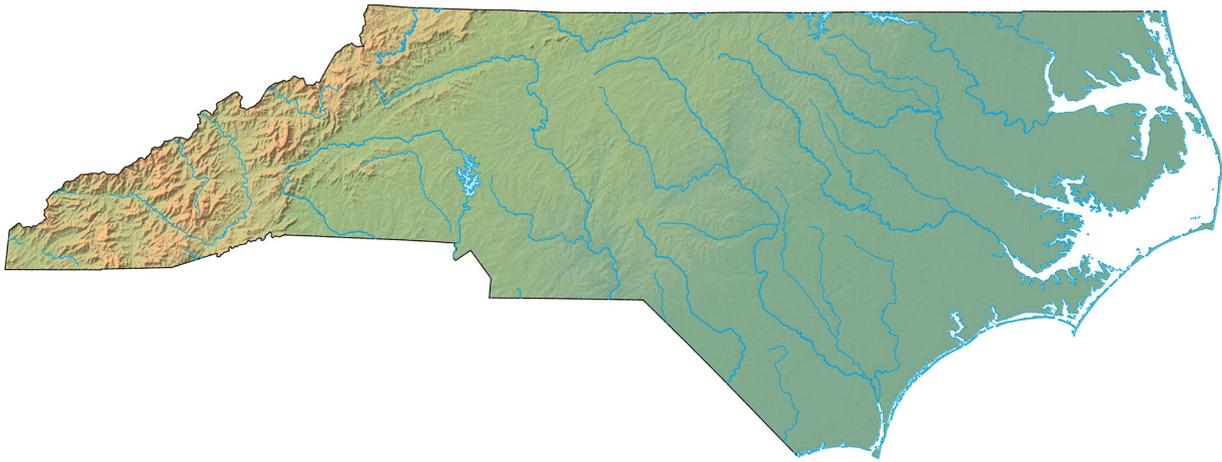


BULLETIN OF AMERICAN ODONATOLOGY



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Harry E. LeGrand Jr, Thomas E. Howard Jr, John Petranka, Mark A. Shields

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Front cover: Top (left to right): *Anax longipes* (Comet Darner), *Zoraena obliqua* (Arrowhead Spiketail), and *Sympetrum rubicundulum* (Ruby Meadowhawk). Photos by John Petranka. **Middle:** Relief map of North Carolina. **Bottom** (left to right): *Progomphus belli* (Belle's Sanddragon), *Nannothemis bella* (Elfin Skimmer), and *Gomphurus septima* (Septima's Clubtail). Photos by Mark A. Shields.

The Odonata of North Carolina, Part 2: Anisoptera

Harry E. LeGrand Jr, Thomas E. Howard Jr, John Petranka, Mark A. Shields

Abstract

In this, the second of two publications about the odonate fauna of North Carolina, USA, we present accounts for each of the 136 species of dragonflies (Anisoptera) recorded in the state. These species accounts draw on our database of over 63,000 specimen, photographic, sight, and literature records of odonates spanning nearly 200 years (1826–2023). Each account describes the distribution, abundance, conservation status, flight seasons, habitats, and behavior of the species. Five dragonfly species were added to the state list since 2005, while another nine species have not been reported for at least 20 years. Populations of five additional species have declined in recent decades, while a dozen others have increased in abundance and/or geographic range within the state.

Keywords: North Carolina, dragonflies, Anisoptera, mountains, Piedmont, Sandhills, Coastal Plain

Introduction

North Carolina has a rich odonate fauna of 189 known species. In Part 1 (LeGrand et al. 2025), we presented a brief history of odonatology in the state, described the three major biogeographic provinces (Mountains, Piedmont, and Coastal Plain) and habitats, and presented species accounts for each of the 53 species of damselflies (Zygoptera) known from the state. Here, we present species accounts for the 136 species of dragonflies (Anisoptera) recorded in North Carolina. These accounts are based on over 63,000 records in our online database, The Dragonflies and Damselflies

Odonata de Carolina del Norte, Parte 2: Anisoptera

Resumen

En esta, la segunda de dos publicaciones sobre la fauna de odonatos de Carolina del Norte, EE. UU., presentamos información sobre cada una de las 136 especies de libélulas (Anisoptera) registradas en el estado. Estas descripciones se basan en nuestra base de datos de más de 63.000 registros de especímenes, fotográficos, registros visuales, y literarios de odonatos que abarcan casi 200 años (1826 a 2023). Cada descripción incluye información sobre la distribución, abundancia, estado de conservación, temporadas de vuelo, hábitats y comportamiento de la especie. Desde 2005, se agregaron cinco especies de libélulas a la lista estatal, mientras que otras nueve especies no han sido reportadas durante al menos 20 años. Las poblaciones de cinco especies adicionales han disminuido en las últimas décadas, mientras que una docena de otras han aumentado en abundancia y/o distribución geográfica dentro del estado.

Palabras clave: Carolina del Norte, libélulas, Anisoptera, montañas, Piamonte, Colinas de Arena, Llanura Costera

of North Carolina (<https://auth1.dpr.ncparks.gov/odes/accounts.php>), a component of the North Carolina Biodiversity Project (<https://nc-biodiversity.com>). This database consists mainly of sight and photographic records submitted directly to the website by registered users. Additionally, over 15,000 records of specimens housed at the Florida State

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Collection of Arthropods (FSCA), most of which were collected by the late R. Duncan Cuyler, and over 100 historical records from the scientific literature are included. We also have added about 500 records from iNaturalist (www.inaturalist.org) to fill distributional gaps or provide more recent data about species of conservation concern.

Species Accounts

Common names follow those of A Checklist of North American Odonata (Paulson, Dunkle, Johnson 2024); scientific names are from the 25 September 2024 revision of the World List of Odonata (Paulson, Schorr, et al. 2024). Families are arranged in taxonomic order; within each family the sequence is alphabetical by genera, then alphabetical by species within a given genus.

As in Part 1, each species account contains a county occurrence map that is color-coded according to the type and recency of records in our database. We recognize two categories of records based on the degree of corroborating evidence: confirmed and unconfirmed. Confirmed records are those documented by either (a) specimens deposited in curated collections and reported in the literature or reported as “Accepted” with “ID Confidence: High” on Odonata Central (www.odonatacentral.org), or (b) photographs uploaded to The Dragonflies and Damselflies of North Carolina website, iNaturalist, Odonata Central, or BugGuide (www.bugguide.net) that have been vetted with high confidence. Unconfirmed records are those supported only by sightings. Although many, if not most, of these sight records probably are correctly identified, we consider them unconfirmed because of the lack of corroborating evidence. We also categorize records according to the period (within the last 20 years or older than 20 years) of the most recent county record to aid us in tracking changes in distribution over time. In our color-coding scheme, we give precedence

to confirmed over unconfirmed records and recent (from 2004 or later) over older (before 2004) records. In some cases, a county has older confirmed records as well as more recent unconfirmed sightings. Consequently, we have five overall record categories: (1) confirmed from 2004 or later, regardless of earlier status; (2) confirmed before 2004 plus more recent unconfirmed sightings; (3) confirmed before 2004 only; (4) unconfirmed sighting from 2004 or later only; and (5) unconfirmed sighting from before 2004 only. Rarely, a county has only an undated record, in which case we created a separate category. Each map also shows the three major biogeographical provinces and the total number of counties (out of 100) for which we have records.

For each species with more than one known flight date, the account also includes flight charts, one for each biogeographical province in which the species occurs (M = Mountains, P = Piedmont, C = Coastal Plain). These charts illustrate the number of records per three 10-day periods (days 1–10, 11–20, and 21–31) in each month throughout the year. The total number of records for which we have specific dates is shown to the right of each chart. Note that Dot Map Project records (Donnelly 2004a,b) provided no dates and that some iNaturalist records lack a specific day (i.e., only the month and year are shown). Thus, these records are not represented in the charts or total number of records shown. The earliest and latest flight dates for the state are provided below the charts.

The distribution, abundance, flight season, habitat, and behavior of the species are described in the main text of each account. Conservation status is also discussed, with conservation ranks coming from the North Carolina Natural Heritage Program (NCNHP), which uses the Nature-Serve methodology for assigning subnational (S) ranks. Life history information is based in part on our field experience and on published information from Dunkle (2000), Beaton (2007), and Paulson (2011).

Suborder Anisoptera (Dragonflies)

Family Petaluridae (Petaltails)

Tachopteryx thoreyi (Hagen in Sélys, 1858) — Gray Petaltail

Distribution: Present throughout the Mountains and Piedmont; very rare in the Sandhills region of the southwestern Coastal Plain and seemingly absent from nearly all of the remainder of the Coastal Plain.

Abundance: Generally uncommon, but it can be fairly common locally. High counts of:

- 12 – Harnett, 8 May 2002
- 12 – Madison, 13 June 2021
- 6 – Harnett, 20 May 2003

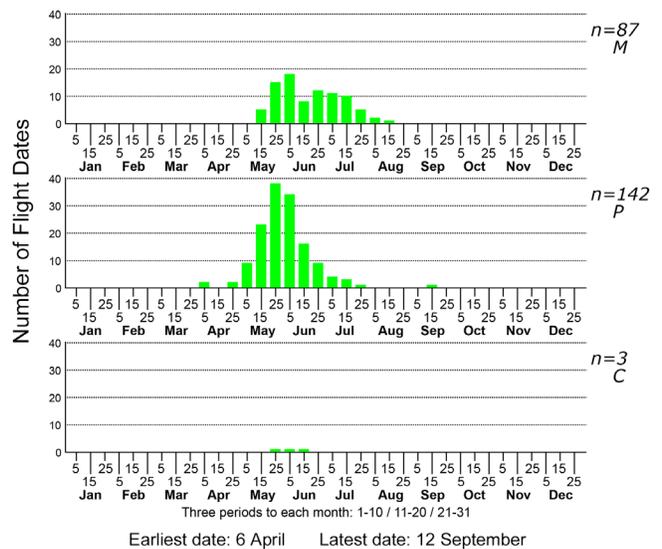
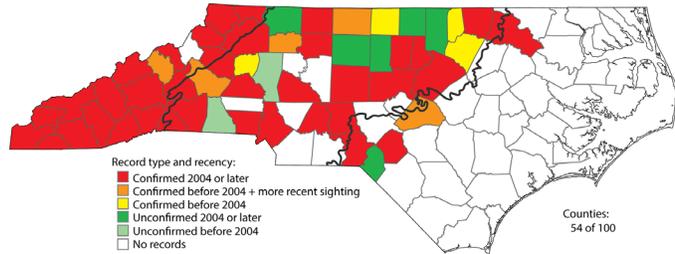
Status: G4/N4/S4

Flight: In the Piedmont, early April to mid-July, and sparingly to late July; a later flight in the Mountains by a month, from mid-May to mid-August. A recent unconfirmed sighting for 12 September in the Piedmont is extremely late.

Habitat: Breeds in wooded seepages; one of the few dragonflies to do so. Adults seen in upland forests and edges of these seeps.

Behavior: Tame. Typically perches vertically on tree trunks but will also perch on humans!

Comments: This species was formerly (30+ years ago) thought to be rare (or very poorly known) in the state. It is now seen frequently. With many more observers afield, it is likely this pattern is representative of survey effort rather than a population increase. Though numbers are not overly great for a large dragonfly, its habit of flying to wooded openings in uplands, such as along dirt and gravel roads and sunny trails and perching on tree trunks and humans, makes it conspicuous.



Family Aeshnidae (Darners)

Aeshna tuberculifera Walker, 1908 — Black-tipped Darner

Distribution: Northern Mountains/foothills only.

Abundance: Rare and local. Only two records prior to 1970, none from 1970 through 2015, and nine records from 2016 through 2023. High counts of:

- 2 – Watauga, 22 September 2017
- 2 – Ashe, 8 August 2021
- 2 – Ashe, 17 September 2022

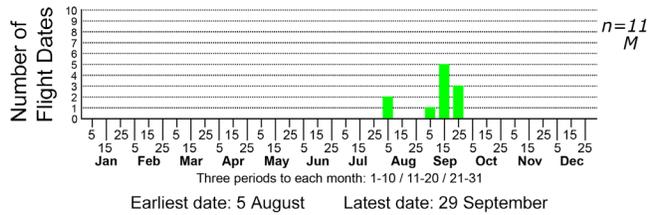
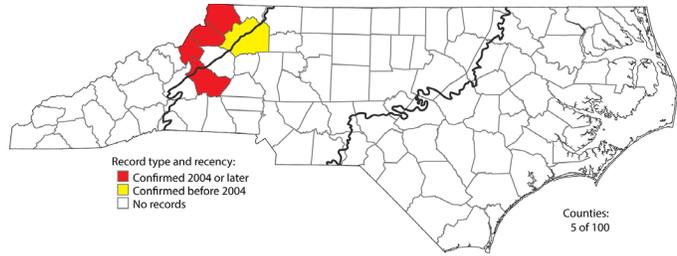
Status: G5/N4/S1

Flight: A late-flying dragonfly, especially in the Mountains. Dates occur between 5 August and 29 September, though most are from the last 20 days of September. Likely flies from early August into October, but most odonate fieldwork in the Mountains terminates in September and thus few people are likely to be active in the northern Mountains when this species is flying.

Habitat: Mostly at ponds with marshy edges, such as cattails, at high elevations (mainly over 3500 feet [1067 m]).

Behavior: Poorly known in North Carolina. All recent records were of individuals seen over or along the edges of ponds. It is not known how far individuals range away from such waters in the state.

Comments: North Carolina lies at the southern edge of the species' range. A photograph obtained in 2016 moved the species off the NCNHP "historical" list; thus, the state rank was changed from SH (historical) to S1 (critically imperiled). Other ponds in the northern Mountains need to be checked in the late summer and fall seasons, especially in August and September, to further elucidate the range of this species in North Carolina.



Aeshna umbrosa Walker, 1908 — Shadow Darner

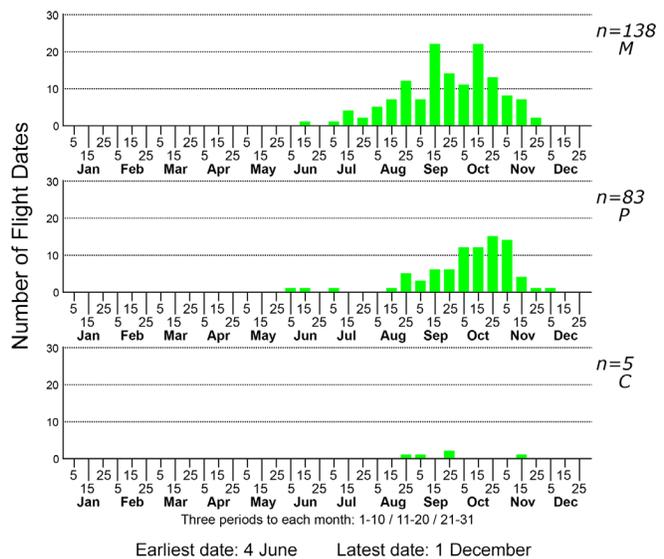
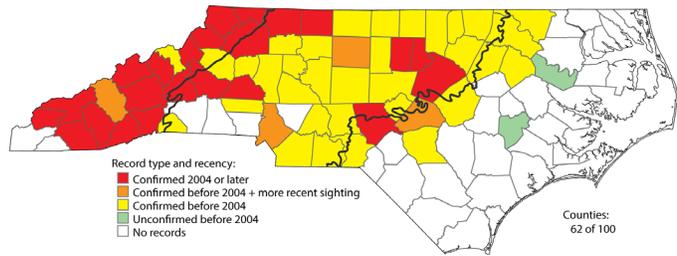
Distribution: Essentially in the Mountains and Piedmont, and sparingly in the western third of the Coastal Plain (at least formerly), including the Sandhills region.

Abundance: Fairly common in the Mountains, rare to uncommon over most of the Piedmont, and very rare in the western Coastal Plain. However, abundance is somewhat difficult to assess, as the species often flies in late afternoon and near dusk, in shaded parts of forests. Also, it flies late in the season, when much odonate fieldwork has subsided. Found in most counties within the range in the state. It is certainly not nearly as numerous or conspicuous as most darners of the spring and early summer seasons; however, it is one of the few darners that is more numerous in the Mountains than it is downstate. High counts of:

- 12 – Haywood, 22 September 2017
- 8 – Burke, 3 October 1989
- 6 – Watauga, 21 September 2019

Status: G5/N5/S4

Flight: Because this is a late summer/fall species, the Mountain flight occurs somewhat earlier than the flights downstate. In the Mountains it occurs mainly from early July to mid-November, peaking in September and October, with a



few records even to late November. In the Piedmont the flight is mainly from late August to mid-November, with a few records as late as early December. However, there are records in the Mountains and Piedmont as early as early-June. The few flight dates from the Coastal Plain are from late August to late September, and one in mid-November; oddly, there are no October reports from this province, though it is very rare there.

Habitat: The vicinity of ponds, lake shores, marshes, and small streams, generally near wooded areas, but it can occur in open areas. Seldom seen near fields or areas far from water.

Behavior: Rather secretive, often staying in shady places. It can fly over small open areas, darting back and forth, but usually only in late afternoon.

Comments: Of the widespread dragonflies in the state (recorded in over 60% of the counties), this is not a well-known species to many observers, as it is rather scarce or hard to find in the Piedmont.

Aeshna verticalis Hagen, 1861 — Green-striped Darner

Distribution: Mountains only. Although this is a northern species, with North Carolina at the southern edge of the range, the state's records are from the central and southern escarpment region.

Abundance: Presumably very rare, if still present in the state. High counts of:

- 4 – Henderson, 28 August 1939
- 1 – Burke, 11 September 1990
- 1 – Henderson, 22 August 1939

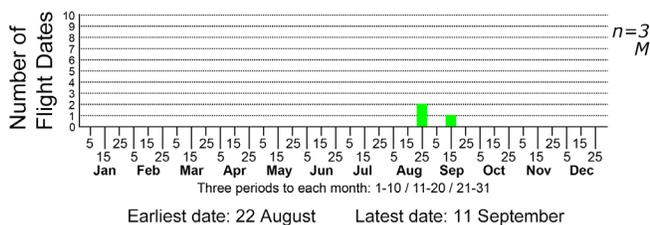
Status: G5/N5/S1. With no records since 1990, we suggest it should now be considered as Historical (SH) in North Carolina.

Flight: Known only from August and September, though flight likely starts in July.

Habitat: Small ponds and lakes near forests.

Behavior: No data for North Carolina. Elsewhere, males patrol along shorelines; adults forage in clearings away from water (Paulson 2011).

Comments: No living person is known to have seen this species in the state. Surveys in the lower elevations of the Mountains in late August and September are needed to determine if it is still extant in North Carolina.



Anax junius (Drury, 1773) — Common Green Darner

Distribution: Statewide. Occurs in all 100 counties.

Abundance: Common statewide. The species is partially migratory, and the state’s highest counts are of swarms seen moving southward in fall migration. High counts of:

- 1000 – Surry, 15 September 2019
- 223 – Stokes, 26 September 2019
- 200 – New Hanover, 13 September 2015

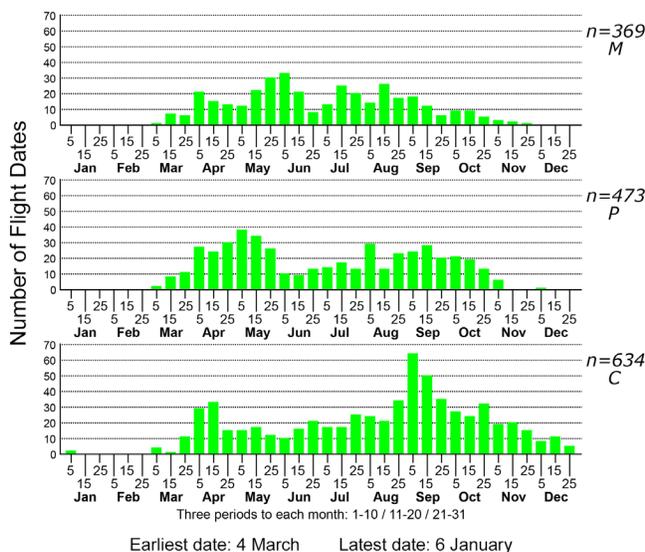
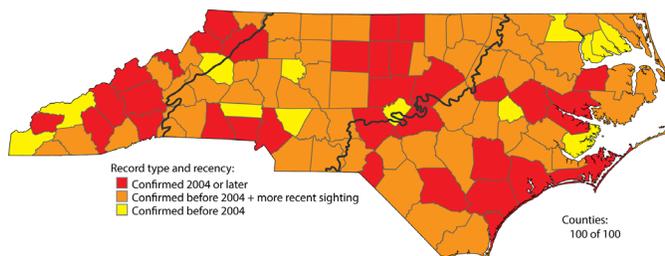
Status: G5/N5/S5

Flight: Generally, from mid-March to mid-November and straggling at least in the Coastal Plain to the end of the year. It has the longest flight period of any dragonfly in the state, as it is the dragonfly species most likely to be seen in early winter, being absent only for about two months in mid- and late winter.

Habitat: Wide-ranging. Found around lakes, ponds, marshes, and other mostly still (lentic) waters. Forages over fields, ponds, lakes, and other open habitats, as well as along roads through woods.

Behavior: Typically seen flying at eye level or higher, over a wide range of open habitats.

Comments: The species is seldom seen in truly large numbers or swarms, except in the fall season. It can often be the first species of dragonfly one sees in spring, or the last in late fall. The species is usually easily identified in flight, even at a distance of 100 feet (30.5 m) or more, through binoculars.



Anax longipes Hagen, 1861 — Comet Darner

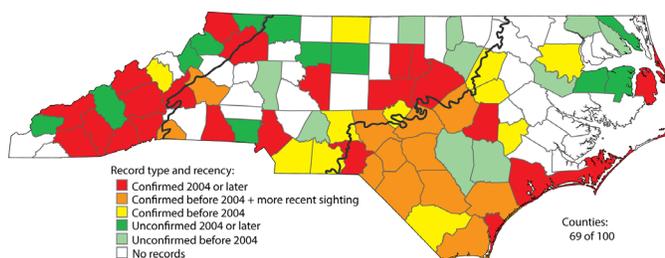
Distribution: Statewide, though more widespread in the southern half of the Coastal Plain and southeastern part of the Piedmont. Of spotty occurrence in most of the Piedmont and Mountains, and the northern half of the Coastal Plain, though likely occurs in all 100 counties. In recent years, there have been many more records for the Mountains, and thus relatively few counties in this province lack records now.

Abundance: Widespread but mostly uncommon (though not hard to see just one) across the southern half of the Coastal Plain and most of the Piedmont and Mountains. Rare to uncommon in the northern Coastal Plain, where there are few recent records (perhaps because of scarcity of observers there). In general, most numerous in the southern Coastal Plain, including the Sandhills. High counts of:

- 11 – Moore, 20 July 2020
- 6 – Orange, 31 May 2014
- 6 – Onslow 29 June 2014

Status: G5/N5/S4

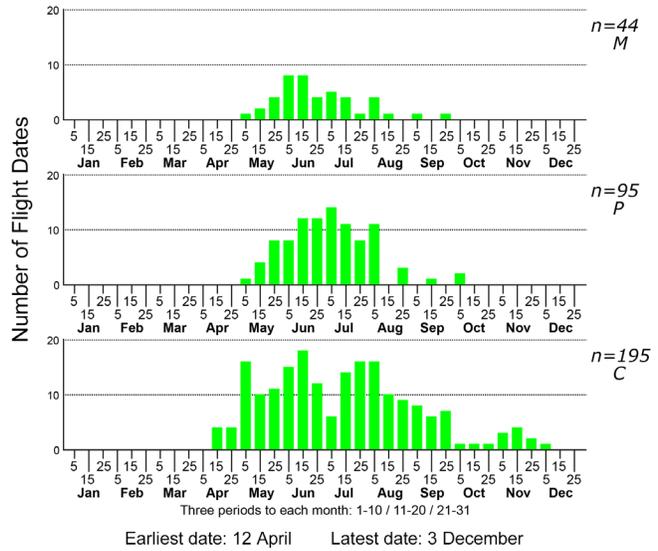
Flight: Generally, from mid-April to early December in the Coastal Plain; from early May to early October in the Piedmont and to late September in the Mountains.



Habitat: Mainly small- to medium-sized ponds, including natural ones such as limesink ponds and Carolina bay lakes.

Behavior: Males often seen patrolling back and forth over a pond, typically about 3–6 feet (1–2 m) above the water. At times seen over dry land but best looked for over a pond/small lake.

Comments: Males, with their bright red abdomen contrasting with the green head and thorax, are among the state’s most beautiful and easily identified dragonflies. Its large size also adds to its striking appearance. Females and immatures can easily be confused with Common Green Darner (*Anax junius*) and often cannot be safely identified while in flight.



Basiaeschna janata (Say, 1840) — Springtime Darner

Distribution: Nearly statewide. Might be absent in a few of the extreme eastern counties. Of spotty occurrence in the southern Mountains, though likely occurs in all counties there.

Abundance: Widespread, but only uncommon to occasionally fairly common in most of the Piedmont and upper half of the Coastal Plain. Uncommon in the eastern Coastal Plain and Mountains, and rare to locally absent near the northeastern and eastern coastal areas. High counts of:

- 15 – Scotland, 10 April 2022
- 15 – Hoke, 10 April 2022
- 11 – Onslow, 1 April 2018

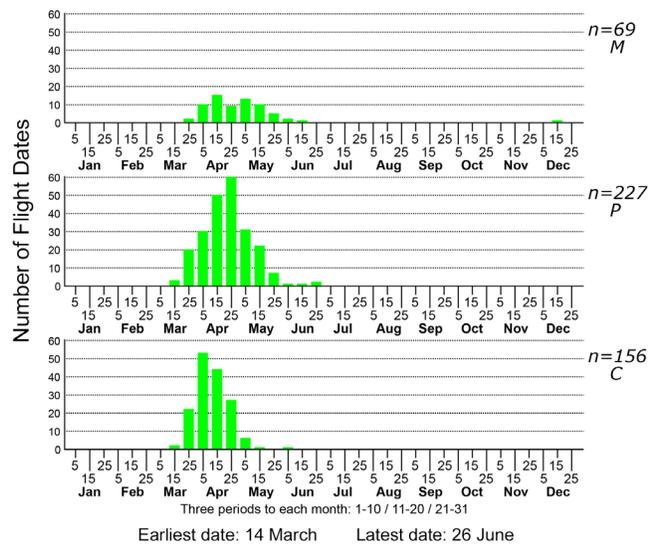
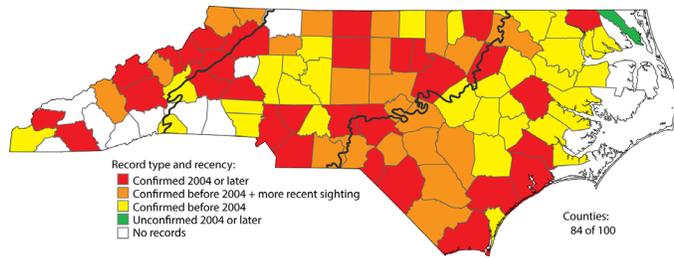
Status: G5/N5/S5

Flight: Primarily mid-late March to late May in the Piedmont and Coastal Plain; mainly late March to early June in the Mountains. Peak numbers are in April.

Habitat: Breeds at streams, less often at ponds or lakes. More often seen along woodland borders or wide roads.

Behavior: Flies low along dirt roads and clearings in upland or mesic woods, perching frequently in an oblique manner on twigs. Relatively easy to identify, as it is not particularly wary when perched.

Comments: The turquoise blue spots on the abdomen are quite stunning, especially in males. The species can often be identified in flight through binoculars, if the blue spots can be seen.



Boyeria grafiana Williamson, 1907 — Ocellated Darner

Distribution: Mountains only, though perhaps into the Piedmont foothills. This is a northern species that ranges south only to the Mountains of northern Georgia.

Abundance: Rare to locally very uncommon. As most records are older than 20 years, it might now be considered rare in the state. In recent years, there have been generally only one or two records a year, with most from a single county (Watauga). High counts of:

- 5 – Swain, 24 September 1931
- 4 – Macon, 23 September 1956
- 4 – Watauga, 21 September 2017

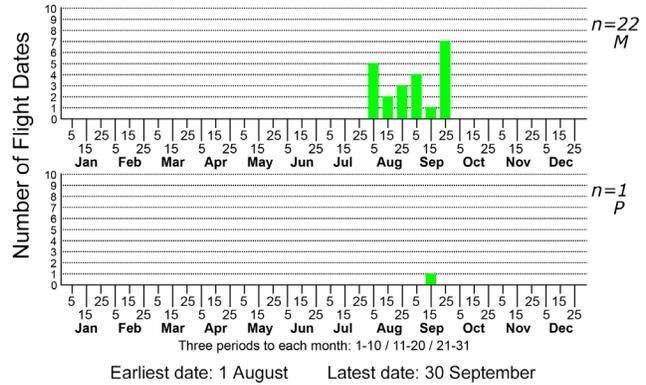
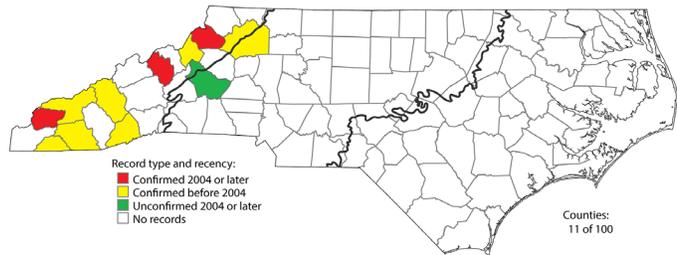
Status: G5/N5/S2?. Listed as Significantly Rare by NCNHP in 2012.

Flight: The flight occurs in late summer and early fall; from early August to the end of September.

Habitat: Mainly at fast, rocky streams in wooded habitats; however, several recent records have been at wet meadows and bogs.

Behavior: As with Fawn Darner (*B. vinosa*), it forages by flying along creek banks but will use the middle of streams and flies slightly faster and more erratically than Fawn Darner (especially noted when and where they fly together). However, that species occurs mainly along slow-moving waters, whereas the Ocellated occurs along rapidly moving waters.

Comments: As there is relatively little odonate fieldwork being conducted in the Mountains, as compared with the other provinces, the range and status of this species are not well known.



Boyeria vinosa (Say, 1840) — Fawn Darner

Distribution: Nearly statewide but apparently absent from the immediate eastern Coastal Plain north and south of Albemarle Sound.

Abundance: Uncommon to fairly common (but easily overlooked) in the Mountains, Piedmont, and upper Coastal Plain; less numerous in much of the Coastal Plain, but not rare except near the coast. High counts of:

- 17 – Cleveland, 19 September 1992
- 15 – Madison, 20 October 2020
- 8 – Madison, 21 September 2017

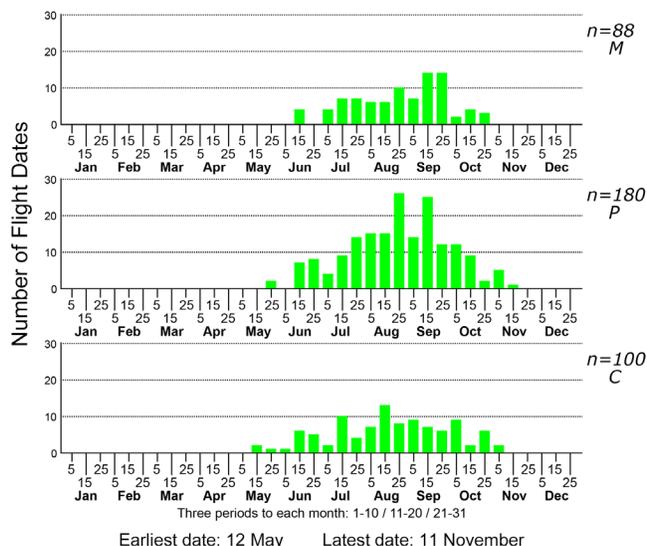
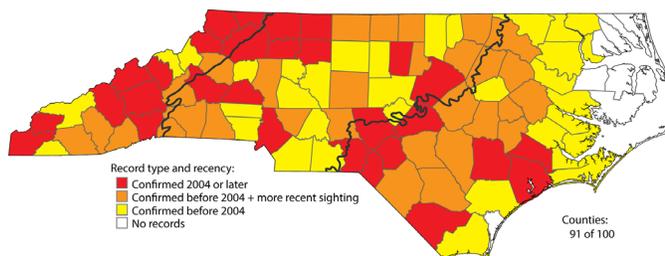
Status: G5/N5/S5

Flight: The flight begins in mid-May in the Coastal Plain, late May in the Piedmont, and mid-June in the Mountains. Extends into early November in the Piedmont and Coastal Plain, and to late October in the Mountains.

