The robber flies or assassin flies form a conspicuous segment of the dipterous fauna of Oklahoma. The relation of robber flies to other insects is comparable to that of Accipiter hawks to other birds. The adults are noted for their speed, agility, and predaceous feeding habits. At rest they habitually sit on leaves, stems, or the bare ground ready to pursue flying insects, large or small. Some are known to take larvae of the Lepidoptera (Comstock, 1940), while others are cannibalistic (Hull, 1962). In some genera, the adults mimic certain wasps and bees in appearance and sound produced; therefore, they are often confused with these forms. When disturbed, the adults usually fly a short distance and alight facing the disturber. The larvae are found in the soil and in decaying wood where they prey on other larvae, or possibly at times are scavengers (Hull, 1962).
The apparent color of the flies is largely due to fine microscopic pollinose hairs often called dust. Adults in collections often become "greasy," however, and the ground color and pollinose hairs on the body are obscured. Placing pinned specimens in benzene or xylene for about a week usually restores the color and pollinosity.

The previous works found for Oklahoma were those of R. D. Bird, a collector who is acknowledged by Curran (1931) as securing many fine specimens in Oklahoma, and of A. Earl Pritchard, who described two new species in the subfamily Asilinae, Proctacanthella jamesi (= exquisita) and Promachus oklahomensis (Pritchard, 1935), and added many state collection records.

I wish to acknowledge the following individuals and institutions for their loan of specimens: Drs. G. W. Byers, University of Kansas; H. R. Burke, Agricultural and Mechanical College of Texas; H. Brown, Oklahoma University; and U. Lanham, University of Colorado. The following individuals are acknowledged for their help during this investigation: Thesis advisor, Dr. W. A. Drew; asilidologist, Dr. C. H. Martin, and the late A. E. Pritchard.

The taxa are arranged after Martin and Wilcox (1965). Synonymy is omitted, for it can be found in the above work. For descriptions of the taxa see Schaefer (1962).

**KEY TO NEARCTIC SUBFAMILIES**

1. Antennal style bare ........................................................................................................... 2
   Antennal style pectinate ................................................................................................. Omnatius

2. Tarsal claws thick almost to apices; abdomen broad ...................................................... 3
   Tarsal claws tapered to apices; abdomen narrow ............................................................ 4

3. Face strongly gibbous below, not uniformly pilose;
   length 15 mm or more ........................................................................................................ Mallophora
   Face evenly and gently convex, evenly pilose;
   length 14 mm or less .......................................................................................................... Mallophorina

**THE SUBFAMILY ASILINAE**

Characteristics: Mystax (bristles between oral margin and antennae) usually well developed, third antennal joint with slender terminal style composed of two joints, basal joint small and indistinct, distal joint usually long and bristle-like; maxillary palpi one-jointed; marginal cell closed and petiolated before costa, two or three submarginal cells; tarsal pulvilli present, empodia bristle-like; genitalia external, ovipositor sometimes with circlet of spines; hypopygium of male consists of elongated, longitudinally divided halves, the upper and lower forceps. The upper forceps (gonoforceps or claspers) are characteristic of the male of some genera. The proctiger appears as a flap or projection between the upper forceps.

**KEY TO GENERA OF OKLAHOMA**

1. Antennal style bare ........................................................................................................... 2
   Antennal style pectinate ................................................................................................. Omnatius

2. Tarsal claws thick almost to apices; abdomen broad ...................................................... 3
   Tarsal claws tapered to apices; abdomen narrow ............................................................ 4

3. Face strongly gibbous below, not uniformly pilose;
   length 15 mm or more ........................................................................................................ Mallophora
   Face evenly and gently convex, evenly pilose;
   length 14 mm or less .......................................................................................................... Mallophorina
4. Three submarginal cells (very long sectional
crossvein formed between veins R$_1$ and R$_4$) ___________________________ 5
   Two submarginal cells ____________________________________________ 6

5. Furcation of veins R$_1$ and R$_4$ before apex of discal
cell, first submarginal cell without shadow __________________________ EFFERIA
   (in part).
Furcation of veins R$_1$ and R$_4$ beyond apex of discal
cell first submarginal cell with shadow ____________________________ PROMACHUS

