RECORDS OF RICE FIELD ODONATA FROM THAILAND

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Abstract – Records (1998-2000) of 29 spp., from 47 localities in 36 provinces are listed, and the abundance of some spp. is discussed.

Introduction

Odonates are commonly breeding in rice fields and their vicinity. In Thailand. they usually have two or three generations per year. The adults are important predators of rice pests such as planthoppers, leafhoppers, and rice stem borers (CHE SALMAH et al., 1999), while their larvae can be used to control mosquito larvae (WINYASOPIT, 1976).

The objective of the present study was an inquire into the biodiversity of the rice field odonate fauna in Thailand. A preliminary report, with emphasis on the new provincial records, was published by THIPAKSORN et al. (2001).

Method

The adults were sampled (1998-2000) with insect sweeping nets in rain-fed rice fields during the rice tiller phase, at 47 localities in 36 provinces throughout the country. The fields were transversed and 20 swoops were made per traject. The procedure was repeated twice per sampled area. After identification, the specimens were sorted in a freezer, until used for a molecular detection of a possible *Wolbachia* infection (THIPAKSORN et al., 2003).

Localities

Central region

(1) Samwatawantok, Khlongsamwa district, Bangkok
(2) Chainat Rice Experiment Station, Khaothaphra, Muang district, Chainat
(3) Thasala, Muang district, Lopburi
(4) Pakplee, Pakplee district, Nakhonnayok
(5) Salaya, Phuthamonthon district, Nakhonpathom
(6) Thayang, Thayang district, Phetchaburi
(7) Thasen, Banlad district, Phetchaburi
(8) Bupham, Nadee district, Prachinburi
(9) Bangnamchiew, Phomburi district, Singburi
(10) Suphanburi Rice Research Center, Ruayai, Muang district, Suphanburi

Northern region

(11) Sanpatong Rice Experiment Station, Thungtom, Sanpatong district, Chiangmai
(12) Chiangdao, Chiangdao district, Chiangmai
(13) Phan Rice Experiment Station, Muangphan, Phan district, Chiangrai
(14) Pateung, Maechan district, Chiangrai
(15) Landokmai, Kosamphinakorn district, Kamphangphet
(16) Thasala, Kohkah district, Lampang
(17) Huadong, Kaoliew district, Nakhonsawan
(18) Maepoem, Muang district, Phayao
(19) Phitsanulok Rice Research Center, Wangthong, Wangthong district, Phitsanulok
(20) Phrae Rice Research Center, Maekhammee, Muang district, Phrae
(21) Nongbuatai, Muang district, Tak
(22) Nam-ang, Tron district, Uttaradit

Northeastern region

(23) Salaengphan, Lamplaimas district, Buriram
(24) Kudnamsai, Chaturas district, Chaiyaphum
(25) Lahan, Chaturas district, Chaiyaphum
(26) Chaotha, Kamalasai district, Kalasin
(27) Khonkaen Rice Experiment Station, Naimuang, Muang district, Khonkaen
(28) Nongson, Chiangyoen district, Mahasarakham
(29) Kwao, Muang district, Mahasarakham

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(30) Phonthong, Buayai district, Nakhonratchasima
(31) Sikew, Sikew district, Nakhonratchasima
(32) Khaoyai, Saelaphum district, Roiet
(33) Takes, Uthumpornphisai district, Srisaket
(34) Surin Rice Experiment Station, Naimuang, Muang district, Surin
(35) Ubonratchathani Rice Research Center, Nongkanon, Muang district, Ubonratchathani
(36) Dongcharoen, Khamkoenkaew district, Yasothon
(37) Samran, Muang district, Yasothon

Southern region

(38) Kron, Sawi district, Chumphon
(39) Nakatam, Thasae district, Chumphon
(40) Sichon, Sichon district, Nakhonsithammarat
(41) Thasala, Thasala district, Nakhonsithammarat
(42) Pattani Rice Experiment Station, Makrud, Khokpoh district, Pattani
(43) Chamuang, Kuankanun district, Phatthalung
(44) Pamong, Muang district, Phatthalung
(45) Kamphaengphet, Rattaphum district, Songkhla
(46) Pawae, Chaiya district, Suratthani
(47) Maruan, Punpin district, Suratthani

Recorded species

Coenagrionidae

– *Aciagrion occidentale* Laidlaw – (2) 26-X-1998, 1♀; 4-IX-1999, 1♀. – (17) 4-IX-1999, 2♀. – (25) 11-IX-1999, 1♂, 1♀. – (27) 11-IX-1999, 1♂, 3♀. – (28) 14-X-1998, 1♀. – (44) 10-X-1999, 1♀.

