

ISSN 1061-3781

BULLETIN OF AMERICAN
ODONATOLOGY

Volume 3 Number 3
October 1995

THE DISTRIBUTION OF ODONATA IN ALABAMA
Kenneth J. Tennessen, James D. Harper, R. Stephen Krotzer, P. 49-74

THE DRAGONFLY SOCIETY OF THE AMERICAS

Business address: c/o T. Donnelly, 2091 Partridge Lane, Binghamton NY 13903

EXECUTIVE COUNCIL 1995-1997

President	K. Tennessen	Florence AL
President Elect	R. Garrison	Azusa CA
Past President	G.L. Harp	Jonesboro AR
Past President	T.W. Donnelly	Binghamton NY
Past President	C. Cook	Center KY
Vice President, SIO Affairs	M. Westfall, Jr.	Gainesville FL
Vice President, Canada	R. Cannings	Victoria, British Columbia
Vice President, Latin America	R. Novelo G.	Jalapa, Veracruz
Secretary	S. Dunkle	Plano TX
Treasurer	J. Daigle	Tallahassee FL
Regular member	T. Cashatt	Springfield IL
Regular member	S. Krotzer	Helena AL
Regular member	C. Shiffer	State College PA

JOURNALS PUBLISHED BY THE SOCIETY

ARGIA, the quarterly news journal of the **DSA**, is devoted to non-technical papers and news items relating to nearly every aspect of the study of Odonata and the people who are interested in them. The editor especially welcomes reports of studies in progress, news of forthcoming meetings, commentaries on species, habitat conservation, noteworthy occurrences, personal news items, accounts of meetings and collecting trips, and reviews of technical and non-technical publications. Articles for publication in **ARGIA** should preferably be submitted and hard copy and (if over 500 words) also on floppy disk (3.5" or 5.25"). The editor prefers MS DOS based files, preferably written in WORD, WORD for WINDOWS, WordPerfect, or WordStar. Macintosh WORD disks can be handled. All files should be submitted **unformatted and without paragraph indents**. Each submission should be accompanied by a text (=ASCII) file. Other languages should be submitted only as text (=ASCII) files. Line drawings are acceptable as illustrations.

T. Donnelly (address above) is the interim editor of **ARGIA**.

BULLETIN OF AMERICAN ODONATOLOGY is devoted to studies of Odonata of the New World. This journal considers a wide range of topics for publication, including faunal synopses, behavioral studies, ecological studies, etc. The **BAO** publishes taxonomic studies but will not consider the publication of new names at any taxonomic level. Enquiries and submission of manuscripts should be made to **BAO** editor T. Donnelly, 2091 Partridge Lane, Binghamton NY 13903. Final submissions (after review) should be made on floppy disk, as above, with illustrations in final form and preferably adjusted to final size.

MEMBERSHIP IN THE DRAGONFLY SOCIETY OF THE AMERICAS

Membership in the **DSA** is open to any person in any country. Dues for individuals are \$10 for regular membership and \$15 for contributing membership, payable annually on or before 1 March of membership year. Institutional (e.g. libraries or universities) membership is \$15 per year. All members receive **ARGIA** via surface mail at no additional cost. For delivery by first class in the U.S. there is an additional charge of \$4, and for Air Mail delivery outside the U.S. a charge of \$10.

The **BULLETIN OF AMERICAN ODONATOLOGY** is available by a separate subscription at \$15 for members and \$18.75 for non-members and institutions.

THE DISTRIBUTION OF ODONATA IN ALABAMA

Kenneth J. Tennessen, 1949 Hickory Ave., Florence, Alabama 35630

James D. Harper, Dept. of Entomology, North Carolina State University, Raleigh, North Carolina
27695-7613

R. Stephen Krotzer, 6010 Woodvale Drive, Helena, Alabama 35080

ABSTRACT A List of Odonata for Alabama, recorded by county, brings the total species recorded in the state to 173. Species recorded for the first time are: *Gynacantha nervosa* Rambur, *Arigomphus submedianus* (Williamson), *Arigomphus villosipes* (Selys), *Gomphus (Gomphus) australis* (Needham), *Gomphus (Gomphus) cavillaris brimleyi* Muttkowski, *Ophiogomphus acuminatus* Carle, *Progomphus bellei* Knopf & Tennessen, *Didymops floridensis* Davis, *Somatochlora calverti* Williamson & Gloyd, *Celithemis bertha* Williamson, *Macrodiplax balteata* (Hagen), *Miathyria marcella* (Selys), *Sympetrum rubicundulum* (Say), and *Amphiagrion saucium* (Burmeister). Species from previous lists which are discredited here are *Gomphus fraternus* Say, *Ophiogomphus mainensis* Packard, and *Cordulegaster diastatops* (Selys). The distribution of the species are discussed according to the physiography of the state, and the relationships of the odonate fauna to neighboring states are considered.

INTRODUCTION

The rich odonate fauna of Alabama is a reflection of the relatively high biodiversity of aquatic communities in the southeastern United States (Hackney *et al.* 1992). Alabama's varied geography and warm, humid climate provide ideal conditions and diversity of habitat for the colonization of dragonflies and damselflies, and its proximity to Florida and Tennessee provides an avenue for immigration of southern and northern faunal elements. The 173 species reported here exceeds the number reported by Dunkle (1992) for the state of Florida. This is surprising considering that Alabama has very few natural lakes and ponds within its borders. Despite the large number of species occurring in the state, however, none is endemic to Alabama. In this paper we bring together all the knowledge we could gather on the distribution of each species within the state, giving county records and noting flight season, habitat, and abundance.

Alabama lies in the southeastern corner of the United States. The state is basically rectangular in shape, 330 miles long in a north-south direction and 210 miles wide in an east-west direction, encompassing 51,600 square miles. From the highest elevations in the Appalachian Mountains in northeast Alabama to the Gulf Coast lowlands near Mobile, dragonflies have the opportunity to colonize streams from large rivers to spring-fed seeps, and lentic habitats such as swamps, man-

made ponds and lakes, and a few small natural ponds and brackish water areas. No large natural lakes occur, but there are numerous large impoundments. Average annual temperature in the north is between 60° and 62°F, whereas in the south it is 64° to 66°F or above. Average annual precipitation in the north is from 52 to 54 inches, increasing in the south to 54 to 64 inches.

Few publications have dealt with the distribution of Odonata within the state, and none has treated the fauna as a whole. Williamson (1903) contributed specific records of *Hetaerina americana* and *H. titia* (as *tricolor*). Mike Wright contributed several papers dealing mainly with the Mobile and Baldwin County area (1937, 1939, 1943, 1946), providing 35 state records. Septima Smith and Robert S. Hodges, while at the University of Alabama in the 1930s and 1940s, formed a group of enthusiastic collectors known as "The Dragonets". Their efforts culminated in a preliminary list of 127 species, but very few of the records were published by them. Their Anisoptera records were reported in Needham and Westfall (1955) as state records only, with no further distributional notes provided.

Johnson (1973-1974) added eight new county records for several species of Calopterygidae. Bick (1978) added four *Enallagma* species to the state list, and Tennessen (1979a) added five species.

Bick and Bick (1983) reported 30 species new to the state list, most of which were Zygoptera, based mainly on the collections of Smith and Hodges.

Tennessee (1990) gave a list of 49 species considered rare or restricted within the state, four of which were new to the state list: *Gomphus*

crassus, *Cordulegaster erronea*, *Nannothemis bella*, and *Sympetrum semicinctum*. Krotzer and Krotzer (1992) added *Erythemis attala* (undoubtedly a single migrant) and *Ischnura kellicotti*, and confirmed the presence of *Gomphus rogersi*, a previously questionable record.

ALABAMA PHYSIOGRAPHY

Alabama has a diverse physiography and a moist, subtemperate climate which have created a wide variety of aquatic habitats, ranging from high gradient mountain streams to coastal marshes (Harris *et al.* 1991). The landscape in Alabama was formed primarily by moving water (gradational processes) and tectonics. The five physiographic regions described here are based on Sapp and Emplaincourt (1975), and the areas they cover in Alabama are indicated in Fig. 1.

HIGHLAND RIM. This section of the Interior Low Plateaus extends from Alabama northward into central Tennessee and to the boundary of the Pleistocene glaciation in Indiana. Most of the area is underlain by cherty limestones that weather into stony soils, especially on steeper slopes. Within Alabama, the Highland Rim is confined to a 3,200 square mile area in the northwest corner of the state and is drained exclusively by the Tennessee River and its tributaries. Elevations range from 500 to 800 feet (up to 240 m). Upland areas are flat to rolling, while the border is characterized by steep, rugged terrain formed by deeply entrenched streams. Streams in this region are usually highly mineralized and well buffered. The region averages 51-54 inches of precipitation annually.

CUMBERLAND PLATEAU. This 8,200 square mile section of the Appalachian Plateaus province in Alabama is typically underlain by horizontal sediments of Paleozoic age. The topography is undulating, frequently dissected by young valleys and broken in the east by a long narrow anticline (the Sequatchie). In northeast Alabama, this anticline is breached by the Tennessee River. The anticline continues to the southwest as a low line of hills into the Black Warrior coal field. Elevations range from approximately 700 feet in the south to over 1000 feet in the north; the highest point is about 1700 feet. The predominant drainage feature in the southwestern part of the Cumberland Plateaus is the Black Warrior River. Precipitation in the region averages 52-56 inches annually.

ALABAMA VALLEY AND RIDGE. In Alabama, this region consists primarily of a series of parallel valleys and ridges that trend northeast to southwest. Paleozoic sediments underlie the formations; ridges are underlain by sandstones and cherts, valleys by carbonates and shales. Elevations typically range from 600 to 700 feet in the valleys to over 1200 feet on the ridges, with maximum altitudes approaching 2100 feet. This region, encompassing 4,160 square miles, is almost exclusively drained by the Coosa and Cahaba rivers and their tributaries. The average annual precipitation for the area is 52-54 inches.

PIEDMONT UPLAND. This 4,700 square mile area, in east-central Alabama, is underlain by a complex of igneous and metamorphic rocks of Precambrian and Paleozoic ages, with maturely dissected rolling hills of moderate relief. The region is bounded on the south by Coastal Plain sediments, to the northwest by the Alabama Valley and Ridge region, and to the east by the Alabama/Georgia state line. Elevations range from about 500 to 1100 feet in the Northern Piedmont Upland and from about 500 to 800 feet in the Southern Piedmont Upland. Several mountains in the region are possibly monadnocks, including Mt. Cheaha, the highest point in Alabama (2,407 feet). The Piedmont Upland is drained primarily by the Coosa, Tallapoosa, and Chattahoochee river systems. Precipitation in the region averages from 48 to 53 inches per year.

EAST GULF COASTAL PLAIN. By far the largest physiographic region in the state, the East Gulf Coastal Plain comprises 31,385 square miles of gently rolling hills, sharp ridges, prairies, and broad alluvial flood plains. Rocks underlying the region are relatively unconsolidated Mesozoic and Cenozoic sediments. The area is youthful to mature, of undulating low relief; several resistant formations appear as low lines of hills called cuestas. Elevations range from 250 feet to 700 feet in the northwest portion, with the rest of the area

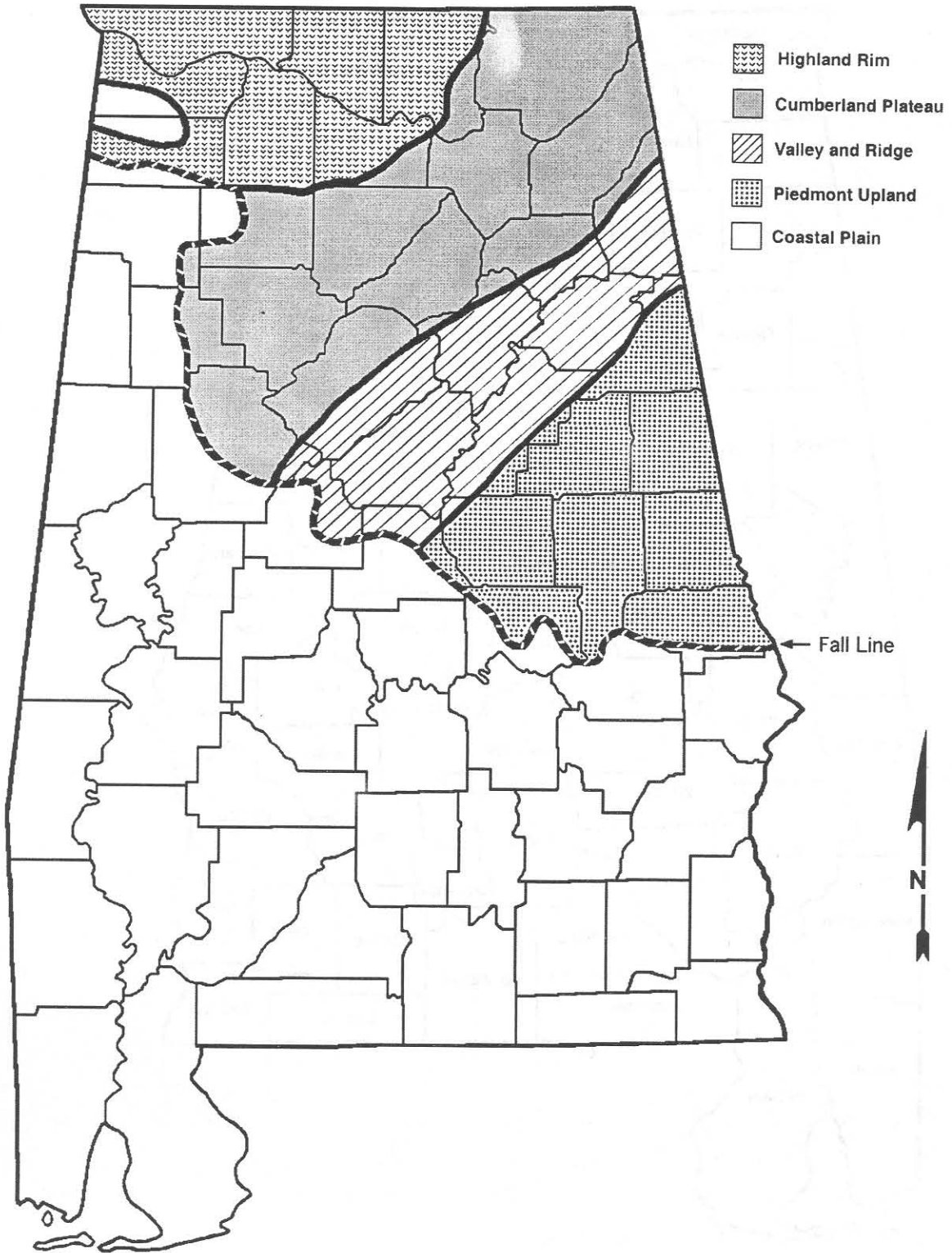


Figure 1. Map of Alabama showing physiographic provinces.



