

RECENT STUDY ON THE ECOLOGY OF ANOPHELES APOCI
IN IRAQ.

PART (I)

THE GEORAPHICAL DISTRIBUTION OF THE BREEDING PLACES
AND THE MORPHOLOGY OF ANOPPELES APOCI PUPA

IN IRAQ.

By

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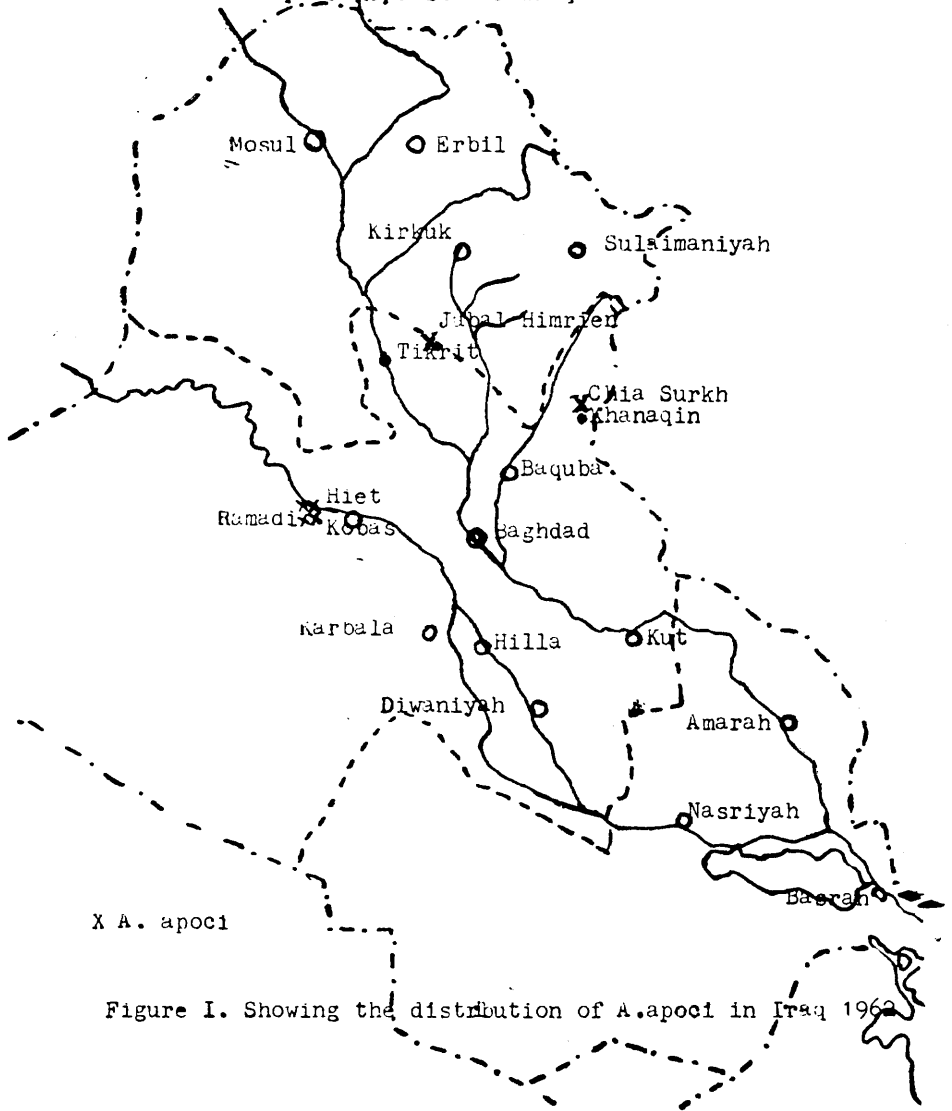
Institute of Endemic Diseases

