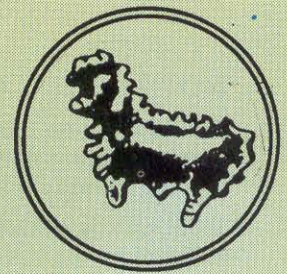


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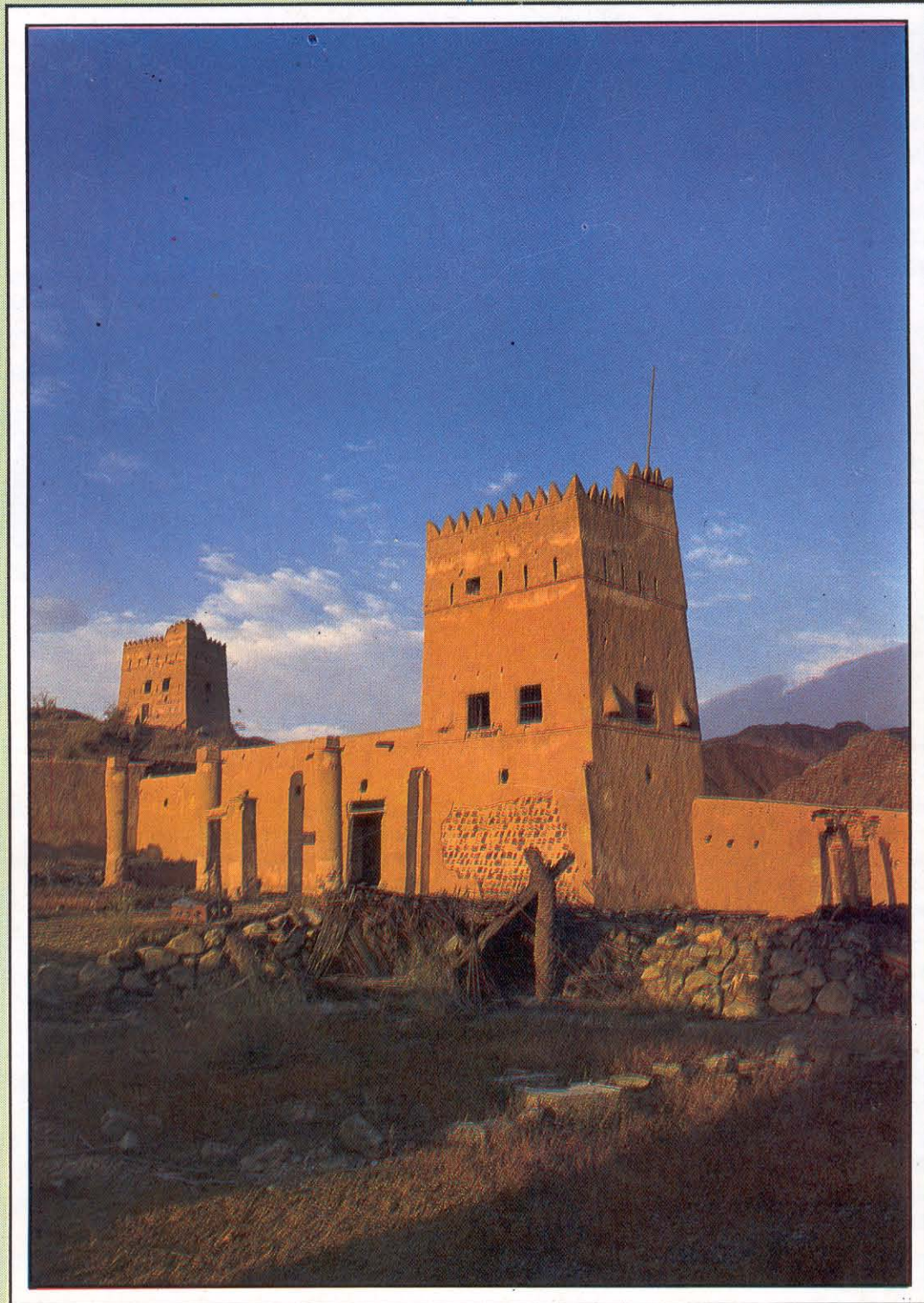


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Discovery of insects belonging to the orders Ephemeroptera and Embioptera at Al Ain

by Michael Gillett

Recently specimens of a mayfly (order *Ephemeroptera*) and a web-spinner (order *Embioptera*) have been taken at Al Ain, allowing these two orders of insects to be added to the 15 already known to occur in the region. A checklist of insect orders recorded from the region is presented along with an assessment of the other 12 orders so far unrecorded from the region.