6. Vein R$_4$ meeting costa before apex ________________________________ 7
   Vein R$_4$ meeting costa behind apex ________________________________ 8

7. Furcation of veins R$_1$ and R$_4$ not angulated at base nor
   bearing a stump ____________________________ PROCTACANTHUS
   Furcation of veins R$_1$ and R$_4$ angulated at base and/or
   bearing a stump ____________________________________ EFFERIA
   (in part)

8. Metanotal slopes (below scutellum) bare ___________________________ 9
   Metanotal slopes hairy ____________________________ PROCTACANTHELLO

9. Abdomen with bristles laterally before segmental apices __________________________ 10
   Abdomen without bristles beyond first segment ___________ ASIUS (in part)

10. Ovipositor of female without apical spines;
    male genitalia compact, never leaving a large
    open space on apical half ____________________________ 11
   Ovipositor of female armed at apex with
    short, stout spines; forceps of male genitalia
    strongly curved and leaving a large open space
    on apical half as seen from above __________________________ PHILONICUS

11. Occipital bristles strongly procline on upper two
    thirds or so; dorsum of thorax with two rows of well
    developed bristles, one far exceeding length of
    others ____________________________________ NEOTAMUS
   Occipital bristles procline only slightly on
    upper half and appearing nearly straight; no long
    dorsal thoracic bristles ____________________________ 12

12. Face with a strongly produced gibbosity occupying
    the lower half or more, developed rather abruptly
dorsally ____________________________________ 13
   Face with a weak gibbosity confined to lower half or
    less, not developed abruptly dorsally ___________ ASIUS (in part)

13. Wings with unrestricted clouded areas at the apices
    and along posterior margins ____________________________ TOLMERUS
   Wings with clouded areas at apices and along
    posterior margins, restricted to the cell center and
    surrounded by a hyaline area ____________________________ MACHIMUS

Ommatus Wiedemann

Ommatus tibialis Say — County records: Alfalfa, Craig, Delaware,

Mallophora Macquart

Mallophora orcia (Wiedemann) — M. orcia mimics the bumble bee
worker Bombus americanaus (Fabricius) (Bromley, 1950). County rec­
cords: Alfalfa, Cleveland, Latimer, Lincoln, Osage, and Payne.
BIOLOGICAL SCIENCES

Mallophorina Curran

1. Posterior femora with long black hairs and yellow pile below; posterior tibiae black-haired on whole length dorsally, at least some black reaching base ................................................................. acra
   Posterior femora with only yellow pile below; posterior tibiae white-haired dorsally .................. guilidiana

Mallophorina acra (Curran) — County records: Alfalfa, Beaver, Canadian, Choctaw, Cleveland, Ellis, Harper, Jefferson, KIowa, McCurtain, Oklahoma, Payne, Roger Mills, Rogers, Texas, Woods, and Woodward. Paratypes are present in the Stovall Museum, University of Oklahoma.

Mallophorina guilidiana (Williston) — County record: Cimarron.

Efferia Coquillett

1. Ovipositor conical; upper forceps of male genitalia divided at apices (Fig. 22) .......................................................... interupta
   Ovipositor laterally compressed; upper forceps not as above ................................................................. 2

2. Ovipositor divided at tip (as seen from above); proctiger of male genitalia divided (Figs. 5 and 6) ................................................................. 3
   Ovipositor not divided at tip; proctiger of male genitalia not divided .................................................. 4

3. Wings hyaline .......................................................... bicaudata
   Wings infuscated .......................................................... pogonias

4. Furcation of veins R₂ and R₃ distinctly before base of second posterior cell ................................................................. 5
   Furcation of veins R₂ and R₃ opposite or beyond base of second posterior cell ........................... 15

5. Three submarginal cells (very long sectorial cross- vein formed between veins R₂ and R₃) ........ candida
   Two submarginal cells .......................................................... 6