In the Bulletin of Endemic Diseases Vol. II (1957) P. 90, Dr. Gordon Pringle and Mr. C. Carret Jones., and Pringle, Tikri y, Azzawi, Riyadh, Murayati in the Vol III (1960) No. 3 and 4 P. 36-56 reported short notes about the breeding places of *A. apoci* which were found for the first time in great numbers, by the writer in Iraq, on the 10th. of July, 1956. The locations of the breeding places were below Chia Surkh, 30km. north of Khanaqin. There were two stagnant pools (Stream-bed) which had heavily salt encrusted margins. The water of the pools was saline, shallow and exposed o the sunlight. A sample of water from one pool was brought to Baghdad and analysed; the results were as follows:—

Chlorides	14480	parts per million
Sulphates	3360	”
Carbonates	90	”
Sodium	7650	”
Calcium	2000	”
Magnesium	600	”
PH	6.9	

On the 2 second of October 1956, a visit was paid to Hiet town of Ramadi Liwa. A general search was made outside the Town. A running stream of saline water was found, 5km. north west of Hiet Town (Wadi Kanaay) and three small canals originating from springs located on the sides of Kobas roud (i-Wadi Tarief 2 - Wadi Hishis 3-Aan Almosalla) and four other streams located south east, south, south west and west of Hiet Town. These streams are:i-Aan Almaamora 2-Aan Allaba 3-Aan Almarig 4-Aan Alsophia.

Map Of Republic of Iraq



X A. apoci

Figure I. Showing the distribution of A. apoci in Iraq 1962

Larvae in all stages and pupae of *A. apoci* were found in great numbers in Wadi Kanaay stream and a small number of larvae and pupae in the seven canals. water of Wadi Kanaay stream was very saline and the banks of the stream were encrusted with salt crystals. All the breeding places were exposed to direct sunlight and contained a sort of aquatic life, microscopic vegetations and grasses in some parts A second trip was made to the same breeding places in Hiet Town in the summer of 1957. Larvae in all stages and pupae were still numerous.

On the 9th. of September 1957, a trip was made to Hemrien mountain (Jabal Hemrien) 40km. north east of Tikrit Town, Baghdad Liwa. Larvae in all stages and pupae of *A. apoci* were found in great numbers. The breeding places were saline running stream on the hill of Jabal Hemrien called Mamlahtel Khalijefa and three other springs named:- i-Aan Algarma 2-Aan Alkshesha 3-Aaun Siritleman.

On the 21st. of October 1962, the writer visited the stream in wadi Kanaay near Hiet Town. It was found dried up. Small stagnant pools were found left here and there with many larvae and pupae, some kind of aquatic animals, microscopic vegetations and grasses. 1000 cc of the pools water was brought to Baghdad as a sample and analysed; the results were as follows :—

Chlorides	33725	parts per million
Sulphates	932	”
Carbonates	—	”
Sodium	15460	”
Calcium	2220	”
Magnesium	2340	”
PH	7.2	

On 16th November 1962, a trip was made to Wadi Kanaay of Hiet Town. Very few fourth stage larvae and many pupae of *A. apoci* were found. 200 pupae and 20 larvae were collected as specimens for study. Table 1 showing the details of the type of breeding places, date of visit, districts, aquatic life and specimens collected :—

TABLE I

Visited date	District			Type of breeding places	Number of specimens collected	Aquatic life
	Liwa	Kasa	Nahia and Iocations			
10/7/1956	Diala	Khanuqin	Chia Surkh	Stagnant pools (stream bed)	200 60	x
9/9/1957	Baghdad	Tikrit	Jabal Hemrien 1: Mamlabat Al-Khabefa 2: Aan Al-Garna 3: Aan Al-Kheshafa 4: Aan Siritleman Hiet 1: Wadi Kanaay	Running stream Small canals originating from springs Running stream	100 30 500 100	x x
2/10/1956	Ramadi	Ramadi	1: Wadi Tareif 2: Wadi Hisbis 3: Wadi Hisbis 4: Aan Al-Mosalla 5: Aan Al-Maamor 6: Aan Al-lalaba 7: Aan Al-Marig 8: Aan Al-Sophia	Small canals originating from springs	270 40	x
Summer 1967	Ramadi	Ramadi	"	"	150 80	x
21/10/1962	Ramadi	Ramadi	Hiet Wadi Kanaay	Stagnant pools	20 200	x
16/11/1962	Ramadi	Ramadi	Hiet Wadi Kanaay	Stagnant pools		

Figure I. Showing the distribution of *A. apoci* in Iraq, 1962.