Present day insects belong to a score or more different orders, but there is no consensus between individual authors as to the exact number. However, a widely accepted classification is that of Imms (1957) which recognises 29 distinct orders of insects. Such a system seems to have been adopted by Walker and Pittaway (1987) in their popular book dealing with the insects of the eastern Arabian region. The scope of this work excludes the more minute members of the class *Insecta*, but 15 orders of mostly medium to large-sized insects are recognised as occurring in the region. I would like to add two further orders to that list to bring the currently recognised total to 17 orders. These additions result from the recent and somewhat fortuitous capture at Al Ain of insects belonging to the orders *Ephemeroptera* (mayflies) and *Embioptera* (web-spinners) as described below.

Ephemeroptera

On the evening of 18th April 1993 I took a single insect at light in the hallway of an apartment block in the Muwajji district of Al Ain. The insect was immediately recognisable as a mayfly on the basis of the following characters: vertical position of wings above body at rest; wing shape and venation; absence of a pair of hind wings (family *Caenidae*?); very short antennae and long forelegs in relation to the other two pairs. One distinctive character was missing; the insect had no 'tails' (these consist of a pair of filamentous cerci with or without a central filament). However, these structures are delicate and can easily be detached (Chinery, 1973) and this would appear to be the case for the insect in question. The insect had a pale brown body and transparent, unmarked wings with a span of about 1 cm. The small size is another indication of its possible affinity with the *Caenidae*. Mayfly development takes place in clean water habitats, so that, apart from identification, another problem exists with this insect. That is how to explain its presence at Muwajji, which is relatively distant from permanent freshwater sites such as Ain Al Faydah or the Omani wadis.

Embioptera

On 16th September 1993, after removing several

● دراسة حول الحشرات في منطقة العين وقائمة بأنواع الحشرات في دولة الامارات العربية المتحدة.

accumulations of dead leaves from the garden of my new house in Muwajji, I noticed a curious black insect on the wall above where I had been working. I captured the insect and was able to recognise it as a web-spinner belonging to the order *Embioptera*, a little known group of insects living in colonies in leaf litter and under debris, where they are known to spin interconnecting tunnels from a silk-like material. It seems that my gardening efforts may have disturbed (destroyed?) a colony of these insects but, despite searches made in other parts of the area, I have been unable to find other examples. The captured insect is about 7mm. long with a cylindrical and completely black body. Two pairs of similarly shaped wings are present and folded flat along the length of the body, which immediately identifies the specimen as a male since, for all species, the females are always wingless, as are the males of some groups.

Both insects have been preserved and will be deposited in the UAE University Museum of Natural History. Other records of mayflies and web-spinners from the UAE would be gratefully received, as too would be descriptions or actual specimens of insects not readily identified to the level of order or family from Walker and Pittaway (1987).

In the accompanying checklist (Table 1), those insect orders recorded as present in eastern Arabia (Walker and Pittaway, 1987) and in the Al Ain region by the author are indicated and the status of the other 12 orders, together with the possibility of finding them in the UAE, is briefly reviewed.

Further Records added In Press

Since this article was written, I have been fortunate to secure two more examples of web-spinners (both males) from the outside walls of my house on October 1st and 9th, 1993. By coincidence, on the second occasion and on the same wall (to which it might have been attracted by electric light during the previous night) I found a second example of a mayfly, apparently of the same species and complete with 'tails.' All examples have been preserved in 70% alcohol for eventual identification.

