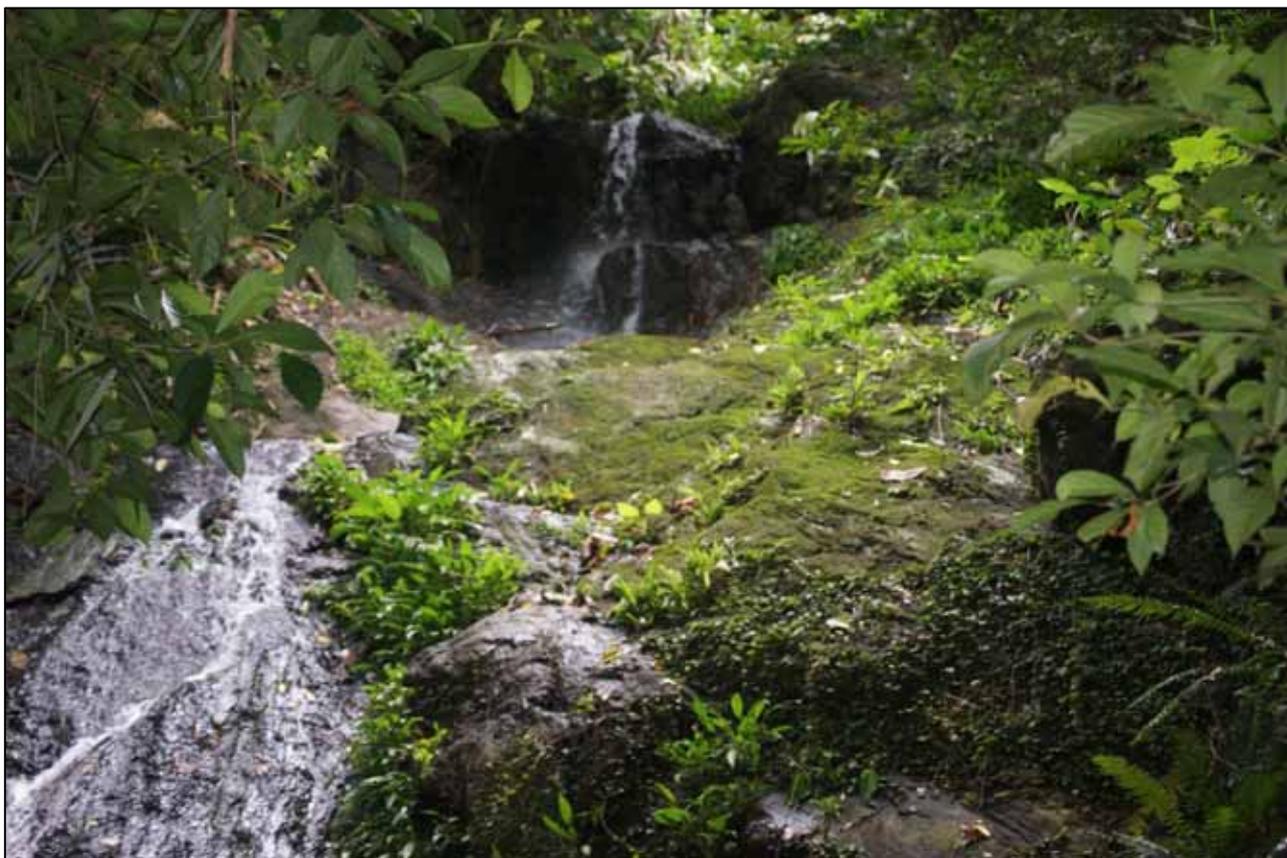


Figure 10. Typical mode of transport in the island parked near the road side waterfalls



Figure 11. Close and slow flowing streams and rivulets offered suitable habitat for majority of the endemic species





