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Gomalia elma TRIMEN, 1862, new to Israel and the Palaearctic Region (Lepidoptera, Hesperiidae)

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Summary

Since the early 1980's *Gomalia elma* TRIMEN, 1862 has been observed frequently along the western shores of the Dead Sea in Israel. It's distribution, zoogeographical aspects and life history are given.

Introduction

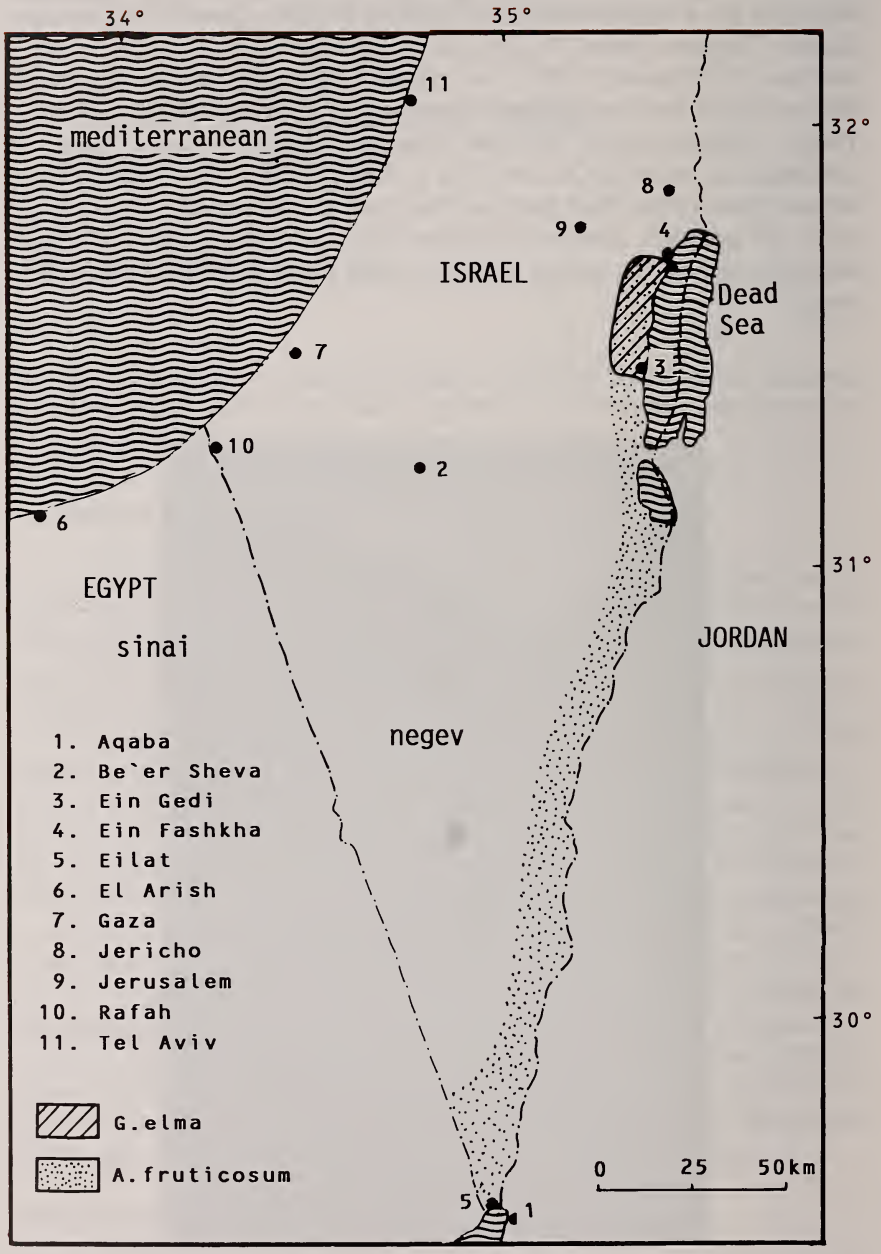
On 4 September 1982 a small hesperid with bold white streaks on its hindwings was observed by the author 2.5 km south of Ein Fashka on the north-western coast of the Dead Sea, Israel. This location is 10 km south of Jericho and 385 meters below sea level. The butterfly which was resting on a single flower of *Blepharis ciliaris* BURTT (Acanthaceae) held all 4 wings at 45°. The specimen (a perfect male) was positively identified from the British Museum (Natural History) Evans reference collection of Hesperiidae as a small very light form of *Gomalia elma* TRIMEN, 1862. The locality, in the foothills of the escarpment of the Rift Valley, is only 50 meters from the Dead Sea coast line ; a typical dispersal corridor (BENYAMINI, 1988) for Afrotropical elements expanding northwards. These facts led the author to believe that he observed a casual migrating specimen ; however, its good condition contradicted this theory. In September 1988, Dr. DE JONG (Leiden) informed me that among specimens which were brought to him from Israel for identification he found one *G. elma* collected by J. VERHULST (Belgium) on 11 April 1985 at Ein Gedi – 300 m (Dead Sea area). In October 1988 the author started a careful search along Israel's Rift Valley ; from the Red Sea in the south to the Lower Jordan Valley in the north, fortunately discovering adults, eggs, larvae, pupae and even one species of parasitic wasp.

