Odonata observations in the Bandh Baretha region, Rajasthan, India

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Introduction

Dragonflies or Odonata are an important group of aquatic insects and one of the dominant invertebrate predators and key components of wetland ecosystems. They are mentioned in the folklore and stories of different Indian cultures, and in dry regions of India it is widely believed among farmers and common people that swarms of *Pantala flavescens* are harbingers of rains. During the 18th and 19th century numerous Indian species were described by Drury, Fabricius, Selys-Longchamps and Rambur. In the first decades of the 20th century it was Laidlaw and Fraser who contributed significantly to the knowledge of Indian dragonflies. Fraser published a series of papers which were compiled into the three volume 'Fauna of British India Odonata' (Fraser 1933, 1934, 1936). Fraser's volumes still remain a basic reference source for the identification of Indian dragonflies. The present checklist of Indian Odonata comprises 488 species and 27 subspecies (Subramanian & Babu 2017). Although 488 species are known for India, high diversity and endemism is restricted to the hill streams and forested riverine habitats of Western Ghats, Western and Eastern Himalaya and Andaman and Nicobar islands. Ponds, lakes, irrigation canals and paddy fields have common and wide-spread species (Mitra et al. 2010, Subramanian 2012). Some 186 Odonata species are endemic to India (Babu et al. 2013, Subramanian & Babu 2017), with high endemism found in the Gomphidae family and among genera including *Protosticta, Macromia* and *Idionyx*.

Although the taxonomy of adults has generally been well-elaborated, there remain several dragonfly species described from India and Pakistan which require a critical taxonomic treatment. The descriptions of larvae and their ecology, the breeding ecology of many species and the lack of recent data also present a major

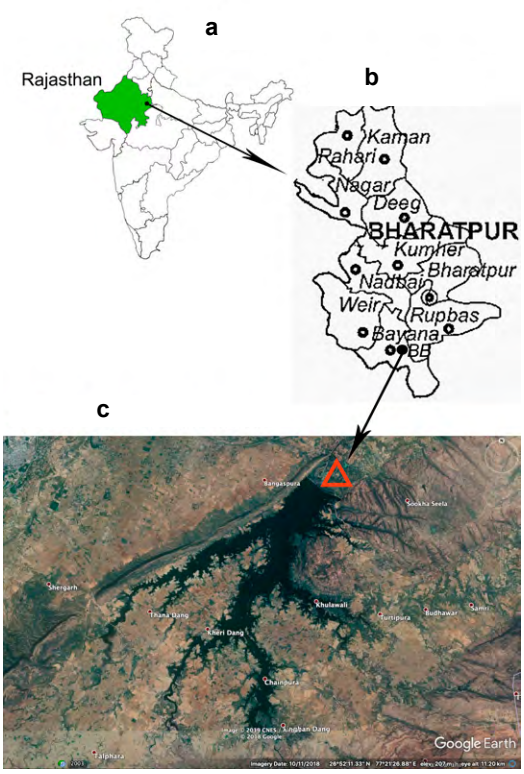

Figure 1. India, state of Rajasthan marked in green (a); the district of Bharatpur (b), arrow marks the region of Bandh Baretha; Bandh Baretha reservoir (c). In the red triangle the area that was selected for the dragonfly research.

Figuur 1. India, deelstaat Rajasthan in groen (a); district van Bharatpur (b), de pijl geeft de regio van Bandh Baretha aan; Bandh Baretha waterreservoir (c). In de rode driehoek de regio die voor het libellenonderzoek was uitgekozen.

Figure 2. The selected habitats: Mahadev Nadi (a); washing-place upstream of Mahadev Nadi (b); Tree nursery (c); irrigation canal (d); sandstone substrate below the dam barrier (e); depression with small streams, below dam barrier (f); water reservoir Bandh Baretha (g).

