The Superfamily Calopterygoidea in South China: taxonomy and distribution. Progress Report for 2009 surveys

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Introduction

Three families in the superfamily Calopterygoidea occur in China, viz. the Calopterygidae, Chlorocyphidae and Euphaeidae. They include numerous species that are distributed widely across South China, mainly in streams and upland running waters at moderate altitudes. To date, our knowledge of Chinese species has remained inadequate: the taxonomy of some genera is unresolved and no attempt has been made to map the distribution of the various species and genera. This project is therefore aimed at providing taxonomic (including on larval morphology), biological, and distributional information on the superfamily in South China.

In 2009, two series of surveys were conducted to Southwest China-Guizhou and Yunnan Provinces. The two provinces are characterized by karst limestone arranged in steep hills and intermontane basins. The climate is warm and the weather is frequently cloudy and rainy all year. This area is usually regarded as one of biodiversity "hotspot" in China (Xu & Wilkes, 2004).

Many interesting species are recorded, the checklist and photos of these surveys are reported here. And the progress of the research on the superfamily Calopterygoidea is appended.

Methods

Odonata were recorded by the specimens collected and identified from photographs. The working team includes only four people, the surveys to Southwest China were completed by the author and the photographer, Mr. Mo Shanlian.

Photo 1 (left): Zhang Haomiao(left) and Mo Shanlian(right)

Photo 2 (right): Haomiao and Shanlian at fieldwork.

Photo 3. Working team for surveys: from left to right Zhang haomiao, Wu Hongdao, Mo Shanlian and Zhou Jigang

We nearly took the photos of each species we encountered. Usually Shanlian took the photos of each species upon which the author collected the specimens. We also took the photos of the habitats which were important for the information on biology. We tried to sample most habitat types in each of the counties visited. Each day we spent the whole day in the field. Our working time was from 7 o'clock on the morning and 22 o' clock at night every day.

Localities surveyed

The money granted by the IDF was used mainly for the transportation. And we conducted several surveys to Yunnan and Guizhou Provinces from June to September in 2009. These surveys are shown in table 1.

Table 1. Locations surveyed from Southwest China funded by IDF.

Site	Date
Xiangzhigou, Guiyang city, Guizhou Province	July 2009, September 2009
Cangshan National Nature Reserve, Dali City, Yunnan Province	June 2009, August 2009
Jinghong Forest Garden, Jinghong City, Yunnan Province	June 2009
Mengla Farm, Xishuangbanna, Yunnan Province	June 2009, September 2009
Menglun Botanic Garden, Xishuangbanna, Yunnan Province	June 2009, September 2009

Results

1. Odonata recorded from Xiangzhigou, Guizhou Province

The streams in this area is shallow and clean. The altitude of the surveyed area is 1080-1230 m (for habitats see photographs 4-6). A total of 51 species were found in Xiangzhigou area, belonging to 11 families. Many of the species recorded here are rather rare in South China, such as *Anaciaeschna martini* Selys, *Cephalaeschna needhami* Asahina, 1981, *Cephalaeschna obversa* Needham, 1930, Planaeschna maolanensis Zhou & Bao, 2002, *Polycanthagyna melanictera* (Selys, 1883), *Chlorogomphus papilio* Ris, 1927, *Watanabeopetalia usignata* (Chao, 1999).

Annotated species list:

Anisoptera

1. *Anaciaeschna martini* Selys, 1897
   The species is here recorded from mainland China for the first time and was rare to find in this area, they become active in twilight condition, especially after sunset. Females were observed to oviposit in paddy fields and marshes.
2. *Anax nigrofasciatus* Oguma, 1915
   Abundant in this area.
3. *Cephalaeschna needhami* Asahina, 1981
   A late season species that can be encountered from late August. Very rare in this area. Shown in photo 10.
4. *Cephalaeschna obversa* Needham, 1930
   A late season species that can be encountered from late August, when many immature individuals gather and forage along the streams when it is nearly dark. Most of these immature adults were female.
5. *Gynacantha japonica* Bartenef, 1909
   Abundant in this area.
6. *Periaeschna magdalena* (Martin, 1909)
   Abundant in this area. Shown in photo 11.
7. *Periaeschna zhangzhouensis* Xu, 2007
   Rare in this area. Males patrol along the streams after sunset with stable flight. Females are very difficult to encounter.
8. *Periaeschna flinti* Asahina, 1978
   Rare in this area.
9. *Planaeschna maolanensis* Zhou & Bao, 2002
   Abundant in this area.
10. *Polycanthagyna melanictera* (Selys, 1883)
    Common in this area but never in large number. Shown in photo 12.
11. *Polycanthagyna erythromelas* (McLachlan, 1896)
    Common in this area but never in large number.
12. *Polycanthagyna ornithocephala* (McLachlan, 1896)
    Common in this area but never in large number.