– *Agriocnemis clauseni* Fraser – (6) 17-XI-1998, 1♂, 1♀. – (7) 8-X-1999, 1♀. – (8) 14-IX-1999, 2♀. – (12) 6-IX-1999, 1♂, 2♀. – (13) 28-X-1998, 1♂. – (14) 6-IX-1999, 2♂, 1♀. – (18) 5-IX-1999, 2♂, 1♀. – (26) 14-X-1998, 1♂, 1♀. – (27) 11-IX-1999, 1♀. – (39) 8-X-1999, 1♀. – (47) 8-X-1999, 1♂.

– *Agriocnemis f. femina* (Brauer) – (1) 7-XI-2000, 1♂, 1♀. – (2) 26-X-1998, 4♂, 5♀; 4-IX-1999, 3♂, 5♀. – (3) 8-IX-1999, 2♂, 1♀; 28-VIII-2000, 1♀. – (4) 14-IX-1999, 1♂, 3♀. – (5) 1-VIII-1999, 1♂; 15-VIII-2000, 2♂. – (6) 17-XI-1998, 3♂, 2♀. – (7) 8-X-1999, 3♂, 1♀. – (8) 14-IX-1999, 2♂, 4♀. – (9) 4-IX-1999, 2♂, 3♀. – (10) 4-IX-1998, 4♂, 2♀. – (11) 30-X-1998, 6♂, 3♀. – (12) 6-IX-1999, 4♂, 4♀. – (13) 28-X-1998, 3♂, 2♀. – (14) 6-IX-1999, 4♂, 5♀. – (15) 7-IX-1999, 2♂, 4♀. – (16) 7-IX-1999, 4♂, 3♀. – (17) 26-X-1998, 2♂, 4♀; 4-IX-1999, 3♂, 4♀. – (18) 5-IX-1999, 3♂, 2♀. – (19) 27-X-1998, 4♂, 2♀; 4-IX-1999, 4♂, 5♀. – (20) 28-X-1998, 4♂, 5♀; 5-IX-1999, 3♂, 3♀. – (21) 30-X-1998, 2♂, 2♀. – (22) 27-X-1999, 4♂, 4♀; 5-IX-1998, 2♂, 5♀. – (23) 13-IX-1999, 1♂, 2♀. – (24) 17-X-1998, 2♀. – (25) 11-IX-1999, 2♂, 6♀. – (26) 14-X-1998, 3♀. – (27) 14-X-1998, 1♂, 5♀; 11-IX-1999, 1♂, 3♀. – (28) 14-X-1998, 3♂, 3♀. – (29) 12-IX-1999, 4♂, 3♀. – (30) 13-X-1998, 2♂, 2♀. – (31) 11-IX-1999, 4♂, 5♀. – (32) 15-X-1998, 1♂, 5♀. – (33) 13-IX-1999, 2♂, 5♀. – (34) 16-X-1998, 2♂, 5♀; 13-IX-1999, 2♂, 2♀. – (35) 16-X-1998, 3♀; 12-IX-1999, 4♂, 7♀. – (36) 15-X-1998, 1♂, 2♀. – (37) 12-IX-1999, 2♂, 2♀. – (38) 17-XI-1998, 3♂, 1♀. – (39) 8-X-1999, 2♂. – (40) 18-XI-1998, 2♂, 4♀. – (41) 9-X-1999, 2♂, 2♀. – (42) 20-XI-1998, 4♂, 1♀; 11-X-1999, 1♂, 2♀. – (43) 19-XI-1998, 2♂, 3♀. – (44) 10-X-1999, 2♀. – (45) 20-XI-1998, 1♂, 2♀. – (46) 21-XI-1998, 1♂. – (47) 8-X-1999, 2♀.