Figuur 2. De uitgekozen habitats: Mahadev rivier (a); wasplaats stroomopwaarts langs de Mahadev rivier (b); boomkwekerij (c); irrigatiekanaal (d); formaties van rode zandsteen beneden de damwandkering (e); depressie met kleine stroompjes, beneden de damwandkering (f); waterreservoir Bandh Baretha (g). May 2017-2018. Photos Dheerendra Singh.

gap, especially for several elusive species breeding in hill streams and forest streams. Geographically, central India, Eastern Ghats, and several parts of Western and Eastern Himalaya are under-explored, as reflected in a lack of recent dragonfly surveys. Here new species are certainly still awaiting formal scientific description, while type specimens of others need to be critically revised. Several Indian states still lack a general dragonfly checklist. One such state is Rajasthan, situated in the north-western part of the subcontinent, and known as the desert state of India. The Bandh Baretha dam area, in south-east Rajasthan, is an interesting region with a variety of aquatic habitats. The dragonfly fauna of this region had never been studied, and in order to remedy this we carried out several field surveys between February and November from 2010 to 2018.

Materials & Methods

Study area

The Bandh Baretha dam area (26°48'27.2"N, 77°25'33.8"E) is located in the Bharatpur District 65 km from Bharatpur (figure 1). Covering 36 km², the area is part of the Kakund river, a moderately sized southern subtributary of the Gambhir river. Although the reservoir is one of the main water sources for Bharatpur, the problems of the Kakund watershed are inadequate supply of surface water, overexploitation of ground water and a deteriorating quality of ground water with salinity and nitrate as the major problems (Anonymus 2013, Pareta 2013). The average annual rainfall in the area is 1050 mm. May is the hottest month of the year, with maximum temperatures sometimes exceeding 48° C. The minimum temperature frequently drops below 5° C in the winter months of December and January (Pareta 2013).

Data collection

Adult dragonflies were photo-documented and observed through binoculars at different habitat localities around Bandh Baretha dam. Damselflies, especially females, were sometimes caught to check their identification by magnifying glass and to make additional detailed photographs and notes of important body marks. Identification was carried out with available taxonomic literature (Fraser 1933, 1934, 1936, Subramanian 2009, Mitra & Babu 2010). At each site the abundance of common species was partly estimated. The status of dragonflies was categorized on the basis of abundance as follows:

A: very common (dominant) and present in high numbers (50->100) at all seven habitats visited;

Figure 3. *Brachythemis contaminata*, female. Mahadev Nadi.

Figuur 3. *Brachythemis contaminata*, vrouwtje. Mahadev Nadi. 23-04-2017. Photo: Dheerendra Singh.

Figure 4. *Ceriagrion coromandelianum*, male, one of the most common damselflies. Mahadev Nadi.

Figuur 4. *Ceriagrion coromandelianum*, mannetje, een van de algemeenste waterjuffers. Mahadev Nadi. 23-04-2017. Photo: Dheerendra Singh.

B: common, present at three to six habitats in good numbers (20-50);
C: uncommon, present at two to four habitats in low numbers (<20);
D: rare or vagrant species, present at one or two habitats (<5).

The numbers of individuals of rare and vagrant species were accurately recorded. Additional information on reproductive behaviour (ovipositing, exuviae, tenerals) was noted at each habitat location and recorded using coordinates taken with a GPS Garmin etrex 20. Much attention and time was invested in describing in detail the habitats visited by analysing the vegetation and preferred breeding localities and documenting these with numerous photos.

Figure 5. *Trithemis aurora*, male, washing place Mahadev Nadi.

Figuur 5. *Trithemis aurora*, mannetje, wasplaats Mahadev Nadi. 23-04-2017. Photo: Dheerendra Singh.

Habitats

Seven interesting dragonfly habitats at Bandh Baretha were selected, based on type and quality of water and the presence of vegetation, and visited regularly. We provide a brief description of each (figure 2). Plant names follow Shetty & Singh (1987-1993).