(Male and female adults were bred out from the larvae, but pupae unfortunately were not preserved and eggs were unobtainable. Marsh, 1933).

GENERAL FORM:—

The colour:— When the pupa is formed it is very pale and gradually becomes darker in colour. It was found blackish, greenish, yellowish and brown in colour, depending on the colour of the environments of the breeding places.

LENGTH:—

From 5-8 mm. (for the specimens which were measured in this paper)

FINS:—

At the end of the abdomen (the distal end of the eighth segment) are the paddles which are flat pear like or flap-like lateral lobes. The terminal paddles have spines of fringe, hair of fringe and apical bristles. The paddle fringe runs around the outside edge of the paddle, except one fifth of the paddle without hair or bristles from the side of the eighth segment.

PADDLE HAIR :—

Curved to form a crook and pointed. About one third as long as the fin.

ACCESSORY HAIR :—

More than one third of the terminal bristable. 2-3 small branches.

Spine A:—

On the eighth segment, with some exceptions, as long as that segment. The central shaft elongated and wavy with 7-9 lateral bristles and a terminal bunch of 4-6 bristles. 12 or more branches.

On segment 7 as long as $\frac{3}{4}$ or $\frac{4}{5}$ of segment 8. Mostly simple but in some of the specimens two branches were found. It was curved with a pointed tip.

On segment 6 longer than $\frac{2}{3}$ or $\frac{3}{4}$ of segment 7. Curved with a pointed tip.

On segment 5 as long as $\frac{3}{4}$ of segment 6 or a little more and also curved with pointed tip.

On segment 4 equal to $\frac{1}{3}$ or $\frac{2}{5}$ of segment 5; curved and a pointed tip.

On segment 3 very much reduced; equal to $1/8$ of segment 4.

On segment 2 reduced to a small Tubecele equal to $1/10$ or $1/12$ of segment 3.

Bristle B: —

On segment 7 as long as or longer than $1/2$ of segment 8. Five to seven branches.

On segment 6 about $1/2$ of segment 7. Five to seven branches.

On segment 5 about $1/2$ or more of segment 6. Five or more branches.

On segment 4 more than $1/3$ segment 5. More than five branches.

On segment 3, three branches. About $1/3$ of segment 4.

BRISTLE C:—

On segment 7 mostly simple and some of them 2-3 branches. As long as segment 8 or a little longer.

On segment 6 mostly simple, some branched from 2-3 branches. As long as segment 7.

On segment 5 mostly simple or branched from 2-3 branches. About the same length as segment 6.

On segment 4 branched to more than five branches from near the base. Approximately half of segment 5.

On segment 3 branched to more than five branches. As long as $1/3$ of segment 4.

BRISTLE C:—

Located on segment 6 only; as long as $1/3$ of segment 7 or $1/3$ of bristle C on the same segment; simple or bifid.

BRISTLE 4:—

On segment 7 four to eight branches.

On segment 6 four to eight branches.

On segment 5 four to seven branches.

On segment 4 four to seven branches.

On segment 3 four to seven branches.

BRISTLE 3:—

On segment 7 two to four small branches.

On segment 6 absent.

On segment 5 branched to more than 2 branches.