Gomphidae

13. *Davidius fruhstorferi* Martin, 1904
    Abundant in this area.
14. *Davidius qinlingensis* Cao et Zhen, 1988
    Abundant in this area. Shown in photo 13.
15. *Lamelligomphus choui tienfuensis* Chao, 1995
    Abundant in this area.
16. *Lamelligomphus ringens* (Needham, 1930)
    Only one male was collected and recorded. The body maculation is more developed than in individuals from North China.

Cordulegastridae

17. *Chlorogomphus papilio* Ris, 1927
    It is one of the largest species from China. Both sexes of this conspicious and attractive species possess basal coloured wings. Rare in this area. The flight period in this area is from June to September. For the illustrations of this species, see Wilson (2002, 2005). Shown in photo 7-8.
18. *Chlorogomphus tunti* Needham, 1930
    A western Chinese endemic species. Common in this area. The males usually patrol small mountain streams in open areas with a steady and slow flight, staying very closely above the water surface. For descriptions see Needham (1930) and Klots (1947).
19. *Watanabeopetalia usignata* (Chao, 1999)
    An endemic species distributed in western China. Common in this area. The males usually patrol small mountain streams in open areas with a steady and slow flight, staying very closely above the water surface. Females will settle at the edge of the streams to choose a suitable place to lay their eggs in the very shallow part. When mating, the pairs will fly higher and perch on the tree. The flight period of adult is from May to September in this area. For descriptions see Chao (1999). The genus *Watanabeopetalia* was established by Karube (2002). Shown in photo 9.

Corduliidae

20. *Macromia moorei moorei* Selys, 1874
    Common in this area. The subspecies *M. m. malayana* Laidlaw, 1928 is known to occur in South Guizhou Province (personal survey in 2007 and 2008).

Libellulidae

21. *Crocothemis servilia servilia* (Drury, 1770)
22. *Libellula melli* Schmidt, 1948
    A species similar to *L. depressa* from Europe. The abdomen is flattened and short. Common in this area but not in large numbers. Shown in photo 15.
23. *Orthetrum albistylum* Selys, 1848
    Abundant in this area. Shown in photo 17.
24. *Orthetrum japonicum internum* McLachlan, 1894
    A early season species and can be seen in April. Abundant in this area.
25. *Orthetrum melania* (Selys, 1883)
    Abundant in this area. Shown in photo 16.
26. *Orthetrum pruinosum neglectum* (Rambur, 1842)
    Abundant in this area.
27. *Orthetrum sabina sabina* (Drury, 1770)
    Common in this area.
28. *Orthetrum triangulare triangulare* (Selys, 1878)
    Common in this area. Shown in photo 15.
29. *Pantala flavescens* (Fabricius, 1798)
    Common in this area.
30. *Sympetrum darwinianum* Selys, 1883
    Abundant in this area. Shown in photo 19.
31. *Sympetrum eroticum ardens* (McLachlan, 1854)
    Rare in this area.
32. *Sympetrum speciosum speciosum* Oguma, 1915
    Abundant in this area. Shown in photo 18.
33. *Tramea virginia* Rambur, 1842
    Rare in this area.

Zygoptera

Calopterygidae

34. *Archineura incarnata* (Karsch, 1891)
    Abundant in this area. Easy to distinguish from other species of the family by its large size and the red wing base of the male. The body is metallic black. Female with brown wings and the wing base without red. It is the largest damselfly of China and widely distributed. Males and females

usually perch on the rocks of the streams during most of the day, often mating after noon. The male guards the female during egglaying. The flight period is from April to September. Shown in photo 20.

35. *Caliphaea nitens* Navás, 1934
    Rare in this area. Males can be found in very shady forested stream in sunny days. Shown in photo 21.
36. *Matrona basilaris* Selys, 1853
    Abundant in this area. Shown in photo 22.
37. *Mnais* sp.
    A large sized species in this genus, since the genus is still in chaos from South China, this species has not been confirmed yet.

Euphaeidae

38. *Bayadera continentalis* Asahina, 1973
    An early season species. Abundant in this area.
39. *Bayadera melanopteryx* Ris, 1912
    Abundant in this area. Shown in photo 23.

Platycnemididae

40. *Coeliccia cyanomelas* Ris, 1912
    Rare in this area. Shown in photo 24.
41. *Copera ciliata* (Selys, 1863)
    Abundant in this area.

Synlestidae

42. *Megalestes distans* Needham, 1930
    Rare in this area. Only one male was recorded.

Megapodagrionidae

43. *Rhipidolestes lii* Zhou, 2003
    Abundant in this area. Shown in photo 28.
44. *Rhipidolestes* sp.
    Rare in this area. The species co-occurs with *R. lii* but is more difficult to encounter.
45. *Sinocnemis yangbingi* Wilson & Zhou, 2000
    Common in this area. For details of the species, see Wilson & Zhou (2000).
46. *Priscagrion kiautai* Zhou & Wilson, 2001
    Rare in this area. For details of the species, see Zhou & Wilson (2001).