Sub-class/Division	Order (common names)	Eastern Arabia	Al Ain
Apterygota	1. Thysanura (silver-fish, bristle tails)	+	+
	2. Diplura ^a .	-	-
	3. Protura ^a .	-	-
	4. Collembola ^b . (springtails)	-	-
Pterygota/Exopterygota	5. Ephemeroptera (mayflies)	-	+
	6. Odonata (dragonflies)	+	+
	7. Plecoptera ^c . (stoneflies)	-	-
	8. Grylloblattodea ^d .	-	-
	9. Orthoptera (crickets & locusts)	+	+

	10. Phasmida ^a (stick & leaf insects)	-	-
	11. Dermaptera (earwigs)	+	+
	12. Embioptera (web-spinners)	-	+
	13. Dictyoptera (cockroaches & mantids)	+	+
	14. Isoptera (termites)	+	+
	15. Zoraptera ^f	-	-
	16. Pscoptera ^g (booklice)	-	-
	17. Mallaphaga ^h (biting lice)	-	-
	18. Anoplura (sucking lice)	+	+
	19. Hemiptera (true bugs)	+	+
	20. Thysanoptera (thrips)	+	+
Pterygota/Endopterygota	21. Neuroptera (ant lions, lacewings etc.)	+	+
	22. Mecoptera ⁱ (scorpion flies)	-	-
	23. Lepidoptera (butterflies & moths)	+	+
	24. Trichoptera ^j (caddis flies)	-	-
	25. Diptera (true flies)	+	+
	26. Siphonaptera (fleas)	+	+
	27. Hymenoptera (ants, bees & wasps)	+	+
	28. Coleoptera (beetles)	+	+
	29. Strepsiptera ^k (stylops)	-	-

Table 1. Checklist of insect orders (Imms, 1957) and their occurrence in eastern Arabic (Walker and Pittaway, 1987) and Al Ain with notes on the orders not currently recognised from these localities.

Notes: Orders are listed as recorded (+) or unrecorded (-). The 9 orders marked in bold type (e.g. **28. Coleoptera**) are well represented in the region and contain the majority of insect species likely to be encountered.

^a Insects in these two orders have no common names and are uncommon, wingless, minute, soil-inhabiting organisms requiring conditions of high humidity. They have not been searched for in the UAE and their regional status is unknown.

^b Springtails are small to tiny insects living in soil and are relatively common throughout the world. They have not been searched for in the UAE, but some species might be expected to occur in the more damp areas.

^c Stoneflies are medium-sized species and the early life stages are passed in fresh water. They have not been encountered in the region, but given the presence of other aquatic insects such as water beetles and bugs, dragonflies and mayflies, the presence of stoneflies might be expected in those wadis with permanent water.

^d These very rare insects have no common name and are restricted to mountain regions in northern Asia and North America. They are unlikely to occur in the Arabian region.

^e Stick insects are not mentioned in Walker and Pittaway (1987) and I have not encountered them in the Al Ain region. However, one was figured in Jongbloed (1991), so there is presumably at least one species in the region. (Since compiling this list, I have been informed by my colleague, Dr N. Woolhouse, of a sighting in late September 1993 of a small stick insect in the Hajar Mountains close to Al Ain, but the insect was not brought home.)

^f Minute insects with no common name, there are about 20 species known from the Americas and SE Asia. They are unlikely to occur in the UAE.

^g The Pscoptera are generally small to minute insects containing cosmopolitan domestic pests as well as free-living species found on plants. Whilst they have not been looked for in this region, there is a high probability of some species occurring.

^h Biting lice are parasites mainly of birds, including the domestic chicken. They have not been looked for in the UAE but are probably present in numbers (e.g. the Egyptian vultures to be found on Jebel Hafit and other birds of prey).

ⁱ Scorpion flies are medium-sized insects characteristic of cool, shady habitats in the northern hemisphere. They have not been encountered in the UAE and their status in this region is unknown.

^j Caddis flies are another group of medium-sized insects with aquatic immature stages. They have not yet been found in the Al Ain region, but the comments given above (^c) for the Plecoptera apply equally well to the Trichoptera.

^k The name 'twisted wing parasites' refers to the male insects, which are active fliers able to seek out the wingless females in host insects. The insects are small and are mainly associated with hymenopterous species, including the honey bee. Although not yet looked for in the UAE, the order is probably present with individual species as parasites of bees and wasps and possibly also with grasshoppers, bugs and bristle tails.

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