The first location is Mahadev Nadi, near Roop Nath Ki Kuthi Temple (26°41'47"N, 77°46'39"E). It is a small stream that brings water from the dam to the villages and to the surrounding agricultural land. The stream is hardly visible because it is partly covered and shaded by trees, mostly *Acacia nilotica*. The parts with open water are fully overgrown by the invasive, floating *Eichhornia crassipes*, while *Typha elephantina* dominates the stream banks (figure 2a).

The second location, upstream of Mahadev Nadi, we call the 'washing place' (26°54'24"N, 77°22'35"E). It is used intensively by humans and cattle. One side of the stream is dammed up by a man-made construction and covered mainly with floating *Eichhornia crassipes*. The other side has small streams that pour down over a stony substrate and disappear into a dense vegetation of *Typha elephantina* and *Phragmites australis* (figure 2b).

The third site is a tree nursery near Baretha village (26°56'03"N, 77°21'53"E) with small irrigation canals in the shade of large mango trees (*Mangifera indica*). During the hottest parts of the day, numerous dragonflies can be found in the shade under the trees (figure 2c).

Location 4 is an irrigation canal, constructed in a 2 metre deep trench with a loamy substrate. A well-developed vegetation is present. *Hydrilla verticillata, Potamogeton crispus, Ceratophyllum demersum* and *Najas minor* dominate in the water, while floating vegetation is represented by *Trapa natans* and several species of duckweed (figure 2d). Near this canal there are places where water seeps from the dam barrier. This seepage causes tiny barely visible streams, recognisable in the field by a

Figure 6. *Pseudagrion spencei*, male, along streams below dam barrier Bandh Baretha.

Figuur 6. *Pseudagrion spencei*, mannetje, langs stroompjes beneden de damwandkering van Bandh Baretha. 10-05-2017. Photo: Dheerendra Singh.

Figure 7. *Onychargia atrocyana*, pair in tandem, washing place. Mahadev Nadi.

Figuur 7. *Onychargia atrocyana*, paar in tandem, wasplaats. Mahadev Nadi. 10-05-2017. Photo: Dheerendra Singh.

pioneer vegetation of small sedges and grasses. The fifth habitat is situated below the dam barrier where variable amounts of water pour down, depending on the reservoir's varying seasonal water level (26°53'42"N,77°22'44"E). Here, water from the dam reservoir becomes mixed with spring water from the deeper underground where it fills up holes and depressions in the red sandstone substrate. This spring water is always present, even in periods of severe drought, guaranteeing continued presence of water in the deepest stony depressions (figure 2e).

Figure 8. *Urothemis signata*, female, washing place Mahadev Nadi.

Figuur 8. *Urothemis signata*, vrouwtje, wasplaats Mahadev Nadi. 10-05-2017. Photo: Dheerendra Singh.

Location 6 is an extension of habitat five where the water, coming up from the rocky substrate below the dam, fills up a depression. In this depression an interconnected system of small streams and rivulets seeks its path between dense vegetation of *Typha angustata* and *Ipomoea carnea* (26°53'46"N, 77°22'43"E). The streams generally have a width of 20-50 cm, sometimes up to 1 m, and an average depth of 5-10 cm, up to a maximum of 30-40 cm (figure 2f).

The seventh and last habitat is the Bandh Baretha reservoir itself (26°53'53"N, 77°22'18"E). During low reservoir water levels, the shallow water zone is covered with a plant community of *Hydrilla verticillata*, *Najas minor* and *Vallisneria spiralis*. This aquatic plant zone is connected to a zone with shrub-like weeds, dominated mainly by *Kirganelia reticulata* and *Polygonum glabrum* (figure 2g).

