

Dry season observations of butterflies in the "Gulf country" of the Northern Territory and far north-west Queensland

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Abstract

Land south of the Gulf of Carpentaria appears to be either a bridge or semi-arid barrier between butterfly populations of the higher rainfall areas of the Top End and north Queensland, but there have been few surveys to shed light on the issue. I surveyed butterflies in two "Gulf country" regions in July 2006, recording 25 species in far north-west Queensland and 27 species in the Borroloola region of the Northern Territory; 36 species in total. Of these, one and seven species respectively are additions to the known faunas for the regions, and records of 11 and seven species respectively provide corroboration for isolated previous records. These mostly represent a diminution of the gap in records between populations in Queensland and the Northern Territory, but exceptions are noted including three species that are at home in semi-arid environments.

Introduction

The relatively dry country along the southern shore of the Gulf of Carpentaria is a barrier separating many butterfly populations associated with the higher rainfall areas, and rainforest patches in particular, in the Top End of the Northern Territory and Cape York Peninsula in north Queensland (Kitching & Dunn 1999). Populations of several species have differentiated geographically, with different subspecies across this barrier; striking examples include the Small Brown Crow *Euploea darchia* and the Red-banded Jezebel *Delias mysis* (Braby 2000). However, the synoptic distributions maps in Braby (2000, 2004) indicate apparently isolated populations on either side of this barrier for a large number of butterfly species, many of which show no sign of differentiation across the Gulf. There are a number of possible explanations for this, amongst them the possibility that the counter-clockwise winds associated with high-pressure systems in central Australia during the dry season (Tapper *et al.* 1994), and cyclonic and monsoonal winds during the wet season (McDonald & McAlpine 1991), may trigger dispersal among apparently isolated populations.

Another possibility is that some of the distributional gaps are apparent rather than real, reflecting little survey effort in the southern "Gulf country" (Figure 1). The maps and distribution notes of Braby (2000) indicate that 22 species range into far north-west Queensland (here defined as north and west of the road from Camooweal to Burketown) whilst a further 23 species are recorded there as isolated records. Published surveys (Puccetti 1991, Daniels & Edwards 1998) detail a further 12 species, not including Puccetti's possible record of the Yellow Migrant *Catopsilia gorgophone*, bringing the known butterfly fauna for far north-west Queensland to 57 species.

In the Northern Territory section of the southern "Gulf country", knowledge of the butterfly fauna appears even less satisfactory. To my knowledge, there are no published surveys south of, nor more recent than Tindale's (1923) list of species for Groote Eylandt. Records in Braby (2000), many derived from other general works such as Dunn and Dunn (1991), indicate limited and otherwise unpublished collecting activities in the Borroloola area, with the documented fauna within about a 100 km radius comprising 21 wide-ranging species and isolated records of a further 19 species. Franklin *et al.* (2005) added three species, bringing the total known fauna of the Borroloola area to 43 species.

In this note, I provide details of species identified in these two regions of the "Gulf country" in July 2006.

Methods

Surveys were conducted: *a*, over a 10-day period in far north-western Queensland (sites 1–7), and *b*, during a two-day period in the Borroloola area (sites 8–9) (Table 1, Figure 1). Butterflies were identified by sight, by close examination of netted individuals, and examination of high-resolution photographs, using Braby (2004) and a key to the lycaenid butterflies of north-western Australia (Franklin & Bisa, in prep.). Only species readily identifiable in the field were recorded without closer examination – some sightings were not listed because their identity could not be adequately established. Surveys in Lawn Hill National Park (Qld) and Limmen National Park (proposed, NT) were limited to sightings and photography, the latter employed extensively at Lawn Hill. Many of the records which are from noteworthy locations were substantiated by photographs (indicated by "P" in Table 2), a CD of which is available upon request.

Results and Discussion

In total, 36 butterfly species were identified during the survey period (Table 2). In far north-west Queensland, 25 species were identified, of which one is an addition to the known fauna and 11 provide corroboration for isolated records. In the Borroloola

area of the Northern Territory, 27 species were identified, of which seven are additions to the known fauna and seven provide corroboration for isolated records.