Coenagrionidae

47. *Ceriagrion fallax fallax* Ris, 1914
    Common in this area.
48. *Ceriagrion sinense* Asahina, 1967
    Common in this area. Shown in photo 25.
49. *Ischnura rufostigma* Selys, 1876
    Common in this area. Shown in photo 26.
50. *Paracercion v-nigrum* (Needham,1930)
    Common in this area. Shown in photo 27.

Photo 4 Xiangzhigou, Central Guizhou Province

Photo 5,6 Stream in Xiang-zhigou, a typical hibitat of *Chlorogomphus* species.

Photo 7 *Chlorogomphus papilio*, male-a beautiful species

Photo 8 Chlorogomphus papilio, female-a beautiful species

Photo 9 *Watanabeopetalia usignata*, male, a rare species from China
Photo 10 *Cephalaeschna needhami*, male, a rare species from China

Photo 11 *Periaeschna magdalena*, male in flight.

Photo 12 *Polycanthagyna melanictera*, female.

Photo 13 *Davidius qinlingensis*, female.

Photos 14-19 Common Libellulids from Xiangzhigou

14. *Libellula melli*, male; 15. *Orthetrum t. triangulare*, male;

16. *Orthetrum melania*, male; 17. *Orthetrum albistylum*, female;

18. *Sympetrum s. speciosum*, male; 19. *Sympetrum darwinianum*, male.

Photo 20 *Archineura incarnata*, pair in wheel.

Photo 21 *Caliphaea nitens*, male.

Photo 22 *Matrona basilaris*, male.

Photo 23 *Bayadera melanopteryx*, pair laying eggs.

Photos 24-28: 24. *Coeliccia cyanomelas*, male; 25. *Ceriagrion sinense*, male; 26. *Ischnura rufostigma*, pair in wheel; 27. Paracercion v-nigrum, pair in flight; 28. *Rhipidolestes lii*. male.

2. Odonata from Yunnan

A total of 82 species in 12 families were recorded from Xiangshuangbanna, Yunnan Province. The altitude of this area is 800-900 m. Most of the area surveyed is rich in water resource and in Odonata (Photographs 29-38). Four species are new to the fauna of China, and 9 species have not been identified.

Annotated species list[1]:

Anisoptera

Aeshnidae

1. *Anax guttatus* (Burmeister, 1839)
2. *Tetracanthagyna waterhousei* McLachlan, 1898
   Common in this area. Over ten females were observed to oviposit at noon in late June. This species is one of the largest species of the world. It is noticed that the Yunnan specimens are conspicuously smaller than those from Hainan and Guangdong.

Gomphidae

3. *Asiagomphus* sp.
   Not yet identified.
4. *Burmagomphus arboreus* Lieftinck, 1907
   Common in this area. Shown in photo 43.
5. *Gomphidia kruegeri kruegeri* (Martin, 1904)
   Only one old male were recorded in late June, it may be common in this area in early time.
6. *Gomphidia interruptistria* Zha, Zhang & Zheng, 2005
   Common but not abundant. Several old males were collected in late June. Shown in photo 40.
7. *Gomphidia* sp.
   A large sized species with the basal 2 abdomen segments entirely yellow.
8. *Gomphidictinus perakensis* (Laidlaw, 1902)
   Abundent in this area, first recorded from China. Shown in photo 41.
9. *Ictinogomphus decoratus* (Selys, 1854)
   Abundent in Menglun Botanic Garden. Shown in photo 39.

[1] Species not annotated are generally widespread taxa.

10. *Lamelligomphus ringens* (Needham, 1930)
    Common in this area. Shown in photo 46.
11. *Lamelligomphus* sp.
    Common in this area. Shown in photo 47.
12. *Nepogomphus sp.*
    Not yet identified at species level.
13. *Nychogomphus* sp.
    Not yet identified at species level.
14. *Paragomphus capricornis* (Förster, 1914)
    Abundant in this area. Shown in photo 42.
15. *Phaenandrogomphus tonkinicus* (Fraser, 1926)
    Common but not abundant. Common in the Menglun area. Shown in photo 44-45.

Cordulegastridae

16. *Anotogaster* sp.
    Not yet identified at species level.
17. *Chlorogomphus yokoii* Karube, 2005
    Rare in this area. First record for China.

Corduliidae

18. *Epophthalmia elegans* (Brauer, 1865,
19. *Macromia flavocolorata* Fraser, 1922
20. *Macromia moorei malayana* Laidlaw, 1928
21. *Macromia* sp.
    Not yet identified at species level.
22. *Idionyx selysi* Fraser, 1926

Libellulidae

23. *Acisoma panorpoides panorpoides* Rambur, 1842
24. *Brachydiplax farinosa* Krüger, 1902
    Common in this area. Shown in photo 48.
25. *Brachythemis contaminata* (Fabricius, 1793)
26. *Cratilla lineata lineata* (Brauer, 1878)
27. *Crocothemis servilia servilia* (Drury, 1770)
28. *Diplacodes trivialis* (Rambur, 1842)
29. *Hydrobasileus croceus* (Brauer, 1867)
30. *Lathrecista asiatica* (Fabricius, 1798)