– *Agriocnemis minima* Selys – (1) 7-XI-2000, 1♂. – (2) 26-X-1998, 2♂. – (9) 4-IX-1999, 2♂, 2♀. – (11) 30-X-1998, 1♂, 1♀. – (12) 6-IX-1999, 2♀. – (13) 28-X-1998, 1♀. – (14) 6-IX-1999, 2♂, 3♀. – (15) 7-IX-1999, 1♂, 2♀. – (17) 26-X-1998, 1♂, 3♀. – (18) 5-IX-1999, 2♀. – (20) 28-X-1998, 1♂, 1♀; 5-IX-1999, 1♂, 2♀. – (25) 11-IX-1999, 1♂, 3♀. – (28) 14-X-1998, 2♂, 1♀. – (29) 12-IX-1999, 2♀. – (32) 15-X-1998, 1♂.

– *Agriocnemis nana* (Laidlaw) – (12) 6-IX-1999, 2♂, 2♀. – (13) 28-X-1998, 2♂, 2♀. – (14) 6-IX-1999, 2♀. – (15) 7-IX-1999, 2♂, 2♀. – (20) 28-X-1998, 2♂, 1♀. – (21) 30-X-1998, 2♀. – (28) 14-X-1998, 1♂. – (29) 12-IX-1999, 1♂, 1♀. – (34) 16-X-1998, 1♀; 13-IX-1999, 1♀. – (41) 9-X-1999, 1♀.

– *Agriocnemis pygmaea* (Rambur) – (2) 26-X-1998, 4♂, 5♀; 4-IX-1999, 3♂, 4♀. – (4) 14-IX-1999, 3♀. – (5) 15-VIII-2000, 1♀. – (6) 17-XI-1998, 1♂, 3♀. – (7) 8-X-1999, 4♀. – (8) 14-IX-1999, 1♂, 3♀. – (9) 4-IX-1999, 2♂, 1♀. – (10) 4-IX-1998, 4♂, 7♀. – (11) 30-X-1998, 6♂, 4♀. – (12) 6-IX-1999, 4♂, 5♀. – (13) 28-X-1998, 4♂, 4♀. – (14) 6-IX-1999, 7♂, 4♀. – (15) 7-IX-1999, 5♂, 9♀. – (16) 7-

IX-1999, 6♂, 8♀. – (17) 26-X-1998, 1♂, 2♀ ; 4-IX-1999, 4♂, 2♀. – (18) 5-IX-1999, 5♂, 7♀. – (19) 27-X-1998, 2♂, 5♀; 4-IX-1999, 6♂, 4♀. – (20) 28-X-1998, 4♂, 6♀; 5-IX-1999, 3♂, 5♀. – (21) 30-X-1998, 2♂, 3♀. – (22) 27-X-1999, 5♂, 3♀; 5-IX-1998, 4♂, 4♀ . – (23) 13-IX-1999, 1♂, 5♀. – (24) 17-X-1998, 2♂, 3♀. – (25) 11-IX-1999, 3♂, 1♀. – (26) 14-X-1998, 4♂, 9♀. – (27) 14-X-1998, 5♂, 10♀; 11-IX-1999, 4♂, 7♀. – (28) 14-X-1998, 2♂, 5♀. – (29) 12-IX-1999, 2♂, 1♀. – (30) 13-X-1998, 3♂, 6♀. – (31) 11-IX-1999, 3♂, 2♀. – (32) 15-X-1998, 1♂, 6♀. – (33) 13-IX-1999, 2♂, 3♀. – (34) 16-X-1998, 4♂, 7♀; 13-IX-1999, 2♂, 6♀. – (35) 16-X-1998, 6♂, 6♀ ; 12-IX-1999, 4♂, 7♀. – (36) 15-X-1998, 3♂, 2♀. – (37) 12-IX-1999, 3♂, 7♀. – (38) 17-XI-1998, 2♂, 4♀. – (39) 8-X-1999, 3♂, 5♀. – (40) 18-XI-1998, 4♂, 7♀. – (41) 9-X-1999, 2♂, 6♀. – (42) 20-XI-1998, 2♂, 5♀; 11-X-1999, 4♂, 6♀. – (43) 19-XI-1998, 5♂, 8♀. – (44) 10-X-1999, 3♂, 7♀. – (45) 20-XI-1998, 5♂, 6♀; 10-X-1999, 2♂, 1♀. – (46) 21-XI-1998, 3♂, 5♀. – (47) 8-X-1999, 2♂, 4♀.