Regional distribution and dragonfly-assemblages

Nine species of dragonflies are common

or very common in the studied area. The following dragonflies are present at all locations surveyed: *Agriocnemis pygmaea*, *Brachythemis contaminata* (figure 3), *Ceriagrion coromandelianum* (figure 4), *Crocothemis servilia*, *Ischnura nursei*, *Orthetrum sabina* and *Trithemis aurora* (figure 5). Many of these common species are ubiquitous dragonflies, tolerant to habitat change and water eutrophication. Another group of dragonflies favours small, slow-running streams on a muddy or stony substrate, mostly covered with open pioneer vegetation. Here species like *Trithemis festiva*, *Orthetrum pruinosum*, *Orthetrum luzonicum*, *Paragomphus lineatus*, *Pseudagrion rubriceps* and *Pseudagrion spencei* (figure 6) are present. Others like *Brachydiplax sobrina*, *Ceriagrion cerinorubellum*, *Ischnura rubilio*, *Onychargia atrocyanea* (figure 7) and *Urothemis signata* (figure 8) are found near well-vegetated parts of streams or stream banks with a variety of aquatic and semi-aquatic plants, but they may also be present around standing waters. *Zyxomma petiolatum* (figure 9) roosts and breeds in man-made structures such as cemented tanks or canals. We observed several adults at the tank of the nursery and around the canal near the Bandh Baretha dam in April-May and October.

The dragonfly fauna of Bandh Baretha can be divided into four ecological assemblages.

The first group we call the *Trithemis-Disparoneura* assemblage. These species are confined to running water on a rocky or stony substrate where shallow water partly fills up holes in the sandstone (figure 2e). Characteristic dragonflies are *Trithemis festiva*, *Bradinopyga geminata, Disparoneura quadrimaculata* (figure 10), *Orthetrum taeniolatum*, *Paragomphus lineatus* and *Trithemis kirbyi*.

The second group of dragonflies is found near small streams and rivulets, often present as a micro-habitat and part of a larger stream system or marshy area. Sometimes these micro-habitats are hidden between dense vegetation comprising big tussocks of *Saccharum spontaneum*. The constant presence of spring

Figure 9. *Zyxomma petiolatum*, roosting male at tank, nursery Baretha.

Figuur 9. *Zyxomma petiolatum*, rustplek op tank, boomkwekerij Baretha. 10-05-2017. Photo: Dheerendra Singa.

Figure 10. *Disparoneura quadrimaculata*, male, sandstone area below barrier Bandh Baretha.

Figuur 10. *Disparoneura quadrimaculata*, mannetje, zandsteen gebied beneden de damwandkering Bandh Baretha. 10-05-2017. Photo: Dheerendra Singh.

Figure 11. *Orthetrum luzonicum*, male, irrigation canal near Bandh Baretha reservoir.

Figuur 11. *Orthetrum luzonicum*, mannetje, irrigatiekanaal bij het waterreservoir van Bandh Baretha. 22-04-2018. Photo: Dheerendra Singh.

water supplies and fills up the muddy substrate with a thin film of water (2-5 mm) that forms little streams running through a pioneer vegetation of *Scirpus* and *Fimbrystilis* species (figure 2f). *Orthetrum luzonicum* (figure 11), *Orthetrum pruinosum* and *Neurothemis tullia* (figure 12) are the dominant species, sometimes accompanied by others like *Agriocnemis pygmaea*, *Ischnura nursei* and *Ischnura rubilio*.

Most of the common dragonflies at Bandh Baretha are associated with slow-moving or standing water with well-developed vegetation (group 3, habitat sites 1-4, figure 2a, 2b). Species with high abundance are *Ceriagrion coromandelianum*, *Ceriagrion cerinorubellum*, *Brachythemis contaminata*, *Pseudagrion decorum*, *Onychargia atrocyana*, *Crocothemis servilia*, *Rhyothemis variegata*, *Brachydiplax sobrina* and *Urothemis signata*. Several other species widespread in India were only recorded in limited numbers (<10): *Acisoma panorpoides*, *Rhodothemis rufa*, *Diplacodes lefebvrii*, *Diplacodes trivialis*, *Potamarcha congener, Tramea basilaris, Anax guttatus* and *Anax parthenope*. A likely reason for their low numbers is the absence of permanent, well-vegetated standing waters like pools or marshes. Around Bandh Baretha these species can only breed when good monsoon rains have created marshy places and temporary pools. In the period between 2010 and 2018 we observed such temporary pools only in 2013 and 2016.