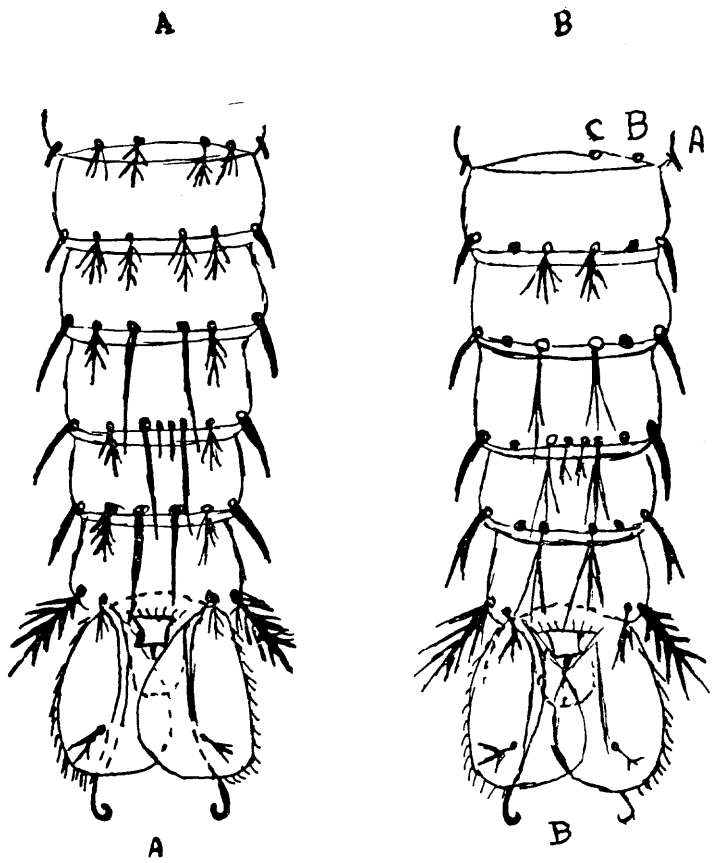


Figure II. Abdomen (from segment 3 to end) dorsal view. A. Showing the different kind of bristles and hairs on the pupal dorsal view. B. Showing the branched bristles (A and C)

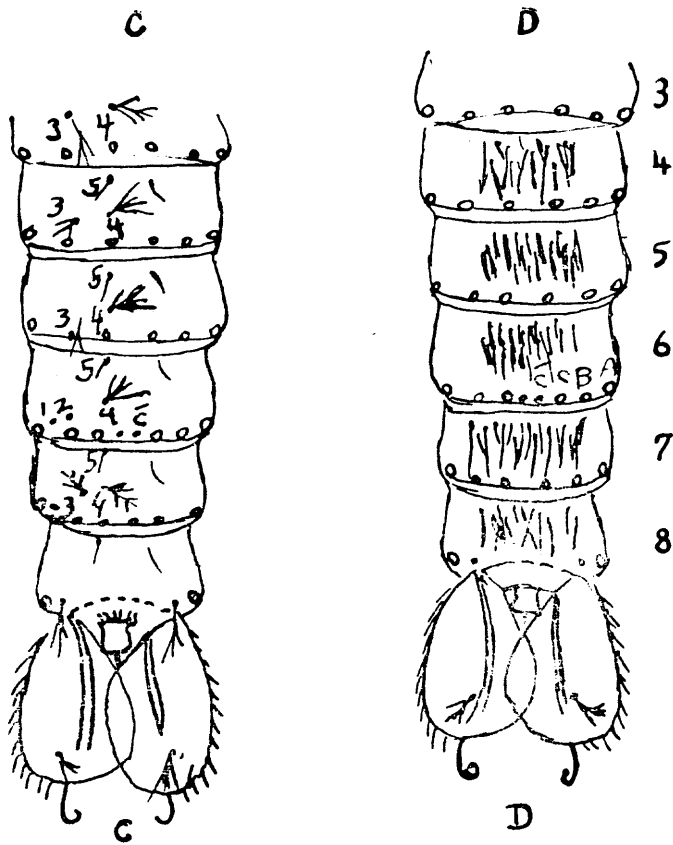


Figure II. Abdomen (from segment 3 to end) dorsal view.

C. Bristles 3 and 4 on segments 7—3.

D. Dots of hairs were found on the dorsal side of the *A. apovi* pupa.

On segment 4 branched to more than 3 branches.

On segment 3 long and branched.

BRISTLE 5:—

Small and simple on all segments

FIGURE II. Abdomen (from segment 3 to end) dorsal view. A. Showing the different kinds of bristles and hairs on the pupal dorsal view. B. Showing the branched bristles (A and B) C. Bristles 3 and 4 on segment 7-3. D. Tubercle of hairs were found on the dorsal side of the A. apoci pupa.

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