

NOTE

A new locality and larval host plant recorded for *Brephidium exilis exilis* (Boisduval, 1852) on the Arabian Peninsula

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Otto, Herbert H.H.

Unit of Environmental Sciences and Management, North-West University, P. Bag. X6001, Potchefstroom, 2520, South Africa. E-mail: herbertotto@hotmail.com or 24765627@nwu.ac.za

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INTRODUCTION

Brephidium exilis exilis (Boisduval, 1852) was first recorded from Sharjah, United Arab Emirates (UAE) by Rutjan and Jongbloed in December 1995 (Larsen 2000). This butterfly, originally described from the USA (Western Pygmy Blue) probably became established on the Arabian Peninsula as immature stages contained in imported plant cultivars from the USA (Pittaway *et al.* 2006). Other UAE records include Ajman, Al-Ain, Dubai, Das Island, Fujairah (ibid.), and Marawah Island off the Abu Dhabi coast (Gillett 2002; Feulner 2003). Saudi Arabia records include Dhahran and Al Qatif by

Majer in 2004 (Pittaway *et al.* 2006). Oman records include those by Gillett (1999) in northern Oman, and Gallagher from [Al] Buraimi and Mahda (Pittaway *et al.* 2006), and further records (Muscat, Qurm) were reported by Vis (2010). The latest records reported here were made at Sohar on the Omani coast, ca. 200 km NW of Muscat, capital of Oman (see Fig. 1).

OBSERVATIONS

30th August 2014 (Day 1)

During an initial survey at approximately 10 am of an Al-Tareef wadi (river, or dry riverbed) of the

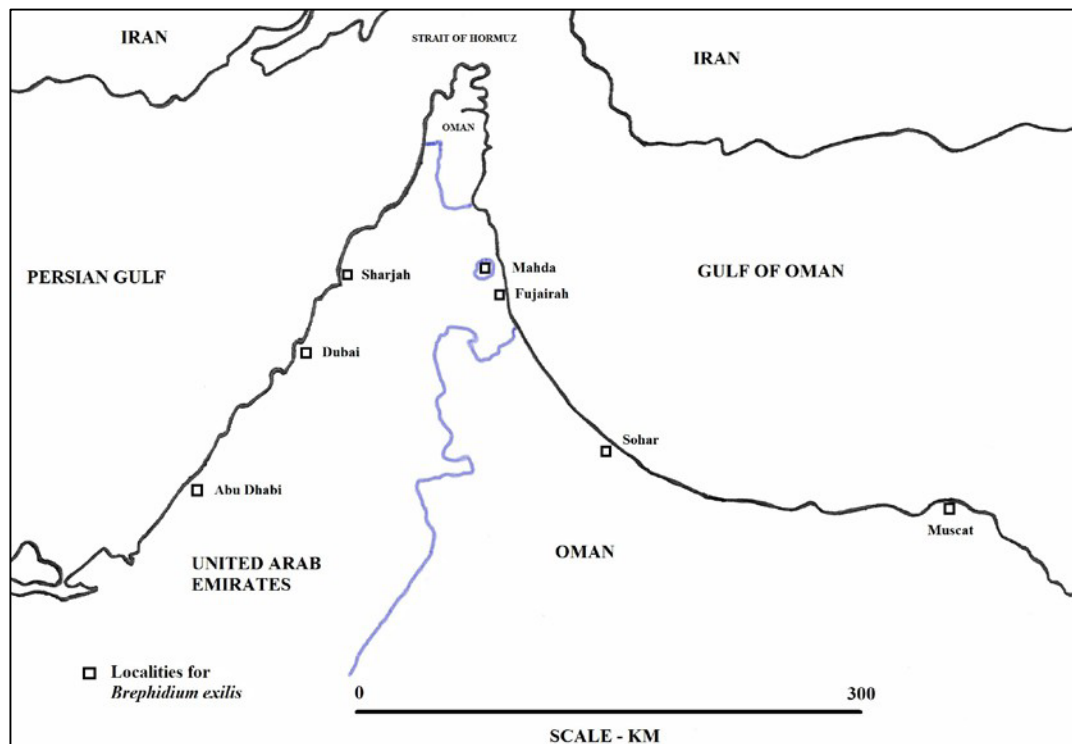


Figure 1 – Localities for *Brephidium exilis* in the United Arab Emirates and Oman

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coastal town of Sohar in northern Oman, two freshly emerged *B. exilis* males were observed territorially 'guarding' two separate prostrate plants of *Zaleya pentandra* (L.) C. Jeffrey (Aizoaceae). These plants, recorded from arid regions, were prominently positioned on a gentle sandy slope of the wadi bank in close proximity to another flowering plant, although when the *B. exilis* males alighted on this

plant, no nectaring was observed. Each of the two males established a territory around a *Z. pentandra* plant, and warded off any intruding insects, returning to the original plant and not venturing much further afield.

The initial photographs of the male *B. exilis* were of inferior quality and a second series was taken at about 4 pm of Day 1. At that time one of the *B. exilis* males was still present in the area and it settled on dried *Abutilon* plant stems 2 m away from the *Z. pentandra* plants. Cirrus and stratus cloud cover now prevailed, and together with the somewhat cooler conditions of approaching evening the male butterfly was induced to take refuge on the lower branchlets of the *Abutilon* plants, readying itself to overnight in this position, thus allowing several photographs to be taken.