31. *Neurothemis fulvia* (Drury, 1773)
32. *Orthetrum glaucum* (Brauer, 1865)
33. *Orthetrum luzonicum* (Brauer, 1868)
34. *Orthetrum pruinosum neglectum* (Rambur, 1842)
35. *Orthetrum sabina sabina* (Drury, 1770)
36. *Orthetrum triangulare triangulare* (Selys, 1878)
37. *Onychothemis testaceum testaceum* Laidlaw, 1902
    Common in this area. Shown in photo 51.
38. *Onychothemis culminicola* Förster, 1904
    Common in this area. First recorded from China. Shown in photo 50.
39. *Palpopleura sexmaculata* (Fabricius, 1787)
40. *Pantala flavescens* (Fabricius, 1798)
41. *Potamarcha congener* (Rambur, 1842)
    Common in this area. Shown in photo 49.
42. *Pseudothemis zonata* (Burmeister, 1839)
43. *Tetrathemis platyptera* Selys, 1878
    Common in this area. Shown in photo 53.
44. *Tramea virginia* Rambur, 1842
45. *Tramea transmarina euryale* Selys, 1878
46. *Trithemis aurora* (Burmeister, 1839)
47. *Trithemis festiva* (Rambur, 1842)
48. *Trithemis pallidinervis* (Kirby, 1889)
    Rare in this area. Shown in photo 52.
49. *Urothemis signata signata* (Rambur, 1839)
50. *Zygonyx iris insignis* (Kirby, 1900)

Zygoptera

Calopterygidae

51. *Matrona* sp.
    A species with basal hyaline wings which is different from other known species of genus from South China. Only one pair was collected. The species' status is currently being assessed.
52. *Mnais mneme* Ris, 1916
53. *Neurobasis chinensis* (Linnaeus, 1758)
    Abundant in this area.

54. *Vestalis gracilis* (Rambur, 1842)
    Common in this area. Shown in photo 54.

Chlorocyphidae

55. *Aristocypha fenestrella* Rambur, 1842
    Abundant. Shown in photo 56-57.
56. *Heliocypha biforata biforata* (Selys, 1859)
    Common. Shown in photo 58.
57. *Heliocypha perforata perforata* (Percheron, 1835)
    Common. Shown in photo 59.
58. *Indocypha vittata* (Selys, 1891)
    A large species with a white abdomen basis which distinguishes the species from other congeners in this family. One male was collected in Menglun Botanic Garden. First record for China. Shown in photo 55.

Euphaeidae

59. *Dysphaea gloriosa* Fraser, 1938
    Rare. Shown in photo 63.
60. *Euphaea masoni* Selys, 1879
    Abundant. Shown in photo 62.
61. *Euphaea ochracea* Selys, 1859
    Abundant. Shown in photo 60-61.

Platycnemididae

62. *Calicnemia eximia* (Selys, 1863)
    Rare. Shown in photo 67.
63. *Coeliccia loogali* Fraser, 1932
    Rare. Shown in photo 69.
64. *Coeliccia satoi* Asahina, 1997
    Common. Shown in photo 68.
65. *Copera ciliata* (Selys, 1863)
66. *Copera marginipes* (Rambur, 1842)
67. *Indocnemis orang* Förster in Laidlaw, 1907

Lestidae

68. Orolestes selysi McLachlan, 1895
Abundant. Shown in photo 66.

69. Lestes praemorsus praemorsus Hagen in Selys, 1862
Abundant. Shown in photo 64-65

Protoneuridae

70. Prodasineura autumnalis (Fraser, 1922)

71. Prodasineura croconota (Ris, 1916)

Coenagrionidae

72. Agriocnemis pygmaea (Rambur, 1842)

73. Argiocnemis rubescens Selys, 1877
Abundant. Shown in photo 72-73.

74. Ceriagrion olivaceum Laidlaw, 1914
Rare. Shown in photo 71.

75. Ceriagrion sp.
Not yet identified.

76. Ischnura aurora Brauer, 1865
Rare. Shown in photo 70.

77. Ischnura rufostigma Selys, 1876

78. Ischnura senegalensis (Rambur, 1842)
Common. Shown in photo 74.

79. Onychargia atrocyana Selys, 1865

80. Pseudagrion microcephalum (Rambur, 1842)
Rare. Shown in photo 76.

81. Pseudagrion pruinosum fraseri Schmidt, 1934
Common. Shown in photo 75.

82. Pseudagrion spencei Fraser, 1922
Rare. Shown in photo 77.

3. Surveys for the superfamily Calopterygoidea in South China, 2007-2009

From 2007 to 2009, considerable surveys were conducted for the research on the superfamily Calopterygoidea. The locations surveyed are shown in table 2. South China is extremely rich in odonates, especially the provinces such as Guangdong, Guangxi, Guizhou and Yunnan. These four provinces together are home to currently over 200 recorded species including many interesting Ca-