**Figure 12. Close and slow flowing streams and rivulets offered suitable habitat for majority of the endemic species**



**Figure 13. Close and slow flowing streams and rivulets offered suitable habitat for majority of the endemic species**





**Figure 14. Close and slow flowing streams and rivulets offered suitable habitat for majority of the endemic species**



**Figure 15. Close and slow flowing streams and rivulets offered suitable habitat for majority of the endemic species**





Figure, 16. Extensive lowland swamp in the Municipality of Viga



Figure 17. Lowland rice paddy



## Annotated lists of species (\* new island record) [site where found]

### Coenagrionidae

#### 1. \**Agriocnemis f. femina* (Brauer, 1868) [5, 9, 23] (Figure 18)

This species is in need of thorough evaluation and can be possibly split into several taxa (Tang, et. al 2010). Though the Catanduanes males do not show clear distinct differences, two distinct variations were noted in the females. One variant shows the typical erect posterior pronotal lobe process while the other variant has a posterior pronotal lobe process that lies between those of typical *A. f. femina* and *A. pygmaea*.



Figure 18. *Agriocnemis* spp. It is difficult to separate the two Philippine *Agriocnemis* in the field.

#### 2. \**Agriocnemis pygmaea* (Rambur, 1842) [9]

#### 3. \**Amphicnemis* sp. (cf. *mcgregori*)\* [7, 8, 11, 16] (Figure 19)

This species is found both on native and introduced *Pandanus* spp. (Figure 66). Compared to *Amphicnemis cantuga*, this species thrives even on plants well exposed to sunlight. The island population is close to *A. mcgregori* but differs on some details. Comparison with the “true” *A. mcgregori* is needed to clarify the taxonomic placement of this population.

#### 4. *Amphicnemis* sp.n1 [4] (Figure 20)

A single male was collected. This species is among the material collected in the 1996 collecting trip and now in RMNH. Despite extensive surveys the species remain very elusive, suggesting that it occurs only on the eastern side of the island.





Figure 19. *Amphinemesis* sp. (cf. *mcgregori*)



Figure 20. *Amphinemesis* spn 1



5. \**Amphicnemis* sp.n2 [3, 8, 9, 26] (Figures 21 – 22)

This species has a varied colour pattern. The younger male is mainly orange, similar to *Amphicnemis bonita*. It becomes green as it ages and the fully mature colour is blackish.

6. \**Amphicnemis* sp.n3 [1, 9] (Figure 23)

This very territorial species thrives on tree holes. It is very cryptic and prefers trees with deep water filled holes.



Figure 21. *Amphicnemis* spn 2; male





Figure 22. *Amphinemesis* spn 2; female



Figure 23. *Amphinemesis* spn 3



7. *Argiocnemis rubescens intermedia* Selys, 1877 [1, 8, 25] (Figure 24)



Figure 24. *Argiocnemis rubescens intermedia*

8. \**Ceriagrion lieftincki* Asahina, 1967 [6] (Figure 25)



Figure 25. *Ceriagrion lieftincki*



9. \**Ischnura senegalensis* (Rambur, 1842) [1, 5, 9, 25] (Figure 26)



Figure 26. *Ischnura senegalensis*

10. \**Pseudagrion microcephalum* (Rambur, 1842) [24] (Figure 27)



Figure 27. *Pseudagrion microcephalum*, in tandem



11. *Pseudagrion p. pilidorsum* (Brauer, 1868) [2, 10, 12, 13, 21, 24, 25, 26]

12. \**Pseudagrion r. rubriceps* (Selys, 1876) [8] (Figure 28)



Figure 28. *Pseudagrion r. rubriceps*

13. \**Teinobasis corolla* Needham & Gyger, 1939 [2, 3, 4, 8, 9, 13, 21, 17] (Figures 29 – 30)

This species is in need of careful study. Needham & Gyger (1939) clearly stated the presence of a crown like marking on the head. However, this characteristic does not hold when given a long series of material from various islands. The Catanduanes population has the characteristic black crown. However some specimens showed no such marking and resemble the typical variation noted in several areas of Luzon biogeographic region. Structurally no significant variation is noted between those with a black vertex and those with a reddish vertex.



