The Mosquitoes of Macha, Zambia

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Updated March 2006
When performing mosquito collections in Africa, by pyrethrum spray catch, CDC light traps, landing catches, larval collections, or aspiration, any number of mosquito species may turn up in addition to the targeted *Anopheles* malaria vectors. While information regarding the identification of anopheline species is excellent, identification of African culicines is more difficult. This pictorial reference was compiled from our voucher collection with the intention of assisting entomological research in Africa by providing an additional tool to identify common culicine species that may be of academic or public health interest. Mosquitoes included are those that have been collected during our malaria research efforts in the Macha catchment region in southern Zambia, and include collection and location data relevant to our study villages. As more information becomes available, this document will be updated. It is our hope that this reference will be a valuable resource for mosquito research in Africa. Please direct any questions or comments to Rebekah Kent at rkent@jhsph.edu. All identifications were made using the sources listed on p. 32.
# The Mosquitoes of Macha

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31. *Ficalbia circumtestacea* (Theobald)
**Anopheles (Anopheles)**

**coustani** Lavaran

**Collection notes:**
Ubiquitously collected from most breeding sites throughout the Macha catchment region; adults occasionally in indoor and outdoor CDC light traps. 5th, 4th, and most of 3rd hind tarsal segments white.

Shaggy maxillary palps
**Anopheles (Cellia) arabiensis**

Patton

**Morphologically identical to An. quadriannulatus** (Theobald), also occurring in Macha**

Diagnostic white interruption on the R1 vein of the third black area; sometimes contiguous with the proximal white area.

Collection notes: Adults collected resting inside sleeping houses. Larvae in sunlit, usually temporary puddles of water, sometimes together with An. quadriannulatus. An. arabiensis is a demonstrated vector of *P. falciparum* in Macha. An. quadriannulatus feeds on cattle and is of no known public health importance. An. quad. collected from Chidakwa and Lupata breeding sites. 

Speckled legs

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March, 2006
Anopheles (Cellia) funestus s.s. Giles

**Morphologically identical to An. leesoni Evans and An. parensis Gillies, also occurring in Macha**

Very small, black mosquito

Solid black legs

Palps ~2X longer than head

Collection notes:
Adults of all three species collected resting inside sleeping houses. An. funestus and An. leesoni also in indoor CDC light traps. An. leesoni and An. parensis blood meals were from cattle; these species are of no known public health importance.

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March, 2006
Anopheles (Cellia) longipalpis
(Theobald)

Palps ~3-4X longer than head

Collection notes: Collected resting inside sleeping houses, however blood meals were from cattle, dogs, and goats. Commonly collected inside houses in Mufwafwi village.

Pale bands on leg joints
Anopheles (Cellia) rufipes
(Gough)

Two pale spots on R1 vein in 2nd black area, no pale interruption in 3rd black area

Collection notes: Ubiquitously collected in breeding sites throughout Macha and in CDC light traps, especially traps placed near cattle kraals. Occasionally found resting inside sleeping houses, but not a known malaria vector.

White hind tarsi

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March, 2006
Anopheles (Cellia) squamosus

Shaggy palps

Lateral scale tufts on abdomen

Speckled femora and tibia, banded tarsi

Collection notes:
Ubiquitously collected in breeding sites throughout Macha. Adults also collected with indoor and outdoor CDC light traps.

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March, 2006
Anopheles (Cellia) pretoriensis (Theobald)

Collection notes:
Collected in CDC light traps hung near cattle kraals, April 2005.

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March, 2006

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Aedes (Neomelaniconion) macintoshi Huang

Lateral bands on scutum bright yellow

Subspiracular scales yellow and narrow

Pale scales on Rs, R_{2+3}, M, M_{1+2}

Collection notes:
Collected by human landing catch, Lupata village, January 2006

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March, 2006
**Aedes (Diceromyia) fascipalpis** (Edwards)

- **Proboscis** with slightly paler, narrow, speckled central area
- **Median white band** on palps
- **Wings** unspeckled
- **Terga** with basolateral and median patches
- **Pleuron** with broad, white scales.
- **Scutum** with narrow, yellow scales.
- **Tarsi** of all legs, and hindtarsomere 5 with broad, white, basal band

**Collection notes:** one adult female collected during human landing catches in Lupata, January 2006.

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March, 2006
Aedes (Aedimorphus) ochraceus (Theobald)

Large yellow and brown mosquito

- Legs lined on either side with thin brown stripes
- 9 yellow and brown stripes on scutum
- Male

Collection notes: Larvae collected along the edges of deep grassy pools in Chidakwa, Jan-Feb 2005. Engorged adults collected inside sleeping houses, Lupata village, January 2006.