Habitat: Flies low over creeks, typically following the creek banks, poking into nooks and cranies. Favors somewhat slow-moving creeks in hardwood forests.

Behavior: This species likes dark places. It rests for most of the day inside a forest, hanging on twigs; sometimes disturbed when an observer is walking through a forest near a creek. It normally flies late in the afternoon and at dusk.

Comments: Fawn Darners must often be intentionally searched for, looking around creeks late in the day. A dragonfly flying slowly back and forth along creek banks, in shady situations, is often a Fawn Darner.



Coryphaeschna ingens (Rambur, 1842) — Regal Darner

Distribution: Present over much of the lower and southern Coastal Plain; scattered records for the eastern and central Piedmont; a single surprising record for the northern Mountains. Seems to be expanding its range westward in North Carolina and may be present over much more of the state than our records indicate.

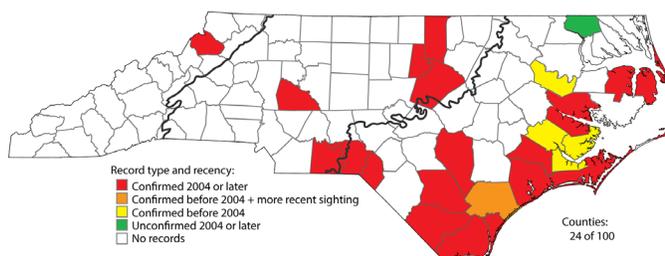
Abundance: Seemingly rare, but perhaps uncommon in some of the southern coastal counties. Abundance difficult to assess because of its often high-flying behavior, and its similarity to the very common Swamp Darner (*Epiaschna heros*), making the species difficult to confirm. For now, however, must be considered as quite “scarce” (though possibly increasing) away from the lower Coastal Plain. (Cuyler, for example, never collected it inward from the lower Coastal Plain, though he intensively worked the entire state.) High counts of:

- 2 – Pender, 13 June 2007
- 2 – Bladen, 4 June 2013
- 1 – Gates, 26 May 2006

Status: G5/N5/S2?

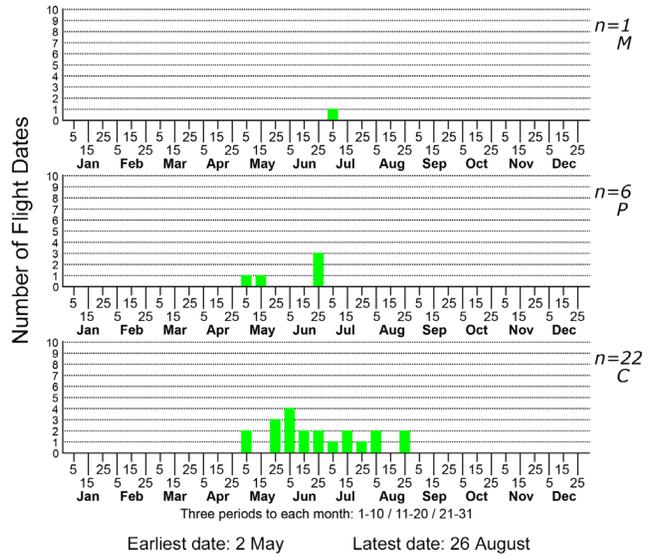
Flight: Flies from early May to late August.

Habitat: Ponds and lakes in forested areas but may occur over fields and other open areas.



Behavior: Typically seen flying rather high, often at treetop level, over a pond. Females oviposit in plant stems and can remain relatively motionless for several minutes with the abdomen arched downward and the distinctive thoracic stripes visible above the water.

Comments: The species is poorly known in North Carolina. Thankfully, both the number of records and the apparent range have been increasing in recent years. As a result, NCNHP elevated it from Significantly Rare to Watch List in 2022.



Epiaeschna heros (Fabricius, 1798) — Swamp Darner

Distribution: Statewide, and certainly occurs in all 100 counties of North Carolina, though no record yet for one of them.

Abundance: Common to often very common in the Coastal Plain, and fairly common to common in the Piedmont; rare to uncommon in the Mountains. High counts of:

- 100 – Camden, 23 June 2017
- 50 – Northampton, 17 May 2012
- 50 – Robeson, 17 April 2019

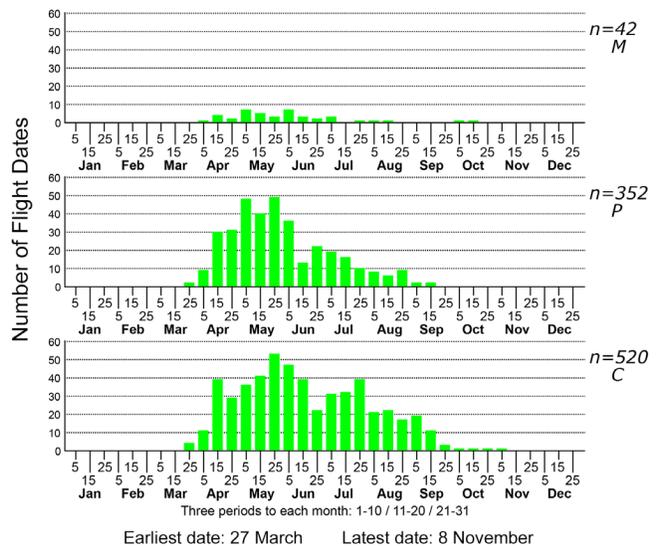
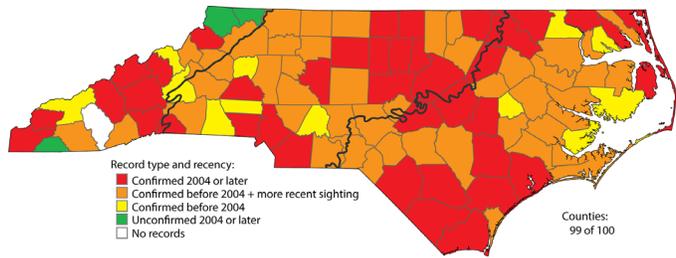
Status: G5/N5/S5

Flight: Flies from late March to early November in the Coastal Plain and to at least mid-September in the Piedmont. The Mountain flight occurs from early April to mid-October.

Habitat: Swamps, bottomlands, rivers, and large streams. Not numerous around forested lakes or ponds.

Behavior: Often seen cruising along forested roads and other clearings near woodlands and swamps, such as along roads through bottomlands and swamps. Flight is often head-height to treetop level. Frequently perches, usually at head-height or above, hanging downward from a twig.

Comments: It can often be the most commonly seen species on a summer or early fall day, especially in the Coastal Plain, when walking along a forest road or wide trail through a swamp or bottomland. Several can often be seen in the same general area, and it sometimes forms feeding swarms with other species, especially at or near dusk.



Gomphaeschna antilope (Hagen, 1874) — Taper-tailed Darner

Distribution: Essentially just the eastern 50–60% of the state; throughout the Coastal Plain, and in the southeastern third of the Piedmont. Two recent records for the western Piedmont were unexpected and suggest that the species might occur throughout the Piedmont province. Nonetheless, there are still huge areas of the northwestern and western part of that region that lack records. No Mountain records yet.

Abundance: Uncommon in the southern and central Coastal Plain, and close to the coast to the Virginia line, but rare in most of the northern third of the province. Rare to locally uncommon in the eastern Piedmont. Very rare to absent in the western 50–60% of the Piedmont. High counts of:

- 20 – Bladen, 26 April 2016
- 20 – Dare, 27 May 2022
- 15 – Scotland, 12 April 2018

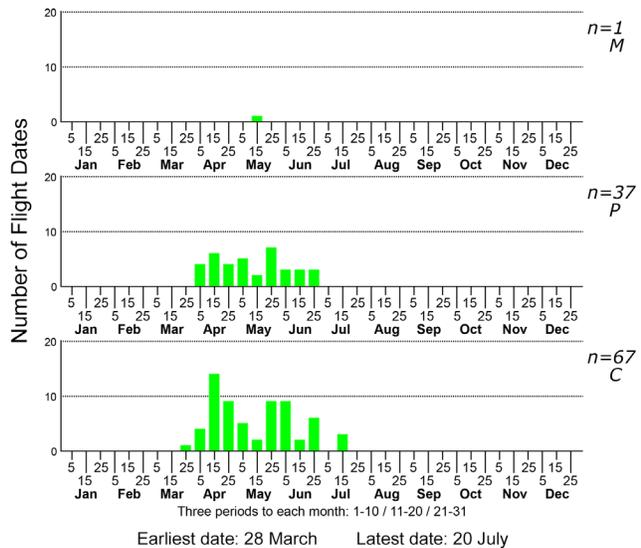
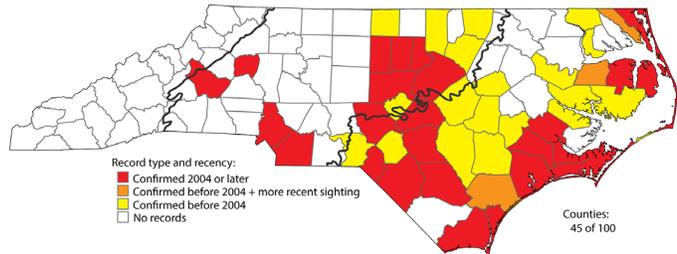
Status: G4/N4/S4

Flight: Spring into early summer only. In the Coastal Plain, the flight is mainly from early April (very rarely in late March) to late June, sparingly into July. In the Piedmont, the flight occurs from early April to late June. The peak is from mid-April to late May.

Habitat: Typically in and near swamps, but also along nearby rivers and streams.

Behavior: Forages typically singly along wooded roads and openings near swamps and rivers, not over the water. As with the Harlequin Darner (*G. furcillata*), it often perches vertically on tree trunks, where it can be photographed near eye level. A number of North Carolina photos, especially on iNaturalist, show them perched on man-made structures, such as on sides of buildings and porch screens.

Comments: There were few recent observations until about 2015, probably owing to better coverage of the Coastal Plain. Many new records have come from the Piedmont, extending the range westward. But, we question if the species is slowly expanding its range inland or if it is a matter of more observers gathering odonate data in the Piedmont.

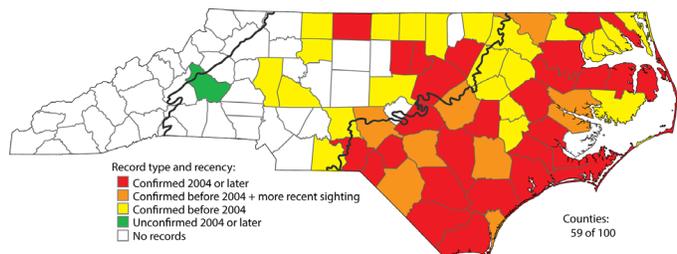


Gomphaeschna furcillata (Say, 1840) — Harlequin Darner

Distribution: Throughout the Coastal Plain, and the eastern two-thirds of the Piedmont; a recent unconfirmed record for the western Piedmont. The occurrence in most of the Piedmont is spotty and consists mostly of older records.

Abundance: Generally uncommon to infrequent over the Coastal Plain but can be locally common to very common (in swarms). Rare to uncommon in the extreme lower Piedmont, but quite rare and declining in the central Piedmont. High counts of:

- 500 – Gates, 13 April 2007
- 50 – Gates, 12 April 2018
- 45 – Washington, 28 March 2008



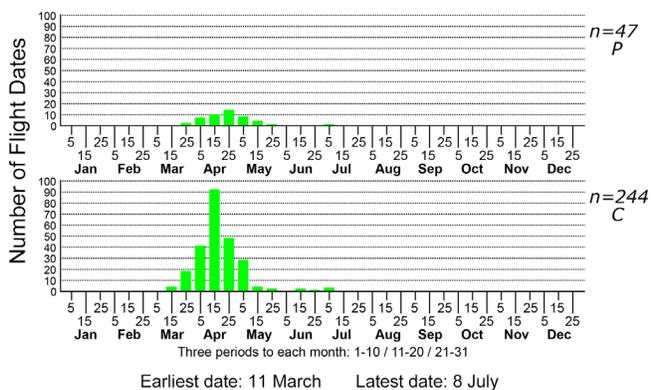
Status: G5/N5/S4S5

Flight: Spring season, but sparingly into early summer. Its flight in the Coastal Plain is from mid-March to late May. The Piedmont flight period is narrower, from very late March to late May. There are scattered records to early July in both provinces. The peak of the flight is mid-April.

Habitat: Typically, near swamps or wetter bottomlands, but also near wooded creeks.

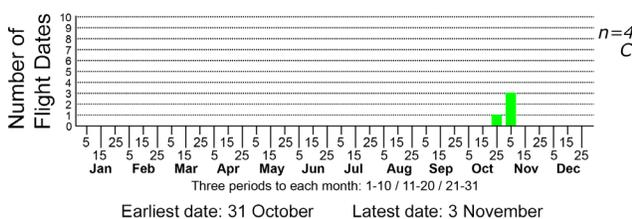
Behavior: Males patrol over swamps or marshes, but also along roads through wetlands and also in nearby uplands. They fly generally from 3–6 feet (1–2 m) off the ground, often back and forth, and sometimes hover in the observer’s face! They do not perch often, but when they do, it typically is vertically on tree trunks, but at times on humans. It is less likely to perch on man-made structures than is the similar Taper-tailed Darner (*G. antilope*).

Comments: Can be seen by the dozens in some favorable spots in the Coastal Plain, especially acidic wetlands such as pocosins (freshwater evergreen shrub bogs). However, there are disturbingly few recent records for the Piedmont.



Gynacantha nervosa Rambur, 1842 — Twilight Darner

Distribution: Reported from one Coastal Plain county and one Piedmont county. However, we consider only the coastal record to be legitimate. The Piedmont record, an individual found dead on pavement at the North Carolina Zoo (iNaturalist 134647533), a major tourist attraction, probably was transported on a vehicle coming from outside North Carolina and did not fly there on its own. Thus, we have decided not to add this record to our database. This is a species of Tropical America, from South America north to Mexico, through the West Indies, and north in the Eastern states only to Florida and barely to southeastern Georgia. Vagrants have been recorded from eastern Oklahoma, eastern Alabama, northern Delaware, and coastal South Carolina—and now coastal North Carolina—and now coastal North Carolina (see Odonata Central range map).



Abundance: Accidental stray. The three individuals observed at the coastal site are presumed to have arrived with strong southerly winds from a low-pressure system passing North Carolina in late October 2021. High counts of:

- 3 – Carteret, 31 October 2021
- 1 – Carteret, 1 November 2021
- 1 – Carteret, 2 November 2021

Status: G5/N5/SNA

Flight: Observed over a four-day period in fall 2021. Though it flies all year in Florida (Paulson 2011), in Georgia the records are only for late summer and fall (Beaton 2007). Expected in the Carolinas only in fall, and most likely along or near the coast.

Habitat: Within its primary range, the species’ habitat is mainly wooded ponds and swampy areas.

Behavior: Forages essentially at dusk, near wooded edges. As it “commonly enters buildings after dusk flight and may be found next morning” (Paulson 2011), the fact that three (!) individuals were found on the morning of October 31 on the side of the Fort Macon State Park visitor’s center is thus not quite as surprising as originally thought.

Comments: Single individuals, presumably members of the original three, also were found at this site on each of the

three days following the original discovery. The Twilight Darner becomes the 189th, and most recent, odonate species found in North Carolina.

Nasiaeschna pentacantha (Rambur, 1842) — Cyrano Darner

Distribution: Essentially the eastern two-thirds of the state only. Throughout the Coastal Plain, and the eastern 60% of the Piedmont; range extended nearly to the base of the Blue Ridge Escarpment with a sight record in 2019.

Abundance: Uncommon to fairly common (but never in swarms) in the Coastal Plain, generally uncommon in the eastern Piedmont, but rare in the central/western Piedmont. High counts of:
 14 – Currituck, 24 June 2019
 14 – Camden, 24 June 2019
 10 – Bertie, 14 June 2008

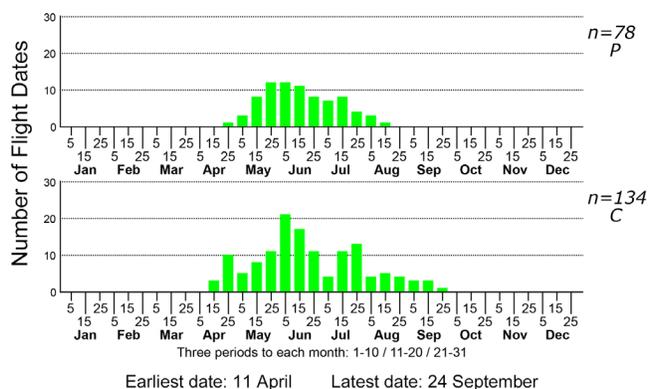
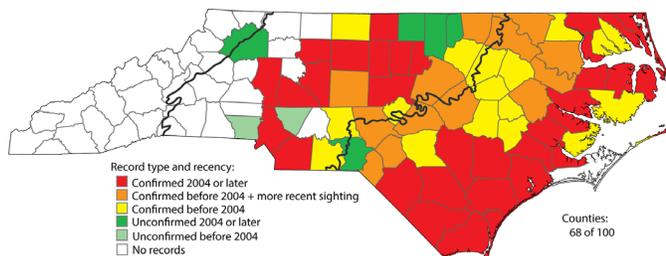
Status: G5/N5/S4S5

Flight: Mainly in late spring and summer. In the Coastal Plain, the flight occurs from mid-April to mid-September, rarely to late September. The Piedmont flight occurs from late April to mid-August. The peak occurs from late May to mid-July.

Habitat: Mostly standing water in forested areas, such as swampy pools or openings in swamps; forested ponds; canals. They favor blackwater, as opposed to brownwater, bodies of water.

Behavior: Males have a distinctive flight behavior. They fly monotonous circular routes, often about 3–4 feet (about 1 m) off the water, over canals and pools/ponds. Adults are only infrequently seen away from such pools and ponds; normally, one must look for the species over water.

Comments: It can be difficult to find one perched. However, the species can be identified in flight, through binoculars, as the “nose” for which it is named can be seen under such circumstances. As the species is quite territorial, normally an observer will only see a single Cyrano Darner at a particular site, and thus it is difficult to see more than a few of them in a given day.



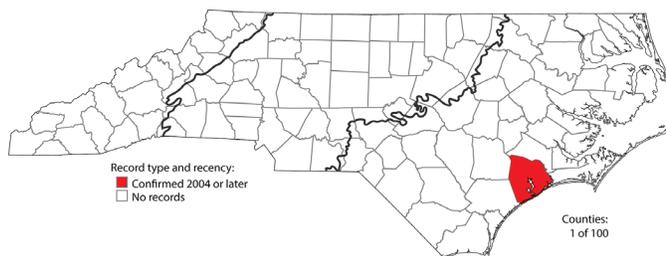
Rhionaeschna multicolor (Hagen, 1861) — Blue-eyed Darner

Distribution: A single record from the Coastal Plain. A western species that ranges east only to southwestern Wisconsin and the eastern parts of Kansas, Oklahoma, and Texas (see Odonata Central range map). One record from Martha’s Vineyard, Massachusetts, in 1943 appears to be the only other record for eastern North America (Paulson 2011).

Abundance: Accidental. Not likely to be seen again in North Carolina for many years. High counts of:
 1 – Onslow, 10 December 2020

Status: G5/N5/SNA

Flight: One record from 10 December (Bockhahn 2022). In its normal range in the western United States, flight occurs from March to December (Smith and Patten 2021).



Habitat: Open, sunny areas around bodies of water, such as lakes, ponds, and streams in open habitats (Paulson 2011). The individual seen in North Carolina was along the edge of a pond.

Behavior: Records from Oklahoma indicate an eastward movement across that state in the fall (Smith and Patten 2021). Such movement may have contributed to the species showing up in North Carolina.

Comments: The Blue-eyed Darner was the 188th odonate species recorded in North Carolina. Speculation will continue about how this species found its way to North Carolina's coast (see Bockhahn 2022).

Triacanthagyna trifida (Rambur, 1842) — Phantom Darner

Distribution: The southeastern corner of the state only.

Abundance: Apparently very rare or rare, if still present in the state; known from just four counties. However, as it is crepuscular, special effort must be made to see it. Thus, its true abundance is difficult to determine. We have no records since 1971, but we also have no reason to believe it is extirpated from North Carolina. High count of:

1 – Pender, 26 October 1971

Status: G5/N5/SH

Flight: Perhaps the latest flying odonate in North Carolina, in terms of total flight season, with the flight likely only in October and November; the only North Carolina date available is 26 October. The flight in Georgia is early October to mid-December (Beaton 2007).

Habitat: Small wooded pools, typically near rivers, in heavily forested areas.

Behavior: Usually starts flying at dusk and continues until too dark to be seen by human observers, but it sometimes is seen foraging in broad daylight (Paulson 2011).

Comments: The species has a very thin abdomen and should be readily distinguished by shape, if seen well. Its late flight season and crepuscular habits mean that the species is unlikely to be seen without a special effort directed just for it. Because there have been no records in decades, and it has been recorded from just four counties, the NCNHP ranked Phantom Darner as historical (SH) in 2020. But, this does not mean it is extirpated from the state; we are hopeful that this secretive species is still out there somewhere! Note added in proof: Photographic records from Carteret County in 2024 (Padgett 2024) and Dare and Brunswick counties in 2025 confirm the current existence of this species in North Carolina. These recent records were not accounted for in the statistics or the species' map to maintain consistency among all species within the 2004–2023 time frame.



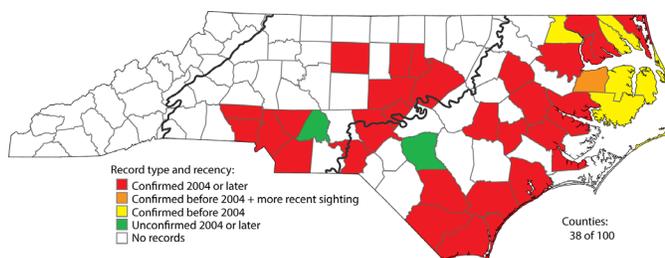
Family Gomphidae (Clubtails)

Aphylla williamsoni (Gloyd, 1936) — Two-striped Forceptail

Distribution: Prior to 2005, it was found mainly just in the lower half of the Coastal Plain. Since 2005, the range has expanded westward rapidly, now being scattered over nearly all of the Coastal Plain and the southeastern Piedmont.

Abundance: Clearly increasing in recent years. Formerly scarce (rare to uncommon) and limited almost solely to the Tidewater counties. Now it occurs essentially throughout the Coastal Plain and southeastern Piedmont, where it was formerly absent but is now uncommon and a bit local. High counts of:

12 – Onslow, 14 July 2017



8 – Durham, 14 July 2021

6 – Union, 16 July 2014

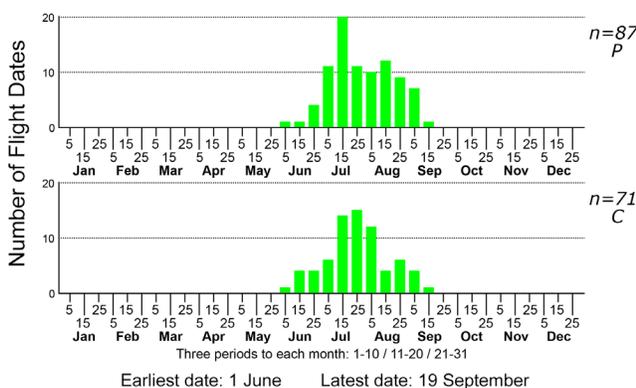
Status: G5/N5/S3S4

Flight: The flight periods in both the Coastal Plain and Piedmont are very similar; early June to mid-September.

Habitat: Vicinity of ponds and lakes, as well as canals, especially muck- or peat-bottom ones. These waters can be somewhat disturbed and not “high-quality”, and many or most are in full sun.

Behavior: May perch on the ground near a pond, or on vegetation around a pond. Most often seen at ponds and small lakes.

Comments: Because Cuyler never collected the species in North Carolina farther inland than the central Coastal Plain, it is certain that recent records to the west represent an inland expansion of the range. Likewise, the species is expanding into the middle Piedmont of Georgia (Beaton 2007).



Arigomphus pallidus (Rambur, 1842) — Gray-green Clubtail

Distribution: Southern Coastal Plain only. North Carolina was the northern edge of the range until 2020, when the species was recorded in southeastern Virginia (Odonata Central record 1565786). Thus, this species is to be looked for, and must certainly occur, along a few blackwater rivers or larger streams in the eastern and northeastern counties.

Abundance: Rare (formerly) to now uncommon (at least locally) in its small range in North Carolina. Known from only two specimens collected in 1989 and 1992 at the same site, until rediscovered in 2016. There are 29 records from 2016 through 2023. Thus, it is not as scarce as formerly believed. High counts of:

- 5 – Columbus, 28 May 2017
- 5 – New Hanover, 8 June 2018
- 4 – Pender, 25 May 2017

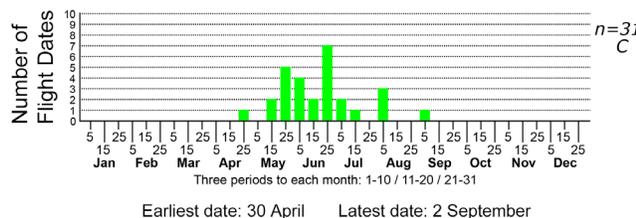
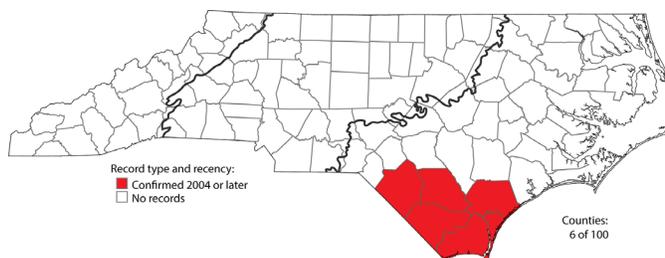
Status: G5/N5/S2

Flight: Late spring to midsummer; most records are from the latter half of May to early August.

Habitat: Along blackwater rivers, large blackwater creeks, and ponds.

Behavior: The species perches readily on the ground such as riverbanks or pond margins, and it can be conspicuous where it occurs.

Comments: Owing to the number of recent records from six counties, the species state rank was changed in 2020 from S1 to S2.



Arigomphus villosipes (Selys, 1854) — Unicorn Clubtail

Distribution: The Mountains, northern Piedmont, and adjacent northern Coastal Plain. A Dot Map record (Donnelly 2004a) from the southern Coastal Plain (Bladen County) seems odd, and it is not in Cuyler’s specimen collection. North Carolina lies at the southeastern edge of the species’ range.

Abundance: Uncommon (and possibly local) in the Mountains, but probably very rare to rare in the southwestern

counties. Seemingly very rare in the western Piedmont near the Virginia border and rare to locally uncommon (but increasing) in the northeastern Piedmont; currently no records for the southern 70% of the province. In the Coastal Plain, apparently very rare; no records since 1998, and thus its current status in that province is not known. High counts of:

- 12 – Orange, 26 May 2018
- 8 – Washington, 19 June 1989
- 6 – Orange, 9 May 2019

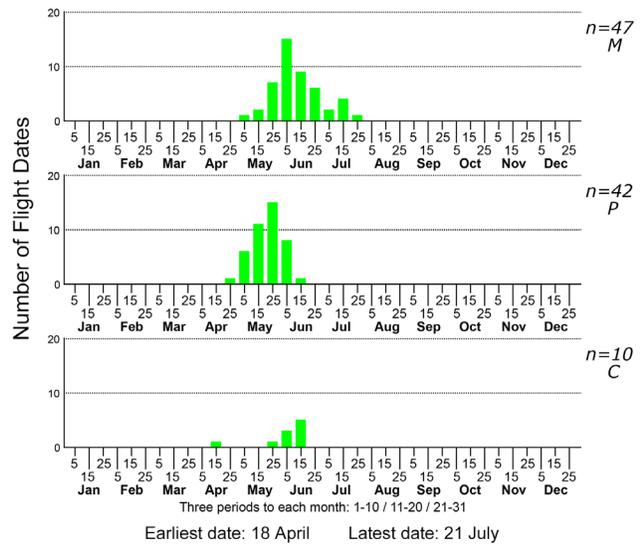
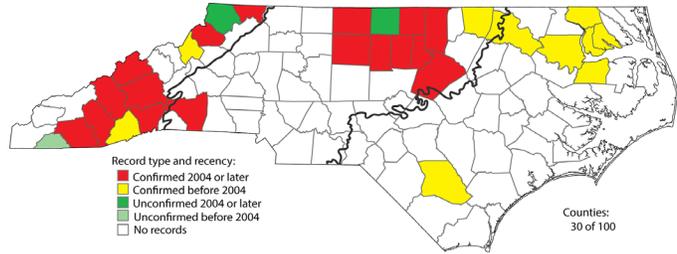
Status: G5/N5/S3

Flight: From early May to late July in the Mountains, late April to mid-June (and possibly into July) in the Piedmont. Even earlier (mid-April to mid-June) in the Coastal Plain.

Habitat: Generally, a lake and pond species, or slow streams; muddy bottom waters preferred.

Behavior: Occurs around ponds and lakes, perching on the ground or on vegetation around the water's edge. It seems to favor small ponds in sunny locations, often in somewhat disturbed situations.

Comments: Until 15–20 years ago, this species had an unusual range in the state, being found mainly in the Mountains and the northern Coastal Plain, at least based on Cuyler's records. However, in the past decade there have been a modest number of records from the northeastern Piedmont, such that the former large gap between the Mountains and Coastal Plain has now been mostly filled in, prompting the NCNHP to remove the species from the Watch List in 2020. There still remains an odd lack of records from the northwestern Piedmont between the north-central Piedmont and the northern Mountains. There has been a fair amount of recent fieldwork in these Piedmont counties, but perhaps more survey of small lakes and ponds (as opposed to rivers and creeks) is needed.



***Dromogomphus armatus* (Sélys, 1854) — Southeastern Spinyleg**

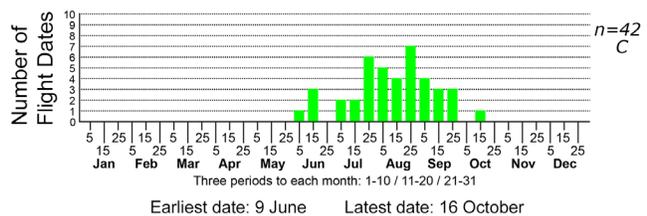
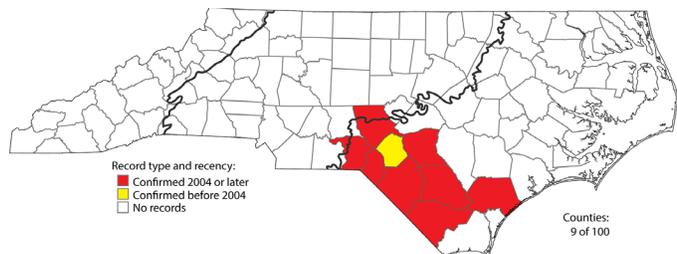
Distribution: Limited to the Sandhills and the southern Coastal Plain, mostly near the South Carolina border. North Carolina lies at the northern edge of the species' range.

Abundance: Uncommon in the Sandhills. Rare to very uncommon in the rest of the range. Surprisingly, all daily counts are just of one to two individuals. It is remarkable that no one has found three or more in a day; the species simply does not occur in groups, much less in swarms. Once you have seen one on a walk, that is likely it for the day! High counts of:

- 2 – Cumberland, 20 June 2007
- 2 – Scotland, 13 August 2003
- 2 – Columbus, 11 September 1965

Status: G4/N4/S3

Flight: Summer into early fall. Records occur



between June and mid-October; however, most are from late July to late September.

Habitat: Breeds in rather acidic waters of seeps, springs, and small streams, mainly in or near forested habitats. Presumably uses pocosin stream heads in the Sandhills. A few records of adults are from along blackwater rivers and streams, though breeding sites are most likely at small pools, seeps, and other tiny and shaded wetlands.

Behavior: Can be seen flying along roads, trails, or brushy areas near wetlands. Rarely over water of rivers and larger creeks. Perches frequently, both on the ground and on vegetation.