6. Furcation of veins R₂ and R₃ at or before middle of distance between base of second posterior cell and r-m crossvein ................................................................. 7
   Furcation of veins R₂ and R₃ distinctly beyond middle of distance between base of second posterior cell and r-m crossvein ................................................................. 12

7. Femora black anteriorly, red posteriorly .......................................................... variipes
   Femora black .......................................................... 8

8. Mystax white .......................................................... 9
   Mystax entirely or largely yellow .......................................................... 10

9. Thorax dorsally dark brownish-gray .......................................................... argentifrons
   Thorax dorsally yellow-brown .......................................................... argyrocoma

10. Upper occipital bristles yellow .......................................................... bezarensis
    Upper occipital bristles black .......................................................... 11

11. Palpal bristles largely black .......................................................... texana
    Palpal bristles white .......................................................... pallida

12. Palpi yellow-haired .......................................................... 13
    Palpi largely black-haired .......................................................... nemorale

13. Wings hyaline; tibiae basally yellow; occipital bristles yellow .......................................................... auripila
    Wings slightly clouded; tibiae basally red; upper occipital bristles black .......................................................... 14
14. Frontal bristles yellow; scutellar bristles black .................................................. *plena*
Frontal bristles largely black; scutellar bristles black and yellow .................................. *prairiensis*

15. Vein R, curved backward at tip, meeting costa at or behind apex of wing .................. 16
Vein R, curved forward, plainly meeting costa before apex of wing .................................. 19

16. Mystax black and white to pale yellow ................................................. 17
Mystax entirely yellow ................................................................................. *aurimyctacea*

17. Tibiae largely bright yellow .................................................. 18
Tibiae reddish-brown; mystax black and white ............................................... *aestuans*

18. Mesonotum, scutellum posteriorly with some pale bristles; mystax black and pale yellow ........................................... *kansensis*
Mesonotum, scutellum bristles all black; mystax black and white .................... *belfragei*

19. Scutellum conspicuously haired and with numerous marginal bristles ............................................ *snowi*
Scutellum with short hairs and usually not more than six marginal bristles .......... 20

20. Palpi black-haired; male and ventral protuberances on abdominal segments four, five, and six ........................................... *tuberculata*
Palpi largely white or yellow; male not as above ........................................... 21

21. Abdominal segments dorsally with dark spots or bands ........................................................................... 22
Abdominal segments with pale yellow-gray hairs ......................................................... *leucocoma*

22. Abdominal segments each with black and gray band of subequal width ........................................... *zonata*
Abdominal segments each with two large, dark, rounded spots, where black appears continuous, gray posterior margin much smaller than black ........................................... *albibarbis*

**Efferia interrupta** (Macquart) (Fig. 22) — County records: Alfalfa, Caddo, Canadian, Choctaw, Cimarron, Cleveland, Coal, Comanche, Craig, Ellis, Jackson, Latimer, Lincoln, Logan, McCurtain, McIntosh, Major, Murray, Oklahoma, Okmulgee, Osage, Payne, Pawnee, Pushmataha, and Woods.

**Efferia candida** Coquillett (Fig. 14) — County record: Beaver.

**Efferia bicaudata** (Hine) (Fig. 6 and 5) — County records: Alfalfa, Beaver, Cleveland, Harper, and Murray.

**Efferia pogonias** (Wiedemann) — County record: Cleveland.

**Efferia argentifrons** (Hine) (Fig. 19) — County records: Adair, Cimarron, Craig, Delaware, and Texas.

**Efferia argyrocoma** (Hine) (Fig. 15) — County record: Cimarron.

**Efferia auripila** (Hine) (Fig. 13) — County records: Comanche and Harper.

**Efferia bexarensis** (Bromley) (Fig. 17) — County record: Kiowa.

**Efferia memoralis** (Hine) (Fig. 9) — County records: Craig, McCurtain, and Nowata.
BIOLOGICAL SCIENCES

Bifuria /splifera/ (Hine) — County record: Cimarron.

Bifuria /plenua/ (Hine) (Fig. 8) — County record: Greer.

Bifuria /prairie/na/ (Bromley) (Fig. 10) — County records: Cleveland and Pittsburg.