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**Aedes (Aedimorphus) hirsutus** (Theobald)

**Collection notes:**
larvae collected from grassy pools in Chidakwa, Jan-Feb 2005 and muddy tire tracks. Adults collected during human landing collections, Lupata village, January 2006.

**Proboscis** widely pale in middle.

**Femora and tibia and tarsomere 1 speckled**

**Thoracic scale patches** well developed, including 2 subspiracular patches.

**Terga 2-6** with basal white bands, straight margins.

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March, 2006
Aedes (Aedimorphus) dalzieli (Theobald)

Collection notes:
Adults collected by human landing catch in Lupata village, January 2006.

Yellow scale scattered throughout mostly dark scutum scales; patches of white scales above wing base and on prescutellar area.

Wing dark with small basal pale spot on costa.
**Aedes (Aedimorphus) vittatus**  
*Bigot*

- **Femora**: speckled, each with subapical white band
- **Banded tarsi**
- **Basal abdominal bands not joined to lateral marks**
- **Scutum**: with rows of white spots
- **Black mosquito with silvery-white marks**
- **Dark proboscis**
- **White spot at base of costal vein**

**Collection notes**: adults collected by CDC light trap

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March, 2006
Aedes (Aedimorphus) argenteopunctatus (Theobald)

Dark mosquito with broad, silvery white, scale patches. No post-spiracular or prealar scale patches.

Silvery-white spot on apical ¾ of mid and hind femora.

Silvery white basolateral patches on abdominal terga.

Collection notes: collected by human landing catch in Lupata, January 2006

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Rebekah J. Kent March, 2006
Aedes (Stegomyia) aegypti
(Linneaus)

Black mosquito with silvery markings

Diagnostic lyre-shaped scale pattern on scutum

Collection notes:
Adults collected while trying to bite during the daytime, inside MIAM office building, May 2004.

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March, 2006
Aedes (Stegomyia) spp.
dendrophilus group

Collection notes:
collected by human landing catch, April 2005.

No white spot on mid femora

Black mosquito with silvery markings

Crescent-shaped scale patches in scutal fossae

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**Aedes (Mucidus) sudanensis**
(Theobald)

- Large mosquito, with a “moldy” look due to broad, erect scales covering body and legs.
- Relatively long palps for *Aedes*.

Collection notes:
- Collected in April 2005 in a CDC light trap hung next to a cattle kraal; larvae are predaceous.

Wing with speckled black and white scales, cloudy appearance surrounding the r-m and m-cu cross veins.

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**Culex (Culex) quinquefasciatus** Say

- Mostly white underside of abdomen (sterna)
- Dark, unbanded legs
- No post-spiracular scales or bristles
- Thick, half-moon-shaped, basal bands on abdominal terga

**Collection notes:** Very common and abundant October – January, especially in Chidakwa. Adults collected by pyrethrum spray catch in sleeping houses. Blood meals are from humans, cattle, dogs, and chickens.

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Culex (Culex) univittatus
Theobald

Collection notes:
adults collected by pyrethrum spray catch between October and January, particularly in Chidakwa

Abdominal sternum (underside) usually with dark markings

Post-spiracular scales present

Diagnostic longitudinal stripe present on hind tibiae

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March, 2006
**Culex (Culex) antennatus**
(Becker)

- **Abdominal terga** unbanded, but with lateral patches on terminal segments
- **Abdominal sternum** white
- **No post-spiracular scale patch**
- **Dark, unbanded legs**

**Collection notes:** Adults occasionally collected in pyrethrum spray catch.

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Culex (Culex) poicilipes
(Theobald)

Collection notes: Adults occasionally collected in pyrethrum spray catches

Fore and mid-femora with row of 6-12 white spots

Proboscis with well-defined pale band

Lower mesanepimeral setae (bristles) absent

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March 2006
Culex (Oculeomyia) bitaenorhynchus
(formerly Cx. ethiopicus Edwards)

Proboscis with distinct, medial pale band.