A fourth dragonfly assemblage is associated with the *Hydrilla-Najas* vegetation growing in the shallow waters along the dam reservoir (habitat 7, figure 2g). This aquatic vegetation creates the ideal breeding habitat for *Ictinogomphus rapax* (figure 13), *Ictinogomphus angulosus*, *Gomphidia t-nigrum* and *Epophthalmia vittata* (figure 14). On numerous occasions we observed females of these species laying their eggs here, guarded by a male. Other species that prefer this habitat are *Amphiallagma parvum, Brachythemis contaminata, Ischnura senegalensis* and *Pseudagrion decorum*.

Conclusions and discussion

The dragonfly fauna of Bandh Baretha region comprises 50 species divided among six families (Table 1). The family *Lestidae* is absent in this region. In our nine years of study we have never observed species from this family, probably because the preferred *Lestes*-habitat, stagnant weedy pools or grassy marshlands, is absent. Two families, *Coenagrionidae* and *Libellulidae*, dominate the species list. This result is similar to that of dragonfly surveys in other Indian

Figure 12. *Neurothemis tullia*, male, irrigation canal near Bandh Baretha reservoir.

Figuur 12. *Neurothemis tullia*, mannetje, irrigatiekanaal bij het waterreservoir van Bandh Baretha. 22-04-2018. Photo: Dheerendra Singh.

Table 1. Recorded Odonata per habitat (2010-2018): 1 = Mahadev Nadi; 2 = washing-place Baretha; 3 = tree nursery; 4 = irrigation canal; 5 = below dam barrier; 6 = depression with streams; 7 = water reservoir Bandh Baretha. Year of observation. Status: A = very common, very high numbers, yearly reproduction; B = common, high numbers, yearly reproduction; C = uncommon, low numbers, reproduction not yearly; D = vagrant or rare, one too few, reproduction uncertain.

Tabel 1. Waargenomen libellen per habitat (2010-2018): 1 = Mahadev rivier; 2 = Wasplaats Baretha; 3 = boomkwekerij; 4 = irrigatiekanaal; 5 = beneden damwandkering; 6 = laagte met stroompjes; 7 = waterreservoir Bandh Baretha. Jaar van waarneming. Status: A = zeer algemeen, zeer hoge aantallen, voortplanting jaarlijks; B = algemeen, hoge aantallen,voortplanting jaarlijks; C = ongewoon, lage aantallen, voortplanting niet jaarlijks; D = zwerver of zeldzaam, een tot enkele exemplaren, voortplanting onzeker.