A number of the noteworthy records involved numerous individuals or repeat sightings, suggesting that occurrences of these species may not be isolated. The Tailed Emperor *Polyura sempronius* was added to the known fauna for both regions based on three individuals including two at well-separated locations in north-west Queensland. In far north-west Queensland, the Blue Argus *Junonia orithya* and Black-spotted Grass-blue *Famegana alsulus* were both widespread and locally common, and the Jewelled Grass-blue *Freyeria putli* was recorded at two locations and was moderately common at one of these (Hedleys Gorge), though the only previous regional records of these species are those of Daniels and Edwards (1998). The Two-spotted Line-blue *Nacaduba biocellata* and Long-tailed Pea-blue *Lampides boeticus* were both widely dispersed in far north-west Queensland and were repeatedly observed associated with their larval food plants (*Acacia* flowers and Rattlepods *Crotalaria* spp. respectively) (Braby 2000), and many hundreds of individuals of the former were present in the Lawn Hill Gorge area. In the Borroloola area, the Chocolate Argus *Junonia bedonia* was abundant along a swampy watercourse at Lorella Springs, whilst the Small Dusky-blue *Candalides erinus* was recorded at both Lorella Springs and Butterfly Springs.

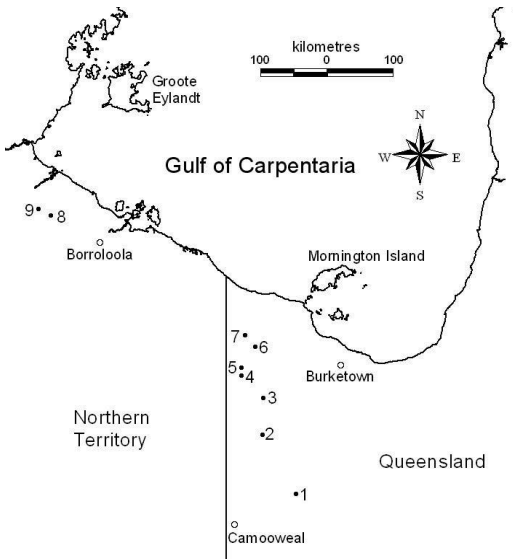


Figure 1. The southern "Gulf country" of the Northern Territory and Queensland. Numbers are survey sites (Tables 1, 2).

Table 1. Location and detail of butterfly surveys of the "Gulf country" in July 2006.

Location	Dates	Details
1. Qld: tributary of Thornton River 19°30'S, 138°56'E	15	0.7 hrs; riparian flat
2. Qld: main gorge area, Lawn Hill Nat. Pk 18°42'S, 138°29'E	16-21	± incidental; various habitats
3. Qld: Elizabeth Creek 18°12'S, 138°30'E	21	0.8 hrs; creekside savanna
4. Qld: Kingfisher Camp, Nicholson River 17°47'S, 138°12'E	22	5 hrs; various habitats
5. Qld: Hedleys Gorge 17°47'S, 138°12'E	23	4 hrs; sandstone gorge, creek
6. Qld: Hells Gate Roadhouse 17°30'S, 138°23'E	24	incidental; garden
7. Qld: Lagoon Creek 17°21'S, 138°15'E	24	0.8 hrs; riparian flat
8. NT: Lorella Springs 15°43'S, 135°38'E	26	5 hrs; various habitats
9. NT: Butterfly Springs, Limmen Nat. Pk 15°38'S, 135°28'E	27	incidental; various habitats

Most of the new regional records or the isolated records that these observations corroborate represent a diminution of the recorded gap between Top End and northern Queensland populations. However, there are four exceptions. The Two-spotted Line-blue and Long-tailed Pea-blue records are northern outliers of southern/arid zone species. The Spotted Dusky-blue *Candalides delospila* is a species of dry subcoastal and inland areas of northern Australia recorded from a series of disjunct locations (Braby 2000). The Northern Pencil-blue *Candalides gilberti* population at Lawn Hill is an eastern extension of a population restricted to north-western Australia, as previously noted by Puccetti (1991) and Daniels and Edwards (1998).