Comments: This is one of the Sandhills' most spectacular odonates. Adults are large, and the bright rusty-orange club easily draws attention. Though a handful of other clubtails flying at that season have rusty-orange clubs, such as Russet-tipped Clubtail (*Stylurus plagiatus*) and Two-striped Forceptail (*Aphylla williamsoni*), they typically are restricted to water and seldom perch on sand roads and other places well away from water.

Dromogomphus spinosus Sélys 1854 — Black-shouldered Spinyleg

Distribution: Nearly statewide, though seemingly absent from the easternmost counties. Three Mountain counties also lack records, though it is certainly present in all counties in that province.

Abundance: Uncommon in the Mountains, fairly common to locally common over the Piedmont, and fairly common in the southern Coastal Plain. Much less numerous in the central and northern Coastal Plain and seemingly absent in the far eastern counties. This is one of the more numerous of the clubtails in the state, particularly in the Piedmont. High counts of:

- 40 – Durham, 20 June 2013
- 30 – Halifax, 14 July 2009
- 30 – Rockingham, 21 June 2012

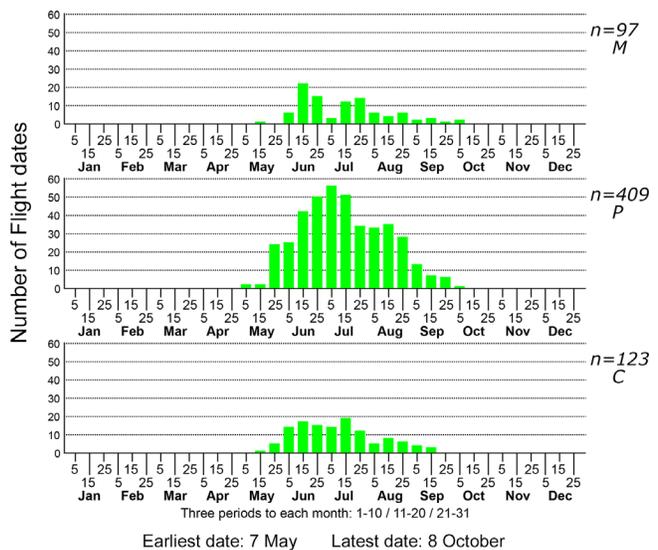
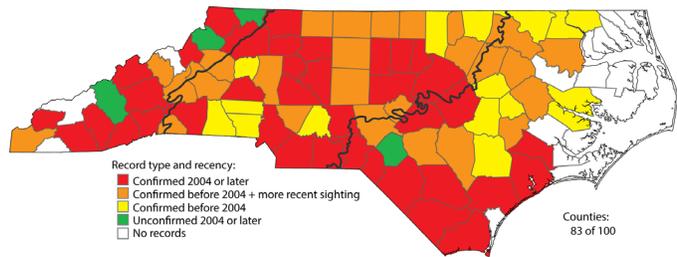
Status: G5/N5/S5

Flight: Flight dates are fairly widespread for a clubtail. Flight occurs from mid-May to early October in the Mountains, early May to early October in the Piedmont, and probably the same in the Coastal Plain, though available dates only span from mid-May to mid-September.

Habitat: Widespread choice of breeding habitats, from rivers and streams, to less often lakes and ponds. More tolerant of disturbed habitats than most clubtails but it tends to favor shaded or partly shaded bodies of water as opposed to open and sunny wetlands.

Behavior: One of the more conspicuous or easily seen clubtails in North Carolina. Adults frequently perch flat on the ground on sunny trails, dirt roads, rocks by water, or vegetation, where they can be easily studied.

Comments: This is a large and striking dragonfly. The thick dark “shoulders” at the front of the thorax and the spiny projections on the very long pair of hind legs are clinching marks.



Dromogomphus spoliatus (Hagen in Sélys, 1858) — Flag-tailed Spinyleg

Distribution: Recorded from a single county in the southwestern Mountains. Ranges essentially west of North Carolina, east to southwestern Virginia, eastern Tennessee, and the extreme northwestern corner of Georgia (Paulson 2011). It is to be looked for in low elevation sites in the Mountains close to the Tennessee border, especially in the southwestern corner of the state.



Abundance: Very rare in North Carolina, with just a single documented record. Not uncommon in much of its range, but Beaton (2007) calls it “rare to uncommon and local” in its small range in northwestern Georgia. High count of:

1 – Graham, 23 June 2014

Status: G4G5/N4N5/S1

Flight: Given a flight season of late May into September in Georgia (Beaton 2007), flight in North Carolina is likely similar; the only available date is 23 June.

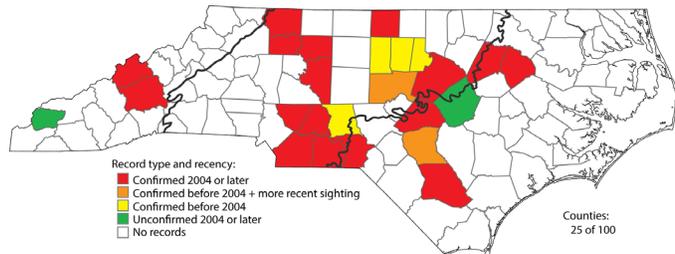
Habitat: Mostly rivers and large streams with low flows, and at times around ponds and lakes (Beaton 2007). The only record for North Carolina was near a creek in a powerline cut between two reservoirs.

Behavior: Males perch on the ground near water; they may also perch on vegetation or other objects.

Comments: The Flag-tailed Spinyleg became the 187th odonate species added to the North Carolina state list.

Erpetogomphus designatus Hagen in Sélys, 1858 — Eastern Ringtail

Distribution: Found recently in the central and southwestern Mountains, but it mainly occurs in the central and eastern Piedmont and the adjacent southwestern Coastal Plain. Likely occurs in the western Piedmont.



Abundance: Rare to locally uncommon in the central and eastern portions of the Piedmont. Rare in the Coastal Plain portion of the range, and obviously rare and local in the lower elevations of the Mountains and in the western Piedmont. However, seems to be increasing in numbers and range in the lower Piedmont and upper Coastal Plain, with many records since 2020. High counts of:

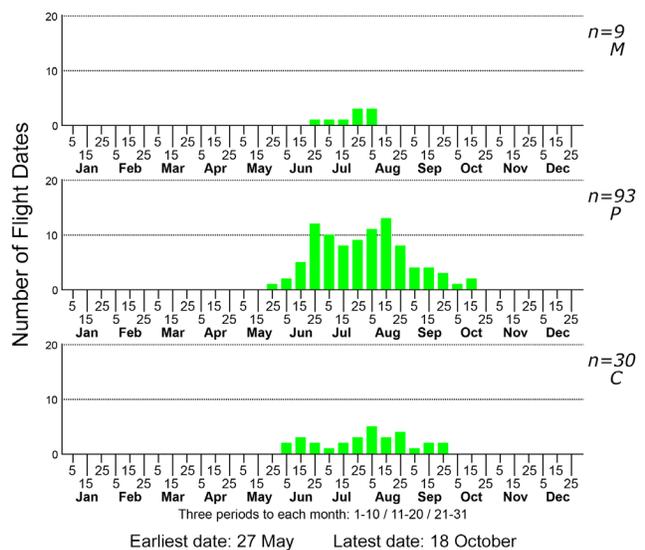
12 – Wake, 7 August 2009

9 – Wake, 18 August 2009

9 – Richmond, 6 July 2018

Status: G5/N5/S3S4

Flight: The flight in the Piedmont occurs between late May and mid-October, with the Coastal Plain flight slightly narrower in time—early June to late September. The Mountain records fall in a narrow window between late June and early August, though the flight period there is certainly wider, and likely extends into September.



Habitat: Generally, at brownwater rivers and wide streams, especially with riffles and somewhat fast flow.

Behavior: Normally it stays very close to rivers and streams, but it will stray to open fields, dirt roads, etc., well away

from flowing waters. Perches on low vegetation, banks, and rocks along shores of rivers and streams.

Comments: This is one of the more colorful of the clubtails and, for that reason, it may be the easiest clubtail in the state to identify.

Gomphurus dilatatus (Rambur, 1842) — Blackwater Clubtail

Distribution: Scattered across the state, though lacking records in the northeastern and far eastern counties and most of the Piedmont and Mountains, where it apparently is absent above about 2,500 feet (762 m) elevation. Most widespread in the southern Coastal Plain.

Abundance: Locally common in the southern portions of the Coastal Plain, but rare northward in that province. Very rare to locally rare over most of the Piedmont, with a remarkable flurry of records from the western and central Piedmont in 2018. Very rare in the southern half of the Mountains, where first recorded in 2017. High counts of:

- 30 – Bladen, 27 May 2016
- 30 – Pender, 27 May 2016
- 17 – Sampson, 24 May 2019

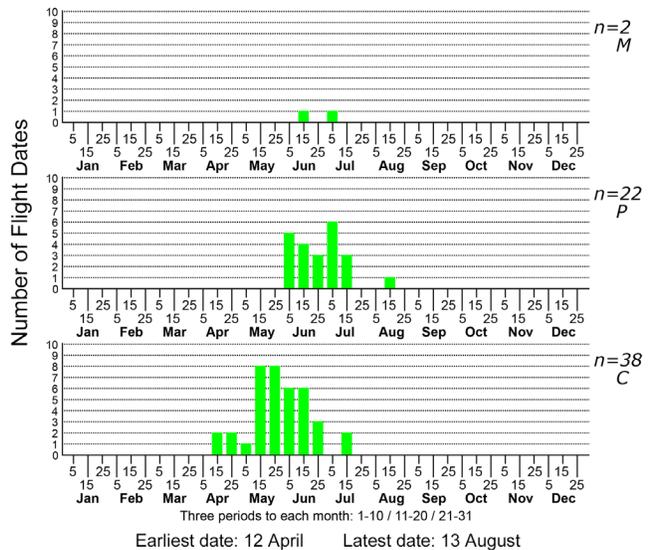
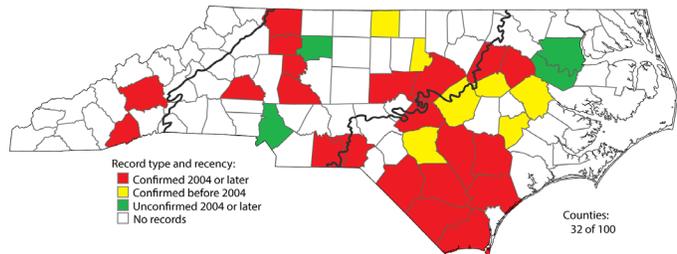
Status: G5/N5/S3S4

Flight: Mid-April to at least mid-July in the Coastal Plain, and from early June into mid-July in the Piedmont and Mountains. There is a sight report from the Piedmont for mid-August, though the latest confirmed record is only to mid-July.

Habitat: Slow-moving rivers or streams with sandy or silty bottoms. Most Coastal Plain records are from blackwater rivers. The common name suggests it is not normally found along brownwater rivers, but this is not the case in North Carolina. Of course, all Piedmont and Mountain records are from brownwater areas, and a few in the Coastal Plain are as well.

Behavior: Males perch on leaves or branches close to or over the water. They also perch on rocks, sand, and even kayaks!

Comments: This is one of the larger clubtails, and the wide club also adds to its striking appearance. However, it can be confused with the Cobra Clubtail (*G. vastus*). Considering the great number of recent records of the species from the Coastal Plain and Piedmont, the NCNHP moved the species off its Watch List in 2020.



Gomphurus fraternus (Say, 1840) — Midland Clubtail

Distribution: Known only from one site, the Rocky River, in the lower Piedmont. The distribution in the state would suggest that this is a Southern species, but in fact it is a Northeastern North American species, ranging south mainly to Maryland, West Virginia, and western Tennessee (Paulson 2011).

Abundance: Undoubtedly very rare, as it is known from just a single body of water. High counts of:



- 6 – Anson, 20 April 2017
- 6 – Stanly, 20 April 2017
- 3 – Stanly, 5 May 1987

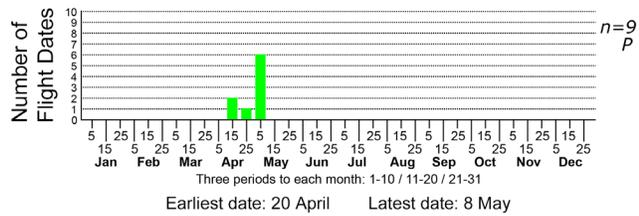
Status: G5/N4/S1

Flight: All of the state’s records fall between 20 April and 8 May. It is assumed that adults are present for only a few weeks, probably mid-April to mid-May.

Habitat: Breeds at fast flowing rivers and large streams.

Behavior: Perch on rocks or banks near rivers.

Comments: This is a very poorly known clubtail in North Carolina. Its known state range, two counties bordering the Rocky River in the lower Piedmont, is most unusual, as this is a Northeastern North American species. We wonder why it does not occur along other rivers in the eastern Piedmont where there has been more odonate fieldwork. Note added in proof: A population was discovered in 2024 along the Pee Dee River in Richmond and Anson counties, about 5 miles (8 km) downstream from where the Rocky River flows into the Pee Dee River. This recent record was not accounted for in the statistics or the species’ map to maintain consistency among all species within the 2004–2023 time frame.



Gomphurus hybridus (Williamson, 1902) — Cocoa Clubtail

Distribution: Present over much of the central and western Coastal Plain and eastern/central portion of the Piedmont, but with large gaps in the range (such as the well-studied northeastern Piedmont). The range in the Coastal Plain is expanding northward, and seems to be expanding westward into the Piedmont, as well.

Abundance: Common, at least locally, in the northern Coastal Plain. Uncommon and local in the central and southern Coastal Plain, but rare and local in the Piedmont. High counts of:

- 15 – Halifax, 25 April 2012
- 10 – Halifax, 12 April 2012
- 8 – Cumberland, 1 April 2023

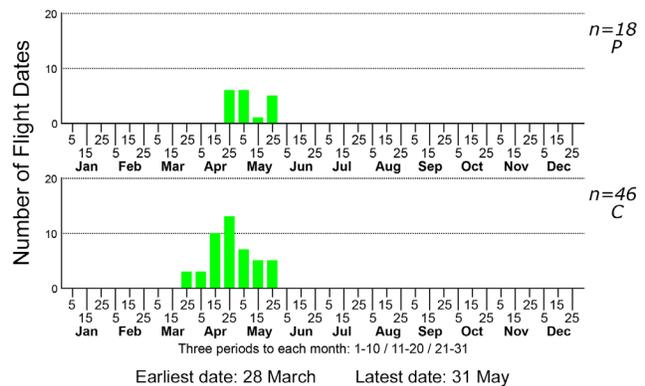
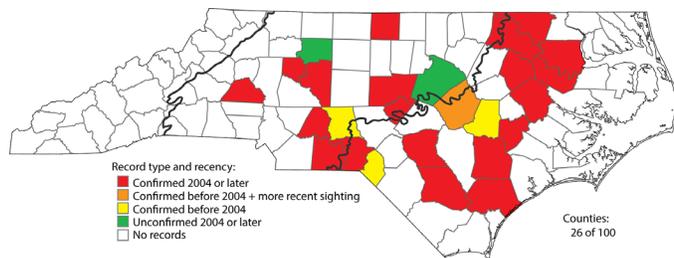
Status: G4/N4/S3

Flight: Spring season only; the known dates range from 28 March to 31 May. The flight is earlier in the Coastal Plain, starting in late March, whereas the first Piedmont records are not until late April.

Habitat: Large or medium rivers with silty or sandy bottoms. Most sites are along brownwater rivers, but a few have been at blackwater sites.

Behavior: Males spend little time in flight patrols over the water. Teneral individuals, as well as adults, often forage hundreds of yards away from rivers, such as along clearings, dirt tracks, and forest openings. It is an unwary species and can be easily approached on the ground.

Comments: This is one of the relatively few clubtails to be found along slow-moving rivers and large creeks in the Coastal Plain, as the majority of clubtails are found in the Mountains and Piedmont, and near faster waters. The species was first found in Virginia in 2013 and has been reported most years since (see Odonata Central records), which indicates that it may be expanding its range northward. The species is still on the NCNHP Watch List, but probably no longer needs to remain there.



Gomphurus lineatifrons (Calvert, 1921) — Splendid Clubtail

Distribution: The northern Mountains (plus old records for two Mountain counties to the southwest), as well as the northwestern and northeastern Piedmont. It may occur in much of the northern Piedmont.

Abundance: Uncommon to fairly common in the northern Mountains but presumed to be very rare in the remainder of the Mountains. Rare in the northwestern Piedmont and uncommon and very local in the northeastern Piedmont; very rare, if not absent, in the intervening northern Piedmont. High counts of:

- 10 – Orange, 29 May 1991
- 5 – Ashe, 8 June 2021
- 4 – Ashe, 27 May 2021

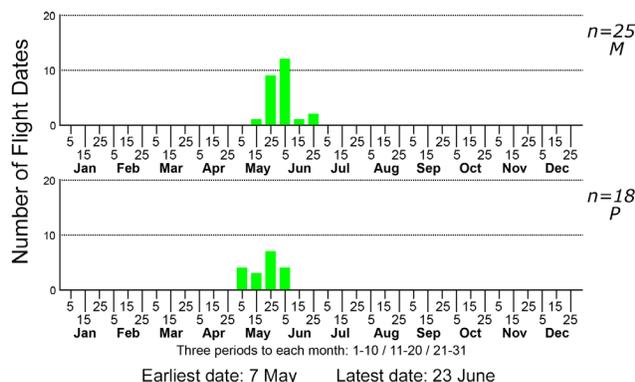
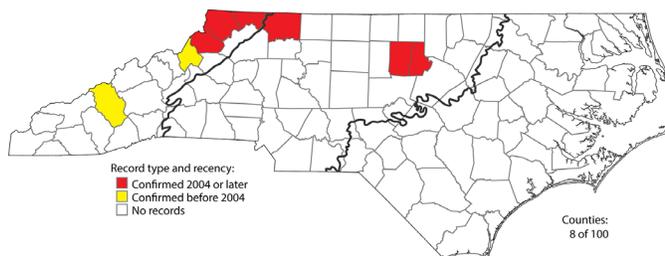
Status: G4/N4/S2

Flight: Late spring and early summer. In the Mountains from mid-May to late June; in the Piedmont, probably a week or two earlier, beginning in early May, and flying into June.

Habitat: Breeds at clear rivers and creeks, with gravel bottoms.

Behavior: Males perch on rocks in rivers or creeks, or on the ground or low vegetation nearby.

Comments: This is a large and colorful clubtail, with a large club in males. Nearly all records in the northeastern Piedmont are from the Eno River, and a record in 2018 came from the Yadkin River (for a new river basin record). There are quite a few recent records for the species, but these are from the same few locales and rivers, with very few new locations reported in recent years.



Gomphurus septima (Westfall, 1956) — Septima’s Clubtail

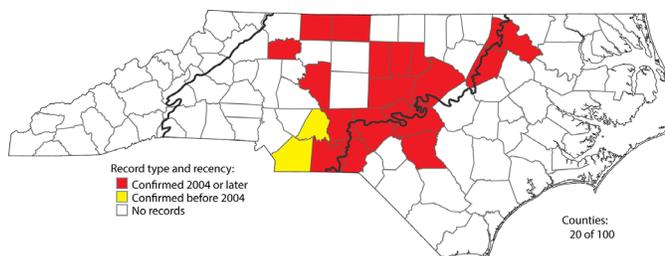
Distribution: Range apparently has been expanding westward into the central and northwestern Piedmont in recent years, and thus now is present over essentially all of the eastern and central Piedmont, as well as into the upper edge of the Coastal Plain along the Roanoke and Cape Fear rivers. The species has a peculiar disjunct, or relict, range, and so far has been found only in seven states: New York, Pennsylvania, New Jersey, Virginia, North Carolina, South Carolina, and Alabama (Paulson 2011).

Abundance: Uncommon to locally fairly common, but widespread, within its North Carolina range; noticeably increasing in the past few years, a true increase in numbers as opposed to just an increase in search effort. Mainly in the Cape Fear River system—Haw, Rocky, Deep, and the Cape Fear itself. Rare to uncommon in the Yadkin/Pee Dee River system. Rare in the Neuse, Tar, and Roanoke, where so far found only along these rivers (includes the Eno River as the upper end of the Neuse) and not their tributaries; only recently reported from the latter two rivers. Discovered in the Dan River system in 2017, but likely rare to very uncommon there. High counts of:

- 34 – Chatham, 22 April 2022
- 34 – Lee, 22 April 2022
- 30 – Chatham, 1 May 2021

Status: G3/NNR/S3

Flight: Very late March to the end of May, and sparingly to late June. The peak in numbers is in late April to mid-May.



The flight period has moved forward (earlier) by a week to 10 days over the past decade. Formerly quite rare before very late April, but now with a number of records from late March to mid-April, including the highest count.

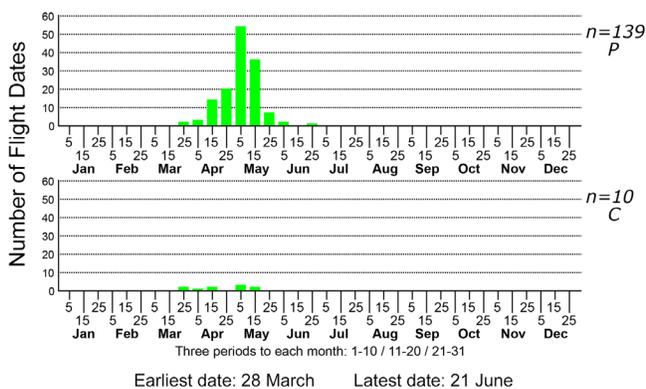
Habitat: Breeds in clean, fast rivers and very large streams.

Behavior: Males perch on the ground near rivers, but they also perch on rocks in rivers. For a clubtail, this species is rather easily observed and photographed, as individuals often perch on dirt roads, trails, and other spots away from rivers.

Comments: This species is best known from

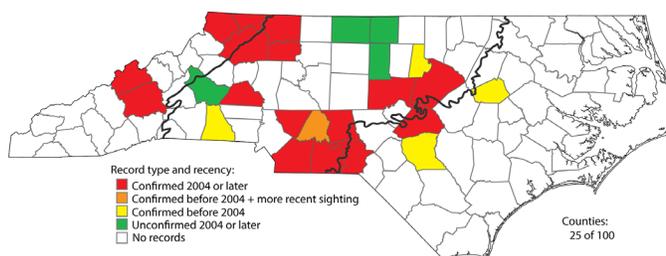
North Carolina, but it has a spotty history throughout its overall range, in terms of its taxonomy, known distribution, and detection. It can be confused with multiple species, including Cocoa (*Gomphurus hybridus*), Splendid (*G. lineatifrons*), and Midland (*G. fraternus*) Clubtails. In fact, a series of specimens identified as the latter, were re-identified by Westfall (1956) and became the type series of *G. septima* (all from Alabama, dating 1937–1940). The species was not reported again in that state until more than 60 years later (Krotzer 2002). It was first detected in North Carolina in 1957 (Florida State Arthropod Collection; LeGrand et al. 2025) and confirmed in both Virginia (Odonata Central record 1565794) and South Carolina (Odonata Central record 1730836) in 2008, although older unverified records existed for these latter two states (Bick 2003). There are no verified records for Georgia, but it would not be unexpected there (Mauffray and Beaton 2005). It has been known from the Delaware River since the 1980s but was not reported as such until much later (Donnelly and Carle 2000, as subspecies *delawarensis*).

It was once thought to be one of the rarest dragonfly species in the U.S. (Bick 1983), but that status is less clear now. It is now known from 20 counties in North Carolina and is one of the more readily found clubtails along the larger rivers in the eastern third of the Piedmont. In late 2018, the NCNHP changed the state rank from S2 to S3; recently, NatureServe followed suit by changing the global rank from G2 to G3. The question remains, though, of whether the species was previously conflated with other species, if increased survey effort has played a significant role in recent detection, or if the species is actually expanding its range.



***Gomphurus vastus* (Walsh, 1862) — Cobra Clubtail**

Distribution: Widely scattered over the western two-thirds of the state, east barely into the western Coastal Plain. Interestingly, nearly all of the Mountain and western Piedmont records have come in the past 10 years, suggesting a possible westward range expansion in the state, though Paulson (2011) shows the species occurring over the majority of the eastern United States. Likely absent at middle and higher elevations in the Mountains. A puzzling scarcity of records from the heavily populated central Piedmont, suggesting true rarity.



Abundance: Uncommon in the eastern Piedmont. Rare to locally uncommon elsewhere in the Piedmont and Mountains, though can be numerous along the French Broad River. Very rare in the western part of the Coastal Plain. High counts of:

- 20 – Madison, 6 May 2011
- 19 – Chatham, 20 May 2022
- 15 – Chatham, 12 June 1976

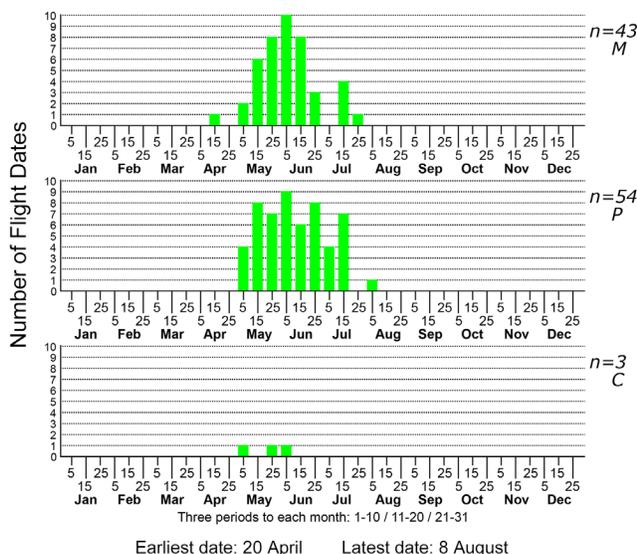
Status: G5/N5/S3S4

Flight: Mostly early May to mid-July, with an early date of 20 April. A seemingly quite late record on 8 August is open to question.

Habitat: Breeds at rivers and large streams, where rocky or with riffles.

Behavior: Males perch along the shore on the ground, or on rocks in rivers. Both sexes are often seen perched on vegetation, as well. They may fly well out over rivers.

Comments: This is a very striking species, quite black on the abdomen with very contrasting yellow markings. And, the male's club is very wide and cobra-like, giving rise to the common name. Even so, there are a few other *Gomphurus* species with wide clubs, and thus sight records must be made with care.



***Gomphurus ventricosus* (Walsh, 1864) — Skillet Clubtail**

Distribution: The northeastern Piedmont only. North Carolina lies near the southern limit of the species' distribution (Paulson 2011).

Abundance: Very rare in North Carolina. Most of the state's 35 records are from the same creek and are over 20 years old. There are only six records after 1999, and three are from a two-week period in the same county. High counts of:
 8 – Caswell, 13 May 1992
 5 – Caswell, 30 May 1996
 4 – Caswell, 14 May 1982

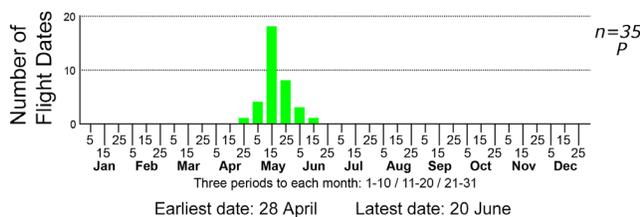
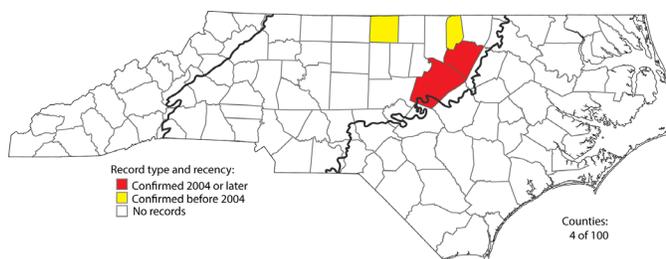
Status: G3/N3/S1

Flight: Late April to mid-June.

Habitat: Rivers and creeks with mostly muddy bottoms and slow to moderate currents.

Behavior: Males are most easily seen in short flights out over the water, and they then return to shore to perch, often in grass, in the shade, or other inconspicuous places.

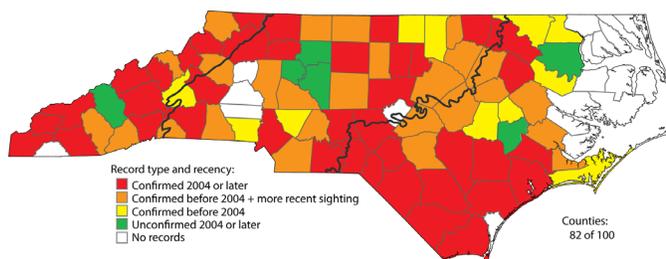
Comments: The club is comparatively the widest of any clubtail, it being wider than the thorax width! This is also the smallest *Gomphurus*. With few recent records, the NCNHP changed the state rank from S1S2 to S1 in 2020.



***Hagenius brevistylus* Sélys, 1854 — Dragonhunter**

Distribution: Nearly statewide, though apparently absent from the northeastern and far eastern parts of the state.

Abundance: Generally, fairly common in the Mountains and foothills, uncommon to fairly common over most of the Piedmont, and uncommon in the Coastal Plain. High counts of:
 25 – Rockingham, 21 June 2012



10 – Buncombe, 15 September 2015
 9 – Madison, 17 May 2021

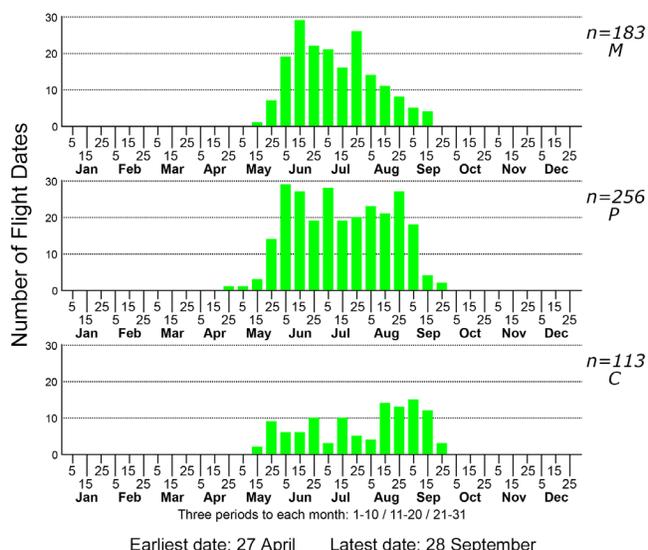
Status: G5/N5/S5

Flight: Mainly from mid-May (rarely as early as late April) to late September; most often seen from early June to early September.

Habitat: Generally it breeds at swift-flowing streams and rivers, rarely at lakes. Prefers forested waters as opposed to very wide, sunny streams.

Behavior: Males often patrol conspicuously up and down the middle of a river or large stream, easily recognized by its very large size and unusual habit of curling the tip of the abdomen downward into a “J” shape. Though most often seen perching on a rock within the stream, or on vegetation very low to the water, they also perch on bare ground at times, allowing for easy observation. Males are territorial, so it is not likely to see more than one patrolling a particular stretch of river or creek.

Comments: North Carolina’s largest dragonfly. As the common name implies, often preys upon other species of dragonflies. The species is monotypic, i.e., the only species in its genus.



Hylogomphus abbreviatus (Hagen in Sélys, 1878) — Spine-crowned Clubtail

Distribution: Found only in the central and eastern Piedmont and the extreme southwestern corner of the Coastal Plain.

