

Morphology of Undescribed Male and Immature Mosquitoes of Aedines in Japan. 1. *Aedes (Finlaya) watasei**

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日本産ヤブカ類の未記載雄及び未成熟期の形態, 1. *Aedes (Finlaya) watasei*. 大森南三郎, 長崎大学医学部
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Since Yamada captured two females of *A. (F.) watasei* coming to bite him in bush on July 21, 1916 at Omura, Nagasaki Prefecture, nobody has succeeded in collecting the species there. The present author has tried in vain to collect it at Omura and its vicinity. The author had a chance to visit Hirado City of the same prefecture and to collect mosquito larvae at graveyards on July 27, 1951, when he found in his collection a strange mosquito dying on the act of emergence. This was the very species we were looking for for long time. He visited the city again on 9-13th, September of the same year and collected a number of larvae and pupae in stone water-containers at graveyards. They were reared to adults and identified as *A. (F.) watasei*.

Yamada (1921) described only the female. Here, the male and immature mosquitoes will be described.

MALE

Wing. 2.3-2.6mm long.

Head. Proboscis dark-scaled. Palpus all dark, shorter than proboscis by about its last segment, with a number of long hairs arising apically on III and along IV and V. Torus bare.

Thorax. The anterior large white patch on scutum is larger than in female extending more laterally and posteriorly; a narrow median white line arising from the concave posterior margin of the patch, extends to and along the prescutellar area; a separate patch of pale scales before wing base is also a little larger than in female extending more mesially than in female; these white markings are usually distinguishable by interposing dark scales but in some individuals they look nearly coalesced with each other. Scutellum dark brown; each lobe covered with broad and nearly all white scales, in contrast to the broad dark scales being admixed on the middle lobe and predominant on lateral lobes in female. Anterior pronotal lobe and posterior pronotal lobe with broad white scales as in female. Other ornamentations are similar to those in female described by Yamada (1921). However, he has not referred to the ornamentations of paratergite and pleural areas. These are described here. Paratergite with a patch of broad white scales. The following pleural areas each with a patch of broad white scales; propleural, prealar, upper stenopleural, lower stenopleural, and upper mesepimeral.

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Abdomen, Wings, and Legs are as in female.

Terminalia (Plate 1, A).

Ninth tergite lobes divided, with 2-3 hairs on each lobe. Basistyle without lobes, about 3 times as long as the greatest width, clothed with long and short setae and many large scales; inner surface of the basistyle clothed with long setae sparsely on apical third, slender filament-like setae densely on middle third, rather short setae densely on basal third. Dististyle pilose, slightly curved, less than one-third as long as the basistyle. Claw slender nearly three-fourths as long as the dististyle. Claspette stem rather short; filament long, rod-like, curved inwards at tip, about 2 times as long as the stem. Phallosome simple and cylindrical, longer than wide, truncate apically.

LARVA (Plate 1, B, C, and D and Tables, 1, 2, and 3)

Head. Antenna smooth; antennal hair rather long and simple, inserted at a level less than one-third from the tip. Mouth brush, median hairs of which with very large teeth. Preclypeal spine simple, long, stout, and blunt at tip. Hair 4 small with

4-8 branches; hairs 5 and 6 simple and long; 7 small usually with 2 branches; hairs 6, 4, and 5 situated from front to middle one after another at nearly equally wide intervals. Hairs 8, 9, and 10 with 2, 3-4, 1-2 branches respectively. Mentum (Plate I, C) with 12-13 teeth.

Thorax. Hairs 1, 2, and 3 situated on the same root; 1 long, single, and barbed; 2 slender, simple; 3 3-4 branched, barbed.