Bifuria /texas/na/ (Banks) (Fig. 11) — County records: Adair, Alfalfa, Carter, Cleveland, Comanche, Delaware, Haskell, Latimer, McCurtain, Mayes, Murray, and Pittsburg.

Bifuria /varipes/ (Williston) (Fig. 7) — County record: Cimarron.

Bifuria /aestuans/ (Linnaeus (Fig. 18) — Distribution statewide.

Bifuria /aurimystacea/ (Hine) (Fig. 26) — Reported by Hine (1919) from Clark County, Kansas.

Bifuria /belfragei/ (Hine) (Fig. 20) — County record: Murray.

Bifuria /kansensis/ (Hine) (Fig. 24) — County records: Alfalfa, Beaver, Cimarron, Comanche, Grady, Harmon, Harper, Noble, Payne, Tillman, Woods, and Woodward.

Bifuria /smoii/ (Hine) (Fig. 16) — County records: Alfalfa, Caddo, Carter, Cleveland, Comanche, Harper, Latimer, McCurtain, Murray, Oklahoma, and Woods.

Bifuria /tuberculata/ (Coquillett) (Fig. 23) — County records: Blaine, Cimarron, Cotton, Ellis, Murray, Texas, and Woodward.

Bifuria /albibarbis/ (Macquart) (Fig. 21) — County records: Adair, Alfalfa, Beaver, Caddo, Cimarron, Cleveland, Comanche, Dewey, Ellis, Harmon, Harper, Jackson, Kiowa, LeFlore, Logan, Marshall, Murray, Okfuskee, Oklahoma, Osage, Pawnee, Payne, Roger Mills, Sequoyah, Texas, Woods, and Woodward.

Bifuria /leucocoma/ (Williston) (Fig. 12) — County records: Alfalfa, Cimarron, Cleveland, Comanche, and Woods.

Bifuria /zonata/ (Hine) (Fig. 25) — County record: Cimarron.

Promachus Loew

1. Abdominal segments distinctly banded, black and gray, subequal in width ........................................... 2
   Abdominal segments not banded .................................................. 3

2. Thorax reddish-brown; femora red ........................................... hinei
   Thorax yellowish-gray; femora dark ........................................... vertebratus

3. Abdomen largely pale .............................................................. 4
   Abdomen largely black with pale hairs noticeable
   on segments two to five on sides and apical
   margins .............................................................. bastardii

4. Thorax clothed with yellowish-brown
   polliniscity .............................................................. 5
   Thorax grayish-yellow ....................................................... oklahomensis

5. Gray shadow in first submarginal cell wider than
   marginal cell; male genitalia longer than
   abdominal segments six and seven ........................................... fitchii
   Gray shadow in first submarginal cell distinctly
   narrower than marginal cell; male genitalia shorter
   than abdominal segments six and seven .................................. texanus

Promachus bastardii (Macquart) — County records: Adair, Bryan, Carter, Cleveland, Comanche, Craig, Custer, Delaware, Harper, Kay, Lati-
mer, LeFlore, Love, McCurtain, McIntosh, Mayes, Nowata, Oklahoma, Osage, Payne, Rogers, Sequoyah, and Washington.

**Promachus fitchii** Osten Sacken — County records: Alfalfa, Beaver, Craig, LeFlore, Nowata, and Payne.

**Promachus hinei** Bromley — County records: Cleveland, Comanche, Delaware, Kay, Latimer, LeFlore, McCurtain, Osage, Pawnee, Payne, Sequoyah, and Washington.