Figure 2. Map of Alabama showing county locations.

varying from about 500 ft to sea level. Average annual precipitation amounts are higher than in any other physiographic region in the state, ranging from 50 to 64 inches.

The most distinctive topographic feature in Alabama is the Fall Line (Fig. 1), so named because it marks the boundary where the harder rocks of the Appalachian foothills and Interior Plains plunge under the sediments of the East Gulf Coastal Plain. The Fall Line is sharply delineated in the eastern part of the state, along the southern borders of the Alabama Valley and Ridge and Piedmont Upland regions. As one follows the line westward and then to the north, it gradually becomes a wide, irregularly shaped transitional belt. Streams crossing the Fall Line are usually of high gradient, often characterized by waterfalls.

DRAGONFLY HABITATS

Alabama is similar to most other southeastern states north of Florida in a near total absence of large natural lakes and an extreme paucity of small natural ponds. Of the latter, there are a few in the extreme northeast part of the state and some in the southwestern part. Man-made ponds, lakes, reservoirs, and other pooled water bodies, however, provide ample habitat for opportunistic lentic species, such as many Libellulidae and Coenagrionidae. A safe assumption is that many of these species, such as *Enallagma civile* and *Pachydiplax longipennis*, have increased in numbers and perhaps expanded their distributions within the state because of these anthropogenic additions.

Seeps appear to be few, but are undoubtedly more numerous than we have encountered because they are extremely hard to find (seeps are usually small in area, concealed, or on private, inaccessible lands). Seeps are important habitat for genera such as *Tachopteryx*, *Cordulegaster*, *Amphiagrion*, *Somatochlora*, and *Nehalennia*. There is a noticeable lack of large bogs in Alabama. Many swamps and other wetlands have been drained for

FAUNAL ORIGINS

The great majority of species occurring in Alabama are of North Temperate origin. A few tropical species, such as *Miathyria marcella*, have entered Alabama via Florida. A number of species have distributions that terminate within Alabama, the

The Fall Line marks a natural break in the distributions of many groups of aquatic organisms, especially lotic obligates, including odonates. The ranges of many species do not cross the Fall Line: 16 % are restricted to above the line, 29 % below the line, while 55% occur on both sides of the line. In Alabama, 55% of the Coenagrionidae, Gomphidae and Corduliidae occur either only above or only below the Fall Line. Species with greater dispersal powers, such as the Aeshnidae, and those with more general habitat requirements, such as many Libellulidae, are less influenced by topographic features such as the Fall Line. We speculate that about 75 species are probably distributed throughout Alabama while 12 other species might be nearly distributed throughout the state, which is about 50% of the fauna.

agriculture or other development, greatly lessening opportunity for species in need of this habitat type, such as *Gomphaeschna*, *Arigomphus maxwelli* and *Epitheca spinosa*.

Nearly all the large and medium-sized rivers within the state have been dammed or otherwise severely disturbed by forestry and agricultural practices, urbanization, construction, and organic and pesticide loading. Species requiring riverine habitat in relatively undisturbed condition have undoubtedly diminished in number (e.g., *Gomphus septima*, *Stylurus notatus*). Small to medium-sized streams with gravel riffles are ideal habitats for gomphids, most of which tolerate minimal human disturbance in the watershed. Removal of riparian vegetation is especially damaging as it causes movement and mixing of gravels in the substrate and erosion of bank habitat where *Ophiogomphus*, *Gomphus* spp. and others abide. Because there is a lack of historical data for most streams of this type, we can not accurately estimate population losses for the dragonflies resident in them.

majority of these being either northern or southern (Table 1). It appears that most of these species occur mainly southeast or northeast of Alabama, probably due in large extent to the influence of the Appalachian Mountains, rather than in a strict

north-south plane. Only 8 species' distributions terminate in Alabama from due East. It appears that the least influence has been from the West, as only 4 species' distributions terminate in Alabama from that direction.

As expected, we found that the fauna of the southern tier of counties (Mobile, Baldwin, Escambia, Covington, Geneva, Houston) is similar to that of northern Florida, as 109 of the 120 species recorded there also occur in northern Florida (91 percent). Likewise, the fauna of the northern tier of counties (Lauderdale, Limestone, Madison, Jackson) shares 92 percent of its species with south-central Tennessee (86 of the 93 species are known from south-central Tennessee). In contrast, the northern and southern tiers of counties share only 55 percent of the 172 species in the state. These data, along with the information concerning the Fall Line, indicate that the area

occupied by the state of Alabama is extremely important in the biogeography of Odonata in the eastern United States. Smith and Hodges (1938), based on limited data, alluded to the difference between the northern and southern portions of the state.

FAUNAL SUMMARY

There are 173 species of Odonata now recorded in Alabama (see Annotated List), comprising six families of Anisoptera and three families of Zygoptera. According to our subjective ratings of abundance, 69 species were ranked as "common"; nearly as many (62) were ranked as "rare". The family containing the highest percentage of rare species was Gomphidae (62.5%). The great majority of species within this family are obligate stream dwellers fairly intolerant of habitat disturbance.

ANNOTATED LIST OF ALABAMA ODONATA

In the following annotated list, we provide county records, flight dates, relative abundance ranking, and habitat notes. Of the 173 species included in this paper, 14 are reported from Alabama for the first time. These are indicated in the following list and locality information is given for each. County locations within Alabama are shown in Fig. 2 (p. 51). County records are based mostly on adult specimens, although some are based solely on sight identification or on nymphal specimens, and are so indicated. The latter two types of records are offered to provide a more complete picture of the distributions, though we recognize there is a greater chance of error in these types of data than those records based on adults. Much distribution work remains to be done in Alabama, especially in the southern third of the state. The flight dates are the earliest and latest dates that adults have been captured in Alabama based on specimens we examined or literature records; for a number of species, these are very incomplete. In general, odonates tend to emerge earlier in the more southern parts of their range, hence the flight dates may not apply to a species' entire range within the state. For "spring species" (see Corbet 1963), flight seasons usually end earlier in the south, whereas for "summer species", adults tend to be present later in the year farther south. The abundance rankings ("common", "rare", etc.) are arbitrary, and are intended only to give the reader a relative idea of possible frequencies of encounter and

population sizes that can be expected in the field. Habitat notes pertain mainly to Alabama and are of a general nature.

The nomenclature, for the most part, follows that of Garrison (1991). However, our treatment differs from that list in the following taxa:

1. *Stenogomphurus* Carle is not recognized; we have placed *consanguis* and *rogersi* in *Gomphus*, although the affinities of these species are unknown.
2. *Gomphus* is split into three subgenera: *Gomphus* Leach, *Gomphurus* Needham, and *Hylogomphus* Needham.
3. *Gomphus brimleyi* Muttkowski is considered a subspecies of *cavillaris* Needham instead of a synonym.
4. *Epicordulia* and *Tetragoneuria* are considered subgenera of the Old World genus *Epitheca*.
5. *Ladona* is recognized as a full genus, not a synonym of *Libellula*.

The compilation of distribution data in this report is based in large part on previously unpublished records collected by many individuals. Besides our own collecting efforts, we have gathered

information from private and institutional collections. We thank the following individuals for collecting with us, sending data, or allowing us to examine collections: Nancy Adams and Oliver Flint (U. S. National Museum), Daniel Botts (Orlando, FL), Malcolm Braid and Britt Raymond (University of Montevallo, AL), Wayne Clark (Auburn University), Carl Cook (Center, KY), Jerrell J. Daigle (Florida Dept. of Environmental Regulation, Tallahassee), Sidney W. Dunkle (Collin County Community College, Plano, TX), Ferrin W. Eilands II (Selma, AL), George Folkerts (Auburn University), George Harp (Arkansas State Univ.), Leroy M. Koch (Abingdon, VA), Mary Jane Krotzer (Helena, AL), William F. Mauffray (IORI, Gainesville, FL), Timothy Vogt (Illinois State Museum, IL), and Minter J. Westfall, Jr. (Florida State Collection of Arthropods, Gainesville, FL). Thanks to Nick Donnelly for examining specimens of *Enallagma traviatum* for subspecific determination. Improvement of the manuscript by two reviewers is gratefully acknowledged. We would greatly appreciate being notified of new collections or existing records of Alabama Odonata of which we were unaware in order to update our database and further elucidate the distribution patterns within the state.

Abbreviations: JDH = James D. Harper; RSK = R. Stephen Krotzer; KJT = K. J. Tennessee; (n) = record based on nymph specimen only; (s) = record based on sight.

PETALURIDAE

Tachopteryx thoreyi (Hagen) Apr 1-Jul 22
Bibb, Chilton, Clay, Cleburne, Colbert (s), Dallas, Escambia, Hale, Lauderdale, Marion (s), Tallapoosa, Tuscaloosa (Wright 1937), Winston.
"Local". Should be found throughout the state; no large populations known. Habitat is wooded, hillside seepage areas; nymphs wallow in mud under dead leaves.

AESHNIDAE

Aeshna umbrosa Walker Sep 2-Nov 25
Elmore, Jefferson, Lee (Tennessee 1990), Tuscaloosa (Tennessee 1990).
"Rare". Probably limited to very isolated localities in northern two-thirds of the state. Habitat is small lakes and woodland pools, such as those formed by beavers.

Anax junius (Drury) Feb 19-Nov 3
Baldwin, Bibb, Blount, Bullock, Cherokee, Clarke, Cleburne, Coffee, Colbert, Covington (Wright 1937), Dale, Dallas, Dekalb, Elmore, Escambia, Fayette (s), Houston, Jackson (s), Lauderdale, Lee, Limestone (n), Macon (s), Marshall, Mobile (Wright 1943), Monroe (s), Montgomery, Perry (s), Pike, St. Clair, Shelby, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker, Washington.

"Common". Probably the most often observed aeshnid, this species occurs throughout the state and should be expected in all counties. Migrates, sometimes in large numbers. Inhabits a variety of lentic habitats.

Anax longipes Hagen Apr 17-Aug 18
Baldwin, Cherokee, Colbert, Covington, Houston (s), Jackson, Lee, Marion, Shelby (s), Tuscaloosa (Smith & Hodges 1937).

"Uncommon". Distributed statewide, but not in large populations; observed infrequently and difficult to capture. Sighted as late as Sep 5. Preferred habitat is vegetated, usually fishless, ponds.

Basiaeschna janata (Say) Mar 24-May 19
Bibb, Blount (Louton 1982), Calhoun, Clay, Cleburne (Louton 1982), Conecuh (Wright 1939), Cullman, Dekalb, Etowah, Jackson (n), Lauderdale, Lawrence, Limestone (n), Marion, Marshall, Morgan (n), Shelby, Tallapoosa, Tuscaloosa, Winston.

"Common". Statewide; paucity of southern county records attributable to inadequate collecting effort in that part of the state and the early, short flight season. Habitat is mainly small to medium-sized streams, occasionally found in lakes.

Boyeria vinosa (Say) May 19-Oct 31
Autauga (s), Baldwin (Wright 1939, 1943), Bibb, Blount (n), Calhoun, Chambers, Cherokee, Choctaw, Clarke (n), Clay, Cleburne, Coffee, Colbert, Coosa (n), Covington, Crenshaw, Dale, Dallas (Louton 1982), Dekalb (s), Elmore (s), Escambia, Fayette, Franklin, Greene, Hale, Houston (s), Jefferson, Lamar, Lauderdale, Lawrence, Lee, Macon, Madison (n), Marion, Morgan (s), Perry (Louton 1982), Pickens, Randolph, Sumter, Talladega, Tuscaloosa, Winston
"Common". Expected to occur in all counties. Flight activity is typically from very late afternoon until dusk. Inhabits small to large shady streams.

Coryphaeschna ingens (Rambur) Apr 16-Jun 18
Baldwin, Covington, Elmore, Escambia, Jackson
(n), Lee, Macon, Mobile.
"Uncommon". Found mostly in southern half of
state, although the Jackson Co. occurrence indicates
that it might be found occasionally in other
northern counties. Usually found in heavily
vegetated lentic habitats.

Epiaeschna heros (Fabricius) Apr 3-Oct 1
Baldwin, Blount (s), Bullock, Cherokee, Colbert
(s), Covington, Dale, Escambia, Fayette, Houston,
Jackson, Jefferson, Lauderdale, Lee, Madison,
Marion (s), Mobile, Monroe, Morgan (s), Perry,
Shelby, Tuscaloosa, Winston.
"Common". Distributed statewide, expected to
occur in all counties. Habitat is woodland pools and
swamps. Adults often fly far from breeding waters.

Gomphaeschna antilope (Hagen) Apr 2-Jul 20
Baldwin, Bibb, Covington, Escambia, Mobile
(Bick & Bick 1983), Tuscaloosa (Bick & Bick
1983).
"Rare". Might occur statewide, but populations and
localities very limited; probability of finding
additional populations is greater in the southern
half of state. Habitat is wooded swamps.

Gomphaeschna furcillata (Say) Mar 18-May 16
Baldwin, Bibb, Covington, Escambia, Jackson,
Tuscaloosa (Tennessee 1990).
"Rare". Expected statewide, but populations local.
The record of *G. furcillata* for Mobile Co. by
Smith & Hodges (1937) has been identified by M.
J. Westfall, Jr., as *G. antilope*. Habitat is wooded
swamps.

Gynacantha nervosa Rambur Aug 2
Lee.
"Rare". New state record. Based on 1 female
collected by KJT at a light near Auburn Univ.
campus, 11:00 p.m. Not reported west of the
Apalachicola River in northwest Florida (Dunkle
1992). Nymphs have been found only in temporary
woodland pools with vegetation but without fish.
Adults are crepuscular, hanging in shaded areas
during the day.

Nasiaeschna pentacantha (Rambur)
Apr 1-Aug 30
Baldwin, Colbert, Covington, Dallas, Escambia,
Hale, Henry, Houston, Jackson (s), Lauderdale,
Madison, Mobile (Smith & Hodges 1937),
Morgan, Perry, Shelby, Tuscaloosa.

"Common". Statewide, expected to occur in all
counties. Inhabits a variety of lentic habitats
containing sunken wood, such as woodland ponds,
slow swampy streams, and reservoir sloughs.