lopterygoidea species. In the series of reports on biodiversity of Odonata by Keith Wilson and his team, many new species were found. Wilson & Xu (2007, 2008, 2009) reported 86 damselflies, 25 aeshnid and 50 gomphid species from Guangdong. Wilson (2005) and Wilson & Reels (2002) reported 202 species from Guangxi. Wilson (2001) reported 128 species from Hainan. Based on these reports, we carried out surveys in South China, mainly in the Guangdong, Guangxi, Guizhou and Yunnan provinces. A total of 42 species (include two *Philoganga* species) from the superfamily Calopterygoidea were collected and identified. A new *Indocypha* species named *I. catopta* is described by Zhang et al. (2010). Three *Matrona* species appear to be new to science. The *Matrona* species from Zhejiang (West Tianmushan) and Guizhou (Fanjingshan) is also likely a new species and a species description is in preparation (Zhang & Hämäläinen, unpubl. Data). The status of two other *Matrona* species is as yet unconfirmed. The checklist of species collected or observed during the surveys are shown in table 3.

Table 2. Locations surveyed in South and Southwest China

Site	Date
Diaoluoshan Nature Reserve, Hainan Province	March 2008; April 2009
Tainyanghe River, Xinglong, Hainan Province	April 2009
Wuzhishan Nature Reserve, Hainan Province	May 2009
Chebaling National Nature Reserve, Shixing County, Guangdong Province	October 2008
Danxiashan National Nature Reserve, Shaoguan City, Guangdong Province	July 2009
Dinghushan, Zhaoqing City, Guangdong Province	August 2009
Heishiding, Zhaoqing City, Guangdong Province	August 2009
Liuxihe, Conghua, Guangzhou City, Guangdong Province	April-May 2009; November 2009
Luofushan, Boluo County, Guangdong Province	August 2009
Nankunshan, Longmen County, Guangdong Province	May-July 2009; September 2008
Nanling National Nature Reserve, Shaoguan City, Guangdong Province	May 2009; July-August 2009
Doupengshan, Duyun City, Guizhou Province	May 2007
Fanjingshan National Nature Reserve, Guizhou Province	July 2008
Maolan National Nature Reserve, Libo County, Guizhou Province	July 2008

Site	Date
Xiangzhigou, Guiyang city, Guizhou Province	July 2009; July 2008; May 2007
Zhangjiang River, Libo County, Guizhou Province	May 2007
Cangshan National Nature Reserve, Dali City, Yunnan Province	June, September 2009
Jinghong Forest Garden, Jinghong City, Yunnan Province	June 2009
Mengla Farm, Xishuangbanna, Yunnan Province	June, September 2009
Menglun Botanic Garden, Xishuangbanna, Yunnan Province	June, September 2009
Fengyangshan, Lishui City, Zhejiang Province	June 2008
Longquan, Lishui City, Zhejiang Province	June 2008
West Tianmushan, Hangzhou City, Zhejiang Province	June 2008

Table 3. Checklist of Calopterygoidea species observed or collected from South and Southwest China during the surveys in table 2.

Species	Locations
Amphipterygidae	
Philoganga r. robusta Navás, 1936	Nanling National Nature Reserve, Liuxihe, Guangdong Province; Zhangjian River, Guizhou Province; West Tianmushan, Zhejiang Province
Philoganga vetusta Ris, 1912	Wuzhishan Nature Reserve, Hainan Province; Liuxihe, Nankunshan, Nanling National Nature Reserve, Guangdong Province; Longquan, Zhejiang Province
Calopterygidae	
Archineura incarnata (Karsch, 1891)	Nanling National Nature Reserve, Liuxihe, Guangdong Province; Zhangjian River,Xiangzhigou, Guizhou Province; West Tianmushan, Zhejiang Province
Atrocalopteryx atrata (Selys, 1853)	Guiyang City, Guizhou Province
Atrocalopteryx melli (Ris, 1912)	Diaoluoshan Nature Reserve, Hainan Province; Chebaling National Nature Reserve, Dinghushan, Liuxihe, Nankunshan, Nanling National Nature Reserve, Guangdong Province; Longquan, Zhejiang Province
Caliphaea consimilis McLachlan, 1894	Cangshan National Nature Reserve, Yunnan Province
Caliphaea nitens Navás, 1934	Nanling National Nature Reserve, Guangdong Province;
Matrona basilaris Selys, 1853	Xiangzhigou, Fanjingshan National Nature Reserve, Guizhou Province; Wuzhishan Nature Reserve, Hainan