- *Ceriagrion a. aurantiacum* Fraser – (2) 4-IX-1999, 1♂. – (11) 30-X-1998, 3♂, 2♀. – (12) 6-IX-1999, 2♂, 1♀. – (18) 5-IX-1999, 1♀. – (20) 28-X-1998, 1♂, 1♀; 5-IX-1999, 1♀. – (27) 14-X-1998, 1♂, 1♀. – (45) 10-X-1999, 1♀.
- *Ceriagrion cerinorubellum* (Brauer) – (1) 7-XI-2000, 1♂, 1♀. – (3) 28-VIII-2000, 1♂, 1♀. – (5) 1-VIII-1999, 2♂; 15-VIII-2000, 1♀. – (15) 7-IX-1999, 1♀. – (17) 4-IX-1999, 1♀. – (18) 5-IX-1999, 2♂, 3♀. – (20) 28-X-1998, 2♂, 1♀; 5-IX-1999, 1♂, 1♀. – (35) 16-X-1998, 2♀. – (37) 12-IX-1999, 1♂. – (40) 18-XI-1998, 1♂. – (41) 9-X-1999, 1♀. – (42) 11-X-1999, 1♂.
- *Ceriagrion indochinense* Asahina – (2) 26-X-1998, 2♀; 4-IX-1999, 1♂, 1♀. – (4) 14-IX-1999, 2♀. – (8) 14-IX-1999, 1♀. – (10) 4-IX-1998, 1♂, 1♀. – (16) 7-IX-1999, 1♂, 2♀. – (18) 5-IX-1999, 2♂, 4♀. – (22) 27-X-1999, 1♂, 2♀; 5-IX-1998, 1♂, 1♀. – (25) 11-IX-1999, 1♀. – (30) 13-X-1998, 1♂, 2♀. – (31) 11-IX-1999, 1♂, 1♀. – (34) 13-IX-1999, 2♂. – (41) 9-X-1999, 1♂, 2♀. – (46) 21-XI-1998, 1♀. – (47) 8-X-1999, 1♀.
- *Ceriagrion o. olivaceum* Laidlaw – (9) 4-IX-1999, 1♂, 1♀. – (18) 5-IX-1999, 2♂, 2♀. – (20) 5-IX-1999, 2♂, 1♀. – (29) 12-IX-1999, 1♂, 1♀. – (34) 13-IX-1999, 1♀.
- *Enallagma parvum* Selys – (4) 14-IX-1999, 1♂, 2♀. – (9) 4-IX-1999, 1♂. – (11) 30-X-1998, 1♂. – (12) 6-IX-1999, 1♀. – (17) 26-X-1998, 1♂; 4-IX-1999, 1♂. – (20) 5-IX-1999, 1♂. – (30) 13-X-1998, 2♂. – (31) 11-IX-1999, 1♀. – (34) 13-IX-1999, 2♀. – (39) 8-X-1999, 1♂. – (42) 20-XI-1998, 1♂, 1♀; 11-X-1999, 1♀. – (45) 10-X-1999, 1♂.
- *Ischnura a. aurora* (Brauer) – (7) 8-X-1999, 1♀ . – (9) 4-IX-1999, 1♂, 2♀. – (11) 30-X-1998, 1♂. – (12) 6-IX-1999, 2♀. – (18) 5-IX-1999, 2♂, 1♀. – (20) 28-X-1998, 1♂, 1♀; 5-IX-1999, 4♂, 1♀. – (24) 17-X-1998, 2♀. – (27) 11-IX-1999, 1♂, 2♀. – (35) 12-IX-1999, 3♂, 1♀.
- *Ischnura senegalensis* (Rambur) – (2) 26-X-1998, 1♂; 4-IX-1999, 1♂, 2♀. – (8) 14-IX-1999, 2♀ . – (10) 4-IX-1998, 1♂, 2♀. – (12) 6-IX-1999, 1♀. – (15) 7-IX-1999, 1♂. – (19) 27-X-1998, 1♂, 1♀; 4-IX-1999, 2♂, 3♀. – (20) 28-X-1998, 1♀; 5-IX-1999, 1♂, 1♀. – (23) 13-IX-1999, 2♀. – (24) 17-X-1998, 2♂. – (27) 14-X-1998, 1♂, 1♀; 11-IX-1999, 2♂, 3♀. – (28) 14-X-1998, 3♀. – (31) 11-IX-1999, 2♂. – (33) 13-IX-1999, 1♂, 3♀. – (35) 12-IX-1999, 2♂, 1♀. – (36) 15-X-1998, 1♂, 1♀. – (44) 10-X-1999, 1♀. – (45) 10-X-1999, 1♀.
- *Pseudagrion microcephalum* (Rambur) – (4) 14-IX-1999, 1♀. – (34) 13-IX-1999, 1♀. – (37) 12-IX-1999, 1♀. – (41) 9-X-1999, 1♀. – (47) 8-X-1999, 1♀.
- *Pseudagrion pruinosum* (Burmeister) – (10) 4-IX-1998, 1♂, 1♀. – (33) 13-IX-1999, 1♀. – (42) 11-X-1999, 1♀.