Abundance: Rare to uncommon in the eastern half of the Piedmont, though common at a few sites, and very rare in the southwestern Coastal Plain. However, it is easily overlooked or confused with other species. The greater number of recent records for the northeastern Piedmont, as opposed to the central and southern Piedmont, might be due to the preponderance of observers in that part of the province. High counts of:

21 – Alamance, 21 April 2023
 20 – Orange, 2 April 2017
 15 – Guilford, 21 April 2023

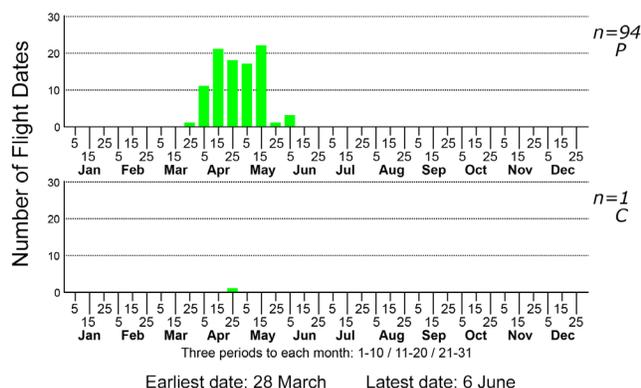
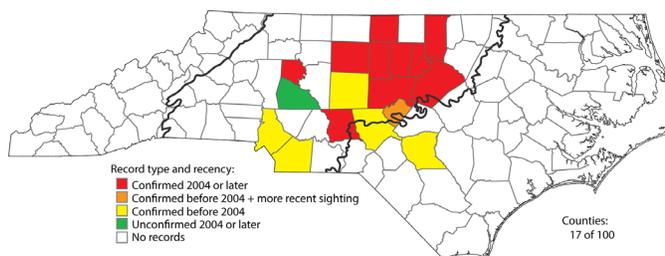
Status: G4/N4/S3S4

Flight: Spring season only; late March to early June. The peak was formerly during the first 20 days of May, but there now are many April records. This change may indicate a phenological shift or it could simply reflect greater observer effort as the species has become better known.

Habitat: This is another riverine clubtail species, favoring fast-flowing rivers and large streams.

Behavior: Seen mainly at or near rivers/streams, on rocks or vegetation. Dunkle (2000) states that males are most active in the late afternoon, though it certainly can be seen in the morning or early afternoon.

Comments: Great care must be taken to distinguish this species from the quite similar Piedmont Clubtail (*H. parvidens*) and Banner Clubtail (*H. apomyioides*). With an increase in recent records, the range and abundance in North Carolina are becoming better known. The species probably no longer needs to be on the NCNHP Watch List.



Hylogomphus adelphus (Selys, 1858) — Mustached Clubtail

Distribution: Mountains and adjacent Piedmont foothills only. This is a Northern species, ranging from Canada south to northern Georgia (Paulson 2011).

Abundance: Seemingly rare in the northern half of the Mountains (and adjacent foothills), with no more than three individuals seen in a day. Obviously very rare, at best, in the southern half of the Mountains. Records are increasing in recent years owing to more surveys of the northern and central Mountains. High counts of:

- 3 – McDowell, 7 June 2017
- 3 – Madison, 17 April 2020
- 3 – Watauga, 6 June 2022

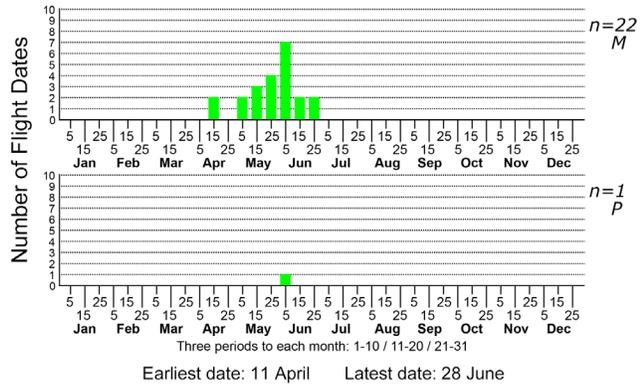
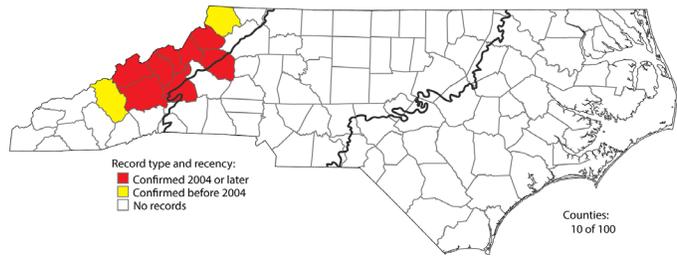
Status: G5/N4/S1S2. We suggest changing to S2.

Flight: A spring to early summer flight, with the flight period seemingly moving earlier in recent years (as has been the case for many odonates). Formerly seldom found prior to mid-May, but the flight now is from mid-April to late June.

Habitat: Rivers to small streams, where there are riffles or rapids.

Behavior: The species is most active in late afternoon. Adults may perch on rocks, shorelines, and leaves near rivers and creeks.

Comments: This is one of many montane species of dragonflies that is poorly known. To find the species, a purposeful search late in the day is typically necessary. It remains a Significantly Rare species, tracked by the NCNHP.



Earliest date: 11 April Latest date: 28 June

Hylogomphus apomyius (Donnelly, 1966) — Banner Clubtail

Distribution: Primarily found in the southwestern Coastal Plain, but it ranges into the west-central Coastal Plain and the eastern and southern Piedmont, with a recent record for the northwestern Piedmont providing quite a surprising extension of the range. It is absent from coastal counties.

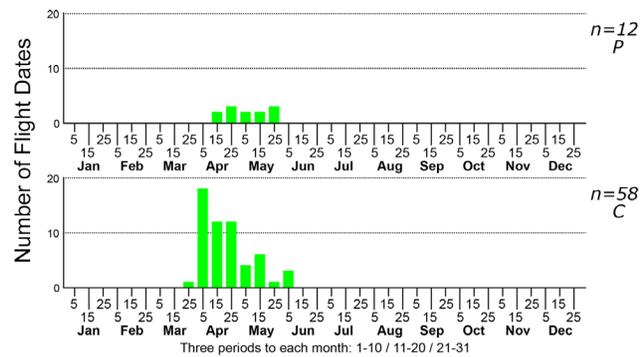
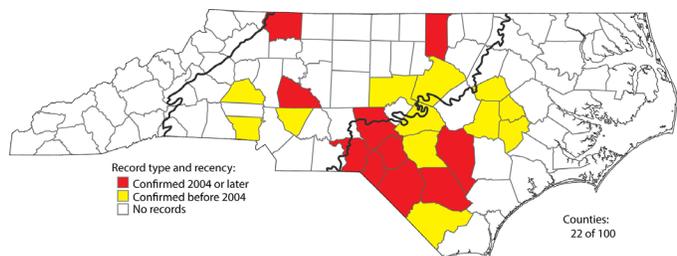
Abundance: Rare to uncommon and somewhat poorly known, as there are no recent records for nearly all of the Piedmont and west-central Coastal Plain. Records from the southwestern Coastal Plain have increased in recent years, owing to more observers, as it is clearly not rare in this region. High counts of:

- 18 – Scotland, 10 April 2022
- 18 – Hoke, 10 April 2022
- 10 – Cumberland, 9 April 1988

Status: G3G4/N3N4/S3

Flight: Ranges from very late March to early June in the Coastal Plain and mid-April to late May in the Piedmont.

Habitat: Generally, in clean streams and rivers



Earliest date: 30 March Latest date: 10 June

with sandy or gravelly bottoms.

Behavior: Males perch on rocks or other perches close to rivers and streams and patrol low above streams with club held high. They are most active early in the morning and toward dusk.

Comments: It is likely that this species has declined in the state, as there are relatively few reports since the 1980s in the northern half of the range. The species is on the NCNHP Watch List.

***Hylogomphus parvidens* (Currie, 1917) — Piedmont Clubtail**

Distribution: Odd range in North Carolina, probably owing to two separate subspecies being present. The nominate subspecies (*H. p. parvidens*) occurs in the western third of the Piedmont and the Mountains, while the Sandhills subspecies (*H. p. carolinus*) occurs in the Sandhills region and in the adjacent Piedmont, with an outlying record in the southern Coastal Plain. It is not known if the species occurs in the intervening south-central Piedmont, though one would expect that it does.

Abundance: Rare to uncommon over the range.

Occurs in rather low densities. High counts of:

- 8 – Richmond, 13 May 2019
- 7 – Richmond, 30 April 1966
- 5 – Wilkes, 5 June 2007

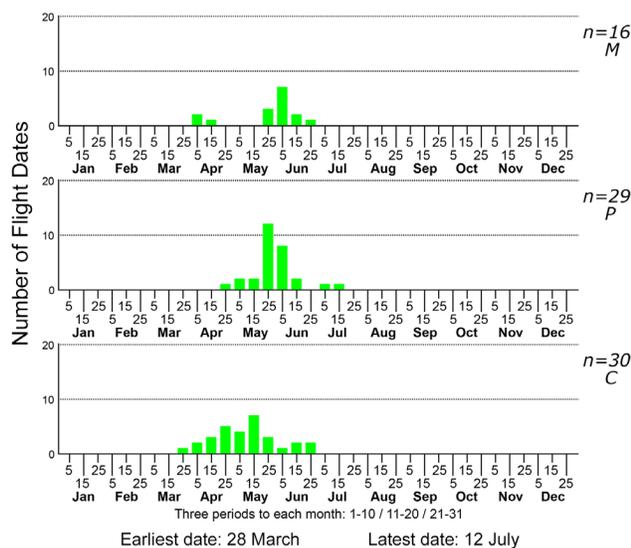
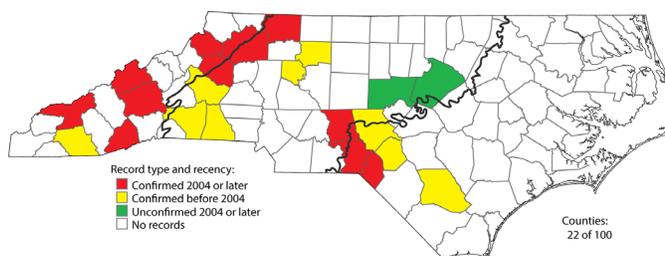
Status: G4/N4/S3

Flight: Very late March or early April to late June, rarely to mid-July. Oddly, perhaps because of the subspecies differences, the Mountain flight period starts about the same time as those downstate and seemingly ends earlier. This pattern is unlike most species, in which the flight period starts later in the Mountains than downstate.

Habitat: Small or medium creeks, with sandy bottoms and well-vegetated banks.

Behavior: Adults only infrequently perch on the ground or dirt, but instead typically perch on low vegetation close to the water.

Comments: More fieldwork is needed in the southern Piedmont to determine the boundaries of the ranges of the two subspecies and whether there actually is a small gap between them. The NCNHP added the species to its Watch List in 2012.



***Hylogomphus viridifrons* (Hine, 1901) — Green-faced Clubtail**

Distribution: Mountains only. Known from only three counties prior to 2004; now recorded in seven. Unknown if this represents a real range expansion or just an increase in sampling efforts.

Abundance: Rare in much of range, but it is locally common along stretches of the French Broad River in recent years (where never collected by Cuyler). High counts of:

- 50 – Madison, 28 April 2023
- 20 – Madison, 2 May 2023



10 – Madison, 20 April 2023

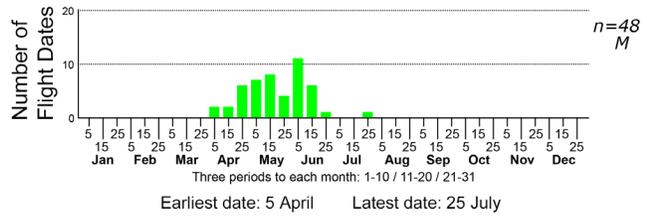
Status: G3G4/N3/S1. With the increase in records and apparent range expansion in the past two decades, we suggest changing to S1S2 or S2.

Flight: Early April to late July; the flight period might be moving earlier in the past few years.

Habitat: Rocky and fast-moving rivers and large streams. The species likes a mixed substrate of silt and gravel.

Behavior: The species is most active late in the afternoon or in cloudy conditions. Males may perch on rocks in rivers or on vegetation or the ground near the shore.

Comments: This is one of many clubtails that are poorly known in North Carolina, as well as rather rare/scarcely throughout the overall range.



Lanthus vernalis Carle, 1980 — Southern Pygmy Clubtail

Distribution: Throughout the Mountains and adjacent Piedmont counties. Despite the common name, this is an Appalachian and somewhat Northern species, ranging south only to the extreme northern Mountains of Georgia (Paulson 2011).

Abundance: Fairly common and widespread. It is one of the more numerous of the clubtails in the Mountains, even in the southernmost Mountain counties. High counts of:

- 10 – Madison, 16 April 2019
- 8 – Ashe, 9 June 2007
- 6 – Avery, 12 May 2015

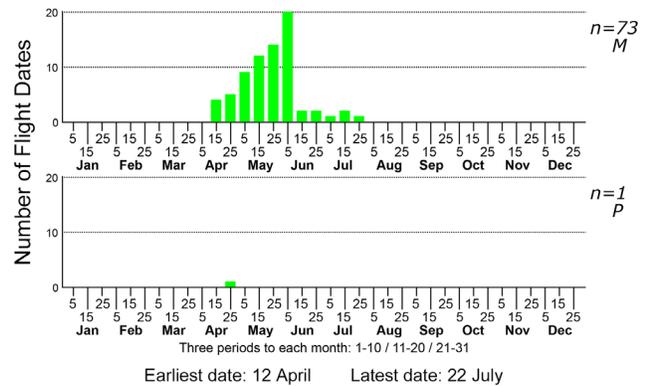
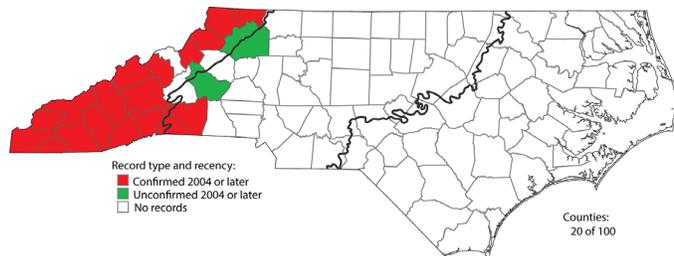
Status: G4/N4/S4

Flight: From mid-April to late July, with the peak from mid-May to early June.

Habitat: Typically breeds at small, rocky streams, often where shaded.

Behavior: Usually seen perched on vegetation, often well away from streams, but in wooded areas, such as along wide trails and dirt roads. Rather unwary and easily studied.

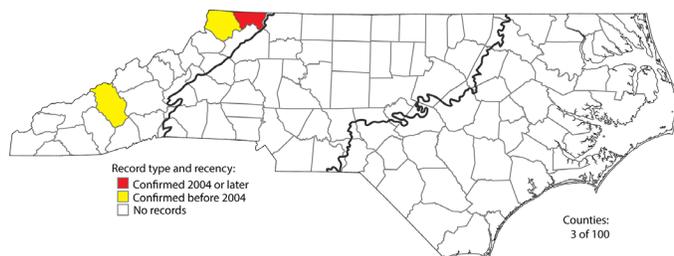
Comments: By early or mid-May, this can be a somewhat easily found dragonfly near streams and along dirt roads through bottomlands or along streams in the Mountains.



Ophiogomphus aspersus Morse, 1895 — Brook Snaketail

Distribution: Known only from the New River in the northwestern Mountains and the Pigeon River in the southern Mountains. This is a Northern species, with a disjunct population in the southern Appalachians (Paulson 2011).

Abundance: Very rare (only one recent record) in the vicinity of the New River and certainly very rare to absent farther southward in the Mountains. This is clearly one of the state's rarest



dragonflies for which there is a definite recent record. High counts of:

- 1 – Alleghany, 13 June 2007
- 1 – Ashe, 5 June 1994
- 1 – Haywood, 9 June 1958

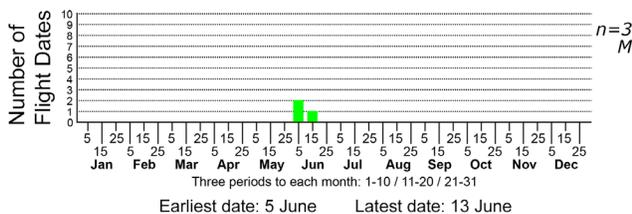
Status: G4/N4/S1

Flight: Probably the latter part of May into most of June. The only dates available are for a very narrow period of 5–13 June, though of course the flight period must surely be a month or more.

Habitat: Breeds in clear, rocky rivers or streams with open canopies and brushy margins (Dunkle 2000).

Behavior: Adults forage both near water and in fields and woodland roads/trails. Males perch on rocks in rivers/creeks and elsewhere.

Comments: This is another of the many clubtails that is very poorly known in the state, in part because the southern edge of the range apparently includes only a relatively few counties. Searches along the New River in the past decade have failed to find this species. Nonetheless, there are several major forks of this river, and dozens of miles of likely suitable habitat, so opportunities still exist to discover this rare snaketail.



Ophiogomphus edmundo Needham, 1951 — Edmund’s Snaketail

Distribution: Occurs in the northwestern Piedmont and the escarpment/foothills of the western Piedmont. This rare species also occurs in western Virginia, southeastern Tennessee, extreme western South Carolina, and northern Georgia (see Odonata Central map).

Abundance: Although rare throughout its global range, this species is found in moderate numbers at several locations in North Carolina, especially along the Mayo River. High counts of:

- 16 – Rockingham, 2 May 2012
- 14 – Rockingham, 1 May 2019
- 14 – Rockingham, 29 April 2022

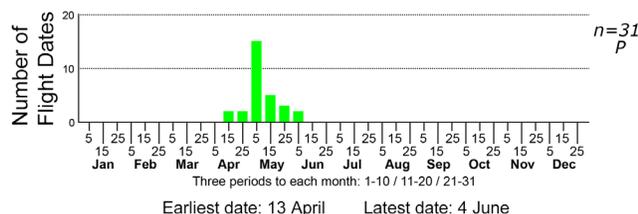
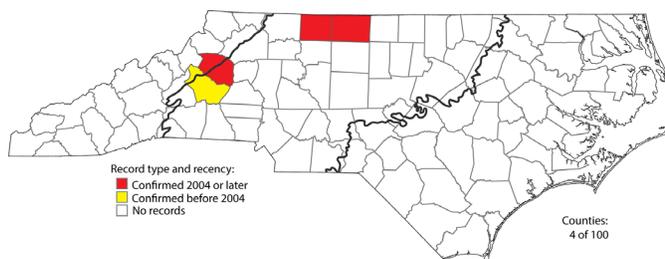
Status: G2/N1N2/S1

Flight: From mid-April to early June.

Habitat: The three bodies of water (Mayo and Dan rivers and Wilson Creek) where recently seen in North Carolina are fast-flowing large creeks/small rivers.

Behavior: Adults, at least males, spend most of their time high in trees (Dunkle 2000), so they are seldom seen except when perching on rocks in rivers and streams.

Comments: This species was considered to be of historical global occurrence (GH) until re-discovered in 1994 in the North Carolina foothills. This may be the globally rarest dragonfly that occurs in North Carolina. It was petitioned for listing under the Endangered Species Act in 2011 because of “present or threatened destruction, modification or curtailment of its habitat or range” and “inadequacy of existing regulatory mechanisms” (U.S. Fish and Wildlife Service 2011), but a ruling has not been made as yet.



Ophiogomphus howei Bromley, 1924 — Pygmy Snaketail

Distribution: This is a Northern/Appalachian species that ranges south to the Mountains of North Carolina.

Abundance: Undoubtedly very rare, with hardly any recent records (just two since 1994, from the same area). High counts of:

- 2 – Alleghany, 10 May 2008
- 1 – Alleghany, 6 June 2007
- 1 – Ashe, 5 June 1994

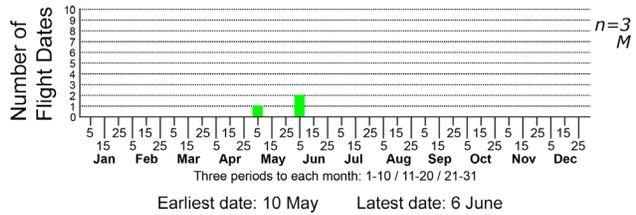
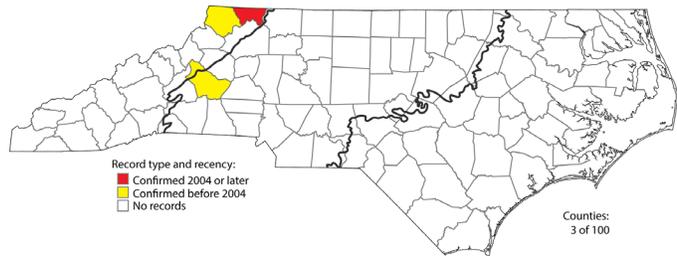
Status: G3/N2N3/S1

Flight: The only dates available to us are 10 May, 5 June, and 6 June. Thus, the flight is presumed to occur from early May to early to mid-June.

Habitat: Breeds at large, clear rivers, with sand or gravel bottoms.

Behavior: Males patrol low over ripples, where difficult to see against the background of rippling water (Dunkle 2000).

Comments: This is the smallest snaketail and one of the smallest of the clubtails (roughly the size of the Eastern Least Clubtail, *Stylogomphus albistylus*). As with other clubtails restricted in North Carolina to the Mountains, it is poorly known. The New River is the best spot to look for this and many other rare or poorly known dragonflies in the Mountains.



Ophiogomphus incurvatus Carle, 1982 — Appalachian Snaketail

Distribution: Occurs sparingly in the lower elevations of the Mountains, throughout the western and central Piedmont (rarely to the eastern Piedmont), and in the western Sandhills.

Abundance: Uncommon to very locally fairly common. High counts of:

- 12 – Richmond, 15 April 2019
- 6 – Wake, 10 April 2022
- 7 – Alexander, 12 September 2023

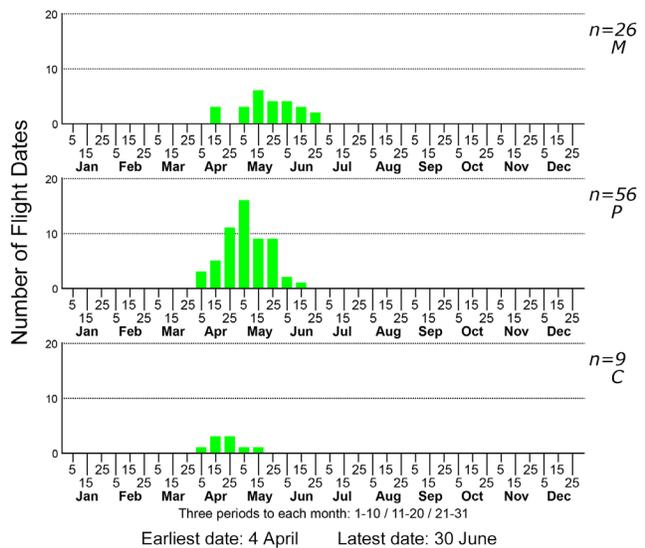
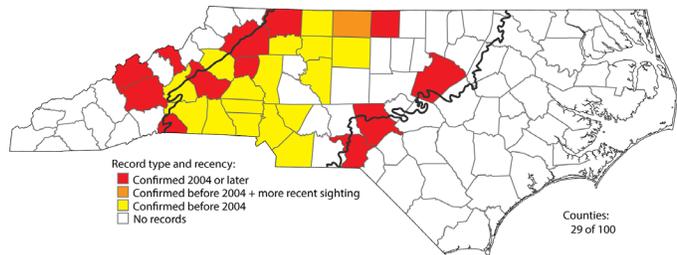
Status: G3/N2N3/S3

Flight: Early April to late June in the Mountains and Piedmont, early April to mid-May in the western Sandhills.

Habitat: Small to medium streams, often in the open, for breeding; usually the streams are clear with some riffles and some gravel.

Behavior: Males typically perch on twigs or low vegetation near a creek; they make short patrols over the water.

Comments: Though this is a globally scarce species, it apparently is most numerous in its range in the western and central North Carolina Piedmont. This is the state's only snaketail that occurs in the Coastal Plain, even if only at the western edge. However, there are no recent records for the large region between the Sand-



hills and Piedmont foothills. Whether the species has declined across most of the Piedmont, or there simply has not been enough fieldwork in the southern Piedmont is unclear.

Ophiogomphus mainensis Packard, 1863 — Maine Snaketail

Distribution: The Mountains and Atlantic drainage streams along the upper Piedmont/Blue Ridge Escarpment.

Abundance: Uncommon in the northern Mountains and foothills, rare in the southern Mountains. High counts of:

- 22 – Caldwell, 7 June 1994
- 9 – Madison, 22 May 2022
- 6 – Caldwell, 2 June 1994

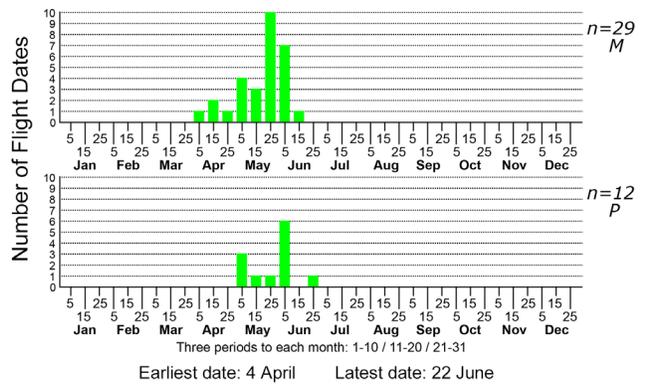
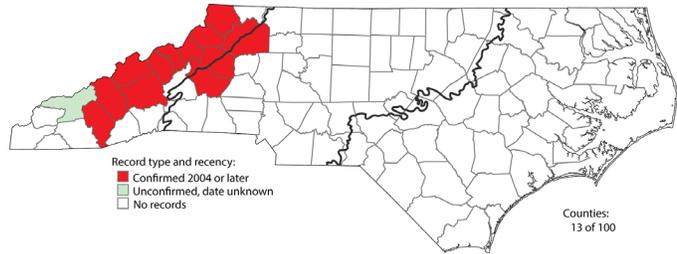
Status: G4G5/N5/S3

Flight: Formerly early or mid-May to early June; however, in recent years the flight period seems to be widening, from early April to late June.

Habitat: Clear and rapid mountain streams or small rivers, in forested areas, for breeding.

Behavior: Males perch on rocks in the streams or on overhanging vegetation. Adults feed in fields (Dunkle 2000), which probably explains why several of the state’s records are well away from streams or rivers.

Comments: There are no records for the four southwestern Mountain counties, but because the global range extends southward to northern Georgia (Paulson 2011), we suspect the species occurs in these counties.



Ophiogomphus rupinsulensis (Walsh, 1862) — Rusty Snaketail

Distribution: Known only from the New River in the northwestern Mountains. This is a Northern species that ranges southward to Tennessee (Paulson 2011).

Abundance: Very rare. High counts of:

- 3 – Alleghany, 13 June 2007
- 3 – Alleghany, 31 May 2009
- 1 – Alleghany, 22 June 2006

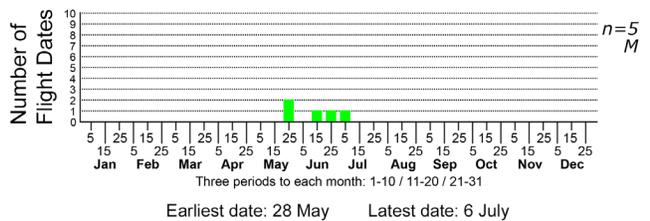
Status: G5/N5/S1

Flight: North Carolina’s five records fall between 28 May and 6 July.

Habitat: Large streams and rivers, where water is clear, with rapids and riffles.

Behavior: Adults are rather easily seen, as they often perch on dirt or other ground or low vegetation. As with most clubtails, males often perch on rocks in rivers while guarding territories.

Comments: This species was reported prior to 2006 (Needham, Westfall, May 2000), but we cannot find supporting documentation. Fortunately, the species was photographed along the margins of the New River in 2006, confirming its presence in the state.



Phanogomphus australis (Needham, 1897) — Clearlake Clubtail

Distribution: Extremely local, known from only 10 lakes and ponds in the southern Coastal Plain. North Carolina lies at the northern edge of the species' range (Paulson 2011).

Abundance: Rare to uncommon at the few known sites. High counts of:

- 10 – Richmond, 5 May 2011
- 8 – Scotland, 8 May 2017
- 4 – Richmond, 8 May 2015

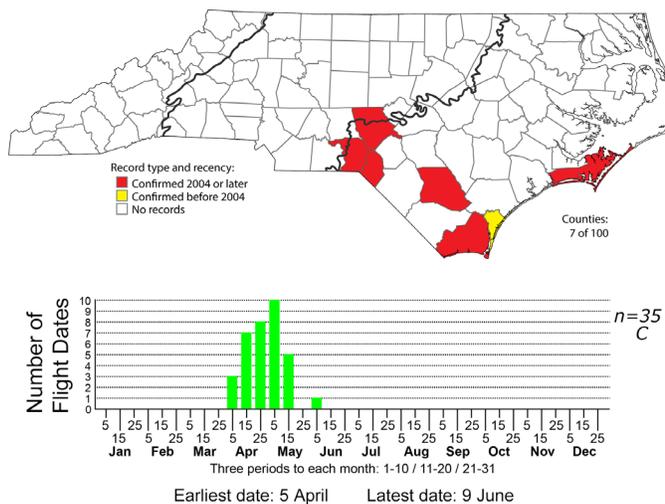
Status: G4/N4/S2

Flight: Fairly early in the season: early April to early June.

Habitat: Lakes and ponds with sand bottoms and heavy vegetation, often with lily pads.

Behavior: Males perch on lily pads and other vegetation close to the lakes and ponds.

Comments: Both Dunkle (2000) and Beaton (2007) mention the association of the species with lily pads. Thus, search efforts focused on ponds or lakes with many lily pads may yield new locations for this species.



Phanogomphus borealis (Needham in Needham and Betten, 1901) — Beaverpond Clubtail

Distribution: Known from just one Mountain county—Mitchell. This is the southernmost record for this species, whose primary range is southeastern Canada south to northern Pennsylvania (Paulson 2011).

Abundance: Because there is only one record (pre-1938), abundance cannot be characterized. High counts of:

No data

Status: G5/N5/SH

Flight: Probably May into July, inferred from Dunkle (2000). The state's only record was from July (Brimley 1938).

Habitat: No data for North Carolina, but elsewhere mud-bottomed lakes, ponds, and slow-moving streams (Dunkle 2000).

Behavior: Males perch on the ground or vegetation near ponds (Paulson 2011).

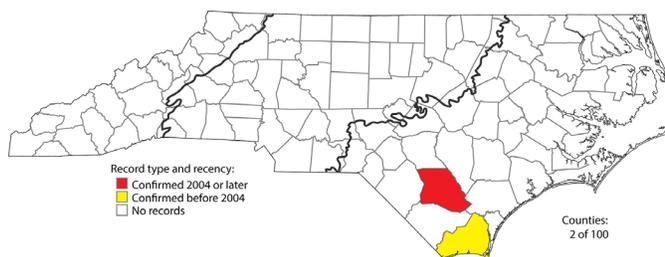
Comments: Brimley (1938) mentions that this species was collected at Magnetic City (now Buladean); obviously, this record is pre-1938 and thus is from over 85 years ago. In the 1990s, Cuyler (pers. comm. to NCNHP) suggested an historical status for the species, as he had searched for it a few decades earlier, and could not find it.



Phanogomphus cavillaris (Needham, 1902) — Sandhill Clubtail

Distribution: Known from just two counties in the extreme southeastern corner of the state. However, all of the Brunswick County records are from 1992 and earlier; thus, currently known just from Bladen County. Disjunct from main part of the range in Florida and extreme southern Georgia (Paulson 2011).

Abundance: Rare to uncommon at the few lakes where known to occur. High counts of:



55 – Bladen, 24 May 2021
 18 – Bladen, 8 May 1966
 17 – Bladen, 6 May 2019

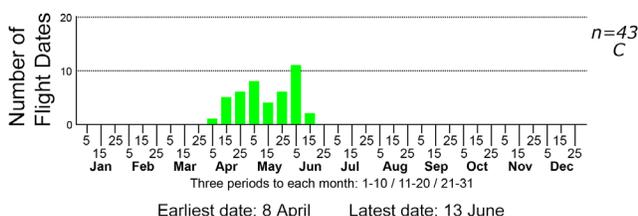
Status: G4/N4/S1

Flight: Dates fall between early April and mid-June.

Habitat: Carolina bay lakes and limesink ponds.

Behavior: Males perch along the shoreline on sand or on twigs/logs in the water.

Comments: There has been much survey effort in recent years at the limesink ponds in Brunswick County where the species was collected by Cuyler, but no Sandhill Clubtails have been found. The subspecies in North Carolina is *P. c. brimleyi*, which also is found in the panhandle of Florida; the nominate subspecies (*P. c. cavillaris*) is found throughout peninsular Florida.



***Phanogomphus descriptus* (Banks, 1896) — Harpoon Clubtail**

Distribution: Mountains only, where recorded only from three counties. All recent records have come from a rather short stretch of the French Broad River in Madison County. North Carolina is at the southern end of the range, which extends north into southeastern Canada (Paulson 2011).