GOMPHIDAE

Aphylla williamsoni (Gloyd) Jun 1-Sep 6
Baldwin (Tennessee 1990), Coffee, Covington,
Geneva (Tennessee 1990), Hale, Houston, Lee
(Tennessee 1990), Lowndes, Marengo, Mobile,
Pickens, Shelby, Sumter.

"Local". Distribution apparently restricted to area
below Fall Line. Populations in several county
lakes, created for fishing, have become fairly
sizable. Habitat is mud-bottomed lakes, ponds and
canals.

Arigomphus maxwelli (Ferguson) May 14-Jul 20
Baldwin (Tennessee 1990), Mobile (Tennessee
1990), Tuscaloosa (Tennessee 1990).

"Rare". Probably restricted to western part of the
state in small, local populations. Habitat confined
to slow moving water in tupelo gum swamps.

Arigomphus pallidus (Rambur) Apr 17-May 31
Covington, Geneva (Tennessee 1990), Houston.

"Rare". Most southern species of the genus,
probably restricted to extreme southern part of
Alabama. Only sites known to us are several
natural ponds in Covington Co. and a beaver pond
in Houston Co. Inhabits permanent, eutrophic
ponds and lake margins.

Arigomphus submedianus (Williamson) Jul 7
Jackson.

"Rare". New state record. Only specimen is a
female collected by KJT near a catfish farm pond 7
mi. north of Scottsboro, although it can be
expected to occur across the state in a westerly-
southwesterly direction. Known early flight date
outside Alabama is May 7 (in Texas, Donnelly
pers. comm.). Inhabits muddy ponds and lakes.

Arigomphus villosipes (Selys) May 21
DeKalb.

"Rare". New state record. Based on one male
collected by Mary J. Krotzer at a small pond at
Alpine Boys' Camp in DeKalb Co. Inhabits muddy,
open ponds and lake edges.

Dromogomphus armatus Selys Jun 1-Aug 17
Baldwin (Tennessee 1990), Bibb, Covington,
Escambia, Lamar.

"Rare". Probably restricted to area below Fall Line; populations are undoubtedly small. Habitat is small, slow-flowing, clear streams with soft organic substrate.

***Dromogomphus spinosus* Selys** May 17-Sep 19
Barbour, Bibb, Blount, Calhoun (Louton 1982), Chilton (s), Cleburne, Colbert, Conecuh (Wright 1939), Coosa, Dale, Dallas, Dekalb, Elmore, Escambia, Fayette, Greene, Hale (s), Jackson, Jefferson, Lamar, Lauderdale (Westfall & Tennessee 1979), Lawrence, Lee, Limestone, Macon, Madison, Marengo (s), Marion, Monroe, Morgan (s), Perry, Pickens, Randolph, St. Clair, Shelby, Sumter (s), Tallapoosa, Tuscaloosa, Walker, Wilcox, Winston.

"Common". Might occur in every county, although it has not yet been collected in the extreme southwest part of the state. This very successful species inhabits streams, reservoirs, lakes, ponds, strip mine pits, and other aquatic habitats, often where no other gomphids are found.

***Dromogomphus spoliatus* (Hagen)** May 24-Sep 18
Cherokee, Colbert (s), Cullman, Elmore, Etowah, Hale, Jackson (Westfall & Tennessee 1979), Lauderdale, Lawrence, Limestone (n), Madison, Marshall (s), Morgan, Pickens, Shelby, Sumter, Walker.

"Uncommon". Ranging across Alabama in northern counties, but southward only to line drawn across Sumter and Elmore counties. Habitat is large rivers and reservoirs, as well as ponds.

***Erpetogomphus designatus* Hagen** May 25-Oct 15
Bibb, Dallas (Louton 1982), Elmore, Escambia, Lee, Perry, Randolph, Sumter, Tallapoosa.

"Uncommon". Although few county records exist, this species could be found to occur statewide. Occurs in rivers and medium-sized streams with gravel/sand substrate.

***Gomphus (Gomphurus) crassus* Hagen**

May 8-Jun 12

Jackson (Tennessee 1990), Lauderdale (Tennessee 1990), Madison.

"Uncommon". Restricted to extreme northern tier of counties; collected at only 3 sites (Hurricane Creek, Shoal Creek, and Flint River). Inhabits small to medium-sized relatively fast rivers with gravel substrate.

***Gomphus (Gomphurus) dilatatus* Rambur**

May 9-Jul 25

Baldwin, Bibb, Conecuh, Covington, Dale, Escambia, Jefferson, Lee, Perry, Pike, Shelby, Tallapoosa, Tuscaloosa (Smith & Hodges 1938).

"Uncommon". Known as far north as Jefferson Co., but more common in southern third of state. Distribution narrowly overlaps that of the more northerly distributed *G. lineatifrons*. Habitat is medium to large, silty rivers.

***Gomphus (Gomphurus) hybridus* Williamson**

Mar 31-Jun 10

Baldwin, Bibb, Choctaw, Clarke, Conecuh, Dallas, Elmore, Escambia, Greene (Bick & Bick 1983), Hale, Jackson, Monroe, Perry, Sumter (Bick & Bick 1983), Tuscaloosa (Bick & Bick 1983), Wilcox.

"Uncommon". May be locally common in some localities. Primarily distributed in southwestern part of the state, although the Jackson Co. record (Tennessee River near Widows Creek) indicates it may be more widely distributed. Inhabits large, silty/sandy rivers.

***Gomphus (Gomphurus) lineatifrons* Calvert**

May 6-Jul 10

Bibb, Blount, Chilton, Clay (Louton 1982), Cleburne, Coosa, Jackson, Jefferson, Lauderdale, Lawrence, Marion, St. Clair, Tuscaloosa (Smith & Hodges 1938), Winston.

"Uncommon". May be locally common. Restricted to northern half of state; see comments under *G. dilatatus*. Habitat is small to medium, cooler, clear streams, usually with gravel substrate.

***Gomphus (Gomphurus) modestus* Needham**

May 22-May 24

Marion (n), Tuscaloosa (Westfall 1974).

"Rare". The Tuscaloosa Co. record is based on specimens collected by Smith and Hodges in the 1930s at the North River and the Black Warrior River (Westfall 1974); it has not been seen or collected there since, and may have been extirpated by construction of dams. The only known living population in Alabama was recently discovered at the Buttahatchie River, Hwy. 278, Marion Co., 22 May 1992, KJT (6 exuviae). Collected as early as April 16 and as late as June 23 in Mississippi (J. J. Daigle, pers. comm.). Prefers medium to large silty rivers.

BULLETIN OF AMERICAN ODONATOLOGY

- Gomphus (Gomphurus) septima* Westfall
 May 17-Jun 2
 Tuscaloosa (Westfall 1956).
 "Rare". Not encountered in Alabama since Smith and Hodges collected it at the Warrior River, old Lock 16, from 1937 to 1940 (Westfall 1956). The river was further dammed in the 1960s, and the species probably has been extirpated at this site. Habitat is medium to large rocky rivers.
- Gomphus (Gomphurus) vastus* Walsh
 May 7-Jul 19
 Bibb (Louton 1982), Blount, Colbert, Elmore, Greene, Jackson, Jefferson, Lauderdale, Madison, Sumter, Tallapoosa (Louton 1982), Tuscaloosa (Smith & Hodges 1938).
 "Uncommon". Probably the most common species of the subgenus. Should be found also in southern part of the state as there are two county records for northwest Florida (Dunkle 1992). Inhabits medium to large rivers.
- Gomphus (Gomphus) consanguis* Selys
 Jun 2-Jun 14
 Blount (Louton 1982), St. Clair.
 "Rare". Known from only a few adult and nymph specimens collected in Blount Co. until one male was collected by Braid and Raymond in St. Clair Co. at Little Canoe Creek in Springville, 1993. Habitat usually small, second order streams, partly wooded.
- Gomphus (Gomphus) rogersi* Gloyd
 May 11-May 22
 Chilton (Krotzer & Krotzer 1992), Clay (Krotzer & Krotzer 1992), Lee (Westfall 1962).
 "Rare". Probably restricted to east central and northeast part of state. State record by Westfall (1962) was doubtful as specimen from Lee Co. was lost; occurrence in state confirmed when RSK collected it in Chilton and Clay counties. Habitat limited to cool, sandy Appalachian streams.
- Gomphus (Gomphus) australis* (Needham)
 Apr 1-Apr 17
 Covington.
 "Rare". New state record. Known in Alabama only from Conecuh National Forest, undoubtedly limited to extreme southern counties. Inhabits permanent, sand-bottomed lakes and ponds, often with lily pads.
- Gomphus (Gomphus) cavillaris brimleyi*
 Muttkowski
 Apr 9-Apr 26
 Covington
 "Rare". New state record. Taken at Blue Pond in the Conecuh National Forest by RSK. Probably occurs only in natural ponds in southwestern part of the state. In Florida, often co-occurs with *G. australis* in sand-bottomed lakes.
- Gomphus (Gomphus) exilis* Selys
 Apr 6-Jun 19
 Baldwin, Bibb, Blount, Butler, Calhoun, Chambers, Cherokee, Chilton, Clarke, Clay, Cleburne, Colbert, Conecuh, Covington, Cullman, Dekalb, Fayette, Greene, Hale, Jackson, Jefferson, Lawrence, Lee, Marion, Monroe, Perry, Pike, Shelby, St. Clair, Tuscaloosa, Walker, Wilcox, Winston.
 "C". Most common species of subgenus. Uncommon in extreme southern Alabama, where paler specimens have been called *G. e. flavocaudatus* Walker. *G. exilis* inhabits a variety of lentic and lotic habitats.
- Gomphus (Gomphus) hodgesi* Needham
 Apr 1-May 8
 Baldwin (Needham 1950), Covington, Escambia (Tennesen 1990).
 "Rare". Probably restricted to extreme southern counties. Found only in small, sandy, wooded streams.
- Gomphus (Gomphus) lividus* Selys
 Mar 11-Jun 12
 Bibb, Blount, Cherokee (Louton 1982), Chilton, Clarke (Louton 1982), Clay, Cleburne, Colbert, Cullman, Dallas, Dekalb, Escambia, Etowah, Franklin, Hale, (n), Jackson, Lauderdale, Lawrence, Lee, Macon, Marengo, Marion, Monroe, Perry, Shelby, St. Clair, Talladega, Tallapoosa, Tuscaloosa.
 "Common". Undoubtedly occurs statewide; can tolerate considerable disturbance to its habitat, which includes small to medium-sized wooded streams.
- Gomphus (Gomphus) quadricolor* Walsh
 May 8-Jun 16
 Jackson, Lauderdale, Madison, Tuscaloosa.
 "Rare". Probably limited in distribution to northern half of the state. Habitat is small, cool, gravel streams.

- Gomphus (Hylogomphus) apomyius* Donnelly *Ophiogomphus acuminatus* Carle Jun 18
 Apr 3-May 31 Colbert.
- Autauga, Blount, Cullman, Marion (Tennessee 1990), Tuscaloosa (Louton 1982).
 "Rare", but may be fairly numerous at certain sites, and is expected to be found in other localities. Inhabits gravel/sand substrate in small, cool, clear streams and medium-sized rivers.
- Gomphus (Hylogomphus) geminatus* Carle *Ophiogomphus incurvatus alleghaniensis* Carle Apr 13-?
 Apr 1-May 8 Blount (Louton 1982), Clay (n), Cleburne, Tuscaloosa.
- Escambia (Tennessee 1990).
 "Rare". Probably restricted to extreme southern part of the state. Restricted to small, sandy headwater streams.
- Gomphus (Hylogomphus) parvidens* Currie *Progomphus bellei* Knopf & Tennessee Jul 10
 May 1-Jun 23 Escambia.
- Bibb, Cleburne, Fayette, Hale (Bick & Bick 1983), Perry (Bick & Bick 1983), Tuscaloosa.
 "Rare". Expected to be found in counties east and northeast of current collection records. Habitat is small, sandy streams with abundant riparian shrubbery.
- Gomphus (Hylogomphus) viridifrons* Hine *Progomphus obscurus* (Rambur) May 1-Aug 10
 Apr 24-May 2 Bibb, Blount (n), Calhoun (Belle 1973), Cherokee (Belle 1973), Clarke (n), Clay, Cleburne, Colbert, Conecuh, Coosa, Covington (Louton 1982), Dale, Dallas (Louton 1982), Escambia, Etowah (n), Fayette, Hale, Henry, Houston, Jackson, Jefferson, Lee, Marengo, Marion, Mobile (Wright 1939), Morgan (s), Perry (Louton 1982), Pike, Randolph (Louton 1982), Shelby, Talladega (Belle 1973), Tallapoosa, Tuscaloosa, Washington, Wilcox (Louton 1982), Winston (Louton 1982).
- Blount, Madison (n), Tuscaloosa (Tennessee 1990).
 "Rare". Probably restricted to northern half of state. Tuscaloosa Co. based on one reared male collected by Smith & Hodges, North River, 2 May 1939, deposited in FSCA; the only other Alabama records are recent (Mulberry Fork, Hwy. 31, Garden City, Blount Co., 1 male and 9 exuviae, 24 April 1992, KJT; Flint River, Little Cove Road, Madison Co., 8 May 1992, 2 exuviae, KJT). Inhabits medium-sized to large rocky rivers.
- Hagenius brevistylus* Selys Jun 5-Sep 8
 Autauga (s), Bibb, Blount (n), Calhoun (Louton 1982), Cleburne, Colbert, Conecuh (Wright 1939), Covington, Crenshaw, Dale, Dekalb, Escambia, Etowah (n), Fayette, Franklin (n), Greene, Jackson, Jefferson, Lamar, Lauderdale, Lawrence, Limestone (s), Macon, Madison, Marion, Mobile (Wright 1939), Monroe, Morgan, Pickens, Randolph, Talladega, Tallapoosa, Tuscaloosa.
 "Common". Largest gomphid in North America. Expected to occur in all counties within the state. Occurs in most types of lotic waters.
- "Rare". Reared specimens from Tuscaloosa Co. were identified as *mainensis* by Smith & Hodges, and later determined to be *incurvatus alleghaniensis* by Carle (1982). In a later paper, Carle (1992) elevated *O. i. alleghaniensis* to rank of species. Mature, flying adults have never been collected in Alabama (April 13 is based on earliest date we have found exuviae in the field), but we reared this taxon in Blount and Cleburne counties; the specimens appear to be intermediate between *incurvatus* and *alleghaniensis*. Habitat is small, clear, sand/gravel streams.
- "Rare". New state record. Three males collected by RSK at Little Creek in Conecuh National Forest. Record by Bick & Bick (1983) for Henry Co. was in error, as it was based on a misidentified *P. obscurus*. Occurs in sandy lakes and first order sandy, spring-fed streams in northern Florida; found in latter type of habitat in Alabama.
- "Common". A common, variable species in the eastern U. S. Occurs in sandy margins of streams and lakes.