**Promachus oklahomensis** Pritchard — County records: Cimarron and Greer.

**Promachus texanus** Bromley — County record: Cimarron.

**Promachus vertebratus** Say — County records: Ellis, Grant, Osage, Texas, and Woodward.

**Proctacanthus** Macquart

1. Abdomen red; proboscis apically triangular ........................................ 2
   Abdomen gray; proboscis apically dorsoventrally flattened ........................ 3

2. Thoracic dorsum uniformly dark red ........................................................ hinei
   Thoracic dorsum dark red with dark vittae .............................................. rufus

3. Proboscis with dorsally enlarged ridge .................................................. 4
   Proboscis uniform, without enlarged ridge ............................................... 6

4. Mystax usually pale yellow; male genitalia compact ................................... 5
   Mystax white; forceps of male genitalia elongated, curved at tips, enclosing open space beyond proctiger ................................................................. nearno

5. Abdomen with stubby black bristles (larger than recumbent white hairs) on most segments, at least on two to four ........................................ micans
   Abdomen with a few long black bristles, no stubby ones ................................ milbertii

6. Palpi white; wings hyaline ............................................................................ 7
   Palpi black; wings brown ........................................................................... brevipennis

7. Femora black above, dark red below, or all dark red ................................... rodecki
   Femora light red above, black below ........................................................... duryi

**Proctacanthus brevipennis** (Wiedemann) — County records: Alfalfa, Cleveland, Craig, Kiowa, and Latimer.

**Proctacanthus duryi** Hine — County records: Alfalfa, Beaver, Blaine, Cleveland, Comanche, Cotton, Harper, Love, McCurtain, Sequoyah, and Woods.

**Proctacanthus hinei** Bromley — County records: Alfalfa, Beaver, Blaine, Cleveland, Ellis, Harper, Jefferson, Logan, McCurtain, McIntosh, Major, Noble, Okfuskee, Oklahoma, Okmulgee, Osage, Texas, Woods, and Woodward.

**Proctacanthus micans** Schiner — County records: Alfalfa, Cimarron, and Woods.

**Proctacanthus milbertii** Macquart — County records: Alfalfa, Beaver, Canadian, Cleveland, Ellis, Grant, Harper, Haskell, Major, Murray, Noble, Osage, Pawnee, Payne, and Texas.

**Proctacanthus nearno** Martin — County record: Cimarron.
Proctacanthus rodecki James — County records: Alfalfa, Beaver, Caddo, Choctaw, Cimarron, Cleveland, Ellis, Harper, Kiowa, Payne, Texas, and Tillman.

Proctacanthus rufus Williston — County records: Alfalfa, Cimarron, Ellis, Major, Osage, Texas, and Woodward.

Proctacanthella Bromley

1. Abdomen with contrasting mid-dorsal row of dark spots; male genitalia with posteriorly directed fan of long bristles on either side of ninth sternite — exquisita
   Abdomen often dark without definite contrasting dark spots; male genitalia not as above — 2

2. Crossvein r-m beyond middle of discal cell; forceps extended at least half their length beyond lower forceps — leucopogon
   Crossvein r-m at or before middle of discal cell; male genitalia not as above — 3

3. Crossvein r-m at middle of discal cell; ninth abdominal male sternite with medial pencil of white hair-like bristles extended posteriorly — cacopiloga
   Crossvein r-m before middle of discal cell; forceps of male genitalia with pair of hook-like processes at tips, sternites six through nine increasingly expanded — wilcoxi

Proctacanthella cacopiloga (Hine) — Distribution state-wide.

Proctacanthella exquisita Osten Sacken — County record: Cimarron.

Proctacanthella leucopogon (Williston) — County records: Beaver, Cimarron, Major, and Texas.

Proctacanthella wilcoxi Bromley — County record: Payne.

Philonicus Loew

Philonicus limidipennis (Hine) (Fig. 4) — County records: Caddo, Kiowa, LeFlore, and Tillman.

Philonicus rufipennis Hine (Fig. 3) — County records: Caddo, Carter, Choctaw, Cleveland, Comanche, McCurtain, Payne, Pushmataha, and Sequoyah.

Asilus Linnaeus

1. Wings uniformly reddish — rufipennis
   Wings fumose — limidipennis

2. Style of third antennal segment very small, one-fourth as long as its segment; femora picine — mesae
   Style obviously differentiated, about as long as its segment; femora largely reddish — 3

3. Scutellum distinctly hairy above with a row of five or more white bristles on posterior margin — delicotatus
   Scutellum not distinctly hairy above, posterior row scutellar bristles not all white — 4
4. Abdomen with bristles laterally before segmental apices ........................................... rubicundus
Abdomen without bristles beyond the first segment .................................................................... formosus

Asilus delicatus Hine — County record: Ellis.