Abdomen. Pentad hair 1 with 3-5 branches; 3 with 6-7 branches; 5 usually with 4 branches. Comb with 37-40 scales in a patch, scales apically broadened and completely fringed. Siphon brownish, index about 2.5-3.3 with 15-17 teeth, each with a strong lateral denticle at near base and a fine fringe on lateral surface near the base of the denticle; siphonal tuft with 5-7 finely barbed branches, the root is at about the middle of tube and at about or slightly more apically from the end of the line of pecten teeth. Saddle narrowly incomplete, posterior margin with fine spines; saddle hair with 1-2 branches, barbed; inner caudal tuft of dorsal brush with 3 branches; outer long and single; ventral

Table 1 Branching of larval hair
(with 11 fourth instar larvae)

Hair	Hair no.	Range		Hair	Hair no.	Range	
		extreme	usual			extreme	usual
Inner preclypeal	1	1	1	Pentad	1	3-6	3-5
Postclypeal	4	3-8	4-8		2	1	1
Frontal	5	1	1		3	5-9	6-7
	6	1	1		4	1	1
	7	1-3	2		5	4-6	4
Sutural	8	1-3	2	Saddle		1-3	1-2
Transsutural	9	2-5	3-4	Caudal hair of dorsal brush	isc	3	3
Supraorbital	10	1-2	1-2		osc	1	1
Shoulder	1	1	1	Ventral brush	1	3-5	3-5
	2	1	1		2	3-4	3-4
	3	3-4	3		3	2-4	2-3
Siphonal		5-7	5-6		4-10	2-3	2-3

Table 2 Number of teeth and scales
(with 11 fourth larvae)

Name of structure	Numbers	
	Extreme range	Usual range
Mentum teeth	12-14	12-13
Comb scales	36-47	37-40
Pecten teeth	15-19	15-17

Table 3 Length of several structures
(with 11 fourth instar larvae)

Name of structure	Length in mm		
	Extreme range	Usual range	
Siphon {	length	0.76-0.95	0.78-0.86
	width	0.25-0.41*	0.25-
Siphonal index (times)		2.5-3.3	
Saddle	0.29-0.36	0.29-0.32	
Gill {	dorsal	0.29-0.41	0.29-0.36
	ventral	0.16-0.27	0.20-0.25

* Some specimens were made pressed.

brush of 10 tufts, 1 or the most basal tuft with 3-5, 2 with 3-4, 3 with 2-4, each of the remainder with 2-3 branches. Anal gills rather rounded at tip, dorsal pair nearly as long as saddle; ventral pairs short, and a little longer than one-half as long as dorsal ones.

PUPA (Plate 1, E)

Hair 8 on segment VIII very long with 3-4 barbed branches, the length of branches unequal: hair 5 slender and simple. Paddle pear-shaped; external margin with fine denticles on apical half; paddle hair rather long, simple, or finely barbed, or rarely branched apically.

TAXONOMIC DISCUSSION

Yamada (1921) differentiated the female of this mosquito species from allied species: *A. assamensis*, *A. lophoventralis*, and *A. melanopterus*.

In terminalia of adult male, this species resembles *A. melanopterus* and *A. gubernatoris*: Detailed

account is not available but they differ at least in the number of setae on the lobe of ninth tergite with each other having 2-4, 5-7, and 9-10 respectively.

In larva, this species appears to be closely related to *A. feegradei* of *gubernatoris* group, but differs in having constantly 3 branched inner caudal tuft of dorsal brush and ordinal branching siphonal tuft in *watasei* while 3-6 branched isc, and somewhat widened branches in siphonal tuft in *feegradei* judging from the description of Barraud, 1934. The larva of *watasei* also somewhat resembles that of *A. melanopterus* but differs in that in *watasei*, postclypeal hair 4 situated at nearly the middle of the roots of frontal hairs 6 and 5; comb scales with 36-47; isc 3 branched; while, in *melanopterus* 4 situated near the root of 6; comb scales with 28-35; and isc 4-6 branched.

BIONOMICS

A dead adult emerging from a pupa and additional 8 larvae and 2 pupae were found in the collection from many stone water-containers in several graveyards at Hirado City, Nagasaki Prefecture, on July 27, 1951. There are many graveyards in the city and are a great number of stone water-containers of various shape and size which are, in conformity with the custom of the Buddhist, placed before tombstones. The shape, size, and number of the containers is depend on the relative wealth of the owner. The containers of average type are about 15 × 20cm in inside measure and 7-8cm deep; larger ones are about 18 × 26cm and 8-10cm; largest ones are about 28 × 40cm and 10-30cm. The graveyards are usually under the grove of pine or other trees and accordingly the containers are usually under adequate shade to maintain rain water for a long time.