Stylogomphus albistylus (Hagen) May 10-Jun 28 Jackson, Lamar, Lauderdale, Limestone (n), Blount, Cherokee, Chilton, Clarke (n), Clay, Monroe, Pickens, Tallapoosa, Tuscaloosa. Cleburne, Colbert, Etowah (n), Jackson (s), "Common". Most commonly encountered species of the genus. Inhabits medium-sized to large rivers, Lauderdale, Lawrence, Marion (n), Tuscaloosa, Winston (Louton 1982). reservoirs and lakes.

"Uncommon". Smallest gomphid in Alabama. The Clarke Co. record, based on two nymphs collected by RSK and Mary J. Krotzer at an unnamed tributary of Choctaw Creek along Hwy. 84, is the only one we have for this species below the Fall Line. Without adult specimens from this locality, we assume these are *S. albistylus*. Occurs in small to medium-sized gravel streams.

Stylurus amnicola (Walsh)

dates unknown in AL

County unknown.

"Rare". This species is included on the Alabama list by Needham and Westfall (1955), probably based on the Smith & Hodges Collection, but we have not located the specimen(s) to learn more detailed information. Flight dates in Georgia and North Carolina range from June 21 to August 12. Habitat in other parts of its range include medium-sized to large rivers with sandy substrates; tolerates moderate siltation.

Stylurus ivae (Williamson) Sep 7-Oct 12

Bibb (Louton 1982), Coffee, Covington.

"Rare". Probably occurs only south of the Fall Line. Inhabits small, shaded, slow-flowing sandy streams.

Stylurus laurae (Williamson) Jun 20-Aug 10

Bibb, Dale, Escambia, Monroe, Tuscaloosa.

"Rare". Should occur throughout the state, but local and difficult to find. Prefers small sandy woodland streams.

Stylurus notatus (Rambur) Aug 24-Aug 26

Colbert.

"Rare". Williamson (1903) reported this species from Riverton, near the Tennessee River. This site was inundated by closure of Pickwick Dam in 1938; the species has not been collected since from that area, although probably few if any subsequent attempts to collect it there have been made. Typically found in large rivers with gravel, sand, silt substrates.

Stylurus plagiatus (Selys) Jun 2-Oct 11

Baldwin, Coffee, Colbert, Covington, Dale, Elmore, Escambia, Fayette, Greene, Houston,

Jackson, Lamar, Lauderdale, Limestone (n), Monroe, Pickens, Tallapoosa, Tuscaloosa.

"Common". Most commonly encountered species of the genus. Inhabits medium-sized to large rivers, reservoirs and lakes.

Stylurus townesi Gloyd

July 17-Aug 2

Escambia (Tennesen 1979a), Mobile.

"Rare". Very few populations known in eastern U.S. Habitat is medium-sized, sandy streams.

CORDULEGASTRIDAE

Cordulegaster bilineata Carle Mar 11-May 19

Bibb, Clarke, Conecuh, Escambia, Hale, Tuscaloosa (Wright 1937, as *diastatops*).

"Rare". We have attributed all previous Alabama records of *C. diastatops* to this species (see notes at end of Annotated List). Habitat limited to seeps and first-order sandy, boggy, spring-fed streams. Should be found within Alabama north and east of present records, as it occurs in Tennessee and Georgia.

Cordulegaster erronea Hagen

dates unknown in AL

Marion (Tennesen 1990).

"Rare". . The only collection is of a nymph taken from a small sandy tributary of Marion County Lake, from which a male emerged on April 19, 1981. Flight season in other states ranges from June 8 to September 4. Found only in small, sandy, first order streams in forest.

Cordulegaster maculata Selys Mar 21-May 19

Bibb, Blount (n), Clarke (n), Clay, Cleburne, Colbert (n), DeKalb, Fayette (n), Jackson (n), Lauderdale, Lawrence, Marion, Marshall, Tuscaloosa, Winston (Louton 1982).

"Common". Not often collected due to early flight season and elusive habits in southeastern U.S. Probably occurs statewide. Habitat not as limited as other species in genus, varying from small to medium-sized woodland streams.

Cordulegaster o. obliqua (Say) Apr 17-Jul 17

Bibb, Chilton, Clarke, Hale, Jackson, Mobile, Monroe, Perry, Russell, Winston.

"Uncommon". Probably distributed statewide, but very local. Habitat very small, sandy woodland streams.

CORDULIIDAE

MACROMIINAE

Didymops floridensis Davis Apr 17-Apr 26
Covington.

"Rare". New state record. One male collected, another observed, at Blue Pond in the Conecuh National Forest by RSK; previously thought to be endemic to Florida. The usual habitat is sand-bottomed lakes margined with maidencane and often bald cypress (Dunkle 1989).

Didymops transversa (Say) Mar 10-Jun 11
Baldwin, Bibb, Blount, Chambers, Chilton, Clay, Cleburne, Colbert (s), Cullman, Elmore, Fayette, Hale, Jackson, Lauderdale, Lawrence (s), Lee, Marion, Marshall, Perry, Randolph, Shelby, Tuscaloosa (Wright 1937), Winston.

"Common". Expected to occur statewide. Inhabits streams, rivers, some lakes.

Macromia alleghaniensis Williamson Jun 10-Aug 22

Choctaw, Cleburne, Colbert, Fayette, Lauderdale, Tuscaloosa.

"Uncommon". Expected to occur statewide, but rarely collected. Habitat small to medium-sized streams.

Macromia illinoiensis georgina (Selys) May 23-Oct 1

Baldwin, Bibb (Louton 1982), Blount, Choctaw, Cleburne, Covington, Crenshaw, Cullman, Dale, Dallas (Louton 1982), Dekalb, Elmore, Escambia, Fayette, Greene, Hale, Houston, Jackson, Lamar, Lauderdale, Lee, Macon, Marion, Monroe, Perry, Pickens, Pike, Shelby, Sumter, Talladega, Tallapoosa, Tuscaloosa, Winston.

"Common". Undoubtedly distributed throughout the state. Habitat varies from small streams to large rivers. A variable taxon in color pattern and hamule tip shape that appears to grade into *illinoiensis*; relegated to subspecies by Donnelly and Tennessee (1994).

Macromia illinoiensis illinoiensis Walsh Jun 8
Lauderdale.

"Uncommon". A few specimens have been collected in extreme northwest Alabama that can be assigned to *illinoiensis*, along with several individuals that possess characteristics intermediate between *illinoiensis* and *georgina*, making them difficult to assign to subspecies (see Donnelly and Tennessee 1994).

Macromia taeniolata Rambur May 30-Sep 12
Baldwin, Butler, Clay, Colbert (Louton 1982), Dale, Elmore, Hale, Houston, Jackson, Lauderdale, Lawrence, Lee, Marengo, Marion, Monroe, Montgomery, Pickens, Shelby, Tuscaloosa.

"Common". Undoubtedly distributed throughout the state. Habitat mainly large rivers, also some lakes.

CORDULIINAE

Epiptera (Epicordulia) princeps Hagen May 2-Aug 20

Baldwin, Bibb, Butler, Calhoun, Chambers, Chilton, Cleburne, Colbert, Coosa, Elmore, Fayette (s), Houston (s), Jackson, Lauderdale, Lawrence, Lee, Limestone, Marengo, Marion, Marshall, Perry, Pickens (n), Shelby, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker (s).

"Common". Commonly seen throughout the state. Inhabits various types of lentic and slow lotic waters.

Epiptera (Tetragoneuria) costalis (Selys) Mar 18-Jun 27

Baldwin, Bibb, Blount, Chambers, Chilton, Clarke, Cleburne, Covington, Dekalb, Escambia, Hale, Jackson, Lauderdale, Lee, Macon, Marion (Tennessee 1979b), Perry, Tuscaloosa (Tennessee 1977).

"Common". Very early season in south Alabama, considerably later in northern part. Inhabits ponds, lakes, small reservoirs and pools in slow, marshy streams.

Epiptera (Tetragoneuria) cynosura (Say) Mar 19-Jun 11

Baldwin, Bibb, Blount, Calhoun, Chilton, Clarke, Clay, Cleburne, Colbert, Conecuh, Covington, Cullman, Dekalb, Elmore, Escambia, Hale, Houston, Jackson, Jefferson (Wright 1937), Lauderdale, Lawrence, Lee, Limestone, Macon, Madison, Marion (Tennessee 1979b), Marshall, Mobile, Shelby, Tuscaloosa (Wright 1937), Winston.

"Common". One of the most common spring dragonflies throughout the state. Inhabits a variety of permanent lentic water bodies, also stream pools.

Epiptera (Tetragoneuria) sepia (Gloyd) May 12-Sep 29

BULLETIN OF AMERICAN ODONATOLOGY

- Chambers (Tennessen 1990), Lee (Tennessen 1990), Perry (Bick & Bick 1983).
 "Rare". A southern species common in Florida except for the northwestern part (Dunkle 1992). Should be found at other sites in southern Alabama. This species has the longest flight season of the genus (Mar 3 to Nov 23 in Florida); often flies late in the day. Inhabits slow-moving portions of swampy streams and sand-bottomed lakes.
- Epitheca (Tetragoneuria) spinosa* (Hagen) Mar 19-Apr 8
 Covington, Tuscaloosa (Bick & Bick 1983).
 "Rare". Earliest flight season of the genus and one of the earliest Anisoptera. Occurs in wooded swamps with very little flow.
- Helocordulia selysii* (Hagen) Mar 10-May 8
 Baldwin, Bibb, Clarke, Escambia, Fayette, Lawrence, Tuscaloosa (Smith & Hodges 1937, 1938).
 "Uncommon". Distributed mainly below the Fall Line. Inhabits small, cool, sandy woodland streams.
- Helocordulia uhleri* (Selys) Mar 29-Jun 5
 Blount, Clay, Cleburne (n), Dekalb, Jackson, Lauderdale, Lawrence, Tuscaloosa (Smith & Hodges 1938).
 "Uncommon". Distributed mainly above the Fall Line, though partly sympatric with *H. selysii*. Inhabits small, upland forested streams, usually where flow has been impeded.
- Neurocordulia alabamensis* Hodges May 22-Jun 23
 Bibb, Escambia (n), Tuscaloosa.
 "Rare". This species had not been collected in Alabama in over 50 years (since Hodges' original specimens) until RSK found it in a tributary of Blue Girth Creek in Bibb Co. in 1993. Undoubtedly more records will be found below the Fall Line. Flies at dusk, which is typical of the entire genus. Occupies small to medium, slow, sandy, shaded streams.
- Neurocordulia molesta* (Walsh) Apr 23-Jul 17
 Baldwin, Colbert, Elmore (n), Greene, Jackson (n), Lauderdale (n), Monroe, Perry, Sumter, Tuscaloosa.
 "Uncommon", but may be locally numerous. Habitat mainly rivers, may occur in medium-sized streams.
- Neurocordulia obsoleta* (Say) May 4-May 25
 Elmore, Tuscaloosa (Smith & Hodges 1937).
 "Rare". Probably more widespread than records indicate. Inhabits rivers and lakes.
- Neurocordulia virginiensis* Davis May 6-Aug 18
 Blount, Butler, Cullman, Dale, Elmore, Escambia, Hale (Louton 1982), Tuscaloosa (Smith & Hodges 1938).
 "Uncommon", but may be locally numerous. Inhabits medium-sized rivers.
- Neurocordulia yamaskanensis* (Provancher) Jun 7-Jul 12
 Colbert (Tennessen 1979a), Lauderdale.
 "Rare", but may be locally numerous. Inhabits large rivers and reservoirs.
- Somatochlora calverti* Williamson & Gloyd July 13
 Covington.
 "Rare". New state record. Several males and females were collected in 1995 by RSK and M. J. Krotzer in the Conecuh National Forest, along Forest Road 305. Probably restricted in state to the Coastal Plain. Flight dates in Florida range from June 11 to August 25.
- Somatochlora filosa* (Hagen) Jul 18-Sep 30
 Autauga, Baldwin, Bibb, Covington, Dallas, Fayette, Geneva, Greene, Houston, Lamar, Marengo, Montgomery, Pickens, Tuscaloosa.
 "Common". Distribution appears to be limited to area below Fall Line. The habitat of the nymphs is unknown, but may be spring-fed seeps or sheet flow in hardwood swamps.
- Somatochlora georgiana* Walker Jun 18-Jul 31
 Tuscaloosa (Tennessen 1990).
 "Rare". Not found in the state since collections by Smith & Hodges in the 1930s. In Mississippi, collected as late as Aug. 12 by S. W. Dunkle, in Massachusetts as late as Aug. 18 (Daigle 1994). Only known habitat consists of pools in slow-flowing tannin streams (Daigle 1994).
- Somatochlora hineana* Williamson Jul 11
 Jackson (Vogt & Cashatt 1994).
 "Rare". Based on one male collected near Robinson Spring north of Scottsboro; whether a population exists or did exist there is unknown. *S. hineana* is a very rare species known from very few localities in four states around the Great Lakes, Illinois, Indiana, Ohio, Wisconsin (Cashatt and Vogt 1994);

it is listed as a Threatened or Endangered species. The locality in Alabama (downstream of Robinson Spring) has changed since the single male was collected by JDH and D. Botts in 1978. It has been developed into a series of catfish ponds, and recent searches have failed to yield additional specimens. Based on Cashatt and Vogt (1994), the habitat in Illinois is sheet flow in calcareous fens, usually where cattail (*Typha*) is growing.

***Somatochlora linearis* (Hagen)** Jun 15-Aug 31
Bibb, Blount, Colbert, Fayette, Jackson, Jefferson, Lauderdale, Marengo, Mobile, Morgan, Sumter, Tuscaloosa, Washington.
"Common". Most common species of the genus in Alabama. Inhabits edges of woodland streams, some being temporary.

***Somatochlora provocans* Calvert** Jun 18- Aug 23
Bibb, Chilton, Covington, Dale, Escambia, Fayette, Lamar, Marengo, Monroe, Tuscaloosa.
"Uncommon". To be expected in northern part of state also. Habitat is small, spring-fed, sphagnum runs.