Libellulidae

- *Acisoma p. panorpoides* Rambur – (3) 8-IX-1999, 1♂; 28-VIII-2000, 1♂. – (5) 1-VIII-1999, 1♀.
- *Aethriamanta aethra* Ris – (5) 1-VIII-1999, 1♂ - (17) 26-X-1998, 1♂; 4-IX-1999, 2♂.
- *Brachythemis contaminata* (Fabricius) – (3) 8-IX-1999, 2♂, 1♀. – (5) 15-VIII-2000, 4♂. – (29) 12-IX-1999, 2♀. – (42) 11-X-1999, 1♂.
- *Crocothemis s. servilia* (Drury) – (1) 7-XI-2000, 1♂, 2♀. – (3) 8-IX-1999, 1♂, 2♀; 28-VIII-2000, 4♂. – (5) 1-VIII-1999, 1♀. – (8) 14-IX-1999, 1♂. – (35) 12-IX-1999, 2♀. – (44) 10-X-1999, 1♀.

- *Diplacodes nebulosa* (Fabricius) – (7) 8-X-1999, 1♀. – (27) 11-IX-1999, 1♂.
- *Diplacodes trivialis* (Rambur) – (1) 7-XI-2000, 1♂, 1♀. – (3) 8-IX-1999, 2♂, 2♀; 28-VIII-2000, 1♂. – (5) 1-VIII-1999, 3♂. – (12) 6-IX-1999, 2♂, 1♀. – (19) 27-X-1998, 1♀; 4-IX-1999, 1♀. – (20) 28-X-1998, 1♂, 1♀; 5-IX-1999, 2♂. – (22) 27-X-1999, 1♂, 1♀; 5-IX-1998, 1♂. – (23) 13-IX-1999, 1♀. – (32) 15-X-1998, 2♂. – (35) 12-IX-1999, 1♂, 2♀. – (38) 17-XI-1998, 1♂. – (39) 8-X-1999, 2♀. – (47) 8-X-1999, 1♀.
- *Neurothemis intermedia atalanta* Ris – (2) 26-X-1998, 1♂. – (9) 4-IX-1999, 1♂, 2♀. – (10) 4-IX-1998, 1♂. – (15) 7-IX-1999, 1♂, 1♀. – (23) 13-IX-1999, 1♀. – (27) 14-X-1998, 1♂, 1♀. – (35) 12-IX-1999, 2♀.
- *Neurothemis t. tullia* (Drury) – (1) 7-XI-2000, 1♂. – (2) 26-X-1998, 1♀; 4-IX-1999, 1♂. – (3) 8-IX-1999, 2♂, 2♀. – (5) 1-VIII-1999, 2♂, 1♀. – (7) 8-X-1999, 1♀. – (8) 14-IX-1999, 1♀. – (9) 4-IX-1999, 1♂. – (17) 26-X-1998, 1♀. – (18) 5-IX-1999, 2♂. – (31) 11-IX-1999, 1♂, 3♀. – (32) 15-X-1998, 3♂. – (37) 12-IX-1999, 2♀. – (40) 18-XI-1998, 1♂. – (41) 9-X-1999, 1♂. – (44) 10-X-1999, 1♀. – (45) 10-X-1999, 1♀. – (47) 8-X-1999, 1♀.
- *Orthetrum s. sabina* (Drury) – (3) 8-IX-1999, 1♂. – (5) 15-VIII-2000, 1♂. – (27) 11-IX-1999, 1♂. – (31) 11-IX-1999, 1♂. – (44) 10-X-1999, 1♀.
- *Pantala flavescens* (Fabricius) – (3) 28-VIII-2000, 2♂. – (7) 8-X-1999, 2♂. – (27) 11-IX-1999, 1♀. – (44) 10-X-1999, 1♂.
- *Rhyothemis p. phyllis* (Sulzer) – (3) 28-VIII-2000, 2♀.
- *Tholymis tillarga* (Fabricius) – (7) 8-X-1999, 1♀. – (27) 11-IX-1999, 1♀. – (29) 12-IX-1999, 1♀. – (41) 9-X-1999, 1♂. – (44) 10-X-1999, 1♀.
- *Trithemis aurora* (Burmeister) – (1) 7-XI-2000, 1♀.