Family/Species	Locality numbers	Year(s) of observation	Status
Family Chlorocyphidae			
Libellago lineata	5	2011	D
Family Platycnemididae			
Disparoneura quadrimaculata	5	2014/ 2015/ 2017	C
Onychargia atrocyana	1,2,4,	2013-2017	B
Family Coenagrionidae			
Agriocnemis pygmaea	1,2,3,4,5,6,7	2010-2018	B
Amphiallagma parvum	1	2013/ 2017	D
Ceriagrion cerinorubellum	2,3,4,	2011-2018	B
Ceriagrion coromandelianum	1,2,3,4,5,6	2010-2018	A
Ischnura nursei	1,2,3,4,5,7	2010-2017	B
Ischnura rubilio	1,2,3,5	2010-2018	C
Ischnura senegalensis	1,2,5,7	2010-2018	B
Pseudagrion decorum	1,2,3,4,7	2010-2018	B
Pseudagrion microcephalum	1,2,	2012/ 2013/ 2014	D
Pseudagrion rubriceps	2,4,5	2011/ 2013/ 2014	C
Pseudagrion spencei	1,2,6	2011/ 2012/ 2017	C
Family Aeshnidae			
Anaciaeschna jaspidea	3	2011	D
Anax ephippiger	1,3	2011/ 2013	D
Anax gutttatus	1,3	2013/ 2016	D
Anax immaculifrons	4,5	2012/ 2014	D
Anax parthenope	3	2016	D
Family Gomphidae			
Gomphidia t-nigrum	1,7	2011/ 2017	C
Ictinogomphus angulosus	5,7	2014/ 2017	C
Ictinogomphus rapax	1,4,7	2011/ 2012/ 2014/ 2017/ 2018	B
Paragomphus lineatus	1,4,5	2013/ 2014/ 2017	C
Family Libellulidae			
Acisoma panorpoides	1,2,3,4,5	2011-2017	B
Aethriamanta brevipennis	1,2	2015	D
Brachydiplax sobrina	1,2,4	2012-2018	B
Bradinopyga geminata	5	2011/ 2017	C
Brachythemis contaminata	1,2,3,4,5,6,7	2010-2018	A
Crocothemis servilia	1,2,3,4,5,7	2010-2018	A
Diplacodes lefebvrii	1,3,4,6	2011/ 2013/ 2014/ 2016/ 2017	C
Diplacodes trivialis	1,4	2011	C
Indothemis carnatica	3	2016	D
Neurothemis tullia	1,2,3,4	2011-2017	B
Orthetrum luzonicum	1,2,4,6	2011-2017	B
Orthetrum pruinosum	1,2,3,4	2011-2017	B
Orthetrum sabina	1,2,3,4,5,6,7	2010-2018	A
Orthetrum taeniolatum	2,5	2012-2017	B
Pantala flavescens	3,4	2016	D
Potamarcha congener	1,3	2011	D
Rhodothemis rufa	2,4	2013-2017	B
Rhyothemis variegata	1,2,3,4	2011-2017	A
Tholymis tillarga	3	2016	C

Family/Species	Locality numbers	Year(s) of observation	Status
Tramea basilaris	4,5	2011/ 2012/ 2013	C
Trithemis aurora	1,2,3,4,5,6,7	2011-2018	A
Trithemis festiva	1,2,3,5	2011-2017	B
Trithemis kirbyi	7	2012	D
Trithemis pallidinervis	1,4,7	2011/ 2013/ 2015	C
Urothemis signata	1,2,4	2013-2017	B
Zyxomma petiolatum	2,3,4	2011-2017	B
Family Macromiidae			
Epopthalmia vittata	7	2017	C

Figure 13. *Ictinogomphus rapax*, male, water reservoir Bandh Baretha.

Figuur 13. *Ictinogomphus rapax*, mannetje, waterreservoir Bandh Baretha. 22-04-2018. Photo: Dheerendra Singh.

regions (Tiple et al. 2008, Rathod et al. 2012, Das et al. 2013, Adarsch et al. 2015, Singh et al. 2017) or other continents (Boudot & Kalkman 2015, Dijkstra & Clausnitzer 2014). Our species checklist has 23 resident species with good populations and yearly reproduction. Fourteen species are regarded as semi-resident because they sometimes appear to be absent and do not seem to breed there every year, and 13 species we regard as vagrant or rare (table 1). Species like *Anaciaeschna jaspidea*, *Aethriamanta brevipennis* (figure 15), *Indothemis carnatica*, *Libellago lineata* and *Trithemis kirbyi* were only seen once between 2010 and 2018. For eight species, mostly Aeshnidae, we have very few observations and records. Species of this family occur irregularly and in low numbers (1-2 individuals). Comparison of our species number with other field surveys carried out in Rajasthan (Singh et al. 2007, Sharma 2014, Koli et al. 2015) indicates that the dragonfly fauna of Bandh Baretha is very species-rich. The dragonfly fauna of this region reflects the permanent presence of running water in combination with temporary standing waters and a variety of vegetations and substrates. Three species, *Ictinogomphus angulosus*, *Gomphidia t-nigrum* and *Aethriamantha brevipennis*, are new to Rajasthan, not having been reported previously (Sharma 2014, Koli et al. 2015, Singh et al. 2017). This study demonstrates that long-term field observations of dragonflies in India are important and crucial to monitor their status, distribution and trends in populations. More than in any other country in the world, wetlands and freshwater bodies are under severe threat in India. The ongoing growth of the human population is leading to urbanization and pollution of many waters and increasing pressure of both humans and livestock on wetlands, and this also holds for Bandh Baretha. Despite the Bandh Baretha area being classified as an important