Asilus formosus Hine — County record: Cimarron.

Asilus mesae (Tucker) — County records: Dewey and Harper.

Asilus rubicundus Hine — County records: Alfalfa, Beaver, Cleveland, Coal, Comanche, Harper, Oklahoma, Payne, Pushmataha, and Texas.

Asilus sericeus Say — County records: Comanche and Craig.

Neoitamus Osten Sacken

Neoitamus flavofemoratus (Hine) — County records: Caddo, Comanche, Johnston, and Marshall.

Machimus Loew

Machimus griseus Hine — County record: Cimarron.

Tolmerus Loew

1. Femora largely red, at least on the posterior side ................................................................. 2
Femora entirely black, or black with a preapical red band ......................................................... 4

2. Thoracic bristles yellowish .................................................................................................. prairiensis
Thoracic bristles black .............................................................................................................. 3

3. Femora almost entirely red ................................................................................................. antimachus
Femora with largely black, anteriodorsal spot ......................................................................... johnsoni

4. Femora black with preapical red band, tibiae red with apical and medial dark bands ................ snowii
Femora entirely black .............................................................................................................. 5

5. Upper forceps of male genitalia with tips bent downward, proctiger flattened (Fig. 2) ...... notatus
Upper forceps straight, proctiger angulate at apex (Fig. 1) ..................................................... virginicus

Tolmerus antimachus (Walker) — County record: McCurtain.

Tolmerus johnsoni (Hine) — County record: Pushmataha.

Tolmerus notatus (Wiedemann) (Fig. 2) — County records: Comanche, Dewey, Haskell, McCurtain, Payne, Pushmataha, and Roger Mills.

Tolmerus prairiensis Tucker — County records: Beaver, Cleveland, Oklahoma, Payne, and Pittsburg.

Tolmerus snowii (Hine) — County records: Bryan, Carter, Choctaw, Cleveland, Delaware, LeFlore, Ottawa, Payne, and Washington.

Tolmerus virginicus (Banks) (Fig. 1) — Banks (1920) erected Asilus virginicus, which differed from T. notatus (Wiedemann) only in the shape of the male genitalia. No other diagnostic characters or ecological information has been found to separate these similar species and for this reason virginicus is assigned to the genus Tolmerus. County records: Comanche and McCurtain.
Fig. 1. Tolmerus virginicus (Banks), lateral view of hypopygium. Fig. 2. T. notatus (Wiedemann), lateral view of upper forceps, proctiger. Fig. 3. Philonicus rufipennis (Hine), lateral view of upper forceps (LVUF). Fig. 4. P. limpidipennis (Hine), LVUF. Fig. 5. Efferia bicaudata (Hine), LVUF and proctiger. Fig. 6. E. bicaudata (Hine), dorsal view of ovipositor. Fig. 7. E. variipes (Williston), LVUF. Fig. 8. E. plena (Hine), LVUF. Fig. 9. E. nemoralis (Hine), LVUF. Fig. 10. E. prairiensis (Bromley), LVUF. Fig. 11. E. texana (Banks), LVUF. Fig. 12. E. leucocoma (Williston), LVUF. Fig. 13. E. auripila (Hine), LVUF. Fig. 14. E. candida Coquillett, LVUF. Fig. 15. E. argyrosoma (Hine), LVUF. Fig. 16. E. snowi (Hine), LVUF. Fig. 17. E. bezarensis (Bromley), LVUF. Fig. 18. E. aestuans (Linnaeus), LVUF. Fig. 19. E. argentifrons (Hine), LVUF. Fig. 20. E. befragei (Hine), LVUF. Fig. 21. E. albibarbis (Macquart), LVUF. Fig. 22. E. interrupta (Macquart), LVUF. Fig. 23. E. tuberculata (Coquillett), LVUF. Fig. 24. E. kansensis (Hine), LVUF. Fig. 25. E. zonata (Hine), LVUF. Fig. 26. E. aurimystacea (Hine), LVUF.

LITERATURE CITED