Abundance: Very rare; one of the rarest dragonflies in the state. High counts of:

2 – Madison, 18 April 2023
 1 – Haywood, 9 June 1958
 1 – Avery, 16 May 1965

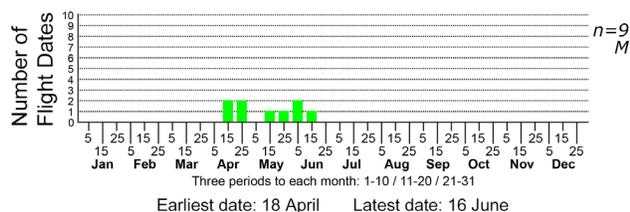
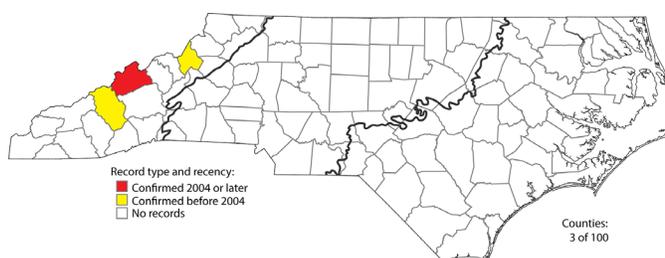
Status: G4G5/N4/S1

Flight: Dates fall from 18 April to 16 June.

Habitat: All North Carolina records are from the vicinity of small to moderate-sized rivers (i.e., French Broad, Linville, and East Fork Pigeon).

Behavior: Males perch on rocks in rivers and streams, on the ground near the water, or on vegetation close to the water.

Comments: This is a poorly known dragonfly in North Carolina. Until recently, the last known record was from 1965, and it had been considered of historical occurrence. However, one photographed in 2013 at the French Broad River in Madison County reconfirmed this species in the state; there are seven additional records from the same area since then. More searches for this clubtail in the Mountains are greatly needed.



***Phanogomphus diminutus* (Needham, 1950) — Diminutive Clubtail**

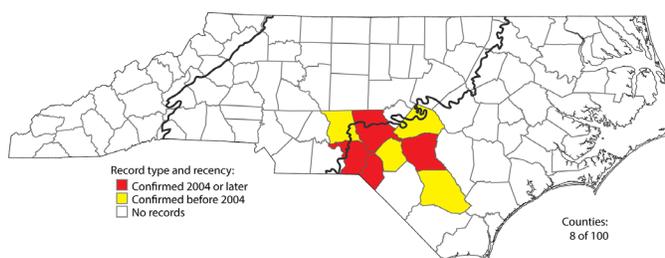
Distribution: Essentially only the Sandhills region, plus the adjacent southern Coastal Plain. North Carolina lies at the northeastern edge of the species' range (Paulson 2011).

Abundance: Uncommon to locally fairly common in the Sandhills, but very rare to the east. High counts of:

33 – Moore, 1 May 1965
 20 – Scotland, 3 May 2015
 20 – Scotland, 17 April 2017

Status: G3G4/N3N4/S3S4

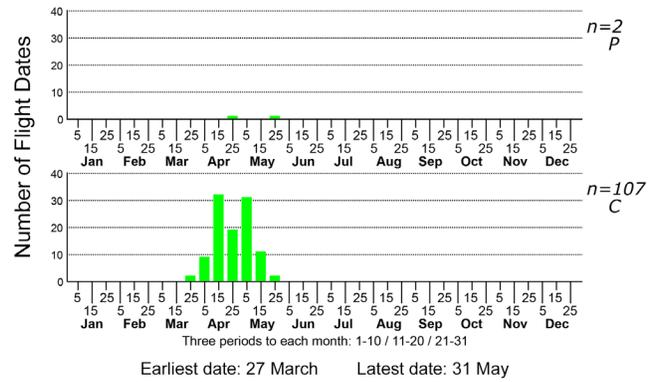
Flight: Spring season only; very late March to late May.



Habitat: Sunny margins of lakes, ponds, pools, and other slow-moving water, often around sphagnum moss or other boggy ground.

Behavior: Adults perch on the ground in boggy places or dirt/ground nearby. They probably do not stray too far from such wet areas.

Comments: In the Sandhills, this species is not too difficult to find, if one walks along the boggy, open margins of beaver ponds or man-made ponds, especially looking near sphagnum moss. Wet spots in powerline clearings can also have the species. Owing to its small global range, the species has been on the NCNHP Watch List for many years.



Phanogomphus exilis (Selys, 1854) — Lancet Clubtail

Distribution: Unlike most of the other clubtails in North Carolina, this species ranges throughout the state, occurring in essentially all counties, though there are no records for a few mountain and eastern Coastal Plain counties.

Abundance: Common and widespread. Generally, the most common and often seen clubtail over most of the state, especially in the Coastal Plain. Presumably not common in the higher Mountains. High counts of:

- 38 – Columbus, 9 April 2022
- 20 – Harnett, 19 April 2010
- 20 – Wake, 30 May 2010

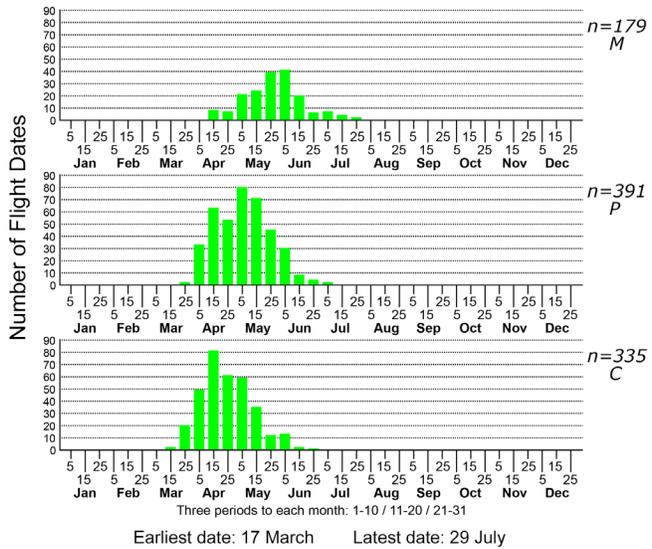
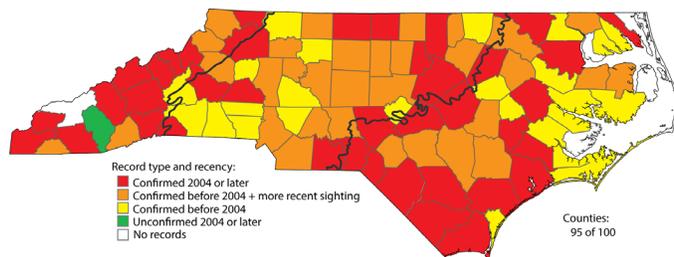
Status: G5/N5/S5

Flight: Mainly in the spring. Downstate, from the end of March to early July, peaking in April and early May. In the Mountains, the dates are from mid-April to late July, with a peak in late May and early June.

Habitat: Breeds mainly at ponds and small lakes, but also at streams.

Behavior: Adults frequently perch on dirt roads, sunny trails, and other bare areas, often a long way from water. They also perch on low vegetation near water.

Comments: Over most of the state, this and the similar Ashy Clubtail (*P. lividus*) are the most frequently observed clubtails by the average person, as both frequently perch on dirt roads and are rather unwary.



Phanogomphus lividus (Sélys, 1854) — Ashy Clubtail

Distribution: Nearly statewide; throughout the Mountains, Piedmont, and nearly all of the Coastal Plain, but seemingly absent in the extreme eastern counties.

Abundance: Common, except infrequent in the central and eastern Coastal Plain, and very rare to absent in the far eastern counties. Abundance equals that of the Lancet Clubtail (*P. exilis*) in the Piedmont, exceeds the Lancet in the Mountains, but is less numerous than that species in the Coastal Plain. High counts of:

- 30 – Rockingham, 11 April 2019
- 20 – Orange, 29 March 2016
- 20 – Rockingham, 10 April 2019

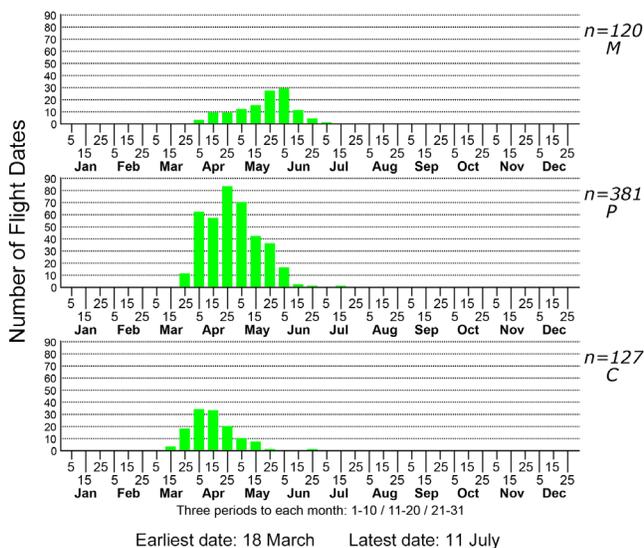
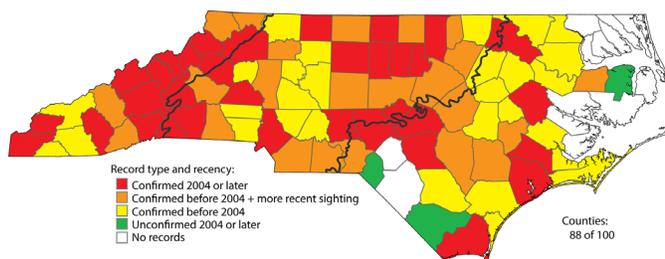
Status: G5/N5/S5

Flight: Spring to very early summer season only. Flies mainly from mid-March to late May in the Coastal Plain, late March to early June in the Piedmont, and early April to mid-June in the Mountains.

Habitat: Typically breeds at small creeks or rivers, less so at lakes and ponds.

Behavior: Behavior seems identical to the nearly equally numerous Lancet Clubtail. Adults commonly perch on dirt roads, trails, and other bare ground or fallen leaves, often far from water. Adults are unwary and easily studied through binoculars.

Comments: Along with the Lancet, this is the most often seen clubtail in North Carolina, typically found on most spring-season field trips to woodlands and fields with appropriate dirt roads or bare ground for perching.



Phanogomphus quadricolor (Walsh, 1864) — Rapids Clubtail

Distribution: Known from just eight counties scattered in the Mountains and eastern Piedmont. Status in the central and western Piedmont is unknown, though it may well occur in a few places in this large region.

Abundance: Seemingly very rare in the Mountains and also very rare and local in the eastern Piedmont. High counts of:

- 2 – Chatham, 3 May 1989
- 2 – Alamance, 19 May 2017
- 2 – Mitchell, 3 June 2017

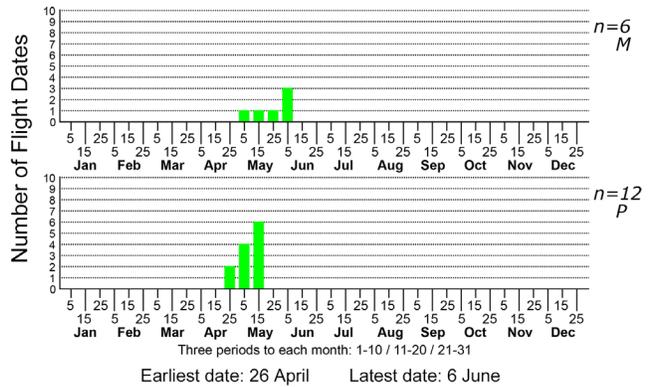
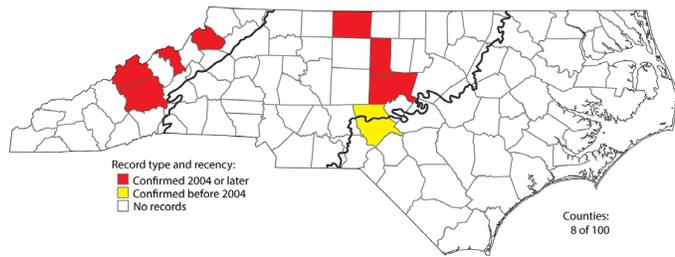
Status: G3G4/N3N4/S1S2

Flight: A relatively short spring season flight, from late April to early June.

Habitat: Mainly at larger rivers with rocks and rapids.

Behavior: Males perch on rocks or vegetation near rivers, but also on vegetation away from rivers.

Comments: This is another rare clubtail in the state. Its distribution is oddly disjunct, as the main part of the range is north and west of the state (Paulson 2011).



Progomphus bellei (Knopf and Tennessen, 1980) — Belle’s Sanddragon

Distribution: Only known in North Carolina from large, natural Carolina bay lakes in Bladen County. This area is highly disjunct from the main part of the range in the Florida panhandle (Paulson 2011).

Abundance: Not uncommon at several lakes during at least a portion of the flight period; however, absent to extremely rare away from such lakes. High counts of:

- 30 – Bladen, 4 June 2008
- 15 – Bladen, 3 June 2008
- 14 – Bladen, 25 June 2009

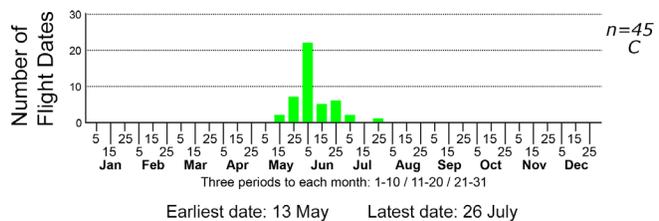
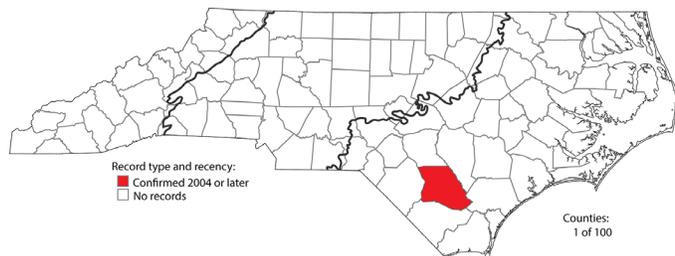
Status: G3/N3/S1

Flight: The flight occurs from mid-May to early July, rarely to late July, with the peak in early June.

Habitat: Only at large Carolina bay lakes, with a sandy bottom and shoreline.

Behavior: Males perch on sand along the lake shorelines, but they also perch on adjacent twigs and cypress knees along the shoreline and on piers. Males make patrolling flights about a foot above the surface of the lakes, coming back to the shore to perch from time to time. They are quite wary, difficult for a person to approach within 10 feet (3 m).

Comments: This is clearly one of the rarer dragonflies in the southeastern part of the United States. One must wonder if it might occur at other large, sand-bottomed Carolina bay lakes in North Carolina, such as Lake Waccamaw, although repeated visits to this lake in recent years have failed to find the species there.



Progomphus obscurus (Rambur, 1842) — Common Sanddragon

Distribution: Nearly statewide, but absent from the extreme northeastern and eastern counties, and oddly lacking records from the southwestern Mountains.

Abundance: Fairly common to occasionally common in the Piedmont and much of the Coastal Plain but seemingly absent in the northeastern and eastern portions of the latter province. Rare in much of the Mountains, and presumably scarce to absent over 3000 feet (914 m) elevation. This species and the Black-shouldered Spinyleg (*Dromogomphus spinosus*) are the most frequently seen clubtails across the state during the late spring and early summer months (whereas Ashy and Lancet clubtails, *Phanogomphus lividus* and *P. exilis*, are the most common clubtails in the spring season). High counts of:

- 65 – Duplin, 27 May 2017
- 33 – Sampson, 24 May 2019
- 27 – Columbus, 17 May 2017

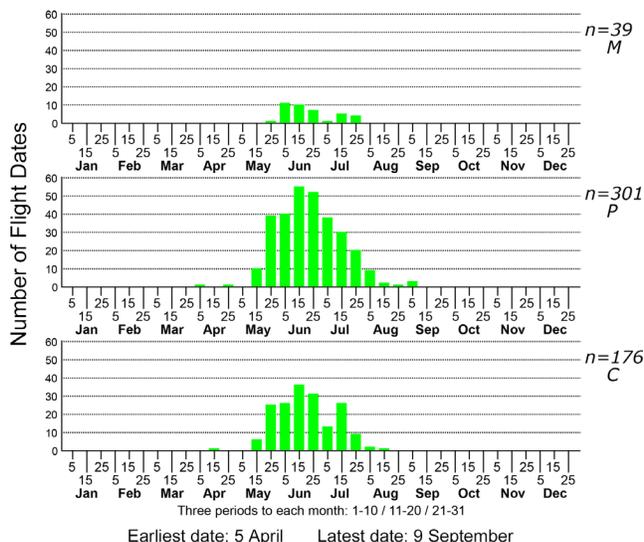
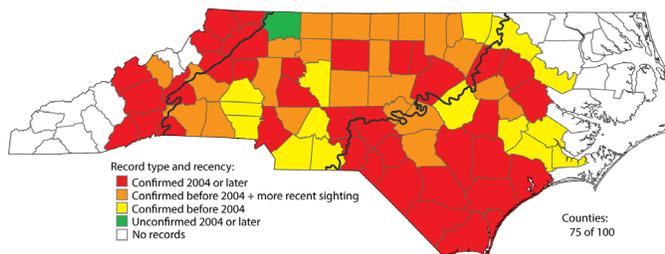
Status: G5/N5/S5

Flight: Generally, from mid-May to mid-August, but there are scattered records as early as early April and as late as early September. The flight starts slightly later in the Mountains than downstate.

Habitat: Creeks or small rivers with sandy shores, sand bars, and other sandy areas nearby. These are often in rather open habitats but may be in wooded areas.

Behavior: As the common name implies, this species is most often seen perching on damp sand or sandbars close to water, but they also perch on logs and branches in or near water.

Comments: A dragonfly perching, with its abdomen raised, on sand beside a small stream in most areas of the state will more than likely be a Common Sanddragon.



Stenogomphurus consanguis (Sélys, 1879) — Cherokee Clubtail

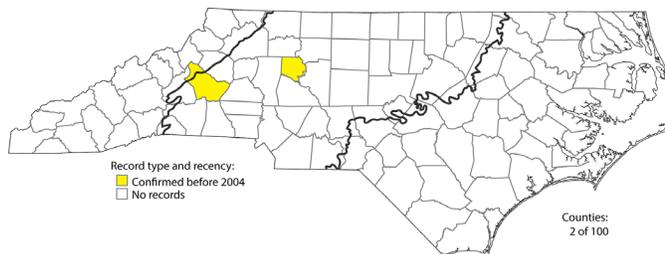
Distribution: Only known from two counties in the western Piedmont/foothills. This species has a small range in the southern Appalachians, from southwestern Virginia into northern Alabama (Paulson 2011). It is odd that there are no records yet from the North Carolina Mountains, where it likely occurs at low elevations (perhaps below 2,000 feet [610 m]).

Abundance: Seemingly very rare, if still present; only two known records. Part of the scarcity of records might be due to difficulty of identification (other than through collecting). Sadly, the species has not been seen in the state since 1993, and we suggest that it now be considered of historical occurrence. High count of:

- 1 – Davie, 20 May 1993

Status: G3/N3/S1?

Flight: The only record available with a date (20 May) seems surprisingly early compared with Georgia flight dates of late



May to mid- or late June (Beaton 2007). The flight in the central/western Piedmont of North Carolina thus might start in mid-May, but it is expected to extend well into June.

Habitat: Small streams, often spring-fed, in forests (Paulson 2011).

Behavior: Males perch close to streams and springs and have a slow flight close to the water (Paulson 2011). Both Beaton (2007) and Dunkle (2000) call the species “unwary” near these streams.

Comments: This is one of most poorly known dragonflies in North Carolina, and probably no living person has seen it in the state. There has been a moderate amount of recent fieldwork in the Mountains, but still relatively little in the upper Piedmont and foothills, where this species resides, or resided in the past. Add to this the similarity in appearance to the Sable Clubtail (*S. rogersi*), and it is understandable that there are no certain recent records. However, there have been observations and photos in the past several years in Madison County of individuals that were one of these two species, but which one they were could not be confirmed.

Stenogomphus rogersi (Gloyd, 1936) — Sable Clubtail

Distribution: Mountains and the immediate foothills.

Abundance: Uncommon, but somewhat widespread in the Mountains, with records for 12 of the 17 counties wholly within the province. Very rare to rare in the Piedmont foothills close to the Blue Ridge Escarpment. High counts of:

- 10 – Haywood, 9 June 2023
- 5 – Watauga, 11 June 2007
- 5 – Macon, 7 July 1982

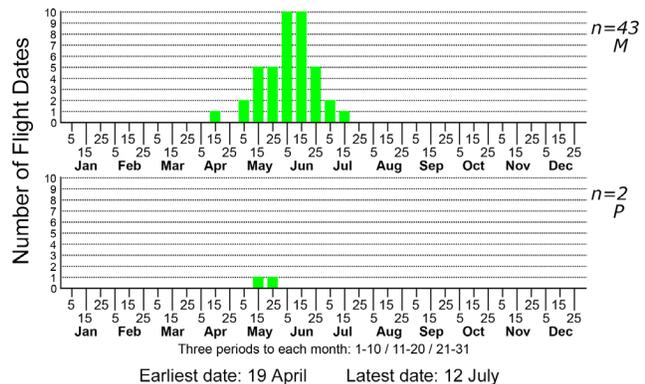
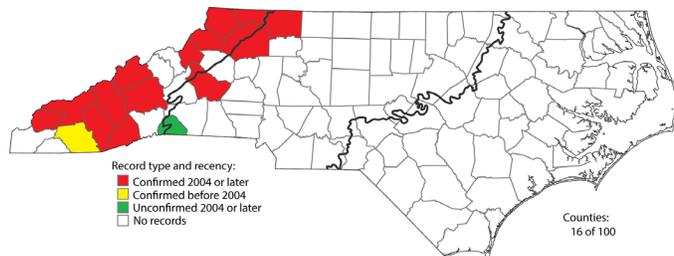
Status: G4/N4/S3

Flight: A mid-spring to early summer flier; recent occurrences from mid-April to mid-July. Interestingly, older collection dates fall from 17 June to 7 July. Whether the species is flying earlier in recent decades, perhaps owing to climate change, or this pattern simply reflects seasonal sampling bias over time is unknown.

Habitat: Breeds at small and clear, woodland streams, with sand or gravel bottoms.

Behavior: Males perch on vegetation or rocks, seldom on the ground, near streams. They often perch in shady places and can be hard to see.

Comments: This species is called “secretive” by Dunkle (2000). Records for this clubtail have, thankfully, been increasing in the past 10 years, presumably owing to more thorough coverage by observers in the state.

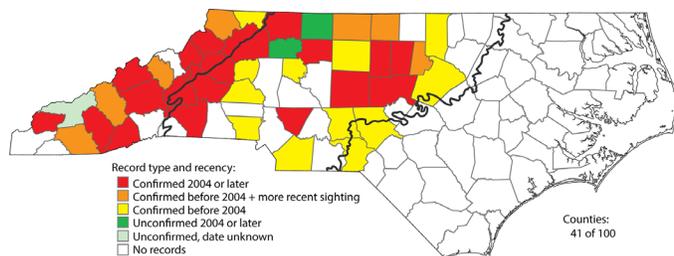


Stylogomphus albistylus (Hagen in Sélys, 1878) — Eastern Least Clubtail

Distribution: Essentially throughout the Mountains, but it is more widely scattered across the Piedmont.

Abundance: Uncommon in the Mountains and in the northern Piedmont, but mostly rare to very uncommon in the central and southern portions of the latter province. High counts of:

- 20 – Madison, 24 June 2021
- 10 – Madison, 20 June 2021
- 5 – Wilkes, 19 July 2007



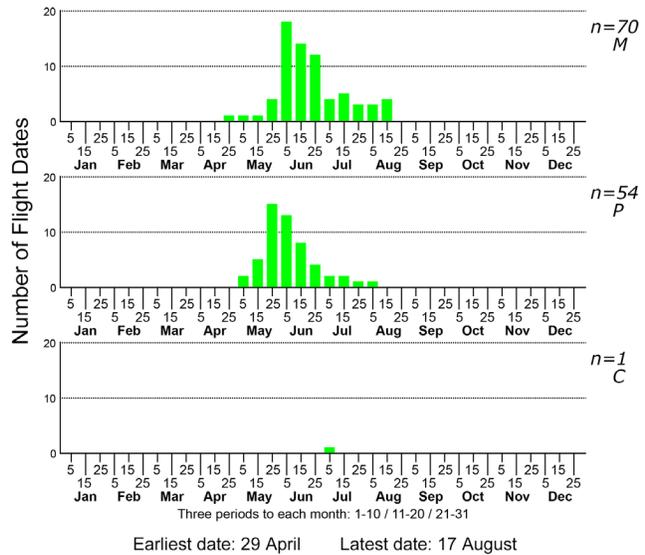
Status: G5/N5/S3S4

Flight: Early May to early August in the Piedmont, and mainly from mid-May to mid-August in the Mountains, though there are a few recent records there as early as 29 April.

Habitat: Small, clear, woodland creeks are preferred; sandy or gravel bottoms.

Behavior: Males often perch on rocks in the streams, where they are difficult to spot because of their small size and dark coloration. They also perch on vegetation near the water and make small, quick flights over water. Females spend much time perched in trees.

Comments: This species might be more overlooked and harder to spot rather than being truly “scarce”. Despite its range including the Triangle and eastern Piedmont, where most biologists study odonates, there are very few reports from this region. This is not a species one would casually stumble into while in the field; rather, one should look carefully along small shaded or semi-shaded creeks from the latter part of May into the first half of July.



Stylogomphus sigmastylus (Cook and Lauder milk, 2004) — Interior Least Clubtail

Distribution: This is a species of the Ozark Mountains eastward to central Tennessee, with outlying records from southwestern Virginia and central North Carolina (Paulson 2011). The single record for the state came from a 1969 collection by Cuyler.

Abundance: Presumably extremely rare in North Carolina, assuming a correct identification. As the record was over 50 years ago, we must consider it to be of historical occurrence, though it still could certainly be present in the state. High count of:
1 – Moore, 2 July 1969

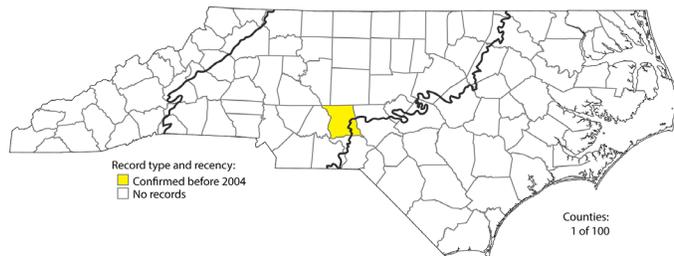
Status: G5/N5/SH

Flight: The only record for the state was on 2 July. As the Eastern Least Clubtail (*S. albistylus*) flies in the Piedmont from early May to early August, the flight of the Interior Least Clubtail is likely for several months in spring and summer.

Habitat: Presumably the same as for Eastern Least Clubtail.

Behavior: Presumably like that of Eastern Least Clubtail.

Comments: This species looks very similar to the Eastern Least Clubtail, which is uncommon in the state. Thus, a specimen would be necessary to confirm that the Interior Least Clubtail still occurs in North Carolina.



Stylurus amnicola (Walsh, 1862) — Riverine Clubtail

Distribution: Mainly in the upper half of the Coastal Plain, and very widely scattered across the entire Piedmont and southern half of the Mountains. Absent from the eastern part of the Coastal Plain and seemingly absent from the northern half of the Mountains.

Abundance: Rare to locally uncommon in the Coastal Plain, very rare (now) to rare and quite local in the Piedmont, and very rare in the Mountains. It seems to be in decline in the Piedmont and Mountains. High counts of:

- 14 – Cumberland, 22 June 1969
- 13 – Yadkin, 15 July 2018
- 5 – Edgecombe, 1 August 1994

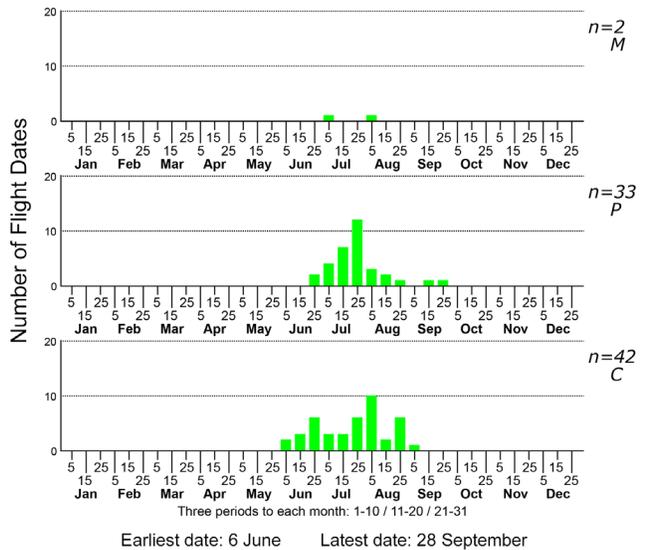
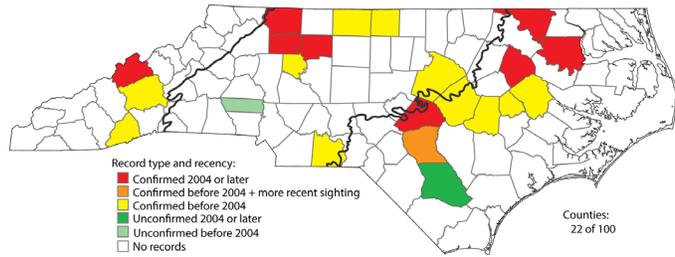
Status: G4/N4/S3. We suggest a change to S2S3.

Flight: Early June to early September in the Coastal Plain, late June to mid- to late September in the Piedmont and Mountains.

Habitat: Rivers, ranging from those with a moderate to rapid current in the Mountains to fairly slow-moving, brownwater rivers in the Piedmont and Coastal Plain.

Behavior: Perches on leaves or other vegetation close to the streams and rivers. Males can be seen patrolling up and down rivers. Males are rather unwarly compared to other *Stylurus* species.

Comments: Though there are records from all three provinces, the species has been recorded in only 22 counties and most recent records are from along the same few rivers.



Stylurus ivae (Williamson, 1932) — Shining Clubtail

Distribution: Strictly the southeastern portion of the state, which represents the northeastern end of the species' overall range (Paulson 2011).

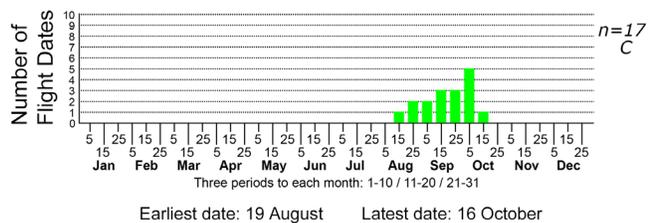
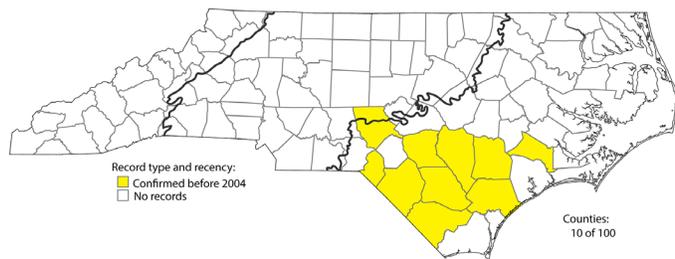
Abundance: Formerly (prior to about 1995), it was uncommon. There are no recent records, despite considerable searching (often by canoe and kayak) in the proper season (fall). Thus, as of now, the species is rare at best. Without doubt it has strongly declined, but the reasons are not clear. High counts of:

- 10 – Duplin, 10 October 1991
- 6 – Duplin, 2 September 1993
- 2 – Moore, 2 October 1965

Status: G4/N4/S1?

Flight: One of the very few “autumn-only” dragonflies in North Carolina, though technically it begins its flight in mid-August, flying until mid-October. It peaks in late September and early October.

Habitat: Sandy creeks or small rivers, where waters are clean.



Behavior: Males typically forage in fields or clearings, perching conspicuously. They patrol over streams in a slow manner, often with some hovering.

