

Odonate Survey of the Sustainable Roots Reserve, Napo, Ecuador

JACK FARLEY

jfarley1@student.ubc.ca

SUMMARY

Dragonflies and damselflies (Insecta: Odonata) are one of the best studied insect groups and are widely across the globe. They are sensitive to anthropogenic disturbance and can be used for habitat quality assessment and monitoring. Odonate diversity of a regenerating cattle pasture within the Sustainable Roots Reserve in the Napo Province of Ecuador was studied between February 5 and March 31, 2022. A total of 10 odonate species representing 8 genera were documented. A list of species recorded and colour photographs are included.

Key words: Dragonfly, Damselfly, Inventory, Napo, Odonata

1. INTRODUCTION

A total of 425 species of odonates have been recorded in Ecuador of which 44 are not known to occur anywhere else on earth (Mauffray and Tennessen, 2019). Though the odonate fauna of Ecuador has been well studied in comparison to that of neighbouring countries, little effort has been made to fully catalogue the odonata of a single site, especially in the highlands. And without comprehensive surveys it is not possible to analyze changes in odonate communities over time or to measure habitat quality by comparing assemblages at different sites.

The Quijos Valley in which the Sustainable Roots Reserve is located is a "mosaic of pasturelands, croplands, and remnant forest patches" sandwiched between three major protected areas: Cayambe-Coca National Park to the north, Sumaco Napo-Galeras National Park to the east, and Antisana National Park to the west (Sarmiento *et al.*, 2021). Despite its picturesque location, soil erosion due to pasture expansion, oil pipelines laid along river banks, and solid waste from the communities threaten to contaminate the streams and rivers (Chaurette *et al.*, 2003). Benthic macroinvertebrates (including odonates) are a key indicator of an aquatic ecosystem's health (Rosenberg and Jackson, 2009) and by better understanding the current odonate assemblage in the valley it will be easier to detect changes to habitat quality in the future.

2. METHODS

The survey took place February 5 to March 31 2022 with 15 visits to the reserve approximately 1-2 hours each dedicated to catching odonates. The rest of the time was spent surveying the birds of the reserve or waiting for the weather to improve. Very little odonate activity was observed when it was not warm and sunny, so surveys generally took place during brief windows of afternoon sun. During the study period not a single odonate was observed in the forested portion of the reserve, and as such, odonate survey efforts were concentrated on the stream that flows through the reserve and a small area of regenerating pasture (approximately 1 ha). During visits, odonates were caught with an aerial insect net and photographed from several angles before being released. Identifications were made from the photos by consulting the available literature and online forums.

2.1 *The study site*

The Sustainable Roots Reserve is a small protected area located on the east slope of the Andes 2 km south-east of the town of Cosanga in the Napo Province of Ecuador (-0.59°N, -77.84°W). The reserve spans an elevation gradient from 1,990 m to 2,190 m, but all odonates were observed below

2,050 m (the upper regions of the reserve are forested). The portions of the reserve where odonates were recorded include a perennial rocky stream through the aftermath of a large landslide and a regenerating cattle pasture.

3. RESULTS

A total of 10 species belonging to 8 genera and 4 families were recorded at the study site.

Table 1: List of Odonata recorded from the Sustainable Roots Reserve

S. No.	Species	Status
Zygoptera		
Calopterygidae		
1	<i>Ormenophlebia imperatrix</i>	Rare
Coenagrionidae		
2	<i>Argia medullaris</i>	Very Common
3	<i>Mesamphiagrion dunklei</i>	Rare
4	<i>Mesamphiagrion ecuatoriale</i>	Common
5	<i>Oxyagrion tennesseini</i>	Very Common
Anisoptera		
Aeshnidae		
6	<i>Rhionaeschna cornigera</i>	Very Common
7	<i>Rhionaeschna marchali</i>	Common
Libellulidae		
8	<i>Cannaphila vibex</i>	Common
9	<i>Erythrodiplax ines</i>	Very Common
10	<i>Macrothemis hahneli</i>	Common

4. DISCUSSION

Of the 10 species recorded, two species (*M. ecuatoriale* and *O. tennesseini*) are endemic to the Eastern Andes of Ecuador. All recorded species were previously known to occur in the Quijos region (Mauffray and Tennesen, 2019). Though it is unlikely that every species at the reserve was documented, no unidentified odonates were observed during the study period and most visits did not yield any new species so it is probable that this list constitutes a reasonably complete reflection of the site's diversity.

