Abstract. ‘Afromontane’ ecosystems in Eastern Africa are biologically highly valuable, but many remain poorly studied. We list dragonfly observations of a Biodiversity Express Survey to the highland areas in north-west Mozambique, exploring for the first time the Njesi Plateau (Serra Jecchi/Lichinga plateau), Mt Chitagal and Mt Sanga, north of the provincial capital of Lichinga. A total of 13 species were collected. *Allocnemis* cf. *abbotti* and *Gynacantha immaculifrons* are new records for Mozambique.

Further key words. Dragonfly, damselfly, Anisoptera, Zygoptera, biodiversity, survey

Introduction

The mountains of the East African Rift, stretching south from Ethiopia to Mozambique, are known to harbour a rich biological diversity owing to their unique habitats and long periods of isolation. Typically comprised of evergreen montane forests interspersed with high altitude grassland/moorland habitats, these montane archipelagos, often volcanic in origin, have been widely documented as supporting high levels of endemism across taxonomic groups and are of international conservation value (Myers et al. 2000). While certain mountain ranges within this region have been relatively well studied biologically e.g. the Eastern Arc Mountains of Tanzania (Burgess et al. 2007), large gaps in our knowledge of the region remain. The mountains of northern Mozambique are one of the poorest studied regions of eastern Africa and until recently few biological records existed.

Since the early 2000s, significant exploratory work addressing the knowledge-gaps in the biology of Mozambique’s mountains has been undertaken. A series of expeditions to the area, particularly Mt Mabu, Mt Namuli, Mt Inago and Chi-iperone, have begun to redress this (see Bayliss et al. 2010, 2014; Timberlake et al. 2007, 2009, 2012). However despite recent increased attention on Mozambique’s mountains, they still remain poorly known especially for several invertebrate groups.
To further contribute to the study of the northernmost highlands and mountains of Mozambique, a Biodiversity Express Survey to the highland areas in the North-west of the country (Niassa province) was organised, covering the Njesi Plateau (Serra Jecci/Lichinga plateau), Mt Chitagal and Mt Sanga, north of the provincial capital of Lichinga. We present here observations on the dragonflies from the expedition.

Study region and methods
We surveyed three peaks in the Serra Jecci Mountain range (Niassa, Mozambique), where camps were made at the summits of the peaks of Mt Chitagal and Mt Sanga as well as on the Njesi Plateau. Data were collected between 05–25-xi-2016. We timed our visit to span the beginning of the wet season, but except for one morning no rain fell during the survey period. Dragonflies were collected on an opportunistic basis using hand nets. We sampled as wide a range of habitats as possible to obtain a good representation of the dragonflies that were active at the time of our surveys. Specimens were killed and preserved in 70% ethanol and subsequently identified by Dr Rosser Garrison from the California Department of Food & Agriculture (Plant Pest Diagnostics Branch) in Sacramento, California, USA. After identification, part of the material was returned to the Museu de Historia Natural in Maputo, Mozambique, and part of the material was deposited in the personal collection of Dr Rosser Garrison.

List of localities with odonate records
(1) Mt Chitagal (12°35’49.32”S, 35°15’46.74”E), 1 428 m a.s.l. (2) Mt Sanga (12°23’0.72”S, 35°20’6.96”E), 1 702 m a.s.l. (3) The Njesi Plateau (12°49’56.76”S, 35°11’12.00”E), 1 728 m a.s.l.

Results
A total of 13 species were recorded. Allocnemis cf. abbotti (Fig. 1) and Gynacantha immaculifrons are newly recorded for Mozambique (see DIJKSTRA & CLAUSNITZER 2014).

List of species recorded

Family Calopterygidae
1. Umma declivium Förster, 1906
   (1) 1♂ 4♀.

Family Chlorocyphidae
2. Platycypha caligata (Selys, 1853)
   (1) 1♂.
Family Platycnemididae
   (1) 1♂.

Family Coenagrionidae
4. *Africallagma sinuatum* (Ris, 1921)
   (1) 1♂ 2♀ (2) 1♀.
5. *Pseudagrion kersteni* (Gerstäcker, 1869)
   (1) 1♂ (3) 9♂ 2♀.
6. *Pseudagrion sublacteum* (Karsch, 1893)
   (1) 1♂.

Family Aeshnidae
7. *Gynacantha immaculifrons* Fraser, 1956
   (1) 1♂.

Family Libellulidae
8. *Atoconeura biordinata* Karsch, 1899
   (1) 2♂.
9. *Crocothemis saxicolor* Ris, 1919
   (3) 2♂ 2♀.
10. *Orthetrum chrysostigma* (Burmeister, 1839)
    (1) 1♂.
11. *Orthetrum julia* Kirby, 1900
    (1) 4♂ 1♀ (2) 2♂ (3) 2♂.
12. *Trithemis furva* Karsch, 1899
    (1) 1♂ (3) 6♂.
    (1) 2♂ (3) 5♂.

Discussion
The single male *Allocnemis* collected (Fig. 1) has a rounded tubercle on the paraproct, not a sharp tooth as stated and illustrated in the original description for *A. maccleeryi* (Pinhey 1969), and is closest to *A. abbotti*. The status of *A. maccleeryi* is uncertain (K.-D.B. Dijkstra pers. comm.) and the specimen collected seems intermediate between *A. abbotti* and *A. maccleeryi* possibly pointing towards synonymy for these taxa. We recorded this dragonfly close to a small stream with fine sand in a forested valley surrounded by dry grasslands. This new record in Northern Mozambique is 170 km ‘as the crow flies’ crossing Lake Malawi from Mt Ntchisi (Malawi), the only location from where *A. maccleeryi* is known (Clausnitzer 2010a). It is about 220 km from the closest recorded location of *A. abbotti* in...
South-west Tanzania (Clausnitzer 2010a). *Allocnemis abbotti* is classified as ‘Near Threatened’ (Clausnitzer 2010b).

*Gynacantha immaculifrons* is a poorly known species documented with sparsely distributed records from Tanzania (two localities), the Democratic Republic of Congo (a single record), and a single record from Malawi (Dijkstra 2005). It is a difficult species to find. It is expected to be common in the known range, and is related to healthy woodlands (Clausnitzer 2017). Our record comprises the first for this species in Mozambique.

*Umma declivium* is a species found along forest streams of the Eastern Arc Mts (Tanzania) but is also known to occur in Mozambique (Dijkstra & Clausnitzer 2014), including Mt Mabu (K.-D.B. Dijkstra pers. comm.). It is classified as ‘Vulnerable’ (Clausnitzer 2010c) owing to rapid deforestation of its montane habitats which is fragmenting existing populations. Our record comprises an important new population of this threatened montane species.

We recorded only 13 species during our fieldwork, most likely a reflection of the paucity of aquatic habitats available at the end of the dry season. There was no precipitation during the expedition and only small mountain streams were flowing.

The occurrence of two new national records is indicative of the sparse knowledge of the dragonflies of Northern Mozambique and also the general fauna and flora of these habitats. Several species associated with healthy forested habitats were observed, confirming the observations in the field of little deforestation in the higher altitudes of the northernmost highlands. Further surveys in this region during different seasons of the year will without any doubt reveal additional species.

Fig. 1. Male of *Allocnemis* cf. *abbotti* from Niassa province, Mozambique. Photo: Rosser Garrison
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