Comments: This is a dragonfly that likely can be identified in flight over water, owing to its overall yellow color—especially the glowing bright yellow or golden-yellow club—and the fairly late flight period. Therefore, the absence of any records since the early 1990s is alarming and almost certainly indicates a clear decline in the state.

Stylurus laurae (Williamson, 1932) — Laura’s Clubtail

Distribution: Occurs in the lower elevations of the Mountains, the Piedmont, and the upper Coastal Plain.

Abundance: Rare and declining across most of the state, and likely absent from the eastern half of the Coastal Plain; certainly has declined in recent years. Most recent records are for the lower Mountains and foothills. High counts of:

- 2 – Orange, 13 June 2002
- 2 – Orange, 5 July 2002
- 2 – Orange, 30 July 2002

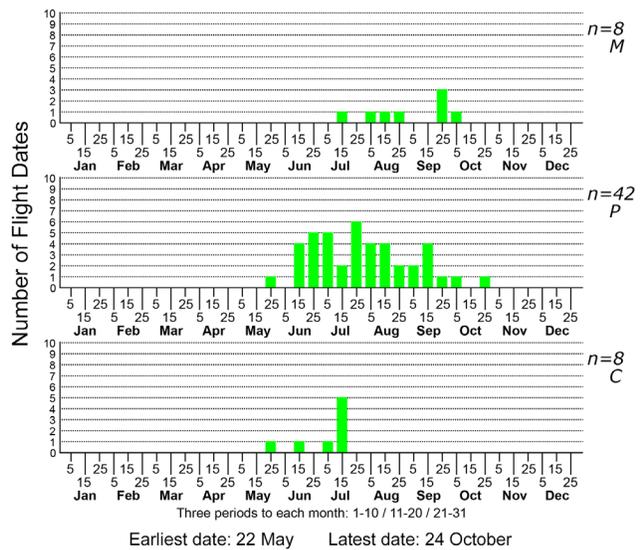
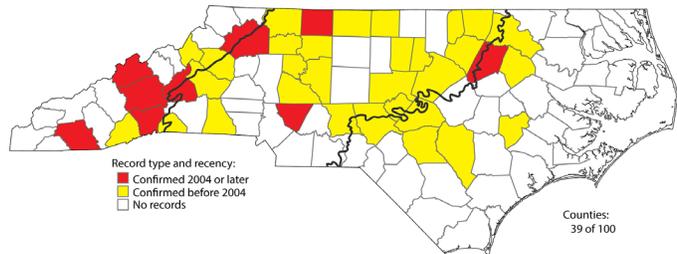
Status: G4/N4/S2S3

Flight: Late May to mid-July in the Coastal Plain, though it likely occurs into the fall season, mid-June (rarely from late May) to late October in the Piedmont, and mid-July to early October in the Mountains.

Habitat: Mainly breeds at small to medium-sized sandy bottom creeks, with clean water.

Behavior: Males are most often seen perched on leaves close to the water. Though they forage during the middle of the day, the species is most active late in the day. Thus, this species can often be difficult to observe because of time of day and infrequency of perching on the ground or in the open.

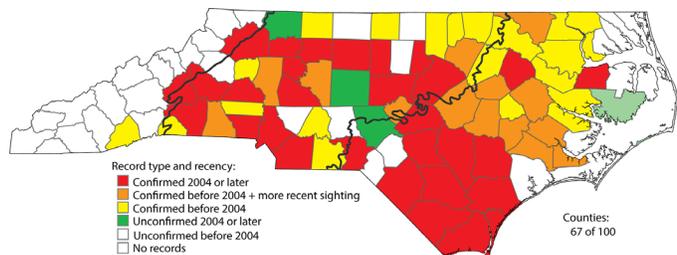
Comments: Nearly all of the state’s records were supplied by Cuyler in the 20th Century. It is not often encountered nowadays, and always just one or two individuals at any one site. Especially disturbing is the very few recent records from the Piedmont and Coastal Plain, suggesting a strong decline in numbers in these provinces.



Stylurus plagiatus (Selys, 1854) — Russet-tipped Clubtail

Distribution: Throughout the Piedmont and nearly all of the Coastal Plain, though probably absent in the far eastern counties; only one county record for the Mountains.

Abundance: Though there are records for close to two-thirds of the counties in the state, it is uncommon in most of the Piedmont and Coastal Plain, but it can be fairly common in parts of the Coastal Plain, especially in the southern part of that province. Rare in the foothills, and likely absent in most of the Mountains, at least above perhaps 2500 feet (762 m) in elevation. High counts of:



48 – Pender, 9 August 2015
 48 – Bladen, 9 August 2015
 18 – Duplin, 15 August 2015

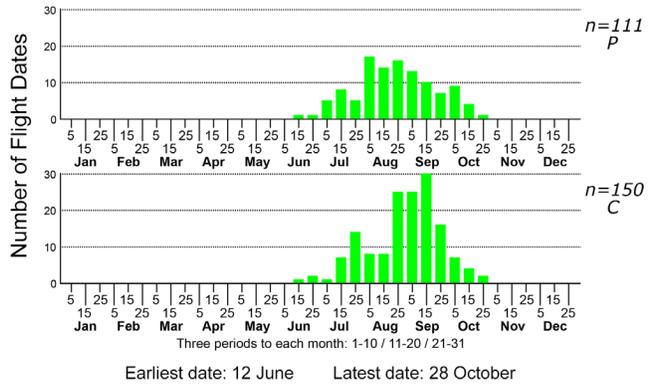
Status: G5/N5/S4S5

Flight: The flight occurs from mid-June to late October.

Habitat: Mainly at rivers and larger streams, both brownwater and blackwater, but also at some lakes; silty or sandy bottoms.

Behavior: Often perch on leaves near the water's edge, such that the weight of the body bends the leaf downward until the clubtail is almost in a vertical position. Adults forage in long flights over rivers and creeks. In fact, the species is most often seen from a canoe or other type of boat along a wide creek or river, typically flying by at eye level.

Comments: This species, along with the Southeastern Spinyleg (*Dromogomphus armatus*), has a large and bright rusty-orange club that is easily seen at a distance. This species can thus be fairly easily identified without a net as it cruises along a river or stream.



Stylurus scudderii (Sélys, 1873) — Zebra Clubtail

Distribution: Mountains and northern foothills only.

Abundance: Rare and somewhat local. High counts of:

7 – Macon, 23 September 1931
 6 – Swain, 24 September 1931
 3 – Wilkes, 23 August 1969

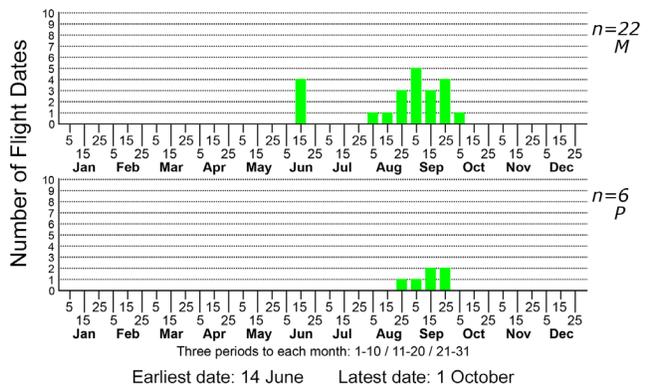
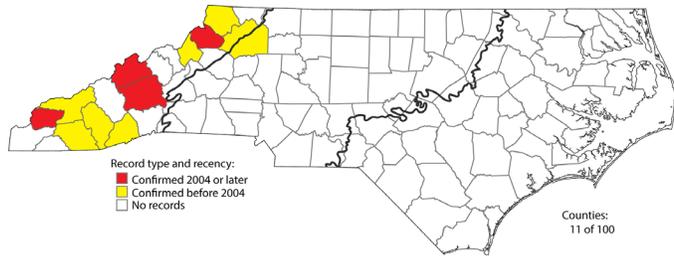
Status: G5/N3N4/S1S2

Flight: This is a late-flying clubtail in North Carolina, with dates from early August to early October. June dates are emergence dates for individuals collected as larvae and raised in captivity.

Habitat: Cool, swiftly flowing creeks and smaller rivers, in forested areas.

Behavior: Males perch low, such as on twigs, leaves, and at times on the ground. They make short patrols over creek riffles.

Comments: This is one of many clubtails in North Carolina that is essentially restricted to the Mountains, and therefore, is known to very few people. Fortunately, the species (especially a male) is easy to identify by the bold pale rings around abdominal segments and the fairly wide club.



Stylurus spiniceps (Walsh, 1862) — Arrow Clubtail

Distribution: Essentially throughout the Mountains and Piedmont foothills, and in the northern Piedmont. An old record for the eastern Piedmont, far to the east and southeast of other records, might be of a stray. A recent record from an oceanfront beach was a shock and certainly was of a stray individual.

Abundance: Rare to locally uncommon in the Mountains and foothills. Rare into the north-central Piedmont, at least away from the foothills. High counts of:

- 6 – Wilkes, 26 August 1962
- 5 – Ashe, 13 September 1970
- 5 – McDowell, 10 September 1998

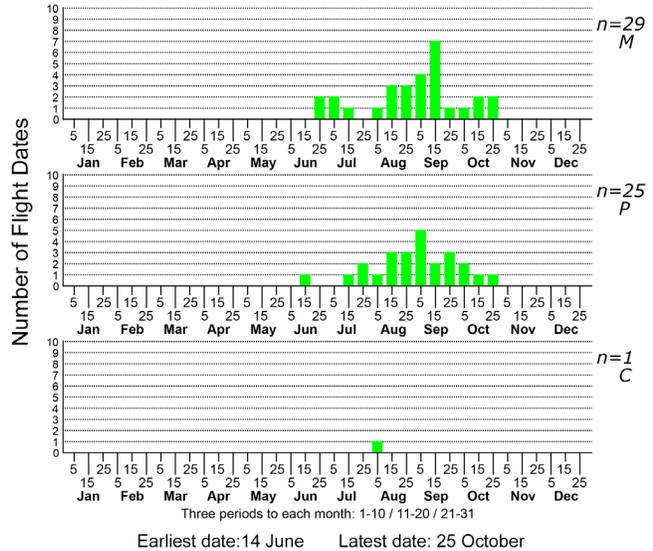
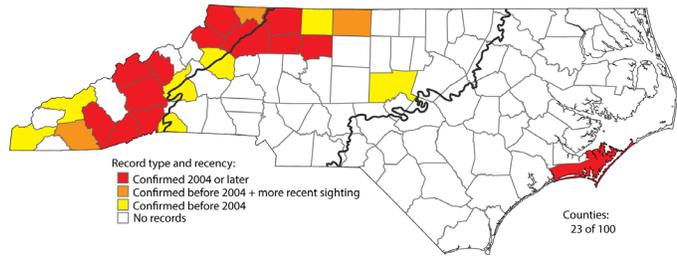
Status: G5/N4/S3S4

Flight: From mid-June to late October.

Habitat: Large rivers, less so at large streams or at lakes. Favors sandy bottoms.

Behavior: Males are very strong fliers and may forage a long distance from water, in fields and other places. As with other *Stylurus* species, males in particular may perch on a leaf and hang vertically on it as the leaf bends under the weight of the insect. They also forage in long flights over water.

Comments: This large species has an unusually long (and slender) abdomen, giving rise to the common name, as it does resemble an arrow in some respects. It is not one of the rarer clubtails in the Mountains and foothills; however, because it flies mostly in very late summer and autumn, after much of the odonate fieldwork is done, records have been somewhat slow to accumulate.



Stylurus townesi (Gloyd, 1936) — Townes's Clubtail

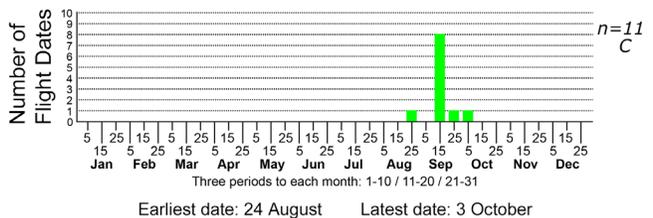
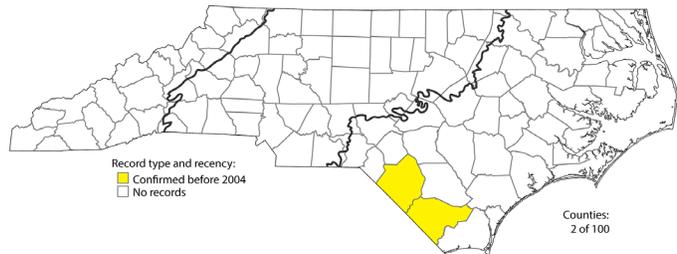
Distribution: Known only from the Lumber River in the extreme southeastern corner of the state. North Carolina lies at the northern edge of the species' range (Paulson 2011).

Abundance: Formerly, not rare along a short section of the Lumber River just north of the South Carolina state line; however, there have been no reports in the state since 1970, despite many recent surveys of this section of the river. Thus, it is presumably very rare, if it still occurs, in the state. High counts of:

- 7 – Columbus, 20 September 1964
- 5 – Columbus, 19 September 1964
- 5 – Robeson, 12 September 1964

Status: G3/N3/SH

Flight: The 11 state records with dates fall between late August and early October. A recent South Carolina record (Hill 2017) is from 4 August, so perhaps flight in North Carolina begins earlier than late August.



Habitat: Forested creeks and rivers with sandy bottoms and clean water.

Behavior: Males apparently forage mainly in low light conditions in early morning, cloudy weather, or near dusk. Males seldom make patrols over water, but forage from twigs along the water's edge.

Comments: There was a flurry of collections of this species along the Lumber River in the 1960s; whether it still occurs there at present is not known. In 2012, the NCNHP moved the species' rank from S1 (critically imperiled) to SH (historical). However, as the Lumber River is still heavily forested in many areas and is a State Natural and Scenic River, there is a fair chance that Townes's Clubtail still occurs there, if not elsewhere in the state.

Family Cordulegastridae (Spiketails)

Zoraena bilineata (Carle, 1983) — Brown Spiketail

Distribution: Present over most of the state except absent close to the coast and in most of the lower Coastal Plain.

Abundance: Fairly common in the Mountains (at least in the northern counties), but uncommon in the northern Piedmont and rather rare in the southern Piedmont. Rare to uncommon in the Coastal Plain portion of the range. Much more common in the Mountains than downstate. Many recent records across the state and possibly is increasing in the Coastal Plain and eastern Piedmont portions of the range. High counts of:

- 8 – Moore, 8 April 2007
- 4 – Halifax, 30 March 2012
- 4 – Caswell, 5 May 1997

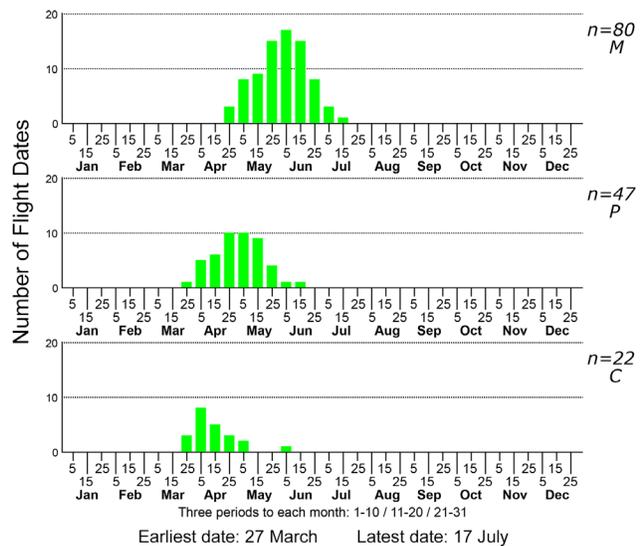
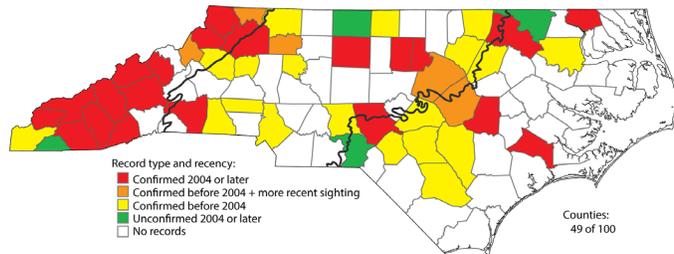
Status: G5/N5/S4

Flight: Late April to mid-July in the Mountains, late March to mid-June (if not later) in the Piedmont, and late March only to early June in the Coastal Plain.

Habitat: Small streams or seeps, often with little flow, typically in wooded areas.

Behavior: Typically flies slowly over streams or seeps or in nearby clearings. Perches on low twigs, in an oblique manner typical of spiketails.

Comments: This species can be confused with the somewhat similar, but slightly more widespread Twin-spotted Spiketail (*C. maculata*). Both can occur together along Mountain and Piedmont wooded roadsides and clearings along woods and small creeks.



Zoraena erronea (Hagen in Sélys, 1878) — Tiger Spiketail

Distribution: Present throughout the Mountains and foothills, and the northern third of the Piedmont; presence in the southeastern half of the Piedmont is uncertain.

Abundance: Uncommon in the Piedmont foothills, but rare to uncommon in the true Mountains and eastward in the Piedmont to the north-central Piedmont. Very rare now in the northeastern Piedmont. The species seems to be slightly increasing in recent decades in North Carolina. High counts of:

- 4 – Ashe, 10 July 2007
- 3 – Orange, 2 July 1993
- 3 – Yancey, 14 July 2017

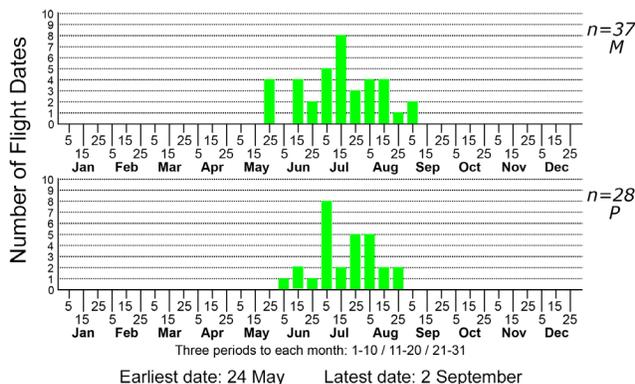
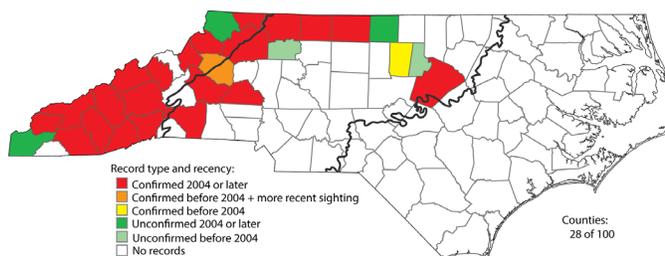
Status: G4/N4/S3S4

Flight: The flights in the Mountains and Piedmont are roughly similar, late May into early September. However, it is most frequent in July and in the first half of August.

Habitat: Small streams or seeps, without fish; in partial shade. Streams may be rocky but may have a sandy substrate.

Behavior: Males cruise in the vicinity of the seeps, though they can be difficult to find when perched. The males are more active late in the day, and may fly and perch well away from seeps, often on a twig or stem just one to several feet off the ground, for easy viewing and photographing.

Comments: Cuyler collected few specimens and county records, as compared with the large number of recent records. This may indicate that the Tiger Spiketail is increasing in numbers in recent decades but without a better understanding of historical abundance, we cannot say for sure.



Zoraena maculata Sélys, 1854 — Twin-spotted Spiketail

Distribution: Throughout the Piedmont, and essentially throughout the Mountains and the western third of the Coastal Plain.

Abundance: Seemingly declining in numbers in recent years, especially across the Piedmont and Coastal Plain. Very uncommon to uncommon in the Mountains and Piedmont (not truly rare), but quite rare in the central Coastal Plain and near the southern coast. High counts of:

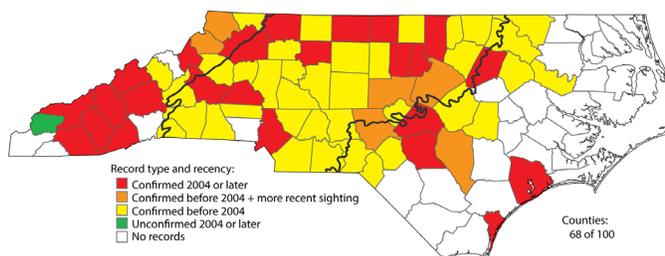
- 6 – Caswell, 31 March 2007
- 5 – Durham, 30 March 2020
- 4 – Orange, 23 April 1966

Status: G5/N5/S4S5. With the seeming decline statewide of this species, we suggest the state rank be moved up from S4S5 to S4.

Flight: Primarily from late March to late May in the Coastal Plain and Piedmont, with the peak in April, while the Mountain flight occurs from late March to late June, though it is scarce before mid-April.

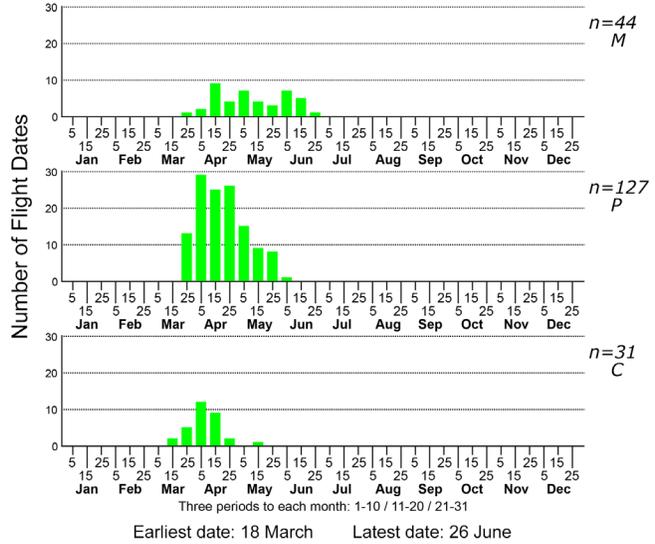
Habitat: Creeks or small rivers, of many sizes and substrates, for breeding. These are typically in forested or semi-shaded areas and fairly pristine or clear waters.

Behavior: Males cruise along streams. But, both males and females are more often seen well away from water along wooded roads or wide trails or wood margins. They perch conspicuously on twigs and other vegetation, in an oblique



manner, typically only a foot or two above the ground, where easily studied.

Comments: This is one of the larger and more spectacular dragonflies that is known only during the springtime.



Zoraena obliqua (Say, 1840) — Arrowhead Spiketail

Distribution: Scattered in the Piedmont and Coastal Plain. Most records are from the north-eastern Piedmont (which could reflect a bias in observer coverage).

Abundance: Uncommon in the eastern third of the Piedmont, rare in the central Piedmont, and very rare in the Coastal Plain. High counts of:

- 8 – Caswell, 30 May 1996
- 5 – Durham, 9 May 2010
- 4 – Wake, 15 May 2011

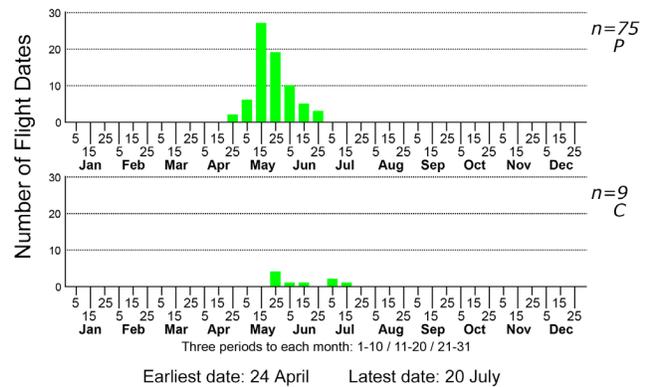
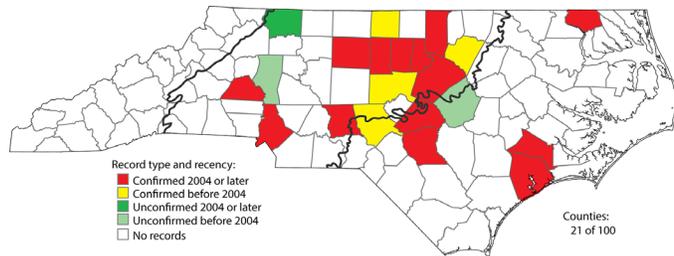
Status: G4/N4/S3

Flight: The flight occurs during the two months from late April to late June (and sparingly to mid-July), with the peak in the latter half of May.

Habitat: Very small streams and seeps, in wooded/shaded habitats.

Behavior: As with all spiketails, adults often forage long distances from their forested streams. The species is most often seen along wooded trails or roads, or in powerline clearings, perching low to the ground on a twig. However, unlike other spiketails, it has a habit of flying off high, often over trees, once disturbed.

Comments: This, the largest of the four spiketails in North Carolina, is always a thrill to see. Its dorsal yellow abdominal markings (not paired as in other spiketails) indeed look like arrowheads, making it easy to identify.



Family Macromiidae (Cruisers)

Didymops transversa (Say, 1840) — Stream Cruiser

Distribution: Essentially statewide, but scarce in the extreme eastern coastal areas, where most dragonfly species are also scarce to absent.

Abundance: Fairly common to common, and very widespread, across the Piedmont and at least the western and southern halves of the Coastal Plain. Uncommon in the lower Coastal Plain and in the Mountains (where records are increasing, perhaps simply owing to more surveys). There are very few observers in the northern half of the Coastal Plain, and the scarcity of recent records there should not be taken as a decline in that region. High counts of:

- 60 – Chatham, 22 April 2022
- 60 – Lee, 22 April 2022
- 30 – Iredell, 27 March 2017

Status: G5/N5/S5

Flight: Mid-March to mid-July, though primarily in the spring i.e., mainly in April and May. There are a few records well into August and early September, but the flight is generally over in July. The flight in the Mountains starts in early April.

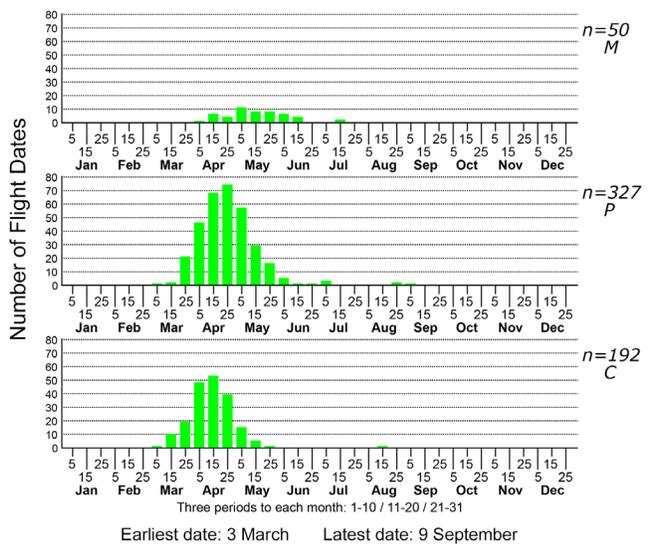
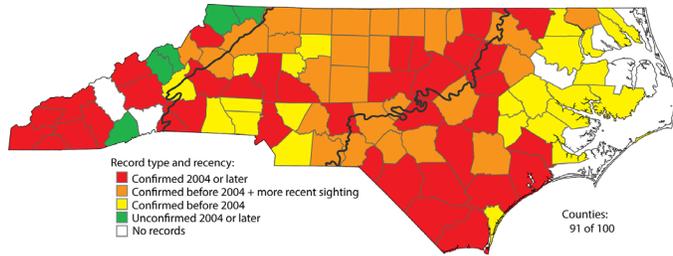
Habitat: A wide variety of creeks and rivers (though typically smaller rivers); rarely at lakes.

Behavior: Males patrol up and down streams or sometimes along the margins of lakes and ponds.

Adults are more often seen flying and perched well away from water, along dirt roads, sunny trails, and edges. They perch obliquely on twigs and other vegetation low to the ground, as do spiketails and darners (with which they often fly).

Comments: The Stream Cruiser is reasonably unwary, often allowing close study while perched obliquely on a twig. Its single yellow stripe on the side of the thorax, white facial bar, and single pale spots (not paired) on the top of the abdominal segments are distinctive.

[Editor's note: Since the time that this manuscript was accepted, the genus *Didymops* was synonymized with *Macromia* (Kosterin et al. 2025). In order to maintain continuity with Part 1 of this paper, this species was left in the former genus.]

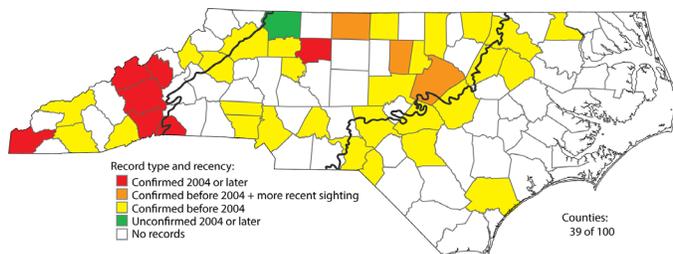


Macromia alleghaniensis Williamson, 1909 — Allegheny River Cruiser

Distribution: Scattered across the Mountains, Piedmont, and western Coastal Plain. The range appears spotty, probably mainly owing to the difficulty of identification.

Abundance: Apparently uncommon in the Mountains, Piedmont, and extreme western Coastal Plain, at least in the past. Very rare to absent over nearly all of the eastern two-thirds of the Coastal Plain. High counts of:

- 14 – Orange, 3 July 1960
- 7 – Orange, 2 July 1994



7 – Orange, 15 July 1984

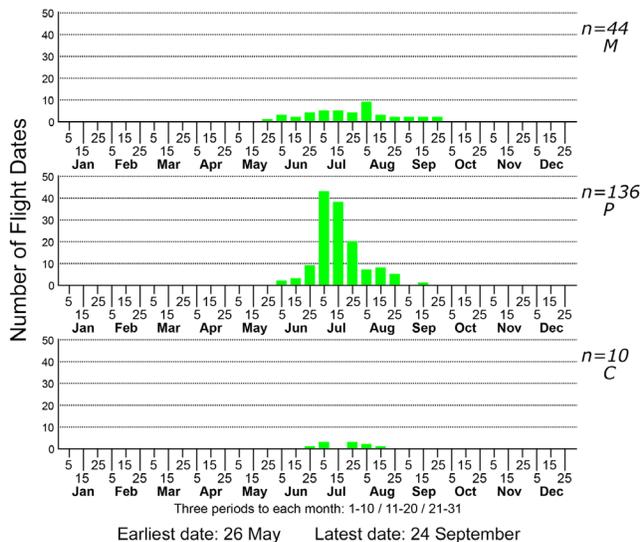
Status: G4/N4/S4

Flight: The flight in the Piedmont and Mountains occurs between late May and late September. This is likely also the flight period in the Coastal Plain, but known records there, all historical, fall in a narrower range from late June to mid-August.

Habitat: Creeks and rivers.

Behavior: Similar to other river cruisers, in that males cruise back and forth quickly along the length of the stream or river. Adults often forage in long patrols along wooded roads and wide trails, typically higher later in the day. They can be difficult to see perched.

Comments: Poorly known by most recent observers because of the difficulty in separation from other *Macromia* species without a specimen or multiple photos of the same individual from different angles. It should not be assumed to have declined in the several decades since Cuyler collected so many specimens. Nonetheless, we have few recent records away from the French Broad River.



Macromia illinoiensis Walsh, 1862 — Swift River Cruiser

Distribution: Statewide, but absent (or essentially so) from the extreme northeastern counties.