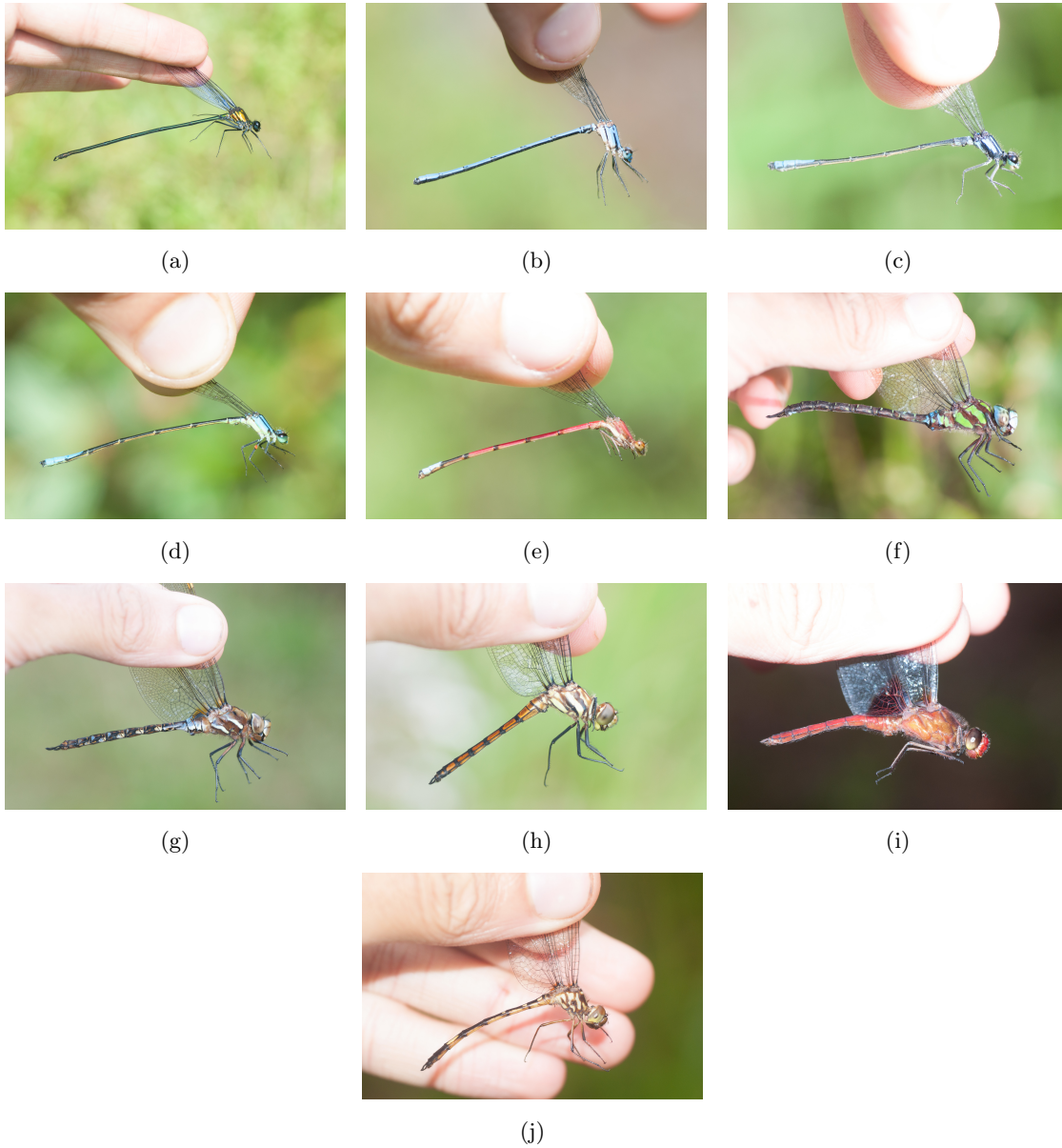


Fig. 1: Photographs of all odonate species recorded during the study period. (a) *Ormenophlebia imperatrix* (McLachlan, 1878); (b) *Argia medullaris* (Hagen in Selys, 1865); (c) *Mesamphiagrion dunklei* (von Ellenrieder Garrison, 2008); (d) *Mesamphiagrion ecuatoriale* (von Ellenrieder Garrison, 2008); (e) *Oxyagrion tenneseni* (Mauffray, 1999); (f) *Rhionaeschna cornigera*; (g) *Rhionaeschna marchali*; (h) *Cannaphila vibex* (Hagen, 1861); (i) *Erythrodiplax ines* (Ris, 1911); (j) *Macrothemis hahneli* (Ris, 1913)

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