***Somatochlora tenebrosa* (Say)** Jun 17-Oct 2
Bibb, Calhoun, Chilton, Cleburne, Fayette, Greene, Jackson, Lamar, Lauderdale, Lawrence, Morgan, Pickens, Tuscaloosa, Winston.
"Common". To be expected also in southern Alabama, as Dunkle (1992) recorded it in three counties in northern Florida. Habitat is small, forested streams.

LIBELLULIDAE

***Brachymesia gravida* (Calvert)** Jun 3-Sep 4
Baldwin, Choctaw, Dallas, Lee, Lowndes, Mobile (Wright 1937), Russell, Sumter.
"Uncommon". Probably limited to area below the Fall Line. Inhabits freshwater and brackish ponds, lakes and ditches.

***Celithemis amanda* (Hagen)** Jul 2-Oct 5
Baldwin (Wright 1939, 1943), Covington (Tennessee 1990), Escambia, Mobile.
"Uncommon". Probably restricted to southern part of state. Inhabits shallow ponds with sparse emergent vegetation.

***Celithemis bertha* Williamson** Apr 30-Oct 4
Covington, Pickens.
"Rare". New state record based on several males collected by R. McCullers and JDH at Blue Pond,

Conecuh National Forest, Covington Co., and one male collected by KJT at McShan Lake, Pickens Co. Inhabits sandy lake margins with emergent vegetation and little organic matter.

***Celithemis elisa* (Hagen)** Apr 26-Oct 2
Autauga, Baldwin, Blount, Butler, Calhoun, Chilton, Choctaw, Colbert (s), Covington, Dekalb, Escambia, Geneva, Houston, Lee, Lowndes, Marengo (s), Marion, Mobile, Morgan, Perry, Pickens, St. Clair, Shelby, Sumter, Tallapoosa, Tuscaloosa, Walker, Washington.
"Common". A widespread species, occurs throughout the state. Habitat includes a variety of lentic waters, including borrow pits.

***Celithemis eponina* (Drury)** May 31-Oct 4
Baldwin, Calhoun, Cherokee, Choctaw, Colbert, Covington, Geneva, Greene, Houston, Jackson, Lee, Lowndes, Madison, Mobile (Wright 1937), Montgomery, Morgan, Russell, Shelby, Sumter, Tuscaloosa, Wilcox.
"Common". Probably occurs statewide. Habitat includes ponds, lakes, marshes and reservoirs.

***Celithemis fasciata* Kirby** May 14-Oct 12
Autauga, Baldwin, Bibb (s), Calhoun, Choctaw, Cleburne, Colbert, Covington, Crenshaw, Dale, Dekalb, Escambia, Fayette, Geneva, Hale, Houston, Jackson, Lee, Marengo, Marion, Mobile, Pickens, Shelby, Tuscaloosa, Walker.
"Common". Probably occurs statewide. Habitat includes ponds and lakes.

***Celithemis ornata* (Rambur)** Apr 17-Jul 14
Baldwin (Tennessee 1990), Covington (Tennessee 1990), Dale, Escambia, Geneva, Henry, Mobile.
"Local". Apparently occurs only in extreme southern part of the state. Inhabits ponds and occasionally slow streams with emergent vegetation.

***Celithemis verna* Pritchard** Apr 17-Aug 1
Cleburne, Colbert, Covington, Jackson, Mobile, St. Clair, Shelby, Tuscaloosa (Tennessee 1990).
"Uncommon". Although appears to be distributed statewide, few populations have been found. This species is the least likely one of the genus to be encountered. Habitat is ponds with emergent vegetation.

***Dythemis velox* Hagen** Mar 28-Sep 18
Autauga, Baldwin, Bibb, Calhoun, Chilton, Cleburne, Crenshaw, Cullman, Elmore, Fayette,

BULLETIN OF AMERICAN ODONATOLOGY

Hale, Henry, Houston, Jefferson, Lawrence, Lee, Marengo (s), Marion, Shelby, Tuscaloosa (Smith & Hodges 1937), Walker.

"Common". This species may have spread fairly recently to the northern part of the state. Inhabits ponds, lakes, and slower portions of muddy streams.

Erythemis attala (Selys) May 2
Elmore (Krotzer & Krotzer 1992).

"Vagrant". The single male collected over a rain puddle in a cotton field road was probably a vagrant, as no other individuals were sighted despite several visits to the site.

Erythemis simplicicollis (Say) Apr 13-Oct 12
Autauga, Baldwin, Barbour, Bibb, Blount (s), Bullock, Butler, Calhoun, Chambers, Cherokee, Chilton, Choctaw, Clarke, Cleburne, Coffee, Colbert, Conecuh, Covington (Wright 1943), Crenshaw, Cullman, Dale, Dallas, Dekalb, Elmore, Escambia, Etowah (s), Fayette, Geneva, Greene, Hale, Henry, Houston, Jackson, Jefferson, Lamar (s), Lauderdale, Lawrence, Lee, Lowndes, Macon, Madison, Marengo, Marion (s), Marshall, Mobile, Monroe, Montgomery, Morgan, Perry (s), Pickens, St. Clair, Shelby, Sumter, Tallapoosa, Tuscaloosa, Walker, Washington.

"Common". One of the most common dragonflies in Alabama. Wide range of habitats includes nearly any lentic condition and backwaters of streams and reservoirs.

Erythrodiplax berenice (Drury) May 13-Sep 3
Mobile (Borror 1942).

"Rare". Undoubtedly limited to the coastal plain. Habitat is brackish water marshes.

Erythrodiplax minuscula (Rambur) Apr 16-Nov 9
Baldwin, Bullock, Butler, Calhoun, Clay, Covington, Dale, Elmore, Escambia, Geneva, Hale, Houston, Lee, Macon, Marengo, Mobile, Pickens (s), Shelby, Tuscaloosa, Walker, Washington.

"Common". Probably occurs statewide. One of the smaller libellulids in North America. Inhabits freshwater ponds, lakes, and sluggish streams.

Erythrodiplax umbrata (Linnaeus) Aug 31-Dec 6
Colbert (s), Mobile, Washington (Smith & Hodges 1937).

"Uncommon". The Colbert Co. sighting (a male) was probably a vagrant. Inhabits ponds and marshes, especially temporary ones.

Ladona deplanata (Rambur) Mar 15-May 21
Baldwin, Bibb, Blount (s), Clay, Cleburne, Colbert, Covington, Escambia, Franklin, Hale, Jackson, Lee, Marion (n), Marshall, Monroe, Pike, Russell, Shelby, Tuscaloosa.

"Common". Probably occurs statewide. Inhabits ponds and lakes, occasionally slow streams.

Libellula auripennis Burmeister Apr 26-Oct 9
Covington (Wright 1943), Dale, Escambia, Etowah, Fayette, Geneva, Hale, Macon, Mobile (Westfall 1943), Pickens, Shelby, Tuscaloosa, Washington.

"Common". This species has not been sighted in extreme northern Alabama. Inhabits lakes and ponds, also ditches and slow portions of streams.

Libellula axilena Westwood May 8-Sep 4
Baldwin, Butler, Dale, Geneva, Hale, Mobile, St. Clair, Tuscaloosa, Washington.

"Uncommon". Distribution similar to that of *L. auripennis*. Inhabits wooded swamps.

Libellula cyanea Fabricius May 2-Aug 18
Barbour, Bibb, Blount (s), Butler, Calhoun, Chambers, Chilton, Cleburne, Colbert, Covington, Dale, Dallas, Dekalb, Escambia, Franklin, Henry, Houston (s), Jackson, Lauderdale, Lee, Macon, Madison, Marengo, Marion, Perry, Pickens, Russell, St. Clair, Shelby, Talladega, Tuscaloosa (Wright 1937), Winston.

"Common". The localities in the southern tier of Alabama counties indicate that this species might occur in northern Florida, although Dunkle (1992) did not report it. Habitat consists of permanent ponds and ditches.

Libellula flavida Rambur Apr 9-Oct 9
Baldwin, Bibb, Chilton, Clarke, Cleburne, Colbert, Covington, Dale, Elmore (s), Escambia, Hale, Henry, Jackson, Jefferson, Lee, Macon, Madison, Marion, Mobile, Monroe, Perry, Pickens, Russell, Shelby, Tuscaloosa (Wright 1937), Washington, Winston.

"Common". Widespread but relatively local. Habitat is small seepage pools in swampy areas.

Libellula incesta Hagen May 10-Oct 2
Autauga, Baldwin, Barbour, Bibb, Bullock, Butler, Calhoun, Cherokee (s), Chilton, Choctaw, Clarke,

Cleburne, Colbert, Conecuh, Covington, Crenshaw, Cullman, Dale, Dallas, Dekalb, Elmore, Escambia, Fayette, Franklin, Geneva, Greene, Hale, Henry, Houston, Jackson, Lamar, Lauderdale, Lawrence, Lee, Limestone, Lowndes, Macon, Madison, Marengo, Marion (s), Marshall, Mobile, Monroe (s), Montgomery, Morgan, Perry, Pickens, Randolph, Shelby, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker, Washington, Wilcox, Winston.

"Common". One of the most common dragonflies in Alabama. Inhabits a wide variety of lentic habitats.

***Libellula luctuosa* Burmeister** May 22-Sep 18
Calhoun, Cherokee (s), Chilton, Choctaw, Cleburne, Colbert, Cullman, Dale, Dallas, Dekalb, Elmore, Escambia, Etowah, Fayette, Franklin, Henry, Jackson, Jefferson, Lamar (s), Lauderdale, Lawrence, Lee, Limestone, Lowndes, Macon, Madison, Marengo, Marion, Marshall, Monroe, Montgomery, Morgan, Perry (s), Pickens, Russell, St. Clair, Shelby, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker (s), Wilcox, Winston.

"Common". Distribution similar to that of *L. cyanea*. Not recorded for Florida (Dunkle 1992). Inhabits ponds, lakes, quiet river margins.

***Libellula lydia* Drury (= *Plathemis lydia*)**

Mar 25-Oct 12

Autauga, Baldwin, Barbour, Bibb, Blount (s), Butler, Calhoun, Chambers, Chilton, Choctaw, Clarke (s), Clay, Cleburne, Coffee, Colbert, Covington (Wright 1943), Crenshaw, Dale, Dallas, Dekalb, Elmore, Escambia, Fayette (s), Franklin, Geneva, Greene, Hale (s), Henry, Houston, Jackson, Lamar (s), Lauderdale, Lawrence, Lee, Limestone (s), Lowndes, Macon, Madison, Marengo, Marion (s), Marshall, Mobile, Montgomery, Morgan, Perry (s), Pickens, Randolph (s), Russell, St. Clair, Shelby, Sumter, Talladega, Tallapoosa (s), Tuscaloosa (Wright 1937), Walker, Wilcox, Winston.

"Common". One of the most common dragonflies in Alabama. Inhabits almost any lentic condition and margins of slow streams, especially where a soft mud bottom is present.

***Libellula needhami* Westfall** May 4-Sep 27
Baldwin (Westfall 1943), Escambia, Mobile (Tennessees 1990).

"Rare". A coastal plain species, restricted in Alabama to extreme southern counties. Habitat is ponds, lakes and marshes, usually slightly brackish.

***Libellula pulchella* Drury** May 6-Oct 12
Chilton, Clarke, Colbert, Covington, Elmore, Geneva, Jackson, Lauderdale (s), Lee, Marshall, Mobile (Wright 1937, 1943), Shelby, Sumter, Talladega, Tuscaloosa, Washington.

"Common". Not as frequently seen as *L. luctuosa*. Dunkle (1992) reported it as rare in northern Florida. Inhabits eutrophic ponds.

***Libellula semifasciata* Burmeister** Mar 25-Jul 29
Baldwin, Blount, Butler, Calhoun, Choctaw, Clay, Colbert (s), Conecuh, Covington (Wright 1943), Dale (s), Escambia, Hale, Jackson, Lauderdale (n), Macon, Mobile (Wright 1937, 1943), St. Clair, Tuscaloosa (Wright 1937), Washington.

"Common". Probably occurs statewide. Inhabits marshy forest ponds, slow streams and seepage ditches.

***Libellula vibrans* Fabricius** Apr 24-Sep 25
Autauga, Baldwin, Bibb, Blount (s), Chambers, Cleburne, Coffee, Colbert, Conecuh, Covington, Dale, Dallas, Elmore, Escambia, Geneva, Greene, Hale, Houston, Jackson, Jefferson, Lamar, Lauderdale, Lee, Lowndes, Macon, Madison, Marengo, Mobile, Morgan, Perry, Pickens (s), Randolph (s), St. Clair, Shelby, Sumter (s), Talladega, Tallapoosa, Tuscaloosa, Washington, Winston.

"Common". Largest species of genus in Alabama. Inhabits wooded ponds, swamps and slow streams.

***Macrodiplax balteata* (Hagen)** Jun 30
Mobile.

"Rare". New state record. Several specimens collected by JDH on Dauphin Island. A coastal plain species, probably restricted to the Mobile Bay area. Inhabits brackish water or mineral ponds.

***Miathyria marcella* (Selys)** Jun 20-Jul 5
Marengo, Mobile.

"Rare". New state record. One male and 2 females taken at a pond near Sand Creek, Hwy. 66, Marengo Co. by KJT, flying with about 6 other individuals; RSK observed several dozen specimens in Mobile Co. Dunkle (1992) did not record it west of the Apalachicola River in northern Florida. Inhabits ponds, ditches, and slow portions of streams choked with floating aquatic plants such as water hyacinth.