Figure 2 – ♂ *B. exilis* underside while nectaring

1st September 2014 (Day 2)

At about 10 am *B. exilis* was not present where they had been seen on Day 1, but about 50 m away around a cultivated bean (*Phaseolus* sp.) field, at least three *B. exilis* butterflies were seen around five *Z. pentandra* plants. Sometimes a pair of males interacted with aerial displays of supremacy, and then they would nectar intensely at different locations approximately 7 m apart on a spreading plant with tiny purple clustered flowers (Fig. 2). To conserve energy, a male was observed crawling from flower to flower to avoid flying. A minute white whirring of butterfly wings in a flurry whirled past, and was nearly invisible in flight only to reappear a little later, briefly inspecting the random spreading plants of *Z. pentandra* on the arid soil. Eventually the butterfly settled on a twig of a plant with a small circumference of about 20cm (Fig. 3). She moved to position her abdomen to the underside of a leaf, ovipositing her first egg and then a second on a different leaf (Fig. 4).

A little later, on a second plant of a larger and denser spread of prostrate branches, some 50 cm radius and merely 2 m from the first plant, a female settled again. It is difficult to differentiate whether there were two ovipositing females or merely one since both females were fresh and had no distinguishing wing damage. This female settled on a branchlet and subsequently moved down along it to the base (a different approach to the first female, yet not unusual). It inspected the axil between leaf petiole and twig then oviposited on flower buds and later on the undersides of two different leaves.



Figure 3 – ♀ *B. exilis* perching on *Z. pentandra*



Figure 4 – ♀ *B. exilis* ovipositing on *Z. pentandra*

5th September 2014 (Day 3) The same wadi was visited between 8 and 10 am, and around 9 am a female *B. exilis* oviposited on the underside of a leaf of a different *Z. pentandra* plant (Fig. 5). This plant had a circumference of about 1.5 m and



Figure 5 – Ovum of *B. exilis* laid on *Z. pentandra*

was fairly dense and situated on an elevated sandy wall at the edge of the bean field. The location of this plant was about 15 m away from the first plant seen on Day 1 and 30 m away from the plants seen on Day 2. Nearly 3 m away on the same soil retaining wall there was another established *Z. pentandra* plant with a circumference close to 3 m.

Climatic conditions

The maximum temperatures recorded in the Muscat/ Sohar area were between 37° C (Day 1) and 42° C (Day 3).

GPS co-ordinates

The observation sites at the Al-Tareef wadi had the following GPS co-ordinates:

Day	Latitude (dd: mm)	Longitude (dd: mm)	Altitude (m)
1	24° 21.420 N	56° 43.206 E	9
2	24° 21.409 N	56° 43.234 E	16
3	24° 21.418 N	56° 43.221 E	17

DISCUSSION

Adult *B. exilis* behaviour

The competitive territorial male behaviour observed appears to have the goal of intercepting a female searching for the LHP.

Female oviposition on a plant requires confirmation that it is a LHP, which comes from visual, olfactory, tactile and gustatory cues (Otto 2014b). Repeated oviposition on the same plant species confirms the plant as a LHP (Otto 2014b). Here female(s) were observed to oviposit five eggs on two different *Z. pentandra* plants on Day 2 and another single egg on a *Z. pentandra* plant at a separate place on Day 3.

Host plants of *B. exilis*

The known larval host plants (LHPs) for *B. exilis* in the USA are members of the genera *Atriplex*, *Chenopodium*, and other members of the family Amaranthaceae (Wikipedia – *Brephidium exilis*). In the UAE, *B. exilis* the genera *Artiplex* and *Salsola* are confirmed LHPs (Pittaway *et al.*, 2006). *B. exilis* is also suspected to use the genera *Sesuvium* and *Trianthema* from the plant family Aizoaceae (Pittaway *et al.* 2006). The observations reported here are the first confirmed record of *B. exilis* using an Aizoaceae species – *Z. pentandra*.

Distribution of *B. exilis* and its host plants

The establishment and rapid expansion of *B. exilis*'s range was explained by Pittaway *et al.* (2006), who described the extensive introduction of some of *B. exilis*'s host plants into the region for use as fodder and for land reclamation.

B. exilis has now been confirmed to use an introduced Aizoaceae species (*Zaleya pentandra*), and this is an additional reason for its rapid expansion in the Arabian Peninsula region.

Z. pentandra appears to be well adapted to the prevailing very hot, arid conditions. Several plants with varying degrees of radiating growth patterns were found, varying in circumference from approximately 20 cm to 3 m. It was found here in close proximity to cultivated beans (possibly serving as cattle fodder) and it may be spreading locally through distribution of crop cultivars. It was noteworthy that no *Z. pentandra* plants were noticed further away from the cultivated field in the natural vegetation of the wadi. The larvae of a close relative of *B. exilis*, the South African butterfly *Oraïdium barberae* Trimen 1868, bore into the host plant stems (Cockburn 2013) and if *B. exilis* larvae have similar habits it would protect them from damage or dislodgement during transport.

Phenology of *B. exilis* and *Z. pentandra*

Zaleya pentandra is known in South Africa as African Purslane, a prostrate evergreen herb found in disturbed soils. The leaves have a distinctive basal sheath on the petiole, with the inconspicuous pink axillary flowers appearing from December to June (Otto 2014a). The present observations indicate

flowering in Oman during August and September – perhaps following northern hemisphere seasons. In Qatar the plant is a rare introduced weed of wastelands, with flowering times from December to March (Norton *et al.* 2009). Perhaps locally *Z. pentandra* starts to flower in autumn and may well flower all year round. In such hot and arid conditions *B. exilis* may also be more abundant from autumn through the milder winter months, coinciding with the flowering period for the northern hemisphere.

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