Pale labellum.

Collection notes:
Collected larvae in Chidakwa, January 2006.

Wing speckled with broad pale and dark scales.

Banded tarsi.

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March 2006
**Culex (Culiciomyia) nebulosus**

Theobald

Grayish-brown mosquito with few markings

**Collection notes:** adults started appearing in CDC and human landing collections by mid-February, especially in Chidakwa. Also abundant in CDC traps hung near cattle pens in April 2005.

Row of wide, pale scales lining the orbital margin of the eyes

Vertical row of white scales lining the posterior edge of the mesokatepisternum

No bands on abdominal terga

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**Culex (Lutzia) tigripes**

**De Grandpré & De Charmoy**

Very large relative to other *Culex*, wing length 5.0-6.0 mm

Apical abdominal bands

4 mesaneplimal setae

Femora and tibiae with longitudinal rows of 10-15 rectangular white spots

**Collection notes:**

Larvae collected from sun-lit Lupata breeding site. Adults aspirated from inside houses. Larvae are predaceous on other mosquito larvae.

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**Uranotaenia (Uranotaenia) balfouri** Theobald

Iridescent blueish-white scales lining the orbital margin of the eye, forming a stripe above the wing, and a large patch on the pleuron.

Collection notes: one adult collected during pyrethrum spray catch, December 2004, Chidakwa.

Abdominal terga dark, sternum pale.

Legs dark.

White at extreme base of R1 wing vein.

Very tiny mosquito; wing length 2-3 mm.
**Mansonia (Mansonioioides) uniformis (Theobald)**

**Collection notes:**
- Adults collected by human landing catch, occasionally by pyrethrum spray catch and CDC trap.
- Blunt abdomen.
- Broad, speckled wing scales.
- Confluent white spots on hind tibiae, vs. 10 discrete spots in *Ma. africana*.
- Banded tarsi.
- Scutum with three main stripes of yellowish scales.

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**Toxorhynchites (Toxorhynchites)**

*Toxorhynchites brevipalpis* Theobald

Extremely large, colorful mosquito

Collection notes: rarely collected because adults don’t feed on blood; larvae predaceous on other mosquito larvae in tree holes

Banded legs

Coxae with white scales, without golden scales on thorax

Black setal tufts on tergite VII, white tufts on tergite VI

Strongly decurved proboscis – feeds only on plant nectar

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Ficalbia circumtestacea
(Theobald)

- Palps 0.2x length of proboscis
- Proboscis slightly swollen at the tip
- Patch of grey-white scales in the center of the meso-katepisternum
- White hind tarsi
- Flagellomere 1 3x longer than flagellomere 2
- Palps 0.2x length of proboscis
- Proboscis slightly swollen at the tip
- Patch of grey-white scales in the center of the meso-katepisternum
- White hind tarsi
- Flagellomere 1 3x longer than flagellomere 2

Palps 0.2x length of proboscis
Proboscis slightly swollen at the tip
Patch of grey-white scales in the center of the meso-katepisternum
White hind tarsi
Flagellomere 1 3x longer than flagellomere 2

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• The Walter Reed Biosystematics Unit. http://www.wrbu.org/index.html
Acknowledgements

Mosquito collections
- Dr. Doug Norris
- Dr. Sungano Mharakurwa
- Harry Hamapumbu
- Fidelis Chanda
- Lushomo Chikobolo
- Collance Munsanje
- Redwell Moono
- Peter Simakwati
- Guide Hansumo
- Seen Mudenda
- Betham Dubeka
- Buster Munsanje
- Maron Mulota
- Frederick Mwiinga
- Patricia Muleya
- Petros Moono
- Fines Mwaanga
- Kalizya Sinyangwe

Funding
This research was supported in part by financial assistance to Douglas E. Norris from the Johns Hopkins Malaria Research Institute, a Johns Hopkins Malaria Research Institute pre-doctoral fellowship award to RJK, a JHSPH Global Field Experience Fund award to RJK, and a NIEHS training award (T32ES07141) to RJK.

Thank you for technical assistance to Joshua Reece of Creative Technology Solutions, http://www.creativesolutions.com, and to the Walter Reed Biosystematics Unit providing access to Smithsonian reference collection for specimen verification.