BULLETIN OF AMERICAN ODONATOLOGY

- Nannothemis bella* (Uhler) May 21 Madison, Marion, Marshall, Mobile (Wright Russell (Tennessen 1990). 1937), Morgan, Shelby, Talladega, Tuscaloosa, Washington, Winston.
"Rare". Taken by JDH near a pond in Seale. Smallest dragonfly in North America. Habitat is seepage bogs.
- Orthemis ferruginea* (Fabricius) Jul 3-Oct 9 Baldwin, Choctaw (Smith & Hodges 1937), Elmore (s), Geneva, Houston, Mobile, Sumter (s).
"Uncommon". Undoubtedly limited to area below the Fall Line. Inhabits ponds and muddy pools, even unvegetated, temporary ones.
- Pachydiplax longipennis* (Burmeister) Mar 20-Oct 29 Autauga, Baldwin, Bibb, Blount (s), Bullock, Butler, Calhoun, Chambers, Cherokee (s), Chilton, Choctaw, Clarke, Cleburne, Coffee, Colbert, Conecuh, Covington (Wright 1943), Crenshaw, Dale, Dallas, Elmore, Escambia, Etowah, Fayette, Franklin, Geneva, Greene, Hale, Henry, Houston, Jackson, Lamar, Lauderdale, Lawrence, Lee, Limestone (n), Lowndes, Macon, Madison, Marengo, Marion (s), Marshall, Mobile, Monroe (s), Montgomery, Morgan, Perry (s), Pickens, Pike, Russell, St. Clair, Shelby, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker, Washington, Winston.
"Common". One of the most common dragonflies in Alabama. Should be found in every county. Inhabits eutrophic lakes, ponds, reservoirs, open or shaded, usually with aquatic vegetation, and marshes, ditches and swamps.
- Pantala flavescens* (Fabricius) May 13-Nov 7 Autauga, Baldwin, Bibb, Bullock, Choctaw, Clarke, Colbert, Covington, Dale, Elmore, Escambia, Etowah, Fayette, Houston, Jackson, Lauderdale, Lawrence, Lee, Madison, Marengo, Marion (n), Marshall, Mobile, Pickens, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker, Washington, Winston.
"Common". May be encountered flying anywhere in the state. Adults are strong fliers and are migratory (Corbet 1963). It has been called the "Globe Trotter" because it occurs on all continents except Antarctica; however, it is rarely seen in Europe. Inhabits open, temporary and newly created pools, occasionally in brackish water or very slow-moving water.
- Pantala hymenaea* (Say) May 13-Aug 31 Baldwin, Colbert, Dale, Fayette, Jackson, Jefferson, Lauderdale, Lawrence, Lee, Limestone, Madison, Marion, Marshall, Mobile (Wright 1937), Morgan, Shelby, Talladega, Tuscaloosa, Washington, Winston.
"Common". Probably occurs statewide. Inhabits temporary pools in the open, including brackish water.
- Perithemis tenera* (Say) Apr 27-Oct 12 Autauga, Baldwin, Bullock, Butler, Calhoun, Chambers, Cherokee, Chilton, Choctaw, Cleburne, Coffee, Colbert, Conecuh, Covington, Cullman, Dale, Dallas, Elmore (s), Escambia, Etowah, Franklin, Geneva, Greene, Hale, Henry, Houston, Jackson, Jefferson, Lamar, Lauderdale, Lawrence, Lee, Lowndes, Macon, Madison, Marengo, Marion, Marshall, Mobile, Monroe (s), Montgomery, Morgan, Perry, Pickens, Pike, St. Clair, Shelby, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker (s), Washington.
"Common". Probably occurs in every county in the state. One of the smallest libellulids in North America. Inhabits ponds, lakes, reservoir margins, and sluggish streams.
- Sympetrum ambiguum* (Rambur) May 3-Dec 2 Calhoun, Cherokee, Chilton, Coffee, Colbert, Covington (Wright 1943), Dale, Elmore, Escambia, Fayette, Houston, Jackson, Lamar, Lauderdale, Lee, Macon, Madison, Mobile, Montgomery, Shelby, Sumter, Tuscaloosa, Walker, Washington.
"Common". Most commonly encountered species of the genus in Alabama. Habitat is shady overflow pools along streams, and some marshes.
- Sympetrum corruptum* (Hagen) May 6-Nov 7 Baldwin, Colbert, Escambia, Mobile, Sumter, Tuscaloosa.
"Uncommon". Very patchy occurrences within Alabama, similar to other eastern states. Inhabits mostly sandy ponds and slow-flowing streams in open environments, but can occur in nearly any lentic water.
- Sympetrum rubicundulum* (Say) Jul 17 Jackson.
"Rare". New state record. Four specimens collected by T. Vogt at a small pond north of Hytop along Hwy. 79. This northern species is probably limited in Alabama to the northeast part of the state. Inhabits marginal, vegetated ponds and stream backwaters.

Sympetrum semicinctum (Say) Jun 14
Blount (Tennessee 1990).
"Rare". Ten specimens taken at a permanent weedy ditch in a pasture near Champion Creek, Hwy. 75, north of Oneonta, by KJT and R. Garrison in 1984. Range in Alabama probably similar to that of *S. rubicundulum*. Habitat is small, marshy ponds and ditches, some with minimal flow.

Sympetrum vicinum (Hagen) Jun 11-Nov 13
Autauga, Bibb, Cherokee, Cleburne, Colbert, Dale, Jackson, Lauderdale, Lee, Madison, Marion (n), Shelby, Tuscaloosa, Washington.
"Common". Statewide, but uncommon in southern part of state. Very rare in northern Florida (Dunkle 1992). Inhabits ponds and marshes.

Tramea carolina (Linnaeus) Mar 24-Oct 3
Baldwin, Choctaw, Cleburne, Colbert, Covington (Wright 1943), Dale, Elmore, Escambia, Geneva, Houston, Lee, Macon, Marion, Mobile (Wright 1937), Montgomery, Russell, St. Clair, Shelby, Talladega, Tuscaloosa, Washington, Winston.
"Common". Undoubtedly occurs throughout the state. An agile and seemingly tireless flier. Inhabits a variety of clear lentic waters from ponds to reservoirs, occasionally found in quiet streams.

Tramea lacerata Hagen Mar 24-Oct 12
Baldwin, Calhoun, Chambers, Choctaw, Colbert, Covington, Escambia, Etowah, Houston, Jackson, Lee, Madison, Marshall, Mobile (Wright 1937), Perry, Sumter, Talladega, Tallapoosa, Walker.
"Common". Undoubtedly occurs throughout the state. Inhabits ponds, lakes, and slow portions of streams.

Tramea onusta Hagen Apr 15-Sep 22
Choctaw, Mobile (Wright 1937), Talladega, Tuscaloosa.
"Uncommon". Probably more likely to be found in southern part of the state, but difficult to find. Habitat is lentic waters.

CALOPTERYGIDAE

Calopteryx angustipennis (Selys) May 6-Jul 9
Bibb, Blount, Cleburne, Dekalb, Etowah (n), Jackson, Lauderdale (Tennessee 1979a), Lawrence, Winston (Tennessee 1984).
"Local". Unlikely to be found below the Fall Line. Prefers faster-flowing, medium-sized, mostly undisturbed clear streams with gravel bottom.

Calopteryx dimidiata Burmeister Apr 16-Oct 6
Baldwin (Wright 1943), Barbour, Bibb, Cleburne, Coffee, Coosa, Covington (Wright 1946), Crenshaw, Dale, Escambia, Henry, Houston, Lauderdale, Marion, Mobile, Perry, Randolph, Talladega, Tallapoosa, Tuscaloosa, Washington, Wilcox.

"Common". Statewide in distribution, but more commonly seen below the Fall Line. Inhabits small to medium-sized clear streams.

Calopteryx maculata (Beauvois) Apr 11-Nov 2
Autauga, Baldwin (Wright 1943), Bibb, Blount (s), Calhoun, Chambers, Cherokee, Chilton, Choctaw, Clarke (s), Clay, Cleburne, Coffee, Colbert (s), Conecuh, Covington (Johnson 1974), Dale, Dallas, Dekalb, Escambia, Fayette, Franklin, Geneva, Henry, Houston, Jackson, Jefferson, Lamar, Lauderdale, Lawrence, Lee (Johnson 1974), Limestone, Macon, Madison, Marion, Marshall, Montgomery, Morgan, Perry, Pickens, St. Clair, Shelby (Johnson 1974), Sumter, Tallapoosa, Tuscaloosa, Washington, Winston.

"Common". The most commonly observed species of the genus, undoubtedly will be found in every county. Occurs in small shaded streams to fairly large streams.

Hetaerina americana (Fabricius) May 12-Oct 10
Autauga, Bibb, Blount, Calhoun, Cleburne, Colbert (Williamson 1903), Coosa, Covington, Dallas (Johnson 1973), Dekalb, Franklin, Greene, Hale, Jackson, Lauderdale, Lee (Johnson 1973), Madison, Marion, Perry (Johnson 1973), Pickens, Randolph, Shelby, Sumter, Tallapoosa (Johnson 1973), Tuscaloosa, Wilcox.

"Common". Very rare in southern 1/4 of the state; there is one isolated population in northern Florida, located on the Chipola River, in Jackson and Calhoun counties (Johnson 1973). Found in medium to large flowing rivers.

Hetaerina titia (Drury) Jun 11-Nov 3
Autauga, Choctaw, Coffee, Colbert (Williamson 1903, as *tricolor*), Dale, Dallas, Escambia, Fayette, Geneva, Greene, Hale, Lamar, Lauderdale, Macon, Mobile, Pickens, Sumter, Tuscaloosa.

"Common". Appears to be limited to area below the Fall Line. Occurs in medium to large, slow streams.

BULLETIN OF AMERICAN ODONATOLOGY

LESTIDAE

Archilestes grandis (Rambur) Jul 4-7
 Jackson (Tennessee 1990), Marion (Tennessee 1979a).
 "Rare". Sporadic occurrence in Alabama is probably due to habitat requirements, namely rocky pools of streams or ponds, perhaps man-made pools or canals.

Lestes congener Hagen May 10-Nov 6
 Madison, Marion (Tennessee 1979a), Tuscaloosa.
 "Rare". A northern species, probably restricted to area above Fall Line. Habitat usually small ponds, some which were formed by surface mining.

Lestes disjunctus australis Walker Apr 4-Nov 14
 Baldwin, Blount, Butler, Chilton, Colbert, Covington (Wright 1943), Dekalb, Escambia, Lee, Limestone, Macon, Madison, Marion, Mobile (Wright 1943), Montgomery, Shelby, Tuscaloosa, Washington, Winston.

"Common". The most often encountered species in the genus, probably occurs in all counties. Habitat includes ponds with vegetation, swamps, and occasionally edges of slow streams; sometimes found in temporary ponds.

Lestes forcipatus Rambur Aug 24
 Jackson, Madison (Bick & Bick 1983).
 "Rare". A northern species, probably only occurring in extreme northern area of state. Found in temporary and permanent ponds.

Lestes inaequalis Walsh Apr 22-Sep 20
 Baldwin, Covington, Escambia, Greene (Bick & Bick 1983), Hale (Bick & Bick 1983), Limestone (n), Macon, Madison, Monroe, Perry.
 "Local". Probably found throughout the state. Inhabits swamps, marshy lake and pond edges, woodland pools, backwaters of slow streams with emergent vegetation.

Lestes rectangularis Say Apr 17-Oct 19
 Bibb, Cherokee, Chilton, Cleburne, Conecuh, Covington, Dekalb, Jackson, Lawrence, Lee, Macon, Madison, Marion, Perry, Shelby, Tuscaloosa.
 "Local". Should be found in most counties, depending on habitat which is mainly shaded to partly open backwaters of reservoirs or slow streams.

Lestes vidua Hagen Jan 31
 Covington.

"Rare". A coastal plain species, probably occurs in Alabama only in extreme southern counties. Rediscovered in Alabama by M. Braid & B. Raymond in 1993, at Nellie Pond in the Conecuh National Forest. Prefers openponds with emergent vegetation. Dunkle (1990) gave flight season as Feb. 22 to Dec. 8, stating it was most common in the fall.

Lestes vigilax Hagen Jun 2-Oct 18
 Baldwin (Wright 1943), Cleburne, Colbert, Covington, Crenshaw, Dekalb, Escambia, Geneva, Houston, Jackson, Lee, Mobile, Tuscaloosa, Washington.

"Common". Undoubtedly will be found in more counties, perhaps statewide. Occurs in shaded areas of ponds, lakes and reservoirs with emergent vegetation.

COENAGRIONIDAE

Amphiagrion saucium (Burmeister) Apr 19-May 16
 Bibb.

"Rare". New state record, based on a male and female collected by RSK at a small seepage area (with sphagnum) near Blue Girth Creek, 1 mi. southeast of Pondville. Probably above Fall Line only. Inhabits seepage runs in wooded lowland areas.

Argia apicalis (Say) May 10-Oct 8
 Baldwin, Bibb, Chambers, Cherokee, Choctaw, Cleburne, Colbert, Coosa, Covington, Dale, Dekalb, Elmore, Escambia, Etowah, Fayette, Greene, Hale, Houston, Jackson, Jefferson, Lamar, Lauderdale, Lawrence, Lee, Limestone (s), Lowndes, Macon, Madison, Marion, Marshall, Mobile (Johnson 1972), Montgomery, Perry, Pickens, Randolph, St. Clair, Shelby, Tallapoosa, Tuscaloosa, Walker, Wilcox, Winston.

"Common". Statewide. Occurs in large to small rivers, reservoirs, lakes and ponds.

Argia bipunctulata (Hagen) Apr 17-Oct 1
 Bibb, Blount, Chilton, Colbert, Covington, Escambia, Geneva, Henry, Jackson, Jefferson, Lee, Mobile (Bick 1978), Russell, Tuscaloosa, Washington.

"Common", but local. Habitat appears to be restricted to seepage areas of 1st order streams.

Argia f. fumipennis (Burmeister) Apr 8- Oct 7 Montgomery, Perry, Pickens, Shelby, Talladega, Autauga, Baldwin, Barbour, Bibb, Chambers, Tallapoosa, Tuscaloosa (Bick & Bick 1983), Clarke, Coffee, Conecuh, Covington (Wright Walker, Wilcox. 1943), Escambia, Houston, Lee (Gloyd 1968), "Common". Probably occurs in all counties. Macon, Mobile, Monroe, Pike, Tuscaloosa, Washington. Habitat includes medium to large streams, occasionally in lakes.

"Common". This subspecies has very dark wings in the southern part of the state, but the wings of more northern populations along the Fall Line are much more translucent. A rather smooth intergradation into *A. f. violacea* can be observed in populations in central Alabama. Inhabits small streams, including small seepage runs, bogs, ponds, and lakes.

Argia fumipennis violacea (Hagen) Apr 9-Oct 19 Bibb, Blount, Calhoun, Chilton, Clay, Cleburne, Colbert, Coosa, Dekalb, Fayette, Hale, Jackson, Jefferson, Lamar, Lauderdale, Lawrence, Lee, Madison, Marion, St. Clair, Shelby, Tallapoosa, Tuscaloosa, Winston.

"Common". See comments under above subspecies. Inhabits small streams, some lakes and small reservoirs.