Abundance: Fairly common and widespread in most of the Piedmont and upper Coastal Plain, including the Sandhills. Uncommon to locally fairly common in the Mountains and foothills, as well as the lower Coastal Plain. It is certainly the most numerous river cruiser in the Mountains, Piedmont, and upper Coastal Plain (though it can be outnumbered in the Coastal Plain by *M. taeniolata*). High counts of:

- 20 – Surry, 22 August 2017
- 20 – Ashe, 10 June 2018
- 18 – Macon, 7 August 1981

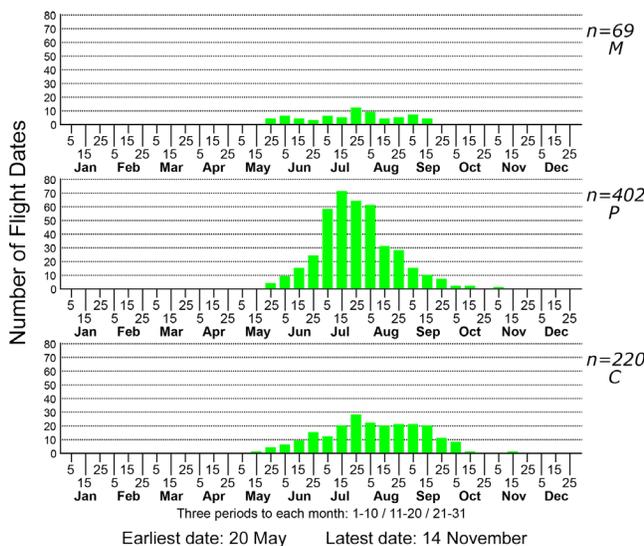
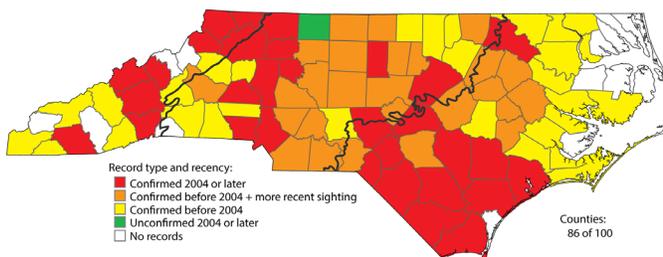
Status: G5/N5/S5

Flight: A fairly wide flight period, from mid-May to mid-November in the Piedmont and Coastal Plain, and at least from late May to mid-September in the Mountains.

Habitat: Rivers and creeks, preferably in smaller rivers as compared with large ones.

Behavior: Very similar to other river cruisers, it can usually be seen when adults are cruising back and forth on long patrols along dirt roads or wide trails through forests, often well away from water. Males patrol along the length of a creek or small river.

Comments: There are two subspecies found in North Carolina. The Georgia River Cruiser (*M. i. georgina*) is found across most of the Piedmont and Coastal Plain, whereas the Illinois River Cruiser (*M. i. illinoiensis*) is found in the Mountains.



Macromia margarita Westfall, 1947 — Mountain River Cruiser

Distribution: This is a very poorly known species that is globally limited to the southern Appalachians and adjacent Piedmont. In North Carolina, there are records for 12 counties in the Mountains and Piedmont. More data are needed to determine the true range, though it seems to be absent from mid- and high elevations in the Mountains.

Abundance: Rare, or at least very difficult to distinguish from other *Macromia*, in the lower Mountains and Piedmont foothills. Presumed very rare eastward over most of the rest of the Piedmont but seemingly absent from the southeastern portion of the Piedmont. High counts of:

- 2 – Macon, 20 July 2008
- 2 – Caldwell, 18 August 1987
- 2 – Cleveland, 6 June 1999

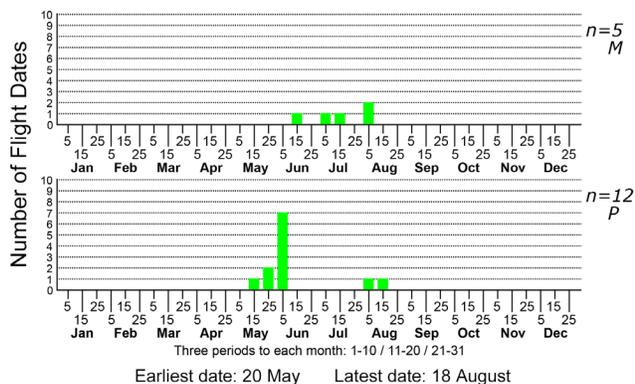
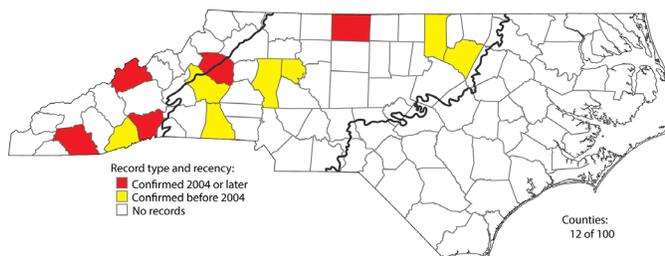
Status: G3/N3/S1

Flight: North Carolina’s records fall between mid-May and mid-August.

Habitat: Creeks and rivers that are clean and fast-flowing.

Behavior: Very little reported. Males patrol lengthwise along creeks and rivers. How often it flies and perches away from the breeding sites has not been reported.

Comments: Because of the difficulty in distinguishing among species of *Macromia*, the range and abundance of this species will likely be unclear for years to come. We strongly encourage observers to photograph from several angles any perched river cruiser they see in the Mountains and Piedmont to facilitate species identification.



Macromia taeniolata Rambur, 1842 — Royal River Cruiser

Distribution: Essentially throughout the Coastal Plain and widely scattered over most of the Piedmont. Apparently absent from the Mountains.

Abundance: Difficult to determine because of similarity of appearance to the Swift River Cruiser and the fact that river cruisers perch infrequently or too high in trees for easy observation/photography. Based on the number of records (mostly collections and recent photos), fairly common to common in the southern half of the Coastal Plain, and uncommon in the northern half, though this difference is possibly due to the comparative scarcity of fieldwork in the northern counties. It is clearly rare to quite uncommon in the Piedmont, though it possibly might be increasing there. High counts of:

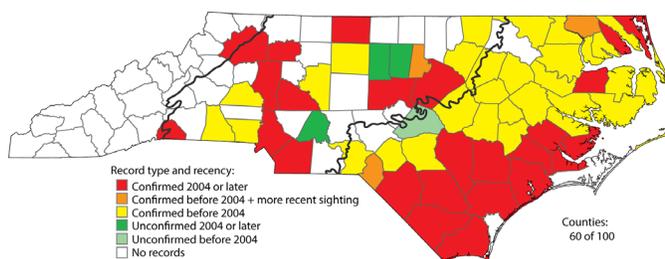
- 38 – Sampson, 23 August 2015
- 30 – Columbus, 15 July 2018
- 30 – Robeson, 15 July 2018

Status: G5/N5/S4S5

Flight: Late May to mid-October.

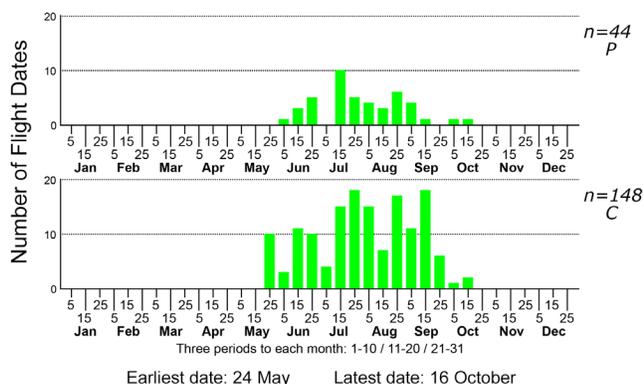
Habitat: Mostly around larger creeks and rivers, rarely at lakes.

Behavior: Males cruise long distances over rivers and larger creeks, mostly about three feet (1 m) above the water, and the flight is slower than in other river cruisers. Away from water, they behave like most other river cruisers, flying



long beats over roads and sunny trails in forested areas. However, they tend to fly higher than the others in the genus, often 15 or more feet off the ground.

Comments: This is one of the longest of the state's dragonflies. However, its abdomen is quite slender, and thus when seen overhead in flight, one can separate it from the similar-sized Swamp Darner (*Epiaeschna heros*; which has a robust and tapered abdomen).



Family Corduliidae (Emeralds)

Cordulia shurtleffii Scudder, 1866 — American Emerald

Distribution: Known only from three locations in the Mountains.

Abundance: Very rare in North Carolina. High counts of:

- 4 – Burke, 6 July 1993
- 3 – Burke, 20 June 2017
- 3 – Burke, 21 June 2017

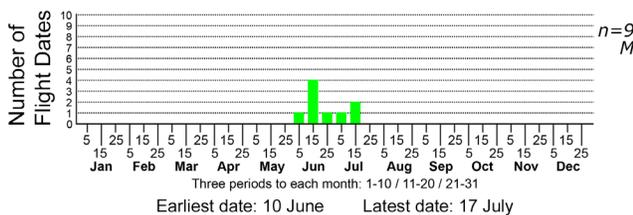
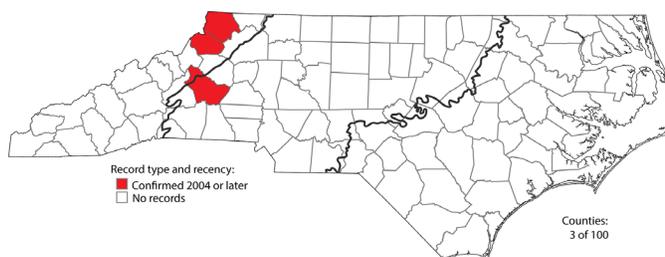
Status: G5/N5/S1

Flight: The only North Carolina records are from early June to mid-July. This seems quite late, as Paulson (2011) gives a flight season of May to July for New Jersey, and May to June for Ohio. Thus, one would expect the species to occur from May at least into mid-July in North Carolina.

Habitat: All of the state's records are from small ponds at high elevations (over 3600 feet [1097 m]).

Behavior: Males “dart and hover” along shores of its ponds and boggy areas. Adults forage away from ponds along wooded margins.

Comments: Observers should search out small ponds at high elevations, especially over 4000 feet (1219 m) in elevation (though this combination does limit the number of places where it could occur in the state).

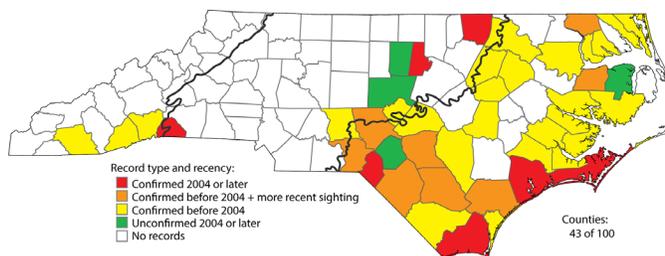


Epitheca costalis (Selys, 1871) — Slender Baskettail

Distribution: Primarily the Coastal Plain, though it does occur in the eastern and southeastern Piedmont and in the southern Mountains. Likely present over other portions of the southern Piedmont.

Abundance: Generally uncommon in the Coastal Plain. Very rare in the eastern Piedmont and southern Mountains (and apparently absent elsewhere in these provinces). High counts of:

- 9 – Carteret, 3 April 2019



8 – Gates, 1 June 1970
 6 – Carteret, 12 April 2021

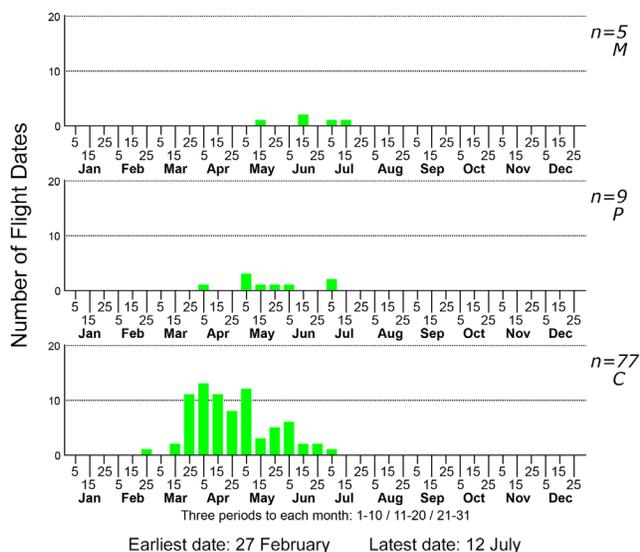
Status: G5/N5/S4

Flight: Early spring to early summer. In the Coastal Plain, the flight is from late February to early July, but it is most numerous in April and May. The meager data for the Piedmont fall between early April and early July, whereas those in the Mountains fall between mid-May and mid-July.

Habitat: Mainly at ponds or small lakes, rarely at slow-moving rivers.

Behavior: Males patrol small territories around the pond margins. As with all baskettails, adults are more easily seen and studied when they are foraging or perching in an oblique manner on twigs a foot or two (30–60 cm) above ground along dirt roads and wide trails.

Comments: This species was formerly called the Stripe-winged Baskettail, but only a few females show the eponymous dark bar on the leading edge of the forewings in this part of the species' range.



Epitheca cynosura Say, 1840 — Common Baskettail

Distribution: Statewide; occurs in every North Carolina county.

Abundance: Common to occasionally abundant across the state. Often the most numerous species seen on an outing in the spring season. High counts of:

- 400 – Camden, 13 April 2017
- 150 – Onslow, 24 April 2010
- 130 – Wake, 3 May 2013

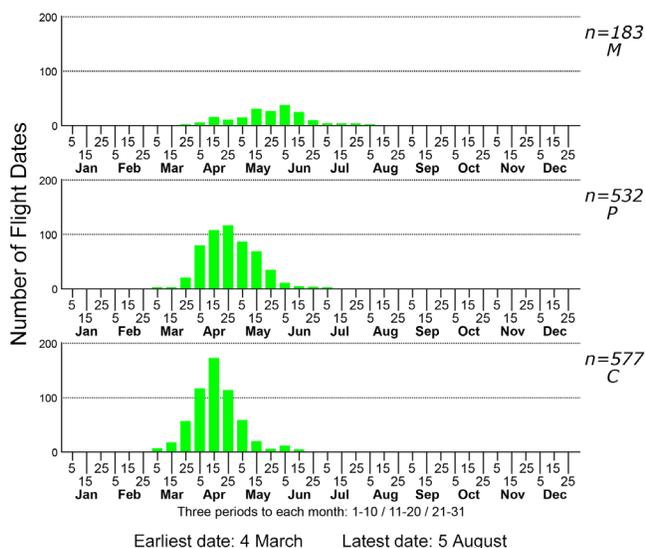
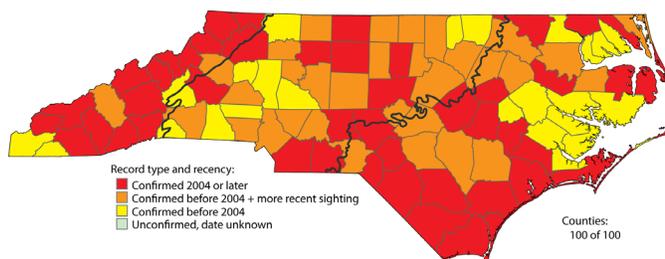
Status: G5/N5/S5

Flight: Spring/early summer season only; early March to mid-June in the Coastal Plain, early March to early July in the Piedmont, and late March to early August in the Mountains.

Habitat: Mainly at still or slow-moving water of ponds, lakes, and pools; less so at slow creeks and rivers.

Behavior: Males are often seen flying low over pools and ponds, and at times over smaller creeks, perching quite frequently along the margins. Away from water, adults range widely to woodland margins, sunny roads and trails, where they perch unwarily on twigs or other low vegetation and thus can be studied closely.

Comments: The most common and widespread of the *Epitheca* species found in the state. Observers may quickly tire of seeing this species in spring, in hopes of finding less numerous baskettails, darners, and skimmers.



Epiplatys princeps Hagen, 1861 — Prince Baskettail

Distribution: Statewide; presumably occurs in all 100 counties, although a few coastal counties lack records.

Abundance: Fairly common to common essentially statewide. Rare toward the coast and likely absent on the Outer Banks. High counts of:

- 50 – Camden, 23 June 2017
- 50 – Onslow, 31 May 2019
- 50 – Jones, 31 May 2019

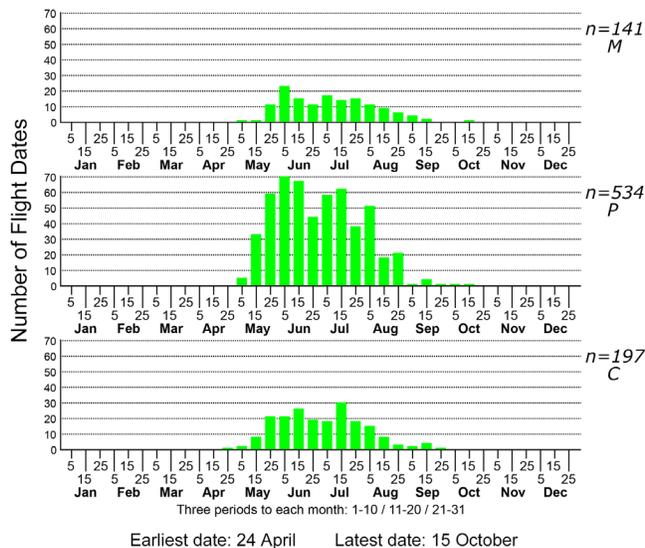
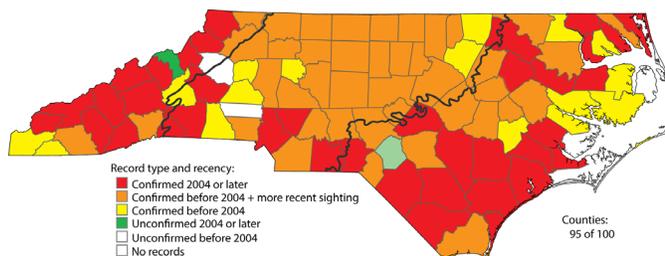
Status: G5/N5/S5

Flight: A long flight period compared with other baskettails, and the only baskettail species that extends through the summer into early autumn. In the Coastal Plain, the flight occurs from late April to late September; in the Piedmont and Mountains, from early May to mid-October (though scarce after August).

Habitat: Slow-moving waters of lakes and ponds, or still rivers. Usually in open, sunny places.

Behavior: Males are often seen making long back-and-forth flights along canals, pond and lake shores, and in sunny areas well away from forests. The flight is often higher than for most other dragonflies, as an observer often sees them at or above head height. Unlike the other baskettails, this species only infrequently perches.

Comments: The Prince Baskettail’s wings are boldly blotched in black, and adults glide and fly in a choppy manner, with wings often held above the horizon, for long periods of time. Thus, it looks and behaves more like a species of darner or skimmer than a typical baskettail, so although it is in the same genus as the other four North Carolina baskettails, those baskettails are placed in a different subgenus, *Tetragoneuria* versus the Prince’s *Epicordulia*.



Epiplatys semiaquea (Burmeister, 1839) — Mantled Baskettail

Distribution: Primarily the Coastal Plain, with few records for the eastern Piedmont.

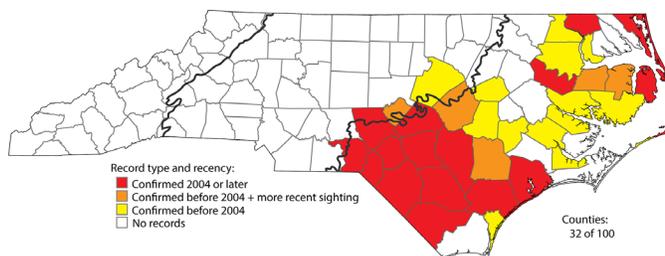
Abundance: Fairly common to locally common in the Sandhills and the adjacent southern Coastal Plain; less common farther eastward and north-eastward, but still at least fairly common locally, though probably rare in the extreme northeastern Coastal Plain. Rare in the narrow Piedmont part of the range. High counts of:

- 200 – Dare, 28 April 2018
- 50 – Bladen, 29 March 2021
- 35 – Moore, 17 April 2005

Status: G5/N5/S5

Flight: Spring season only; early March to early June, with peak abundance from late March to late April. The few Piedmont records end in late April, though it likely flies there for a few more weeks.

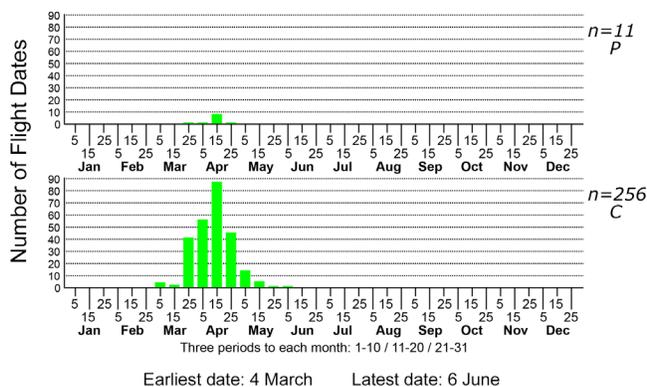
Habitat: Lakes, ponds, and pools. Seems to be more numerous where these waters are acidic, such as in pocosin habitats



to include Carolina bay lakes and ponds.

Behavior: Males are less often seen in patrols over water than are Common Baskettails. Adults are typically seen, along with many Common Baskettails, flying along dirt roads and other clearings, frequently stopping to perch obliquely on twigs and other vegetation close to the ground.

Comments: Mantleds are the smallest baskettails and can often be identified by their small size while seen on the wing in mixed-species groups.



Epitheca spinosa (Hagen in Sélys, 1878) — Robust Baskettail

Distribution: Occurs over most of the Coastal Plain and adjacent Piedmont. Seemingly absent in the extreme eastern Coastal Plain, at least in most tidewater counties around the Albemarle and Pamlico sounds.

Abundance: Uncommon, to locally fairly common, over its range in the Coastal Plain and eastern Piedmont. High counts of:

- 10 – Craven, 13 April 2013
- 8 – Northampton, 17 April 1969
- 8 – Robeson, 17 April 1989

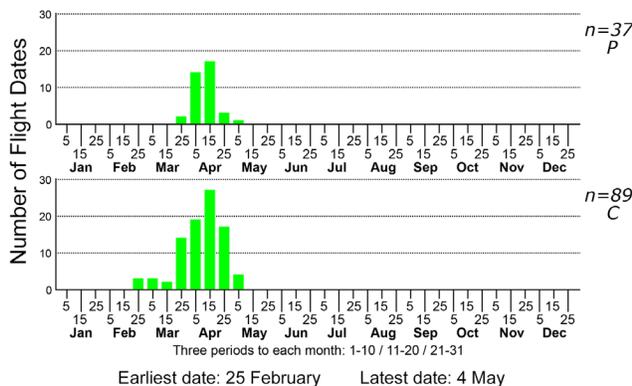
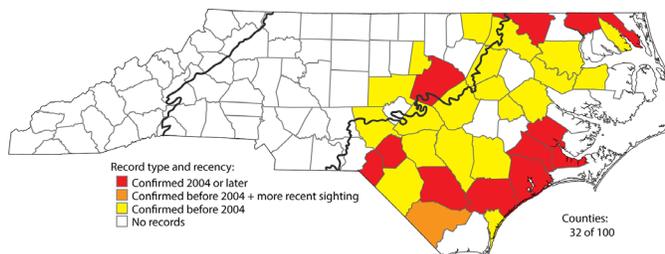
Status: G4/N4/S4

Flight: Spring season only, with the flight finishing about as early as any dragonfly species in the state. This flight period in the Coastal Plain is from late February to early May, and in the Piedmont from late March to early May.

Habitat: Still (lentic) waters of swamps and ponds/pools in or near forests; probably scarce at open water of lakes and ponds.

Behavior: Males patrol along swampy edges near and over water. The now-numerous photos of the species have essentially all been from blackwater ponds, creeks, and rivers; thus, it apparently does not occur along wide, slow-moving, brownwater rivers and its associated swamps.

Comments: Paulson (2011) says “The sparseness of records south and west of North Carolina is puzzling” and “seemingly rare in most parts of range”. This suggests that most of the records rangewide are from North Carolina, and the species is likely much more numerous here than elsewhere in the range.



Helocordulia selysii (Hagen in Selys, 1878) — Selys’s Sundragon

Distribution: Nearly throughout the Piedmont and the Coastal Plain, though apparently absent from the eastern part of the latter region. Of sporadic occurrence in the western Piedmont, possibly absent from a few of these counties. No Mountain records.

Abundance: Uncommon to occasionally or locally fairly common in the eastern half of the Piedmont and the southern Coastal Plain. Slightly less numerous (uncommon) in the central and northwestern Coastal Plain; rare to uncommon in the western Piedmont. High counts of:

- 29 – Sampson, 25 March 2017
- 29 – Bladen, 25 March 2017
- 13 – Cumberland, 19 March 2020

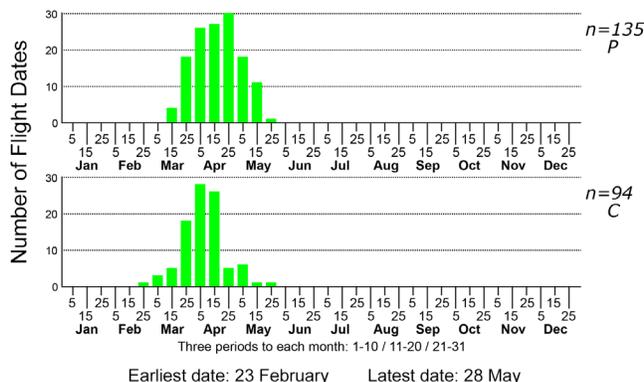
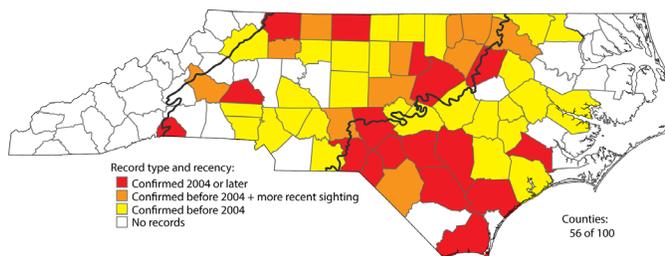
Status: G4/N4/S4

Flight: First two-thirds of the spring season only; late February to late May in the Coastal Plain, and mid-March to late May in the Piedmont.

Habitat: Small streams and trickles, where sandy, and typically in shaded or semi-shaded places.

Behavior: Its behavior is similar to that of basket-tails, with males patrolling small areas along creeks. Adults frequently move well away from water, feeding along dirt roads and wide, sunny trails, perching in an oblique manner on twigs close to the ground. They can be somewhat unwary and studied/photographed at close range.

Comments: As Dunkle (2000) calls the species “uncommon” over its range, and Beaton (2007) calls it “uncommon to rare” in its Georgia range, the species may be more numerous in North Carolina than in most other states in its range.



Helocordulia uhleri (Selys, 1871) — Uhler’s Sundragon

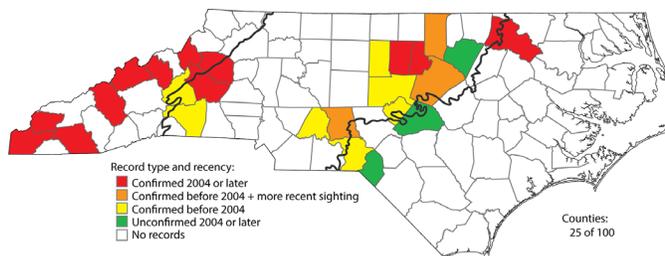
Distribution: Scattered over the Mountains and Piedmont, with an apparently real gap (or certainly “scarcity”) in the west-central portions of the Piedmont. Occurs on very rare occasions in the Sandhills portion of the Coastal Plain.

Abundance: Declining in recent years, with shockingly no records in 2018–2020, and only eight records from 2021 through 2023. Less numerous than Selys’s Sundragon (*H. selysii*) in most counties where both occur in the eastern Piedmont, but seemingly quite rare westward, with most records in the western part of the state lying close to the Blue Ridge escarpment. The gap of records in the west-central Piedmont is bizarre and suggests that the species must be very rare there, but as there are many records from the foothills and from the eastern Piedmont, it certainly ought to be present in all Piedmont counties. High counts of:

- 8 – Orange, 2 May 2002
- 8 – Orange, 31 March 2006
- 6 – Macon, 13 May 2023

Status: G5/N5/S3S4

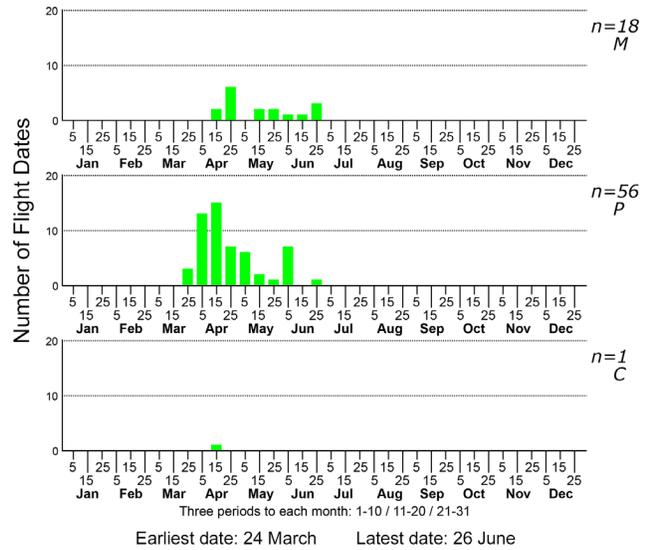
Flight: Somewhat similar to Selys’s Sundragon, though occurring later into early summer. In the Piedmont, from late March to late June, but scarce after early May; dates in the Mountains fall between mid-April and late June; and the single Coastal Plain record is for mid-April.



Habitat: Creeks and slower-flowing rivers, in shaded or semi-shaded forested areas. Apparently in slightly larger bodies of water than for Selys's, but habitat certainly overlaps.

Behavior: Males patrol territories over creeks and rivers but fly longer and faster patrols than does Selys's. Adults are like most baskettails and Selys's Sundragon in foraging well away from water along trails and roads, usually perching low on twigs for easy observation and photographs.

Comments: Though this species has a wider, more northern, range than does Selys's (Paulson 2011), it is the less common of the two *Helocordulia* in North Carolina.



Neurocordulia alabamensis (Hodges in Needham and Westfall, 1955) — Alabama Shadowdragon

Distribution: Ranges across the southwestern 40–50% of the Coastal Plain, including the Sandhills region. North Carolina lies at the northeastern end of the range (Paulson 2011).

Abundance: Very difficult to assess because of its crepuscular habits. As it has been found in practically all potential counties in North Carolina within its range, it must not be truly scarce. Dunkle (2000) calls the species “common but seldom seen” across its range. Likely, it is uncommon to fairly common in the Sandhills region, and rare to uncommon elsewhere in the southern Coastal Plain, but especially scarce in the central Coastal Plain. High counts of:

- 6 – Moore, 2 July 1973
- 5 – Richmond, 14 July 1996
- 5 – Moore, 25 June 1966

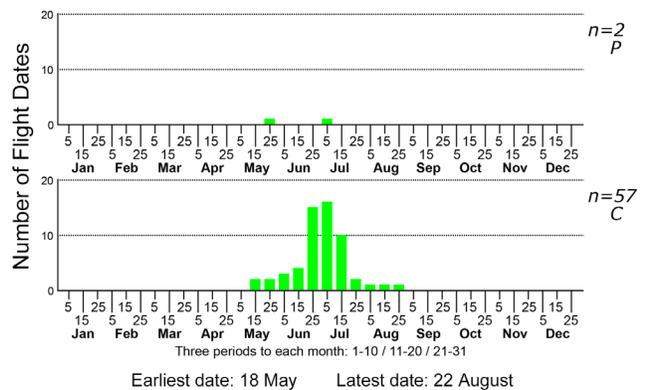
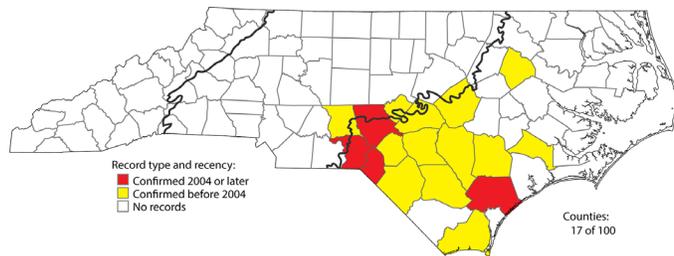
Status: G5/N5/S3?

Flight: The flight is from mid-May to late August, though most do not appear until mid-June, and the peak is from late June to mid-July.

Habitat: Small creeks in forested regions, often where sandy and with low flow.

Behavior: Strictly crepuscular, with most flying taking place about 30 minutes before dusk. It spends the remainder of the day hanging on twigs in shade in forests, where very seldom seen. When it does fly, females move in a jittery manner in tight circles just above the water, while males fly longer beats up and down the creek (Kittelberger and Bockhahn 2020).

Comments: To see shadowdragons, observers must visit creeks and other bodies of water in shaded places during the last hour of daylight, with a net handy to catch whatever may be seen flying over the water. Dunkle (2000) calls this species “One of the world’s most elusive dragonflies” because of its very narrow flight time, often just 10–20 minutes near dusk. Because this species is poorly known by today’s biologists/observers, the NCNHP retains the species on its Watch List.