Figure 29. *Teinobasis corolla*





Figure 30. *Teinobasis corolla*

14. \**Teinobasis filiformis* (Brauer, 1868) [2, 8, 9, 11, 17] (Figure 31)



Figure 31. *Teinobasis filiformis*



15. \**Teinobasis nigra* Champion & Laidlaw, 1928 [4, 8]
16. \**Teinobasis olivacea* Ris, 1915 [6, 25]
17. \**Teinobasis samaritis* Ris, 1915 [2, 3, 9, 11, 21, 14, 16, 17, 25] (Figure 32)



Figure 32. *Teinobasis samaritis*

18. \**Teinobasis strigosa* Needham & Gyger, 1939 [1, 8, 9, 13, 14]

### Protoneuridae

19. \**Prodasineura integra* (Selys, 1882) [10] (Figure 33)



Figure 33. *Prodasineura integra*



## Platystictidae

### 20. \**Drepanosticta pistor* van Tol, 2005 [9]

It is a surprise to find this species on the island. The distribution of this species is very interesting among the Philippine Odonata. This is the only species that is widely distributed in the Western Visayas and south-central Luzon to southern Luzon (including Catanduanes) leaving Eastern Visayas open.

### 21. *Drepanosticta rhampis* van Tol, 2005 [2, 3, 4, 8, 9, 17, 21, 24] (Figure 34)

This species is very widely distributed in the island. It occurs in almost at every rheophilous sites explored.



Figure 34. *Drepanosticta rhampis*

## Platycnemididae

### 22. *Risio cnemis* (*Risio cnemis*) *confusa* Hämäläinen, 1991 [21, 23, 24] (Figures 35 – 36)





Figure 35. *Risiocnemis confusa*



Figure 36. *Risiocnemis confusa*



23. *Risio cnemis (Risio cnemis) serrata* (Hagen, 1863) [1, 2, 3, 4, 6, 13, 17, 21, 24]  
(Figures 37 – 38)



Figure 37. *Risio cnemis serrata*



Figure 38. *Risio cnemis serrata*



24. *Risiocnemis (Igneoconemis) haematopus* (Selys, 1882) [1, 2, 3, 4, 8, 9, 12, 13, 17, 21, 24] (Figure 39)

This is the commonest damselfly at shady rheophilous sites.



Figure 39. *Risioconemis haematopus*

25. *Risioconemis (Igneoconemis) odobeni* Hämäläinen, 1991 [2, 3, 4, 8, 9, 13, 17, 21, 24, 26] (Figures 40 – 41)



Figure 40. *Risioconemis odobeni*





Figure 41. *Risiocnemis odobeni*

26. *Risiocnemis (Igneocnemis) polilloensis* Hämäläinen, 1991 [3, 8, 17, 21, 24, 26]  
(Figures 42 – 43)



Figure 42. *Risiocnemis polilloensis*





Figure 43. *Risioctnemis polilloensis*

### Chlorocyphidae

27. *Cyrano unicolor* (Hagen in Selys, 1869) [3, 21, 26] (Figure 44)



Figure 44. *Cyrano unicolor*



28. *Rhinocypha colorata* (Hagen in Selys, 1869) [2, 7, 12, 13, 21, 25, 26] (Figures 45 – 47)



Figure 45. *Rhinocypha colorata*; adult male



Figure 46. *Rhinocypha colorata*; emergence



Figure 47. *Rhinocypha colorata*, larva



29. *Rhinocypha turconii* Selys, 1891

Despite an extensive survey, this species remained elusive. The lone specimen of this species came from Gigmoto collected in 1996 and is now in RMNH.

### Megapodagrionidae

30. \**Rhinagrion philippinum* (Selys, 1882) [10] (Figure 48)

Kalkman & Villanueva 2011 revised the genus and commented on *R. philippinum*. The local population has a larger dorsal pale spot on the thorax compared to other populations from various islands. However, this spot is smaller and pale (instead of blue) and also the island population lacks the distinct blue spot on S8-S9 found in *R. reinhardi*. More material is needed for this interesting population.