Argia moesta (Hagen) May 8-Oct 15 Autauga, Baldwin, Bibb, Blount, Butler, Calhoun, Cherokee, Choctaw (Bick & Bick 1983), Cleburne, Coffee, Colbert (Bick & Bick 1983), Coosa, Covington (Bick & Bick 1983), Crenshaw, Dale (Bick & Bick 1983), Dallas (Bick & Bick 1983), Dekalb (Bick & Bick 1983), Elmore, Escambia (Bick & Bick 1983), Fayette, Franklin (Bick & Bick 1983), Geneva (Bick & Bick 1983), Greene, Hale, Houston, Jackson (Bick & Bick 1983), Jefferson, Lamar, Lauderdale (Bick & Bick 1983), Lawrence, Lee (Bick & Bick 1983), Limestone, Macon, Madison, Marion (s), Marshall (s), Mobile (Bick & Bick 1983), Montgomery, Perry, Pickens, St. Clair, Shelby, Tallapoosa, Tuscaloosa (Bick & Bick 1983), Winston (s).

"Common". Probably occurs in all counties. Habitat is small to large streams.

Argia sedula (Hagen) May 21-Oct 15 Bibb (Bick & Bick 1983), Calhoun (Bick & Bick 1983), Chilton, Clarke (Bick & Bick 1983), Coffee, Colbert (Bick & Bick 1983), Coosa, Covington (Bick & Bick 1983), Dale, Dallas (Bick & Bick 1983), Dekalb, Elmore, Escambia, Fayette, Geneva (Bick & Bick 1983), Greene, Hale, Henry (Bick & Bick 1983), Houston (Bick & Bick 1983), Jackson, Jefferson, Lauderdale, Lawrence, Lee, Limestone, Macon, Madison, Marion,

Argia tibialis (Rambur) May 8-Sep 1 Baldwin (Wright 1943), Bibb, Blount, Butler, Calhoun, Chilton, Choctaw, Clarke, Cleburne, Coffee, Colbert, Conecuh, Coosa, Covington, Dale, Dallas, Dekalb (s), Elmore, Escambia, Fayette, Franklin, Geneva, Greene, Hale, Henry, Houston, Jackson, Jefferson, Lamar, Lauderdale, Lawrence, Lee, Limestone, Macon, Madison, Marengo, Marion, Marshall, Mobile, Montgomery, Morgan, Perry, Pickens, St. Clair, Shelby, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker, Washington, Wilcox.

"Common". Should be found in every county. Inhabits small streams to rivers, usually where shaded.

Argia translata Hagen Jun 2-Sep 27 Bibb (Bick & Bick 1983), Calhoun (Bick & Bick 1983), Cherokee, Clay, Colbert, Coosa, Dekalb (Bick & Bick 1983), Elmore, Fayette, Jackson (Bick & Bick 1983), Jefferson, Lauderdale (Bick & Bick 1983), Lawrence, Limestone, Madison, Marshall (Bick & Bick 1983), Montgomery, Shelby, Tallapoosa, Tuscaloosa (Bick & Bick 1983), Winston.

"Common". Distribution in Alabama apparently terminates in Montgomery Co. It has not been reported in Florida (Dunkle 1992). Reasons for the southern limit here are unclear, as the species is common in Mexico and extends south through Central America to Peru (Garrison, pers. comm.). Inhabits medium-sized to large rivers in the U.S.

Chromagrion conditum (Selys) May 6-May 22 Bibb, Cleburne, Dekalb, Hale (Bick & Bick 1983), Jackson, Tuscaloosa (Bick & Bick 1983).

"Uncommon". A northern species probably limited to the northern half of Alabama. Inhabits wooded, cool, small slow streams.

Enallagma aspersum (Hagen) Apr 24-Aug 24 Blount, Chilton, Colbert, Dekalb, Jackson, Lauderdale, Lawrence, Madison (Bick & Bick 1983), Marion, Shelby, Tuscaloosa (Bick & Bick 1983).

"Local". Southern limit of distribution appears to be near the Fall Line; not recorded in Florida

BULLETIN OF AMERICAN ODONATOLOGY

(Dunkle 1992). Habitat is small ponds, usually fishless.

***Enallagma basidens* Calvert** Apr 29-Sep 20
Blount, Calhoun (Bick & Bick 1983), Chambers, Cherokee, Chilton, Cleburne, Colbert, Cullman, Henry, Jackson, Lee, Marion, Marshall (Bick & Bick 1983), Pickens, Shelby, Sumter, Tuscaloosa (Bick & Bick 1983), Walker, Winston.
"Common". Probably occurs statewide, but uncommon in south Alabama; rare in the panhandle of Florida (Dunkle 1992). Habitat is a variety of ponds, slow parts of streams, and reservoir margins.

***Enallagma civile* (Hagen)** Apr 12-Nov 6
Calhoun (Bick & Bick 1983), Chambers (Bick & Bick 1983), Cherokee, Chilton, Choctaw (Bick & Bick 1983), Colbert, Dekalb, Hale, Houston (Bick & Bick 1983), Jackson, Jefferson, Lauderdale, Lawrence, Lee, Limestone, Madison, Marion, Mobile (Bick & Bick 1983), Perry, Pickens, St. Clair, Shelby, Sumter, Talladega (Bick & Bick 1983), Tuscaloosa, Washington (Bick & Bick 1983).

"Common". Statewide. One of the most common species in the genus; paucity of southern Alabama records probably due to inadequate collecting effort. Inhabits almost any permanent lentic water, especially man-made ponds.

***Enallagma coecum* (Hagen) (= *E. cardenium*)** Aug 31

Geneva (Bick & Bick 1983).
"Rare". This species has been known as *E. cardenium* Selys in the United States; the name *E. coecum* applied only to populations from the islands in the Caribbean. There is consensus that the two taxa are one species (Garrison 1991, Westfall, pers. comm.). It is undoubtedly confined in Alabama to the extreme southern part of the state. Its usual habitat is small shaded streams.

***Enallagma concisum* Williamson** Apr 26-Oct 12
Covington, Mobile (Bick & Bick 1983).
"Uncommon". Probably limited to southern counties in Alabama. Found along edges of permanent ponds with emergent vegetation, usually sand-bottomed and not eutrophic.

***Enallagma daeckii* (Calvert) (= *Teleallagma daeckii*)** Apr 17-Jul 10
Baldwin (Bick & Bick 1983), Bibb, Covington (Bick & Bick 1983), Dale, Escambia, Mobile (Bick

& Bick 1983), Tuscaloosa (Bick & Bick 1983), Winston.

"Uncommon". Restricted to shady areas of ponds and backwaters of slow, swampy streams.

***Enallagma davisii* Westfall** Apr 3
Mobile (Bick & Bick 1983).

"Rare". This seldom encountered species is probably restricted in its Alabama distribution to the southern tier of counties. Inhabits shallow, vegetated margins of sand-bottomed lakes.

***Enallagma divagans* Selys** Apr 17-Sep 4
Baldwin, Bibb, Blount, Clarke, Clay, Cleburne, Conecuh, Covington, Dale, Dekalb (Bick 1978), Escambia, Hale, Henry, Houston, Jackson, Lauderdale, Macon, Marion, Mobile, Montgomery, Perry, Pike, St. Clair, Shelby, Tuscaloosa, Winston.

"Common". Probably occurs throughout the state. Prefers shaded areas of ponds and lakes, but may be found in small, slow streams and boggy seeps.

***Enallagma doubledayi* (Selys)** Mar 18-Oct 1
Baldwin, Covington (Bick & Bick 1983), Dale (Bick & Bick 1983), Escambia, Geneva (Bick & Bick 1983), Houston (Bick & Bick 1983), Mobile (Wright 1943), Shelby, Tuscaloosa (Bick & Bick 1983).

"Common". Common in small ponds in southern fourth of state but less common north toward Fall Line. Inhabits ponds.

***Enallagma dubium* Root** Apr 17-Sep 24
Covington, Escambia, Houston (Bick & Bick 1983), Madison, Mobile (Bick & Bick 1983), Shelby.

"Uncommon". More likely to be encountered in southern half of state, but not easily detected due to its habits and coloration. Habitat varies from slow-moving, heavily vegetated small streams to large shaded swamps.

***Enallagma durum* (Hagen)** Jun 11-Sep 25
Baldwin (Tennessee 1990), Mobile (Wright 1943).
"Rare". Probably restricted in Alabama to southern counties. Inhabits slow-moving, vegetated waters; occurs in lakes in Florida.

***Enallagma exsulans* (Hagen)** May 1-Sep 27
Bibb (Bick & Bick 1983), Blount, Calhoun, Cherokee, Chilton, Clay, Cleburne, Colbert, Coosa, Dallas (Bick & Bick 1983), Dekalb (Bick & Bick 1983), Elmore, Fayette, Jackson (Bick & Bick

1983), Jefferson, Lauderdale (Bick & Bick 1983), Lawrence, Limestone, Macon, Madison, Marion, Morgan, Perry, St. Clair (Bick & Bick 1983), Shelby, Talladega, Tallapoosa, Tuscaloosa (Bick & Bick 1983), Wilcox.

"Common". Distributed throughout the northern 2/3 of the state only. Habitat is small to large streams, occasionally lakes.

***Enallagma geminatum* Kellicott** Apr 16-Oct 4
Blount, Bullock, Cleburne, Colbert, Covington, Dekalb (Bick 1978), Hale, Houston, Jackson, Lee, Madison, Mobile, Pickens, Shelby, Tuscaloosa.
"Common". Probably statewide in distribution. Inhabits lentic or slow-moving waters with vegetation.

***Enallagma pallidum* Root** Jun 14
Baldwin (Bick & Bick 1983).
"Rare". Probably restricted in Alabama to southern part of state. Occurs in swampy lake shores.

***Enallagma pollutum* (Hagen)** Aug 16
Baldwin (Wright 1943).
"Rare". Undoubtedly restricted to the edge of the coastal plain. Inhabits a variety of slow streams, ponds and lakes.

***Enallagma signatum* (Hagen)** Apr 20-Oct 18
Blount, Calhoun, Cherokee, Chilton, Choctaw, Cleburne, Coffee, Colbert, Covington, Crenshaw, Dale, Dekalb (Bick 1978), Elmore, Escambia, Etowah, Geneva, Hale, Houston, Jefferson, Lamar, Lauderdale, Lawrence, Lee, Limestone, Lowndes, Madison, Marion, Marshall, Mobile, Montgomery, Pickens, St. Clair, Shelby, Sumter, Tuscaloosa, Washington, Winston.
"Common". One of the most widespread and common eastern species in the genus. Inhabits a wide variety of lentic and lotic habitats.

***Enallagma sulcatum* Williamson** Jun 1-Aug 31
Covington (Bick & Bick 1983).
"Rare". Another southern species restricted in Alabama to most southern counties. Habitat is sand-bottomed lakes and ponds with emergent vegetation along edges.

***Enallagma traviatum* Selys** Apr 26-Jul 18
Calhoun, Cleburne, Covington, Dale, Dekalb (Bick 1978), Hale, Jackson, Jefferson, Lee, Marion, St. Clair, Shelby, Tuscaloosa, Winston.
"Common". Collected very rarely below the Fall Line. Bick (1978) did not determine subspecies,

and stated "Neither *E. t. traviatum* Sel. nor *E. t. westfalli* Donnelly has been recorded from Alabama". Specimens from Covington and Dale Co. are *E. t. traviatum* Selys, whereas specimens from Marion and Jefferson Co. are *E. t. westfalli* Donnelly (T. W. Donnelly, pers. comm.). Dunkle (1992) stated that the record for Florida, based on Byers (1927; Leon Co., Tallahassee), was doubtful. Occurs in shady margins of ponds and small reservoirs.

***Enallagma vesperum* Calvert** Apr 1-Aug 9
Cleburne, Colbert, Covington, Hale, Madison, Shelby.
"Uncommon". This species is probably more widespread than collection records indicate; its normal activity period is at dusk and therefore is rarely seen. Habitat is margins of ponds, lakes and reservoirs, usually where floating vegetation or debris is present.

***Enallagma weewa* Byers** May 23-Sep 20
Covington (Wright 1943), Escambia.
"Rare". Probably only occurs in extreme southern part of state. Habitat is shady areas of slow, swampy streams, although it occurs in lakes in North Carolina.

***Ischnura hastata* (Say) (= *Anomalagrion hastatum*)** Jan 31-Oct 18
Baldwin, Bullock, Butler, Chilton, Clarke, Cleburne, Colbert, Covington (Wright 1943), Dale, Elmore, Escambia, Geneva, Henry, Houston, Jackson, Lauderdale, Lee, Madison, Marengo, Marion, Marshall, Mobile (Wright 1943), Montgomery, St. Clair, Shelby, Sumter, Tuscaloosa, Walker, Washington.
"Common". Occurs statewide; a very successful species for its diminutive size. Occurs in vegetated margins of ditches, swamps and ponds, permanent or temporary.

***Ischnura kellicotti* Williamson** Mar 19-Oct 1
Covington, Crenshaw (Krotzer & Krotzer 1992), Escambia (Krotzer & Krotzer 1992), Hale (Krotzer & Krotzer 1992), Houston.
"Uncommon". Found only south of the Fall Line to date. Occurs in ponds and lakes with lily pads (*Nymphaea*), on which it mates and lays eggs; the nymphs cling to the underside of the lily pads.

***Ischnura p. posita* (Hagen)** Feb 18-Oct 18
Baldwin, Barbour, Bibb, Blount, Bullock, Butler, Calhoun, Cherokee, Chilton, Choctaw, Clarke,

BULLETIN OF AMERICAN ODONATOLOGY

Cleburne, Colbert, Covington (Wright 1943), Crenshaw (s), Dale, Dekalb, Elmore, Escambia, Fayette, Geneva, Hale, Houston, Jackson, Lamar, Lauderdale, Lawrence, Lee, Limestone, Macon, Madison, Marengo, Marion, Marshall, Mobile, Monroe, Montgomery, Perry (s), Pickens, Russell, St. Clair, Shelby, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker, Washington.

"Common". The most frequently collected *Ischnura*. Inhabits many types of ponds, swamps, reservoirs and lakes, and slow moving streams.

Ischnura prognata (Hagen) Mar 23-Aug 24
Baldwin, Madison (Bick & Bick 1983).
"Rare". An elusive species that should be expected at more localities. Inhabits shady areas of swamps and seepages.