Species	Locations
	Province; Chebaling National Nature Reserve, Nanling National Nature Reserve, Nankunshan, Guangdong Province; Xiangzhigou, Guizhou Province; Longquan, Lishui City, Zhejiang Province
Matrona sp1	Fupiqiao, Shaoguan City, Guangdong Province
Matrona sp2	Fanjingshan National Nature Reserve, Guizhou Province; West Tianmushan, Hangzhou City, Zhejiang Province
Matrona sp3	Mengla Farm, Xishuangbanna, Yunnan Province
Mnais mneme Ris, 1916	Diaoluoshan Nature Reserve, Wuzhishan Nature Reserve, Hainan Province; Nankunshan, Guangdong Province
Mnais tenuis Oguma, 1913	Nanling National Nature Reserve, Nankunshan, Liuxihe, Guangdong Province
Neurobasis c. chinensis (Linnaeus, 1758)	Diaoluoshan Nature Reserve, Xinglong, Hainan Province; Liuxihe, Nankunshan, Guangdong Province; Zhangjiang River, Guizhou Province; Jinghong Forest Garden, Mengla Farm, Yunnan Province
Vestalaria miao (Wilson & Reels, 2001)	Diaoluoshan Nature Reserve, Wuzhishan Nature Reserve, Hainan Province; Dinghushan, Heishiding, Guangdong Province
Vestalaria velata (Ris, 1912)	Chebaling National Nature Reserve, Nanling National Nature Reserve, Nankunshan, Liuxihe, Guangdong Province
Vestalaria venusta (Hämäläinen, 2004)	Chebaling National Nature Reserve, Guangdong Province; Xiangzhigou, Guizhou Province
Vestalis gracilis (Rambur, 1842)	Mengla Farm, Yunnan Province
Chlorocyphidae	
Aristocypha aino Hämäläinen, Reels & Zhang, 2009	Diaoluoshan Nature Reserve, Wuzhishan Nature Reserve, Hainan Province
Aristocypha chaoi (Wilson, 2004)	Nankunshan, Liuxihe, Guangdong Province; Maolan National Nature Reserve, Guizhou Province
Aristocypha f. fenestrella Rambur, 1842	Zhangjiang River, Guizhou Province; Jinghong Forest Garden, Mengla Farm, Yunnan Province
Heliocypha b. biforata (Selys, 1859)	Xinglong, Hainan Province; Mengla Farm, Yunnan Province
Heliocypha p. perforata (Percheron, 1835)	Diaoluoshan Nature Reserve, Wuzhishan Nature Reserve, Xinglong, Hainan Province; Liuxihe, Nankunshan, Guangdong Province; Zhangjiang River, Guizhou Province
Indocypha catopta (Zhang et al., 2010, in press)	Maolan National Nature Reserve, Guizhou Province
Indocypha katharina	Zhangjiang River, Guizhou Province

Species	**Locations**
(Needham, 1930)	
Indocypha vittata (Selys, 1891)	Menglun Botanic Garden, Yunnan Province
Libellago lineata (Burmeister, 1839)	Xinglong, Hainan Province; Nankunshan, Guangdong Province
Rhinocypha drusilla Needham, 1930	Nanling National Nature Reserve, Guangdong Province; Maolan National Nature Reserve, Guizhou Province
Rhinocypha huai (Zhou & Zhou, 2006)	Diaoluoshan Nature Reserve, Hainan Province;
Euphaeidae	
Anisopleura qingyuanensis Zhou, 1982	Nanling National Nature Reserve, Guangdong Province
Bayadera bidentata Needham, 1930	Nanling National Nature Reserve, Nankunshan, Liuxihe, Guangdong Province; West Tianmushan, Hangzhou City, Zhejiang Province
Bayadera continentalis Asahina, 1973	Nanling National Nature Reserve, Guangdong Province
Bayadera melanopteryx Ris, 1912	Nanling National Nature Reserve, Nankunshan, Liuxihe, Guangdong Province; Xiangzhigou, Guizhou Province; West Tianmushan, Hangzhou City, Zhejiang Province
Dysphaea basitincta Martin, 1904	Xinglong, Hainan Province; Zhangjiang River, Guizhou Province
Dysphaea gloriosa Fraser, 1938	Menglun Botanic Garden, Yunnan Province
Euphaea decorata Hagen in Selys, 1853	Nankunshan, Liuxihe, Guangdong Province; Maolan National Nature Reserve, Guizhou Province
Euphaea masoni Selys, 1879	Mengla Farm, Yunnan Province
Euphaea opaca Selys, 1853	Liuxihe, Guangdong Province; Longquan, Lishui City, Zhejiang Province
Euphaea ochracea Selys, 1859	Jinghong Forest Garden, Mengla Farm, Yunnan Province
Euphaea ornata (Campion, 1924)	Diaoluoshan Nature Reserve, Wuzhishan Nature Reserve, Hainan Province
Euphaea superba Kimmins, 1936	Maolan National Nature Reserve, Guizhou Province

