

THE MOSQUITOES OF THE RED SEA AREA, EGYPT

The mosquito fauna of the western side of the Red Sea area including the Suez Gulf has received little attention from workers in the field of mosquito surveys, probably because of the difficulty in reaching certain regions of this vast area extending over 800 km from Suez in the north to Ras Alam in the south. In his study of the mosquitoes of Egypt, Kirkpatrick (1925, *The Mosquitoes of Egypt*, Government Press, Cairo) recorded 2 new *Culex* species from the North Galala Mountains, south of Suez. Surveys by the Insect Control Section, Ministry of Public Health, of the main towns of the Red Sea coast—viz., Ras Ghareb, Hurghada, Safaga and Koseir—revealed the occurrence of *Anopheles multicolor*, *Aedes caspius* and *Culex pipiens* (Gad, unpubl. rep.). Specimens of *Aedes aegypti* larvae and adults were collected by Gad in 1951 from Koseir. *A. aegypti* has not been found since 1963. For a few years earlier, the Red Sea coast was the only place in the Arab Republic of Egypt (A.R.E.) where *A. aegypti* continued to appear, in very small numbers and only on sailing vessels crossing the Red Sea from Saudi Arabia (Shawarby & Elias 1966, *J. Egypt. Pub. Hlth Assoc.* 41: 107-14).

In 1966, *A. stephensi* was collected from Shokier near Ras Ghareb (Gad, 1967, *Mosquito News* 27: 171-74). This was the first record of this Oriental species crossing its geographical boundaries and establishing itself on the African continent. Theories regarding the appearance of *A. stephensi* in Shokier were discussed by Gad & Kamel (1967, *J. Egypt. Pub. Hlth Assoc.* 42: 249-51).

The present paper reviews the data concerning the mosquito fauna of the Red Sea and reports the findings of recent surveys carried out in 1962 and 1969.

Anopheline species:

A. multicolor Cambouliu: This saline-breeding species was encountered in all surveys of Koseir, where it breeds in small and moderate-sized pools exposed to the sun and mostly devoid of vegetation. It was also collected from brackish seepage at Wadi El-Ambag, 8 km west of Koseir near the road which joins Koseir to the Nile Valley at Quena. This wadi is a depression between mountains in which many springs are found and brackish seepage water exists in numerous scattered areas.

A. sergenti Theobald: This desert species occurs in Fayoum and all oases of the Libyan Desert and Sinai (Gad, 1956, *Bull. Soc. Ent. Egypte* 40: 131-36). It was collected for the first time from the Red Sea area in 1962 in Wadi El-Ambag. (Salit, unpubl. rept). Typical breeding places in which it was found in abundance were slowly flowing spring pools with rocks and reeds at the edges. Adult females were found in houses and hair tents. In 1969, the same area was resurveyed; *A. sergenti* larvae were again found in abundance and 2 female mosquitoes and 1 male were collected from a room. It is interesting to note that although *A. sergenti* occurs in Fayoum, about 80 km from Minia Governorate, and in Wadi El-Ambag, about 150 km from Quena Governorate, this species has not yet been able to establish itself anywhere in the Nile Valley.

A. stephensi Liston: This species was first collected in October 1966, and was found again in September 1967 and July 1969 in the same breeding places already described (Gad, 1967, loc. cit.). No adults were found in the few nearby buildings but a few were collected outdoors during night catches on human bait.

A. dhali Patton: This species is rather rare in the A.R.E., occurring presently only in Sinai (Gad & Darwish, 1957, *Bull. Soc. Ent. Egypte* 41: 535-38). Before the *A. sergenti* campaign in Dakhla and Kharga Oases (1946-1948), it was recorded in small numbers in these 2 oases (unpubl. repts), but disappeared completely and failed to show up after the end of the campaign, probably an instance of unintended species eradication. In the Red Sea area, a few larvae were collected from Wadi El-Ambag in 1969, associated with *A. sergenti* in the same breeding places described above.

Culicine species

Theobaldia longiareolata Macquart: This species was mentioned by Kirkpatrick (1925, loc. cit.) as occurring throughout those parts of the Eastern Desert that he was able to visit, wherever there were permanent or semipermanent water holes. However, no mention is made of the actual places where it was collected. In 1962, several larvae were found at Wadi El-Ambag, but no adults. *T. longiareolata* adults are very rarely encountered in houses and are not known to bite man.

Aedes caspius Pallas: This species was found breeding in Wadi El-Ambag, alone or associated with *A. multicolor*. It is widely distributed in the valley, and the high densities attacking man viciously during the day make it a very annoying outdoor biter. Only 1 male was captured inside a house.

Culex pipiens L.: This is the most abundant mosquito in the Nile Valley and Delta, breeding in all sorts of underground and surface water. It was found breeding at Hurghada and Qoseir in wells, barrels of drinking water and cement tanks. Adults frequent houses sometimes in very high densities, reaching 42 mosquitoes per room in Hurghada and 36 in Qoseir.

C. theileri Theobald: This species is not very common in the Delta and Nile Valley but is very numerous in Fayoum and all the oases of the Libyan Desert except Siwa (Gad, 1956, loc. cit.). It has not been recorded before in the Red Sea area. In August 1969, in Wadi El-Ambag a single 4th stage larva was found among 7 *A. sergenti* larvae in a small pool. No adults of *C. theileri* were encountered in the nearby buildings.

C. deserticola Kirkpatrick: This species was recorded and described for the first time by Kirkpatrick (1925, loc. cit.). At that time, it was only known from a single rock pool in the North Galala Mountains on the Red Sea 80 km south of Suez at an altitude of 350 m. Subsequently, it was found in Siwa by Salem (1933, *Bull. Soc. Ent. Egypte* 17: 83-85) and in all oases of the Libyan desert by Gad (1956, loc. cit.). This species was lacking in the areas of the Red Sea surveyed in the present investigation.

C. adairi: This species was first recorded and described by Kirkpatrick under the name of *C. pluvialis*. He collected it from the same breeding place in the North Galala Mountains in association with *C. deserticola*. It has not

been found anywhere in the country subsequently.—**Amin M. Gad** and **Ali Salit**, Research Institute of Medical Entomology, Dokki, Cairo, Arab Republic of Egypt (A.R.E.).

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