Ischnura ramburii (Selys) Apr 16-Oct 18
Baldwin, Cherokee, Choctaw (Bick & Bick 1983), Clarke (Bick & Bick 1983), Coffee, Colbert, Conecuh (Bick & Bick 1983), Covington (Bick & Bick 1983), Dale (Bick & Bick 1983), Elmore, Escambia, Etowah, Geneva (Bick & Bick 1983), Greene (Bick & Bick 1983), Hale, Henry (Bick & Bick 1983), Jackson, Lauderdale, Lawrence, Lee, Marion, Mobile (Bick & Bick 1983), St. Clair, Sumter, Tuscaloosa (Bick & Bick 1983), Washington (Bick & Bick 1983).
"Common". Might not occur in the northeastern part of Alabama. Inhabits a variety of vegetated ponds and lakes.

Ischnura verticalis (Say) Jul 12
Dekalb (Bick & Bick 1983).
"Rare". A northern species probably only to be found in the most northern counties of Alabama. Inhabits ponds and swampy areas of slow streams.

Nehalennia gracilis Morse May 5-Jun 23
Bibb, Covington (Bick & Bick 1983), Escambia.
"Rare". Restricted to boggy seepage areas with sphagnum.

Nehalennia integricollis Calvert Apr 18-Sep 30
Baldwin (Bick & Bick 1983), Cleburne, Covington (Bick & Bick 1983), Escambia, Geneva (Bick & Bick 1983), Houston (Bick & Bick 1983), Mobile (Bick & Bick 1983), Shelby, Tuscaloosa (Bick & Bick 1983), Washington (Bick & Bick 1983).

"Uncommon". Habitat is shallow margins of ponds and lakes with emergent vegetation, rarely beaver ponds.

Telebasis byersi Westfall Aug 21-Sep 1
Houston (Westfall 1957), Montgomery.
"Rare". Inhabits floating mats of duckweed and other plants in swamps or backwaters of slow streams.

Species of doubtful occurrence or misidentification:

Gomphus fraternus Say. This northern species was recorded for Alabama by Needham and Westfall (1955), based on specimens collected by R. S. Hodges from 1938 to 1940 in Tuscaloosa Co. However, Westfall (1956) described these specimens as a new species, *G. septima*.

Ophiogomphus mainensis Packard. Another northern species reported by Needham & Westfall (1955) for Alabama based on specimens reared by Smith and Hodges. Carle (1982) showed that these were not *mainensis*, but belonged in *O. incurvatus*.

Cordulegaster diastatops (Selys). Prior to the description of *Coräulegaster bilineata* (Carle, 1983), *C. diastatops* was widely reported in the southern United States. Based on our examination of many specimens, we believe that the literature records of this species for Alabama should be referred to *C. bilineata*.

LITERATURE CITED:

Belle, J. 1973. A revision of the New World genus *Progomphus* Selys, 1854 (Anisoptera: Gomphidae). *Odonatologica* 2(4):191-308.

Bick, G. H. 1978. New state records of United States Odonata. *Notul. Odonatol.* 1(2): 17-19.

Bick, G. H., and J. C. Bick. 1983. New records of adult Odonata from Alabama, United States, in the Florida State Collection of Arthropods. *Notul. Odonatol.* 2(2):19-21.

Borrer, D. J. 1942. A revision of the libelluline genus *Erythrodiplax* (Odonata). Ohio State Univ., Columbus. 286 pp.

- Carle, F. L. 1982. *Ophiogomphus incurvatus*: a new name for *Ophiogomphus carolinus* Hagen (Odonata: Gomphidae). *Ann. Entomol. Soc. Amer.* 75(3):335-339.
- Carle, F. L. 1992. *Ophiogomphus (Ophionurus) australis* spec. nov. from the Gulf Coast state of Louisiana, with larval and adult keys to American *Ophiogomphus* (Anisoptera: Gomphidae). *Odonatologica* 21(2):141-152.
- Cashatt, E. D., and T. E. Vogt. 1994. Distribution, habitat, and field biology of *Somatochlora hineana* (Odonata: Corduliidae). *Ann. Entomol. Soc. Amer.* 87(5):599-603.
- Corbet, P. S. 1963. A biology of dragonflies. Quadrangle Books, Chicago. 247 pp.
- Daigle, J. J. 1994. The larva and adult male of *Somatochlora georgiana* Walker (Odonata: Corduliidae). *Bull. Amer. Odonatol.* 2(2):21-26.
- Donnelly, T. W., and K. J. Tennessee. 1994. *Macromia illinoensis* and *georgina*: a study of their variation and apparent subspecific relationship (Odonata: Corduliidae). *Bull. Amer. Odonatol.* 2(3):27-61.
- Dunkle, S. W. 1989. Dragonflies of the Florida peninsula, Bermuda and the Bahamas. Scientific Publishers, Gainesville, Florida. 154 pp.
- Dunkle, S. W. 1990. Damselflies of Florida, Bermuda and the Bahamas. Scientific Publishers, Gainesville, Florida. 148 pp.
- Dunkle, S. W. 1992. Distribution of dragonflies and damselflies (Odonata) in Florida. *Bull. Amer. Odonatol.* 1(2):29-50.
- Garrison, R. W. 1991. A synonymic list of the New World Odonata. *Argia* 3(2):1-30.
- Gloyd, L. K. 1968. The union of *Argia fumipennis* (Burmeister, 1839) with *Argia violacea* (Hagen, 1861), and the recognition of three subspecies (Odonata). *Occ. Pap. Mus. Zool. Univ. Mich.* 658:1-6.
- Hackney, C. T., S. M. Adams, and W. H. Martin. 1992. Biodiversity of the southeastern United States. Aquatic communities. Wiley, New York.
- Harris, S. C., P. E. O'Neil, and P. K. Lago. 1991. Caddisflies of Alabama. *Ala. Geol. Surv. Bull. No.* 142:1-442.
- Johnson, C. 1972. An analysis of geographical variation in the damselfly, *Argia apicalis* (Zygoptera: Coenagrionidae). *Can. Entomol.* 104:1515-1527.
- Johnson, C. 1973. Distributional patterns and their interpretation in *Hetaerina* (Odonata: Calopterygidae). *Fla. Entomol.* 56(1):24-42.
- Johnson, C. 1974. Taxonomic keys and distributional patterns for nearctic species of *Calopteryx* damselflies. *Fla. Entomol.* 57(3):231-248.
- Krotzer, R. S., and M.J. Krotzer. 1992. Significant new records of Odonata from the southeastern United States. *Notul. Odonatol.* 3(10):168-169.
- Louton, J. A. 1982. Lotic dragonfly (Anisoptera: Odonata) nymphs of the southeastern United States: identification, distribution and historical biogeography. PhD. diss., Univ. of Tennessee, Knoxville. 357 pp.
- Needham, J. G. 1950. Three new species of North American dragonflies with notes on related species. *Trans. Amer. Entomol. Soc.* 76:1-12.
- Needham, J. G. 1951. Prodrôme for a manual of the dragonflies of North America, with extended comments on wing venation systems. *Trans. Amer. Entomol. Soc.* 77:21-62.
- Needham, J. G., and M. J. Westfall, Jr. 1955. A manual of the dragonflies of North America (Anisoptera). Univ. Calif. Press, Berkeley. 615 pp.
- Sapp, C. D., and J. Emplaincourt. 1975. Physiographic regions of Alabama. *Ala. Geol. Surv. Special Map* 168.
- Smith, S., and R. S. Hodges. 1937. Alabama dragonflies (Odonata). *J. Ala. Acad. Sci.* 9:21-22.
- Smith, S., and R. S. Hodges. 1938. Alabama dragonflies (Odonata). *J. Ala. Acad. Sci.* 10:20-21.

BULLETIN OF AMERICAN ODONATOLOGY

- Tennessee, K. J. 1977. Rediscovery of *Epitheca costalis* (Odonata: Corduliidae). Ann. Entomol. Soc. Amer. 70(2):267-273.
- Tennessee, K. J. 1979a. New records of Odonata for Alabama and Tennessee, with significant range extensions for several species. Entomol. News 90(2):118-120.
- Tennessee, K. J. 1979b. Distance traveled by transforming nymphs of *Tetragoneuria* at Marion County Lake, Alabama, United States (Anisoptera: Corduliidae). Notul. Odonatol. 1(4):63-65.
- Tennessee, K. J. 1984. The nymphs of *Calopteryx amata* and *C. angustipennis* (Odonata: Calopterygidae). Proc. Entomol. Soc. Wash. 86:602-607.
- Tennessee, K. J. 1990. Odonata. Pages 81-83 in Harris, S. C. (ed.). Preliminary considerations on rare and endangered invertebrates in Alabama. J. Ala. Acad. Sci. 61(2):64-92.
- Westfall, M. J., Jr. 1943. The synonymy of *Libellula auripennis* Burmeister and *Libellula jesseana* Williamson, and a description of a new species, *Libellula needhami* (Odonata). Trans. Amer. Entomol. Soc. 49:17-32.
- Westfall, M. J., Jr. 1956. A new species of *Gomphus* from Alabama (Odonata). Quart. J. Fla. Acad. Sci. 19(4):251-258.
- Westfall, M. J., Jr. 1957. A new species of *Telebasis* from Florida (Odonata: Zygoptera). Fla. Entomol. 40(1):19-27.
- Westfall, M. J., Jr. 1962. The true *Gomphus consanguis* Selys (Odonata: Gomphidae). Fla. Entomol. 45(1):29-41.
- Westfall, M. J., Jr. 1974. A critical study of *Gomphus modestus* Needham, 1942, with notes on related species (Anisoptera: Gomphidae). Odonatologica 3(1):63-73.
- Westfall, M. J., Jr., and K. J. Tennessee. 1979. Taxonomic clarification within the genus *Dromogomphus* Selys (Odonata: Gomphidae). Fla. Entomol. 62:266-273.
- Williamson, E. B. 1903. The dragonflies (Odonata) of Tennessee, with a few records for Virginia and Alabama. Entomol. News 14:221-229.
- Wright, M. 1937. A survey of the adult anisopterous dragonflies of the central Gulf Coast region. J. Tenn. Acad. Sci. 12(3):255-266.
- Wright, M. 1939. Additions to the list of anisopterous dragonflies of the central Gulf Coast region. J. Tenn. Acad. Sci. 13(2):203-208.
- Wright, M. 1943a. Dragonflies collected in the vicinity of Florala, Alabama. Fla. Entomol. 26(3):30-51.
- Wright, M. 1943b. A comparison of the dragonfly fauna of the lower delta of the Mississippi River with that of the marshes of the central Gulf Coast. Ecol. Monogr. 13:481-497.
- Wright, M. 1946. A description of the nymph of *Agrion dimidiatum* (Burmeister). J. Tenn. Acad. Sci. 21:336-338.

BULLETIN OF AMERICAN ODONATOLOGY

VOLUME 3

THE ODONATA OF OHIO - A PRELIMINARY REPORT, Robert C. Glotzhober
3(1): 1 - 30

**FOUR DECADES OF STABILITY AND CHANGE IN THE ODONATA
POPULATIONS AT TEN ACRE POND IN CENTRAL PENNSYLVANIA**, Clark
N. Shiffer and Harold B. White 3(2): 31 - 41

**DESCRIPCION E HISTORIA NATURAL DE LAS LARVAS DE ODONATOS DE
COSTA RICA. IV: MECISTOGASTER ORNATA (RAMBUR, 1842)**
(ZYGOPTERA, PSEUDOSTIGMATIDAE). [Description and Natural History of
Odonata larva of Costa Rica. IV. *Mecistogaster ornata* (Rambur, 1842) (Zygoptera,
Pseudostigmatidae)], Alonso Ramirez 3(2): 43-47

THE DISTRIBUTION OF ODONATA IN ALABAMA, Kenneth J. Tennessen,
James D. Harper, R. Stephen Krotzer, 3(3): 49-74

BULLETIN OF AMERICAN ODONATOLOGY

VOLUME 1

THE ODONATA OF NEW YORK, Thomas W. Donnelly 1(1): 1-27

DISTRIBUTION OF DRAGONFLIES AND DAMSELFLIES (ODONATA) IN FLORIDA, Sidney W. Dunkle 1(2): 29-50

MORPHOLOGICAL AND ECOLOGICAL DIFFERENCES AMONG SPECIES OF *LADONA* (ANISOPTERA: LIBELLULIDAE), Michael L. May 1(3): 51-56

COMPORTAMIENTO REPRODUCTIVO Y POLICROMATISMO EN *ISCHNURA DENTICOLLIS* Burmeister (Zygoptera: Coenagrionidae), [Reproductive behavior and polychromatism in *Ischnura denticollis*], with English summary
Alejandro Córdoba Aguilar. 1(3): 57-64

A CHECKLIST OF THE ODONATA OF THE DOMINICAN REPUBLIC BY PROVINCE, Jerrell James Daigle 1(4):65-69

ODONATA DE LA SIERRA DE HUAUCHINANGO, PUEBLA, MEXICO [Odonata of the Sierra de Huachinango, Puebla, Mexico], José A. Gómez Anaya y Rodolfo Novelo Gutiérrez 1(4):71-73

VOLUME 2

LA NAYADE DE *ARCHILESTES LATIALATUS* DONNELLY, 1981 (ZYGOPTERA: LESTIDAE) [The naiad of *Archilestes latialatus* Donnelly, 1981], R. Novelo-Gutiérrez 2(1): 1-7

DESCRIPCIÓN E HISTORIA NATURAL DE LAS LARVAS DE ODONATOS DE COSTA RICA. II: *GYNACANTHA TIBIATA* (KARSCH 1891) (ANISOPTERA, AESHNIDAE) [Description and Natural History of of the Odonata Larvae of Costa Rica. III: *Gynacantha tibiata* (Karsch 1891)(Anisoptera: Aeshnidae)], Alonso Ramírez 2(1): 9-14

DESCRIPTION OF THE NYMPH OF *EPITHECA (TETRAGONEURIA) SPINOSA* (HAGEN) (ODONATA:CORDULIIDAE), K. J. Tennessen 2(2): 15-19

THE LARVA AND ADULT MALE OF *SOMATOCHLORA GEORGIANA* WALKER (ODONATA: CORDULIIDAE), Jerrell J. Daigle 2(2): 21-26

MACROMIA ILLINOIENSIS AND *GEORGINA*: A STUDY OF THEIR VARIATION AND APPARENT SUBSPECIFIC RELATIONSHIP (ODONATA: CORDULIIDAE), Thomas W. Donnelly and Kenneth J. Tennessen 2(3): 27-61

THE SUBGENUS *TETRAGONEURIA* (ANISOPTERA: CORDULIIDAE: *EPITHECA*) IN NEW JERSEY, Michael L. May 2(4): 63-74

continued on inside cover