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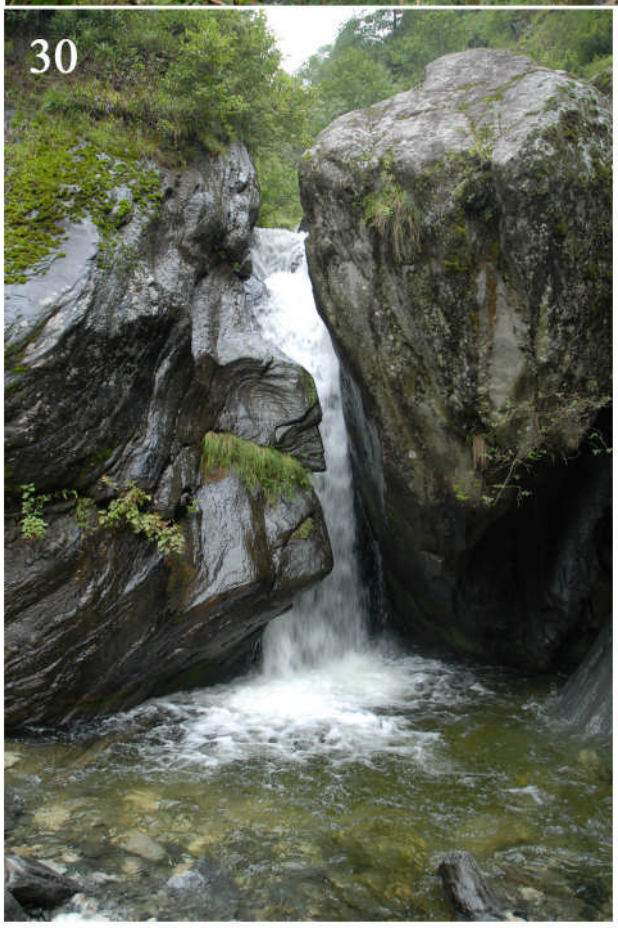
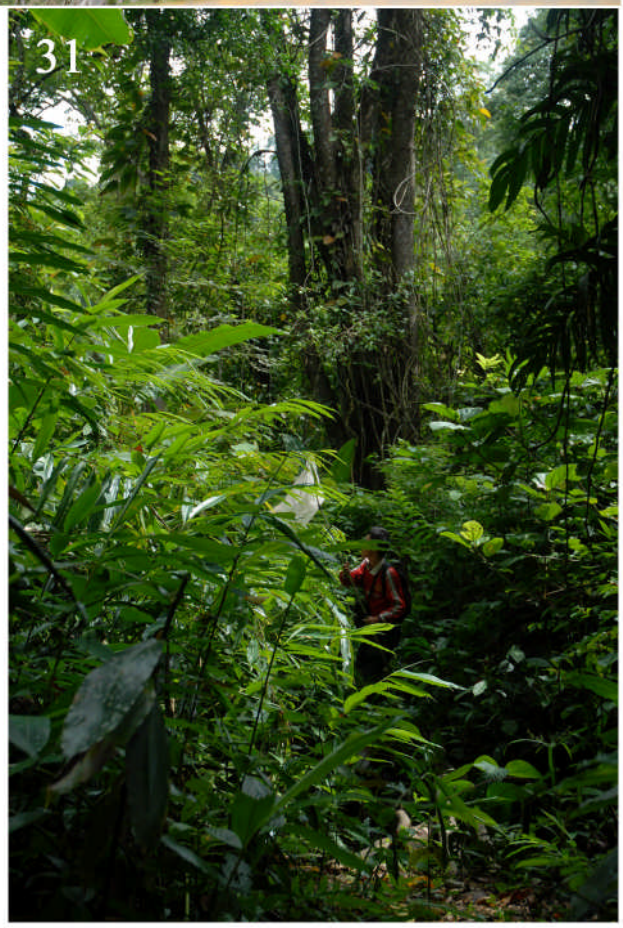




Photos 29-30. Cangshan Nature Reserve, Yunnan Province, China.
Photo 31. Mengla Farm, Xishuangbanna, Yunnan Province, China.

Photos 32-36. Menglun Botanic Garden, Xishuangbanna, Yunnan Province, China.
Photos 37-38. Mengla Farm, Xishuangbanna, Yunnan Province