Figure 48. *Rhinagrion philippinum*

### Euphaeidae

31. *Euphaea refulgens* Hagen in Selys, 1853 [1, 3, 9, 16, 17, 21] (Figure 49)

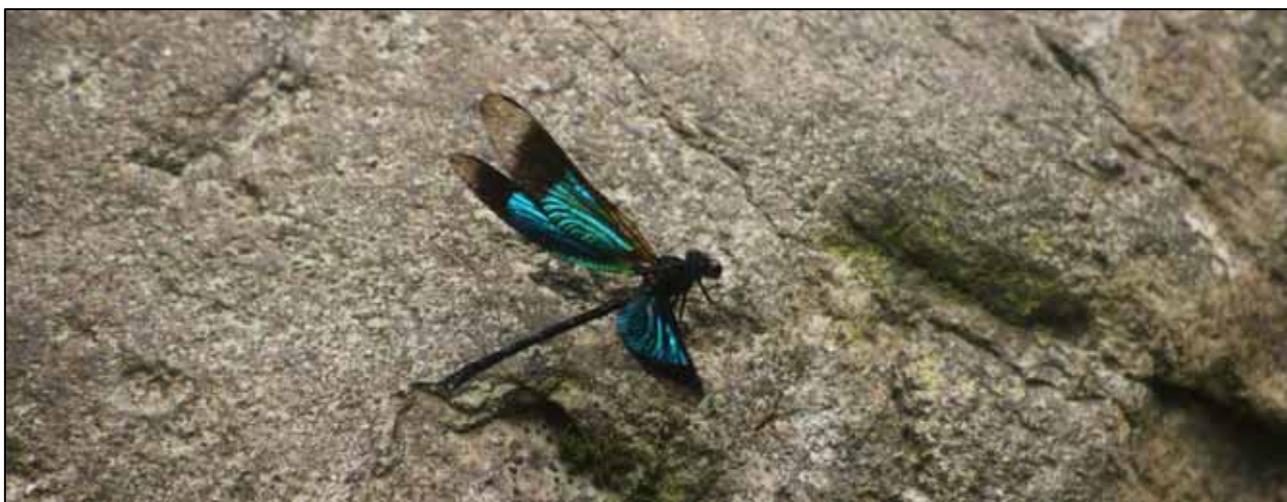


Figure 49. *Euphaea refulgens*



**Calopterygidae**

32. \**Neurobasis luzoniensis* Selys, 1879 [1, 6, 21, 7] (Figures 50 – 51)



Figure 50. *Neurobasis luzoniensis*, male



Figure 51. *Neurobasis luzoniensis*, female



33. *Vestalis melania* Selys, 1873 [2, 21]

### Aeshnidae

34. \**Gynacantha* sp [9]

This is a small light coloured species. It lacks a T-shape mark on the frons. The synthorax is light greenish-brown and the abdomen is light brown. Review of the genus at least for the Philippine species is badly needed.

### Gomphidae

35. \**Gomphidia kirschii* Selys, 1878 [3, 26] (Figure 52)



Figure 52. *Gomphidia kirschii*

36. *Heliogomphus bakeri* Laidlaw, 1925 [9, 18]

### Corduliidae

37. \**Macromidia* sp. [9]

The single female specimen obtained is distinct from presumed *M. samal* collected in Cebu Island and in the collection of the first author. The first author has specimens referable to three species of *Macromidia* from the Philippines, but has refrained from making taxonomic decisions until he can check the type material of *M. samal* and *M. asahinai*. The former species is widely distributed in the Philippines but the latter species is recorded in Palawan only so far.