- *Urothemis s. signata* (Rambur) – (1) 7-XI-2000, 2♂. – (5) 1-VIII-1999, 1♂. – (10) 4-IX-1998, 1♀. – (15) 7-IX-1999, 1♂, 1♀. – (17) 4-IX-1999, 1♀. – (25) 11-IX-1999, 1♀. – (30) 13-X-1998, 1♂. – (31) 11-IX-1999, 1♀. – (32) 15-X-1998, 1♀. – (39) 8-X-1999, 1♀. – (47) 8-X-1999, 1♀.

Discussion

In all 1167 specimens, referable to 29 species were collected. Among the Zygoptera, *Agriocnemis pygmaea* (37.45% of all collected odonates), followed by *A. f. femina* (25.79%), *Ischnura senegalensis* (4.11%) and *A minima* were the most abundant. Among the Anisoptera, *Diplacodes trivialis* (2.74%), followed by *Neurothemis t. tullia*, *Crocothemis s. servilia*, and *Urothemis signata* were represented by the highest numbers in our samples. Since the anisopterans fly over the field rather than perching on rice plants, their low numbers in our samples are due to the sampling method.

NAKAO et al. (1976) listed from Thai paddy fields 509 specimens pertaining to 20 Zygoptera and 13 Anisoptera species. Similarly as in our study, the numbers of zygopteran individuals and species were much higher than those of the Anisoptera. *A. f. femina* followed by *A. pygmaea*, were the most abundant species. According to our observations *A. f. femina* is the dominant species in the central region, while in the northern, northeastern and southern regions *A. pygmaea* dominates (437 *pygmaea* specimens as to 301 *femina*).

VUNGSILABUTR et al. (1990) reported from central Thailand 12 Zygoptera species. To these we can add *Aciagrion occidentale*, *Pseudagrion microcephalum*, and *P. pruinosum*, but *Agriocnemis nana* was not presented in our collections. Contrary to our evidence, *A. pygmaea* was most abundant. It is likely that *A. femina* and *A. pygmaea* co-occur in the same habitats, as reported by ASAHINA (1972) for India.

The substantial numbers of collected *A. pygmaea* and *A. femina* may depend on the time of the day and on the season, but the genus certainly is dominant in rice fields, and the Coenagrionidae is the most important rice field odonate family. The coenagrionids share the territory with other odonates and, due to their small size, can penetrate the closely spaced rice plants to seek their prey.

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