Photo 39.
Ictinogomphus decoratus male

Photo 40.
Gomphidia interruptistria, male

Photo 41.
Gomphidictinus perak-ensis, male

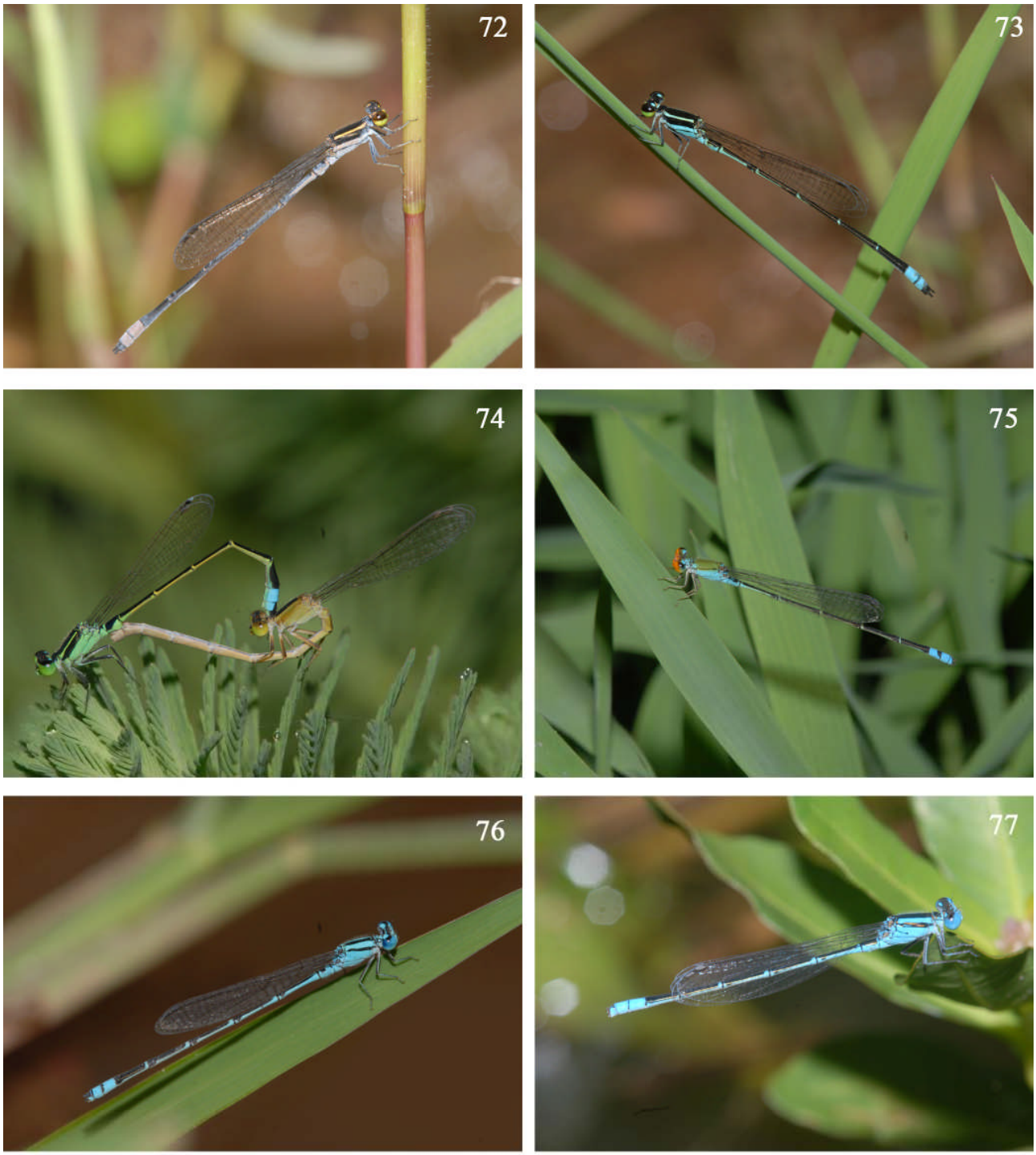
Photos 42-47: 42. *Paragomphus capricornis*, male; 43. *Burmagomphus arboreus*, male; 44. *Phaenandrogomphus tonkinicus*, male; 45. *Phaenandrogomphus tonkinicus*, female; 46. *Lamelligomphus ringens*, male; 47. *Lamelligomphus* sp.

Photos 48-53: 48. *Brachydiplax farinosa*, male; 49. *Potamarcha congener*, male; 50. *Onychothemis culminicola*, male; 51. *Onychothemis t. testaceum*, male; 52. *Trithemis pallidinervis*, male; 53. *Tetrathemis platyptera*, male.

Photos 54-59: 54. *Vestalis gracilis*, male; 55. *Indocypha vittata*, male; 56. *Aristocypha f. fenestrella*, male; 57. *Aristocypha f. fenestrella*, female; 58. *Heliocypha b. biforata*, male; 59. *Heliocypha p. perforata*, male in flight.

Photos 60-65: 60. *Euphaea o. ochracea*, male; 61. *Euphaea o. ochracea*, female; 62. *Euphaea masoni*, male; 63. *Dysphaea gloriosa*, male; 64. *Lestes p. praemorsus*, male; 65. *Lestes p. praemorsus*, pair.

Photos 66-71: 66. *Orolestes selysi*, pair; 67. *Calicnemia eximia*, male; 68. *Coeliccia satoi*, male; 69. *Coeliccia loogali*, male; 70. *Ischnura aurora*, male; 71. *Ceriagrion olivaceum*, male.



Photos 72-77: 72. *Argiocnemis rubescens*, male, brown form; 73. *Argiocnemis rubescens*, male, blue form; 74. *Ischnura senegalensis*, pair; 75. *Pseudagrion* r. rubriceps, male; 76. *Pseudagrion microcephalum*, male; 77. *Pseudagrion spencei*,male.