Figure 14. *Epophthalmia vittata*, male, water reservoir Bandh Baretha.

Figuur 14. *Epophthalmia vittata*, mannetje, waterreservoir Bandh Baretha. 22-04-2018. Photo: Dheerendra Singh.

Figure 15. *Aethriamanta brevipennis*, male, washing place Bandh Baretha.

Figuur 15. *Aethriamanta brevipennis*, mannetje, wasplaats Bandh Baretha. 19-07-2015. Photo: Dheerendra Singh.

bird sanctuary, the pressure of the agricultural communities and their livestock on the wetland habitats has increased and is leading to habitat degradation and deterioration. We hope our dragonfly research may contribute to a better understanding of the need for conservation of the wetland habitats of Bandh Baretha and the dragonflies they harbour. Future research and field surveys in other parts of Rajasthan are necessary, especially in the southern and northern regions where no recent information about the dragonfly fauna is available.

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Summary

Bandh Baretha dam is a water reservoir, part of Kakund river, situated in the Bharatpur District in the south eastern part of Rajasthan (India). The dragonfly fauna of the water reservoir and adjacent region was examined from 2010-2018. Field surveys were carried out between February and November across seven selected habitats. To date 50 dragonfly species have been recorded: 14 damselflies (Zygoptera) and 36 dragonflies (Anisoptera). Three species are reported for the first time for Rajasthan: *Ictinogomphus angulosus*, *Gomphidia t-nigrum* and *Aethriamantha brevipennis*. The present study describes the existence of characteristic dragonfly assemblages in the investigated habitats. It also emphasizes that long-term field studies are necessary to understand the status, distribution and stability of dragonfly populations in relation to changes in their environment due to increasing human influence.

Samenvatting

Singh D & J. Hermans 2019. Libellenwaarnemingen in de Bandh Baretha regio, Rajasthan (India). Brachytron 20 (1): 38-48

Bandh Baretha is een stuwdam/waterreservoir in de Kakund rivier, gelegen in het district van Bharatpur in het zuidoosten van Rajasthan (India).De libellenfauna van het waterreservoir en omgeving is tussen 2010 en 2018 onderzocht. De inventarisaties zijn, verdeeld over zeven geselecteerde habitats, uitgevoerd tussen februari en november. Tot nu toe zijn 50 soorten libellen vastgesteld, 14 waterjuffers (Zygoptera) en 36 echte libellen (Anisoptera). Drie soorten worden voor het eerst voor Rajasthan gemeld: *Ictinogomphus angulosus*, *Gomphidia t-nigrum* en *Aethriamanta brevipennis*. Dit onderzoek noemt de aanwezigheid van kenmerkende libellengemeenschappen bij de onderzochte habitats. Het onderstreept de noodzaak van langjarig veldonderzoek om status, verspreiding en populatietrends van libellen te begrijpen in relatie tot de verandering van hun omgeving veroorzaakt door toenemende menselijke beïnvloeding.

Keywords: Odonata, Bandh Baretha, Rajasthan, India, habitat, dragonfly-assemblages