38. *Heteronaias heterodoxa* (Selys, 1878) [1, 9, 22, 21] (Figure 53)



Figure 53. *Heteronaias heterodoxa*

39. \**Idionyx salva* Needham & Gyger, 1937 [21, 26]

### Libellulidae

40. \**Agrionoptera insignis* (Rambur, 1842) [17, 20] (Figure 54)



Figure 54. *Agrionoptera insignis*



41. \**Cratilla lineata assidua* Lieftinck, 1953 [4, 25, 26]  
 42. \**Crocothemis s. servilia* (Drury, 1770) [9]  
 43. \**Diplacina bolivari* Selys, 1882 [3, 12, 13, 17, 21] (Figure 55)

There is one specimen from Pedro Vega that is doubtful. Unlike other specimen, this individual lacks the pale yellow spot on S8. It has some other notable differences from *D. bolivari* from various areas of the archipelago in the collection of the first author. Pending more material we refrain from commenting on the taxonomic status of this individual.



Figure 55. *Diplacina bolivari*

44. \**Diplacina braueri* Selys, 1882 [1, 10]  
 45. \**Diplacina lisa* Needham & Gyger, 1941 [17]  
 46. *Diplacodes trivialis* (Rambur, 1842) [2]  
 47. \**Neurothemis r. ramburii* (Brauer, 1866) [2, 9]  
 48. \**Neurothemis t. terminata* Ris, 1911 [1, 2, 9]  
 49. \**Onychothemis abnormis* Brauer, 1878 [10] (Figure 56)

Previous encounters with this species were on fast flowing streams and rivers. They patrol a specific portion of the rapids especially at sites with dangling roots or vines. However the Catanduanes population was observed on a slow flowing stream with pool sections. Besides habitat deterioration, electrofishing is another threat of this species in the island (Figure 57).





Figure 56. *Onychothemis abnormis*



Figure 57. Electrofishing



50. \**Orthetrum chrysis* (Selys, 1891) [18]

51. \**Orthetrum pruinosum clelia* (Selys, 1878) [2, 3, 7, 15, 16, 23] (Figure 58)



Figure 58. *Orthetrum pruinosum clelia*

52. *Orthetrum s. sabina* (Drury, 1770) [1] (Figure 59)



Figure 59. *Orthetrum s. sabina*



53. \**Orthetrum t. testaceum* (Burmeister, 1839) [2, 9, 25, 26] (Figure 60)



Figure 60. *Orthetrum t. testaceum*

54. \**Pantala flavescens* (Fabricius, 1798) [2] (Figure 61)



Figure 61. *Pantala flavescens*



55. \**Potamarcha congener* (Rambur, 1842) [2, 3, 9, 14, 26]  
56. \**Tetrathemis i. irregularis* Brauer, 1868 [1, 17]  
57. \**Tholymis tillarga* (Fabricius, 1798) [19]  
58. \**Trithemis festiva* (Rambur, 1842) [17, 23] (Figure 62)



Figure 62. *Trithemis festiva*

59. \**Zyxomma obtusum* Albarda, 1881 [15, 19]  
60. \**Zyxomma petiolatum* Rambur, 1842 [19]

## Remarks

Although the present survey has revealed a significant number of new island records and a few new species were found, our knowledge of the odonate fauna of Catanduanes is still inadequate. There are several oriental species that are to be expected on the island but that have not yet been found. One (*Rhinocypha turconii*) previously recorded species was not found during the survey. The absence of several expected and previously recorded species might be accounted for by the weather condition affecting the country during the survey; although the survey period fell in the “dry” season, there was excessive rain during the trip. The rivers and streams also showed signs of recent flooding.



Further surveying on the island is warranted during more favourable weather conditions. This is especially important to locate the “expected” species and find more material of some interesting species. From the size of the island we estimate that it should host over 70 species.

Fragmented but good forests still exist on the island. However the *google view* of the island is rather deceiving, the green noted on the satellite photo is in fact very extensive *Musa textalis* (Abaca) and coconut plantations (Figure 63).



Figure 63. Abaca and coconut plantation

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**Figure 64.** Planted *Pandanus* spp plants offer suitable habitat for some phytohelmatan species of Zygoptera