Distribution

This Palaeotropical species is found in the tropical parts of Africa with its northern limits at Tibesti, northern Chad (Specimen in B.M.N.H. collection)

and Gebel Elba, southern Egypt. In the Arabian Peninsula it is found in the south and has a coastal distribution reaching northern Oman in the west and Yanbu (Southern Hejaz) in the east (LARSEN, 1983 ; PITTAWAY, 1985 ; WALKER & PITTAWAY, 1987). Its presence in Israel extends its known northern limits into the Palaearctic Region. Ein Fashkha is 900 km north of Yanbu, 1100 km north of Gebel Elba and 2100 km from Tibesti. Its distribution in Israel for October 1988 is given in Map 1. It is localized along the west coast of the Dead Sea from Ein Gedi to Ein Fashkha, 25 km to the north. Its foodplant *Abutilon fruticosum* GUILL. & PERR. (Figs. 1, 2) has a wider distribution, but neither adults nor early stages were found in southern Israel.

Fig. 1. Typical habitat of *G. elma* in Israel. The large bushes of *A. fruticosum* are growing in the wadi bed : Dead Sea escarpment – 350 m to + 50 m above sea level.



Map. 1. Distribution of *G. elma* and its food plant in Israel.

Fig. 2. *A. fruticosum*, with an adult *G. elma*.

Zoogeography

This recent addition to the list of tropical butterflies of the Mediterranean only slightly changes the LARSEN (1986) composition table. Table 1 shows that the 20 tropical butterfly species of Israel make up 80% of all the tropical elements of the Mediterranean ; however, it emphasizes the east Mediterranean and the Rift Valley as the most important northward expansion corridor for tropical butterflies (BENYAMINI, 1988).

Table 1.
Zoogeographical composition of the tropical butterfly species of the Mediterranean and Israel (Updating LARSEN, 1986)

Regions	Mediterranean	Israel
Afrotropical	11	9
Oriental	2	2
Neotropical	1	0
Palaeotropical	10	9
Uncertain	1	0
Total	25	20

Early stages

In Israel the eggs are laid singly on *Abutilon fruticosum* (Malvaceae), Sudanian bush reaching 1.20 m in height. In Ein Gedi it may also feed on *Abutilon hirtum* SWEET which is quite common. Most of the eggs were laid

in the centre of the upper surface of the leaves, but some were laid on the flower buds and one egg was found hidden at the base of a leaf petiole. The egg is greenish-white, hemispherical, 0.9 mm in diameter and 0.6 mm high (Fig. 3). The young larva eats a hole in the egg and as it comes out it starts immediately to prepare its feeding area. Those larvae emerging on a bud will bore a hole in it and enter their protected surroundings (Fig. 4).

Fig. 3. SEM photo of the egg of *G. elma* × 75.

Fig. 4. Bud of the foodplant with hole made by the first instar larva × 4.

The first instar larva is 1.25 mm long, with white body, black head and black black "collar" behind the head. Within a few days the body colour turns to light green, identical to the leaf colour and is covered with a white pubescence. The first and second instar larvae feed in the folded leaf (or bud) together with their frass. When they finish eating the epidermis of the first leaf, they move to a new leaf and emerge to feed at night or at dusk. Having fed on a nearby leaf they walk backwards, retreating into their shelter. The full grown larva is 20 mm long and 3.5 mm wide (Fig. 5).

Fig. 5. Fully grown larva.

The prepupa is white, 14-15 mm long and is connected to the leaf with the cremaster. The pupa is enclosed in a large folded leaf (Fig. 6) ; it is 10 mm long, 4 mm wide, "dusty" brownish-white with orange spiracles and 2 dark-brown "bumps" on its head. The entire life cycle normally takes approximately 35 days in the summer (35°C day temperature), but during the winter (November-February) it is lengthened to 100 days or more ; egg 2-3 weeks, larva 9-10 weeks, and pupa 3-4 weeks. During the winter of 1988/89 the Dead Sea breeding sites of *G. elma* were visited every 2 weeks. In mid-December first instar and larger active larvae were observed ; in mid-January the temperatures dropped to 5°C at night and 15°C at noon ; February 4th was the coldest with 2°C at night and 13°C at noon. Despite this unusually cold winter 3 full-grown larvae and one 4th instar larva were found alive after carefully searching 20 foodplants on Feb. 4th 1989. On March 24th 2 adults were observed flying around the foodplants (Fig. 2). It is now apparent that a permanent colony can survive the winters in the Dead Sea Valley. The slow growing larvae survive the coolest and longest period of winter as do *Colotis fausta* Olivier on *Capparis* bushes every winter in the same area (Benyamini, 1990, in press).

Fig. 6. Leaf-pod opened to expose pupa.

Parasites

Only one parasite hatched from a pupa ; apparently the larvae are well protected in their closed folded leaves. The parasitic wasp was identified as a *Brachymeria* sp. (Hymenoptera : Chalcididae).

Adults

The Dead Sea population is composed of small specimens which are similar to each other. The male wing span is 14-15 mm and females 16-17 mm. The upperside is brownish-green with typical white spots, black transverse discal narrow band on the fore wings and broad median white band on the rear wings. The underside is brownish-white ; the light brown marking on the hind wings are hardly visible. The Dead Sea population does not resemble *G. elma albofasciata* MOORE, 1879 which has the upperside "dark grayish brown" and wings with "Expanse 7/8 inch". Except for the first generation (March) the Dead Sea population does not resemble the typical African *G. elma elma* which is much darker on the upper side and larger in size. The Israeli specimens are identical to those collected in Tibesti and Hejaz and represent a desert inhabiting population.

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