The number of noteworthy records obtained and the ease with which they were obtained in a short period of survey may in part reflect that the previous wet season in the areas surveyed finished late, with rainfall 50 to 100% above average (Bureau of Meteorology web-site, www.bom.gov.au, 1 Aug. 2006). However, it also demonstrates how poorly surveyed the lower "Gulf country" is, and suggests that further surveys of these areas are likely to be fruitful.

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Viola Barnes and Kerstin Maas Enriquez joined me on several of the surveys. Michael Braby and Helen Larson commented helpfully on a draft of this manuscript.

Table 2. Butterflies observed in the "Gulf country" of far north-west Queensland and the Northern Territory, July 2006. Location numbers correspond to those in Table 1 and Figure 1. Notes: "xx" indicates a new record for the region; "x" corroboration of a spot record; and "P" that the record is supported by a photograph. Nomenclature follows Braby (2004) updated by Lushai *et al.* (2005).

Family Species	Locations	Notes N-W Qld Borroloola
Hesperiidae		
Lyell's Swift <i>Pelopidas lyelli</i>	8	xx P
Papilionidae		
Chequered Swallowtail <i>Papilio demoleus</i>	1 2 7	
Pieridae		
Lemon Migrant <i>Catopsilia pomona</i>	2 3	
Lined Grass-yellow <i>Eurema laeta</i>	7	
Pink Grass-yellow <i>Eurema herla</i>	3 4 7 8	
Small Grass-yellow <i>Eurema smilax</i>	2 3 7 8	
Large Grass-yellow <i>Eurema hecabe</i>	3 4 5 7 8	
Narrow-winged Pearl-white <i>Elodina padusa</i>	2	
Caper White <i>Belenois java</i>	1 2 5	
Caper Gull <i>Cepora perimale</i>	2	x P
Scarlet Jezebel <i>Delias argenthona</i>	8 9	xx
Nymphalidae		
Evening Brown <i>Melanitis leda</i>	8	
Dusky Knight <i>Ypthima arctous</i>	8	
Orange Ringlet <i>Hypocysta adiante</i>	8 9	x
Tailed Emperor <i>Polyura sempronius</i>	5 6 9	xx P xx
Glasswing <i>Acraea andromacha</i>	2 3 4 5 7 8 9	
Varied Eggfly <i>Hypolimnias bolina</i>	8	
Blue Argus <i>Junonia orithya</i>	1 2 4 5 8 9	x P
Meadow Argus <i>Junonia villida</i>	8	
Chocolate Argus <i>Junonia hedonia</i>	8 9	x
Blue Tiger <i>Tirumala hamata</i>	9	xx
Australasian Lesser Wanderer <i>Danaus petilia</i>	4 5 8 9	
Common Crow <i>Euploea core</i>	2 4 5 7 8 9	
Lycaenidae		
Northern Pencil-blue <i>Candalides gilberti</i>	2	x P
Small Dusky-blue <i>Candalides erinus</i>	8 9	x
Spotted Dusky-blue <i>Candalides delospila</i>	5 9	x P x P
Two-spotted Line-blue <i>Nacaduba biocellata</i>	2 3 4 8	x P xx
Speckled Line-blue <i>Catopyrops florinda</i>	5 8	x P x
Wattle Blue <i>Theclinesthes miskini</i>	1 2 7 8	
Long-tailed Pea-blue <i>Lampides boeticus</i>	1 2 3 8	x P x
Spotted Grass-blue <i>Zizeeria karsandra</i>	4	x
Common Grass-blue <i>Zizina labradus</i>	3 4 7 8	
Black-spotted Grass-blue <i>Famegana alsulus</i>	3 4 5 7 8	x P x
Dainty Grass-blue <i>Zizula hylax</i>	4	x P
Spotted Pea-blue <i>Euchrysops cnejus</i>	8	x
Jewelled Grass-blue <i>Freyeria putli</i>	3 5 8	x P xx

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The Two-spotted Line-blue *Nacaduba biocellata* at the flowers of Apple Bush (*Pterocaulon* sp.) in Lawn Hill National Park. (Don Franklin)