On from 9th to 13th of September, 1951, the collection of *watasei* was made and the larvae and pupae of this mosquito were collected from 8 containers among some seventy ones inspected. The number of larvae plus pupae of *watasei* and concurrently collected other mosquitoes in these 8 containers are tabulated in Table 4.

Table 4 Number of larvae plus pupae collected in stone water-containers on graveyard at Hirado City, Nagasaki Prefecture, on September 9-13, 1951

Species	Containers number								Total No. of individuals
	1	2	3	4	5	6	7	8	
<i>Aedes (S.) albopictus</i>	55	3	20	17	4		11	7	117
<i>Aedes (F.) japonicus</i>	18		13	77	39	12	37	25	221
<i>Aedes (F.) togoi</i>						67			67
<i>Aedes (F.) nipponicus</i>			2						2
<i>Aedes (F.) watasei</i>	1	1	1	3	8	1	3	2	20
<i>Anopheles (A.) koreicus koreicus</i>			1						1
<i>Armigeres (Ar.) subalbatus</i>				2					2
<i>Culex (Loph.) infantulus</i>							4		4
<i>Tripteroides (T.) bambusa</i>					1				1
<i>Uranotaenia (U.) bimaculata</i>		26	6						32

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総 括

Aedes watasei は山田 (1921) が1961年に長崎県大村で♀2個体を採集したのみで、その後採集の報告がない。著者は1951年夏長崎県平戸市の墓地のアカダナから幼虫を採集して蛹及び♀、♂成虫を得た。♂の触鬚は黒色で吻より僅かに短かく末端2節には黒色剛毛を生ずる。中胸背の腎臓形大白斑は♀と同様であるが、凹部中央から白色の正中線がのびて Prescutellar space

前で2岐している点が異なる。♂の外部生殖器の Easistyle には Apical lobe も Basal lobe もないが、内側下部に僅かに膨らんだ、剛毛の生ずる着色部がある。又、内側中央部には拾数本の長い葉片状剛毛を生ずる。Claspette はよく発達し Filament は棍棒状で柄部の2倍近く、尖端僅かに細くなって内曲する。Phallosome は円筒状で単純である。

幼虫の触角は平滑で無刺。頭部の毛 No. 4 は4—8岐の小毛で、前後に並んだ No. 5 と No. 6 の略中間に位する。No. 5 及び6は共に単状で長い。No. 7 は1—3岐する小毛である。前胸の Shoulder hair は同一根部から生じ、No. 1 は細枝を有する単条毛、No. 2 は細く単純、No. 3 は3—4岐し細枝を有する。Mentum teeth は疎大で13内外である。第8腹節の側鱗は37—40あり先の稍広いシヤモジ形で中央から先端に縁毛を有する。呼吸管比は2.5—3.3、呼吸管毛は略中央にあって5—7岐する。呼吸管刺は普通15—17で細長く基部近くに1齒を生ずる。鞍板は殆ど環状をなし、後端に刺を生ずる。鞍板毛は1—2岐し、微枝を疎生する。尾葉は長短あり、長いものは鞍板と略同長、短いものはその3/4内外である。

蛹の Paddle は西洋梨形で長さは幅より僅かに長く外縁は多少肥厚して小刺を生ずる。第8節のA毛は4—5岐するがその長さは不揃いで、その内1—2本は特に長く Paddle の長さの3/4以上に達する。Paddle hair は通常単条で長い。

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EXPLANATION OF PLATE

- Plate I, A: Male terminalia of *Aedes (F.) watasei*.
 B: Head of the larva of the same.
 C: Mentum of the same.
 D: Anal segments of the same.
 E: Anal segments of the pupa of the same species.

Plate 1