Neurocordulia molesta (Walsh, 1863) — Smoky Shadowdragon

Distribution: Scattered in the western half of the Coastal Plain, and adjacent Piedmont.

Abundance: Secretive and difficult to survey (as are all shadowdragons) because of its crepuscular habits, but seemingly less numerous than *alabamensis* and *obsoleta* within its North Carolina range. Probably rare to locally uncommon. Few recent records. High counts of:

- 4 – Cumberland, 18 June 1968
- 2 – Wake, 22 June 2010
- 2 – Wake, 17 June 2010

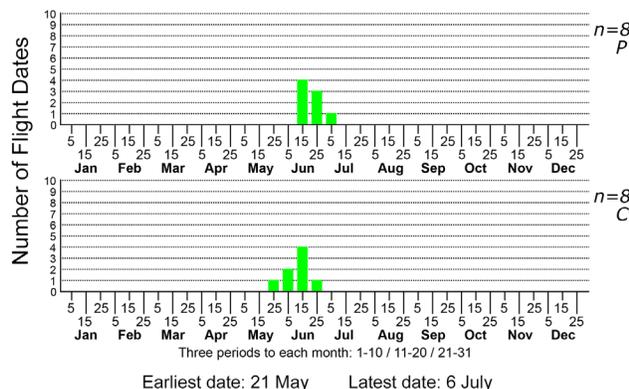
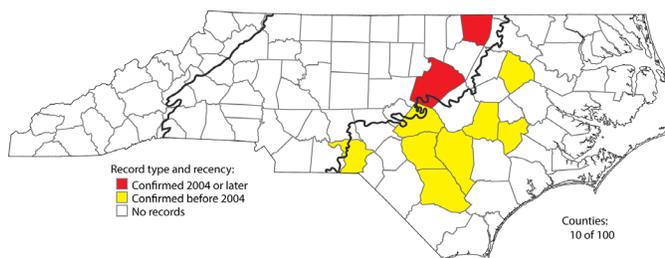
Status: G4/N4/S3?. We suggest raising the rank to S2?.

Flight: Available dates fall between 21 May and 6 July.

Habitat: Occurs at larger bodies of water (i.e. rivers and larger creeks) than does Alabama Shadowdragon.

Behavior: As with all shadowdragons, Smoky Shadowdragons remain motionless, hanging from twigs and leaves in the forest shade during the day. They fly over water for only the last hour of daylight, with most activity right at dusk.

Comments: Though the species might not be truly rare in North Carolina, there are records for just 10 counties and the species is on the NCNHP Watch List. As there are so few recent records, some consideration for placing the species on the Significantly Rare list must be given.



Neurocordulia obsoleta (Say, 1840) — Umber Shadowdragon

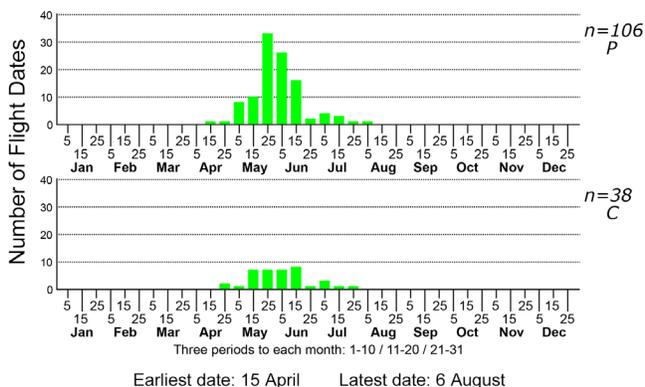
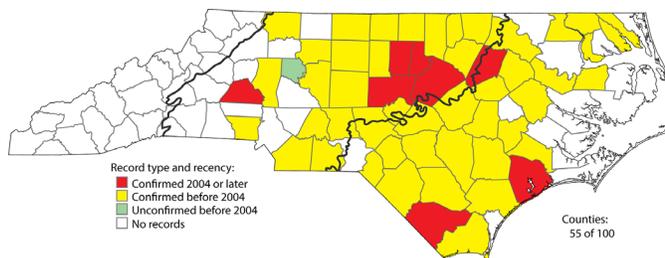
Distribution: Occurs over nearly all of the Piedmont and Coastal Plain, though the range is spotty near the Blue Ridge Escarpment and in the extreme eastern Coastal Plain, where possibly absent in a few Tidewater counties. No records for the Mountains.

Abundance: Because of its crepuscular habits, abundance is poorly known, but it has been recorded from the majority of Piedmont and Coastal Plain counties within its range, and with about 145 records with dates available, it is certainly not scarce, though most of these records are from before 2004. Likely uncommon to fairly common in much of its range in North Carolina. High counts of:

- 10 – Onslow, 26 May 2017
- 9 – Chatham, 29 May 1987
- 7 – Chatham, 13 June 2021

Status: G5/N5/S4

Flight: The flight period is from mid-April to early August.



Habitat: Rivers, typically large and clean; less often at creeks.

Behavior: As with all shadowdragons, adults hang from twigs and vegetation in the forest shade during the day and emerge to fly only in the last hour of daylight. Males prefer to fly patrols over riffles in rivers.

Comments: The large number of counties with records (n = 55) for such a secretive dragonfly largely represents the intense collecting efforts of Cuyler conducted prior to 2004.

Neurocordulia virginiensis Davis, 1927 — Cinnamon Shadowdragon

Distribution: Known at present only from a handful of counties in the northeastern Piedmont and a single Coastal Plain record at the Fall Line.

Abundance: Perhaps declining. Seemingly rare to uncommon (and perhaps fairly common at one or two sites, at least formerly). High counts of:
 14 – Chatham, 2 June 1976
 6 – Chatham, 8 June 2000
 6 – Chatham, 13 June 1994

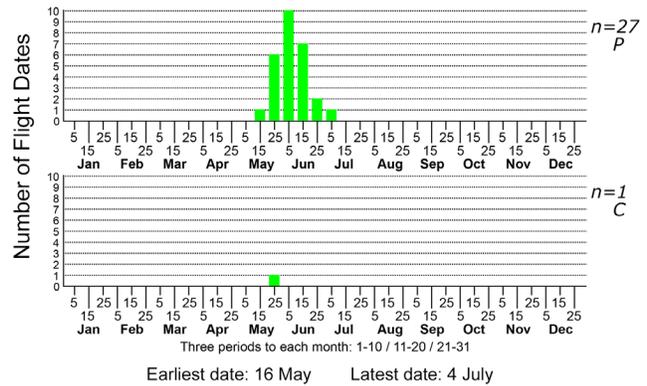
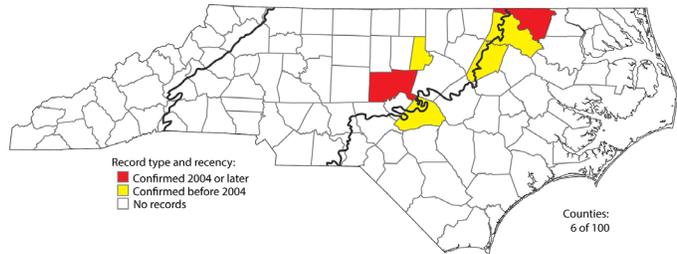
Status: G4/N4/S2?. We suggest raising the rank to S1? or S1S2.

Flight: The flight occurs from mid-May to early July.

Habitat: This is a riverine species, occurring at larger, clean ones with riffles. This preferred habitat precludes occurrence in most of the Coastal Plain, with its slow-moving rivers generally devoid of rocks and riffles, but this habitat is widespread across the Piedmont, and so far all known records are near the Fall Line of the eastern Piedmont/extreme western Coastal Plain.

Behavior: As with other shadowdragons, adults perch inconspicuously on twigs in the shade of forests during the day, emerging during the last hour of light to forage near rivers. More likely than other shadowdragons to be found away from water (Beaton 2007).

Comments: Despite there being fewer than 30 records with dates available, the NCNHP moved the species from the Rare List to the Watch List in 2012, as it wants more data on twilight survey efforts for shadowdragons before it considers any to be truly rare. With only two records in recent years, it seems best for this species to be moved back to the Rare List as Significantly Rare.



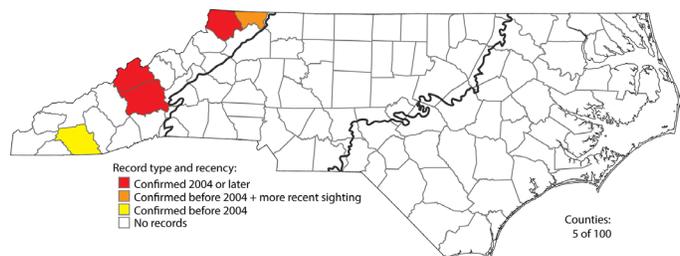
Neurocordulia yamaskanensis (Provancher, 1875) — Stygian Shadowdragon

Distribution: Known from just five Mountain counties, ranging from the Virginia state line to the Georgia state line.

Abundance: Rare to locally quite numerous, but as it is crepuscular, true relative abundance across the Mountains is only speculative at the present time. High counts of:
 50 – Madison, 7 June 2020
 30 – Madison, 2 June 2019
 30 – Madison, 4 June 2021

Status: G5/N4N5/S1?

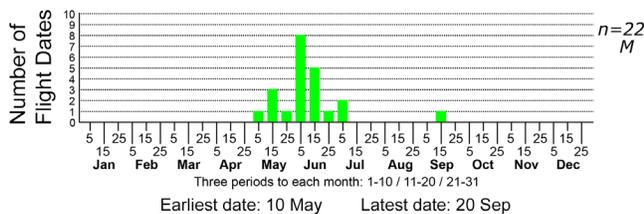
Flight: Early May to mid-September.



Habitat: Larger rivers.

Behavior: This shadowdragon flies even later in the day than the others, typically not flying until sunset and continuing for another 30 minutes (Dixon 2021). During the day, shadowdragons perch in the shade of forests on twigs and leaves, where nearly impossible to find.

Comments: This is the only one of the five shadowdragon species in North Carolina that occurs in the Mountains. The species has been found recently only along two large rivers, the French Broad and the New, and though not rare at all along these waters, the state rank probably should stay at S1? for now.



Somatochlora elongata (Scudder, 1866) — Ski-tipped Emerald

Distribution: Strictly the Mountains, and perhaps along the Blue Ridge Escarpment in Piedmont counties.

Abundance: Rare to possibly uncommon in the northern Mountains, but rare to the south. High counts of:

- 4 – Macon, 15 June 1953
- 4 – Watauga, 7 August 2018
- 3 – Burke, 23 August 1991

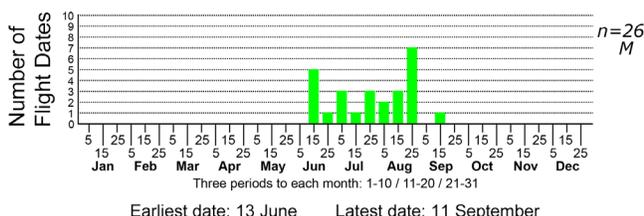
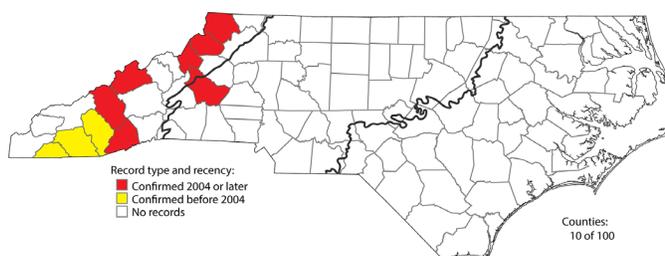
Status: G5/N5/S2

Flight: Mid-June to the end of August; one record in mid-September.

Habitat: Slow-flowing streams, outlets of lakes and ponds, beaver ponds, bogs, etc., typically in open or partly open sites at elevations mainly over 3500 feet (1067 m). Most records are from high-quality sites/natural areas.

Behavior: Males patrol territories about 1–2 feet (30–60 cm) above water. However, in normal feeding, the adults often forage high, sometimes in shade.

Comments: Most of the other emeralds in the state occur at lower elevations and often in somewhat more wooded settings than does this northern species.

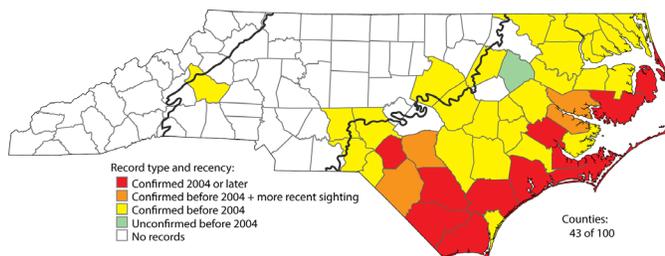


Somatochlora filosa (Hagen, 1861) — Fine-lined Emerald

Distribution: Throughout the Coastal Plain, with records for nearly every county in the province, even along the coast. Occurs along the Fall Line in the extreme eastern Piedmont, and there is a collection record (mis-identified?) from a Mountain county.

Abundance: Fairly common and widespread in much of the Coastal Plain; probably uncommon in some areas closer to the Piedmont. It is one of the few dragonflies that is more numerous in the lower Coastal Plain than in the upper part of this province. It is very rare in the eastern Piedmont. High counts of:

- 63 – Pender, 19 September 2017
- 20 – Onslow, 24 September 2016
- 15 – Carteret, 24 August 2018



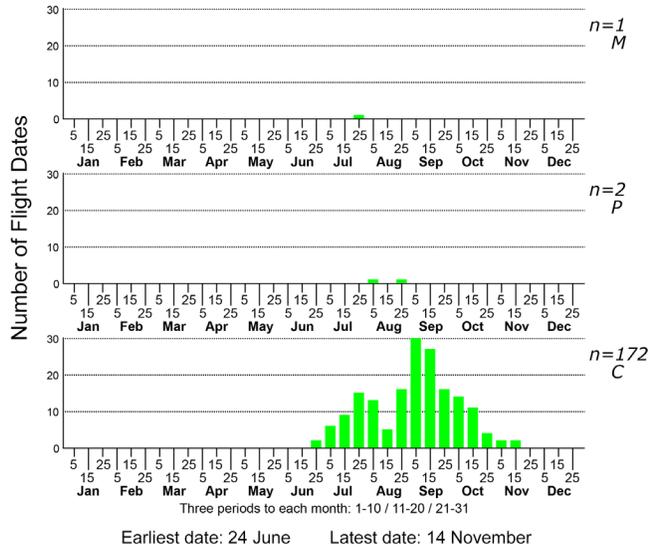
Status: G5/N5/S4

Flight: Late June to mid-November, being one of the few dragonflies whose main flight is the fall season, where it often peaks in September or even into October. Interestingly, the three records from the Piedmont and Mountains are from late July to late August, not in the fall.

Habitat: Often found near forested, swampy habitats, as opposed to flowing waters of riverine/creekside habitats or wide-open waters of lakes and ponds.

Behavior: As with most emeralds, adults forage widely away from water, such as along forest edges and along roads and wide trails. They often fly quite high (over 10–20 feet [3–6 m]), but occasionally they can be observed as they perch on a twig, at times within a few feet of the ground.

Comments: This species can be numerous in the fall season near swampy woodlands and forested margins near wetlands, though finding one perched within easy viewing or photographing can be a challenge. Often the best way to see one is to net the dragonfly as it flies by, which is frequently over one's head.



Somatochlora georgiana Walker, 1925 — Coppery Emerald

Distribution: Present (at least formerly) over the eastern Piedmont and western two thirds of the Coastal Plain. It seems to be absent in the far eastern counties, as well as in the western half of the Piedmont and the Mountains.

Abundance: Rare (only one record since 1997), but formerly not uncommon, which may indicate a decline in the last three decades. High counts of:

- 9 – Duplin, 30 June 1970
- 8 – Moore, 7 July 1972
- 4 – Nash, 6 August 1980

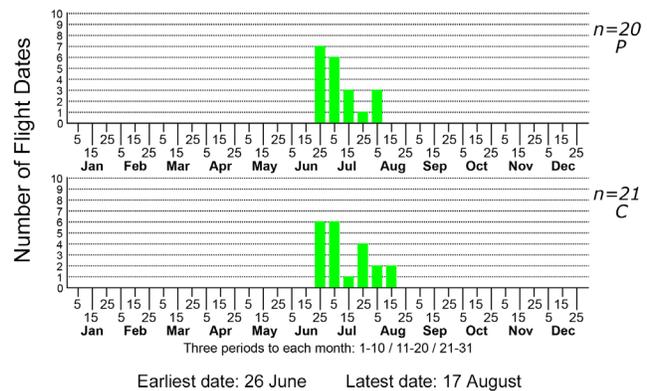
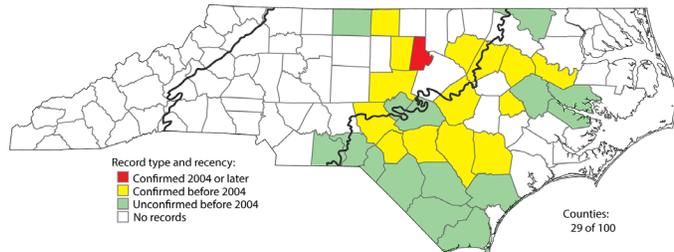
Status: G3G4/N3N4/S1?

Flight: Flight occurs between late June and mid-August.

Habitat: Creeks and other slow-moving acidic streams, in forested areas.

Behavior: Adults are somewhat secretive. They are most frequently seen flying 30 or more feet (≥ 9 m) above ground in late afternoon. They perch on twigs, but often well above ground. Males can sometimes be seen patrolling over streams.

Comments: Notoriously difficult to find this tiny, habitat-specific, secretive, high-flying species. The reason for the apparent decline in North Carolina is unknown. The only recent record was of a specimen caught in a spider web! Note added in proof: One was photographed in flight in Richmond County in 2024; this record also included noteworthy behavioral data. This recent record was not accounted for in the statistics or the species' map to maintain consistency among all species within the 2004–2023 time frame.



Somatochlora linearis (Hagen, 1861) — Mocha Emerald

Distribution: Throughout the Coastal Plain (even near the coast), and the eastern and central Piedmont. Not known yet from the Mountains, despite range maps in reference books that include the entire eastern United States.

Abundance: Uncommon to locally fairly common over much of the Coastal Plain and eastern third of the Piedmont, but uncommon in the central Piedmont. Perhaps uncommon also in the southeastern part of the Coastal Plain. This is generally the most numerous emerald in the Piedmont and is the most numerous emerald in the Coastal Plain during the summer. High counts of:

- 18 – Durham, 8 August 2010
- 12 – Orange, 21 July 2016
- 10 – Orange, 4 July 2018

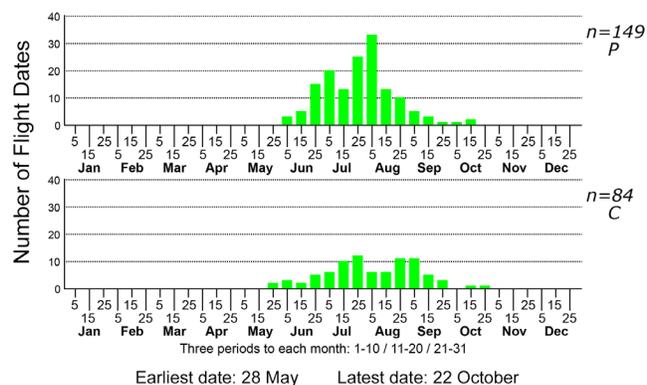
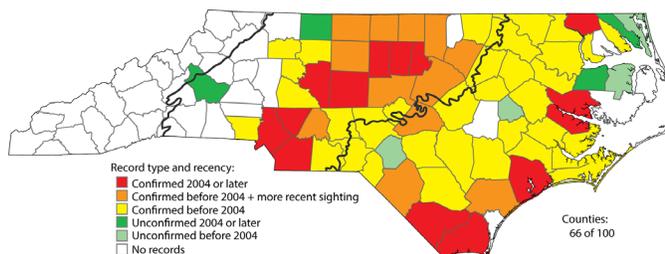
Status: G5/N5/S5

Flight: Summer and early fall seasons, from early June (and very late May in the Coastal Plain) into late September, and sparingly to mid-October. Not numerous after August.

Habitat: Small, forested streams; streams about 1–3 yards (0.9–2.7 m) wide are preferred (Dunkle 2000).

Behavior: The species is most easily seen near small streams that are drying up. Away from streams, this emerald can be seen flying along wooded roads and wide trails, frequently at head height, back and forth, pausing to hover close to an observer. They spend most of the day perched in shady places, often hidden from an observer.

Comments: Emeralds are usually seen in flight along and over forested roads, often at treetop height, and sometimes perching on telephone wires. They seem curious and may hover close to an observer.



Somatochlora provocans Calvert, 1903 — Treetop Emerald

Distribution: Strictly in the western and central Coastal Plain, though possibly along the Fall Line in the extreme eastern Piedmont.

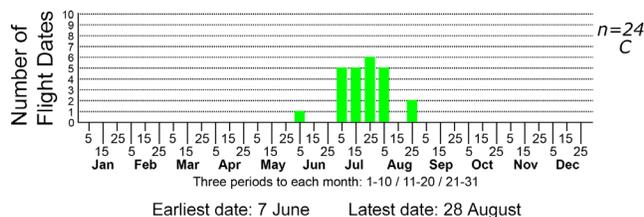
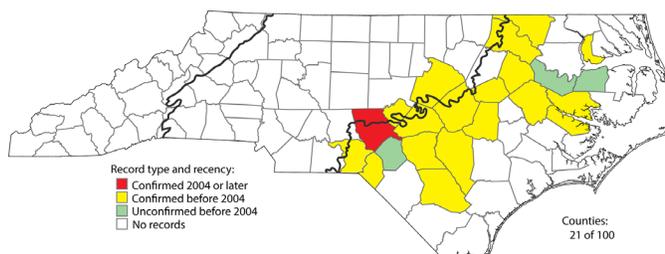
Abundance: Difficult to assess because of its high-flying habits. It has been recorded from 21 counties, so it certainly is not overly rare. Best considered as uncommon and very easily overlooked, within its narrow range in the state. High counts of:

- 3 – Johnston, 26 July 1990
- 2 – Beaufort, 21 August 1996
- 2 – Beaufort, 2 August 1992

Status: G4/N4/S3? With few recent records, it may be time to consider designating this species as Significantly Rare and moving the state rank to S2?.

Flight: The flight apparently occurs between early June and late August, though we only have one record before July.

Habitat: Small forested seeps and pools, perhaps very small streams.



Behavior: As the common name implies, this emerald is normally seen in flight, typically over head- to treetop-height, along and over forested roads and clearings. Adults normally perch high on twigs of canopy trees.

Comments: This species usually needs to be netted to verify records.

Somatochlora tenebrosa (Say, 1840) — Clamp-tipped Emerald

Distribution: Present over most of the Mountains, throughout the Piedmont, and in the northern Coastal Plain. Seemingly absent from the southern Coastal Plain counties, except in the Sandhills region. Probably occurs in all Mountain counties but recorded so far only in roughly half of the counties in that province.

Abundance: Generally uncommon but widespread in the Piedmont, somewhat less numerous than the Mocha Emerald (*S. linearis*). Rare (to formerly uncommon) in the northern Coastal Plain and the Sandhills, as well as in the Mountains. Alarmingly, we have no recent records at all from the Coastal Plain; has it declined there in recent decades? However, there are very few recent observers and reports of any odonate species from much of this large area (northwestern half of the Coastal Plain), and thus trends are not certain. High counts of:

- 20 – Stokes, 24 August 2021
- 8 – Richmond, 10 August 1991
- 6 – Madison, 31 July 2019

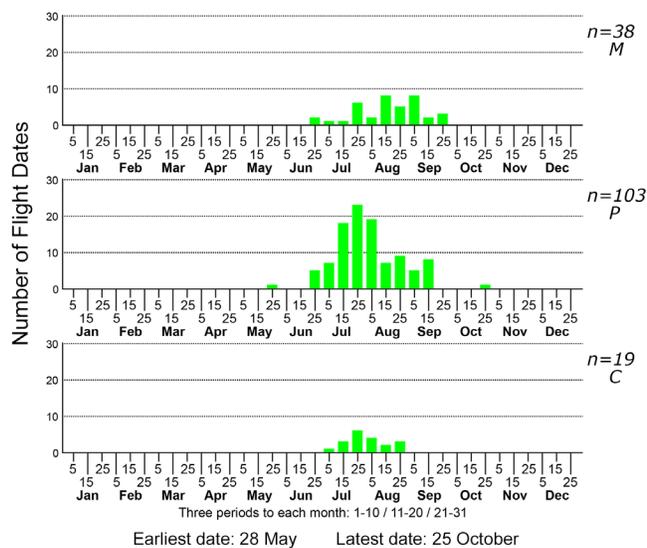
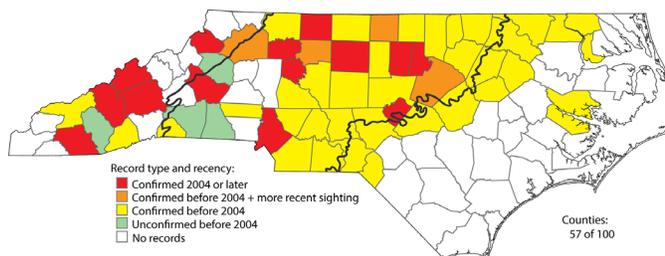
Status: G5/N5/S4

Flight: Primarily the summer season, to early fall; generally, from late June or early July to mid-September.

Habitat: As with other emeralds, it breeds in small, forested wetlands, such as small streams and seeps.

Behavior: Males may be seen flying patrols over the small streams, more easily noticed when the streams are becoming dry. Adults typically forage away from water along wooded roads, edges, and small clearings. They perch on twigs in the shade, often higher than does the Mocha Emerald.

Comments: Clamp-tipped and Mocha are the only emeralds normally seen in the Piedmont. Even so, because emeralds perch in the shade, often not in conspicuous places, many people have trouble becoming familiar with this group of dragonflies, even though *Somatochlora* are collectively numerous in much of North Carolina.



Family Libellulidae (Skimmers)

Brachymesia gravida (Calvert, 1890) — Four-spotted Pennant

Distribution: Mainly the lower half of the Coastal Plain, with an apparent westward expansion in recent years into the central and upper Coastal Plain and a few records in the Piedmont.

Abundance: Common close to tidal/brackish waters; rare to uncommon in areas well away (several dozen miles [50-60 km]) from tidal waters. Casual stray into the southern and eastern Piedmont. High counts of:

- 1000 – New Hanover, 24 May 2014
- 200 – Craven, 15 September 2023
- 67 – Onslow, 29 August 2015

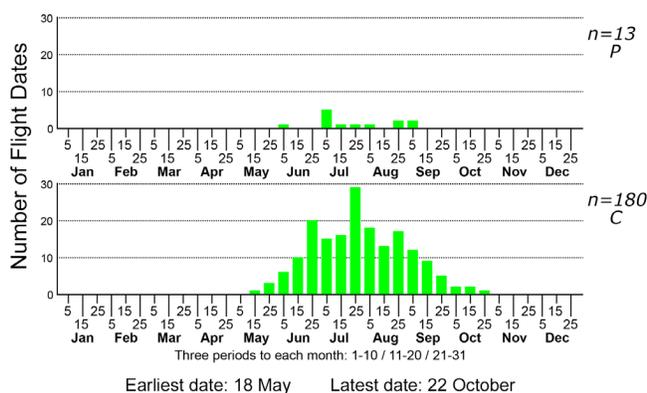
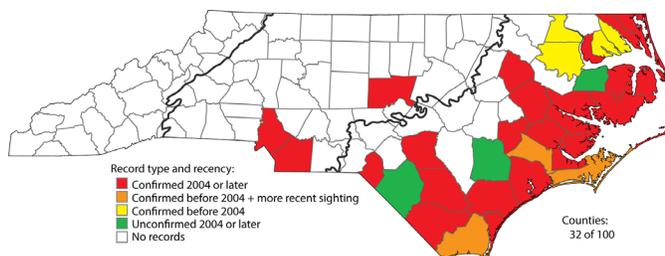
Status: G5/N5/S5

Flight: A wide flight period during the warmer months, ranging from mid-May to mid-October.

Habitat: This is one of the few dragonflies that favors brackish water for breeding. Habitats include brackish lakes, ponds, and ditches. But, also some freshwater habitats.

Behavior: Adults are often seen in some numbers flying along ponds and ditches, frequently perching on twigs and vegetation in easy view of the observer.

Comments: This is one of just four primarily coastal dragonflies in North Carolina (along with Seaside Dragonlet [*Erythrodiplax berenice*], Needham's Skimmer [*Libellula needhami*], and Marl Pennant [*Macrodiplax balteata*]). Most records for the Piedmont occurred after the passage of tropical storms, suggesting that these individuals were carried there by strong winds. No evidence of breeding has been observed at these far inland locations yet, but it would not be surprising if resident populations eventually become established in the Piedmont, given the apparent recent inward range expansion into the western Coastal Plain.



Earliest date: 18 May Latest date: 22 October

Celithemis amanda (Hagen, 1861) — Amanda's Pennant

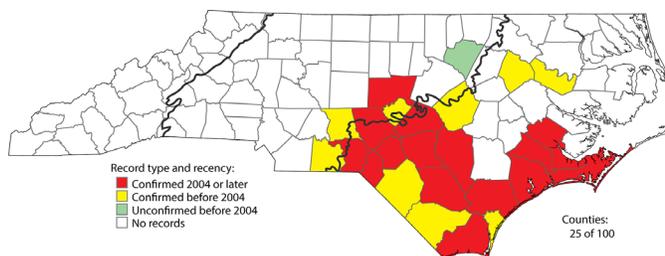
Distribution: The southern two-thirds of the Coastal Plain and extreme eastern Piedmont. North Carolina lies at the northern end of this Southeastern U.S. species' range (Paulson 2011).

Abundance: Common in the Sandhills and southern/southeastern Coastal Plain counties, especially where pocosins, savannas, limesink ponds, and other non-riverine waters are present. Rare to uncommon in the northern portion of its Coastal Plain range, and rare in the Piedmont. High counts of:

- 100 – Craven, 1 September 2013
- 50 – Carteret, 1 September 2013
- 50 – Scotland, 3 September 2018

Status: G5/N5/S5

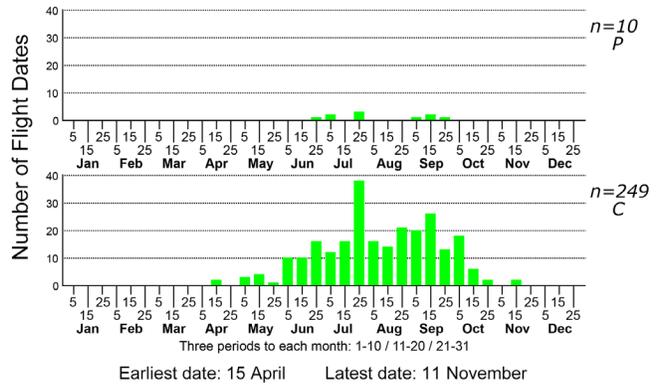
Flight: Mid-April to mid-November, with most records from early June to early October. All records for April and May have been from 2010 or more recently, indicating an earlier start to the flight season than in previous decades.



Habitat: Breeds in pools, ponds, and lakes, where well vegetated.

Behavior: This species, as do most other pennants in North Carolina, perches on twigs and vegetation fairly low to the ground. Adults often forage well away from ponds, such as in savannas and flatwoods.

Comments: This is one of the most often encountered dragonflies in late summer when one is walking in savannas, flatwoods, pocosin margins, and the vicinity of limesink ponds, in high quality natural habitats. It, along with the Halloween Pennant (*C. eponina*), seems to forage farther away from water than do the other *Celithemis* pennants in North Carolina.



Celithemis bertha Williamson, 1922 — Red-veined Pennant

Distribution: Scattered over nearly all of the Coastal Plain and eastern Piedmont; a few records for the southwestern Piedmont, plus outliers in the southwestern Mountains. Found primarily in the southern half of the Coastal Plain. North Carolina lies at the northern edge of the species' range (Paulson 2011).

Abundance: Uncommon to locally fairly common in the southern half of the Coastal Plain; rare in the northern half of the Coastal Plain and the extreme eastern Piedmont; very rare farther west. High counts of:

- 22 – Bladen, 23 August 2015
- 15 – Bladen, 25 June 2009
- 15 – Cumberland, 5 September 2012

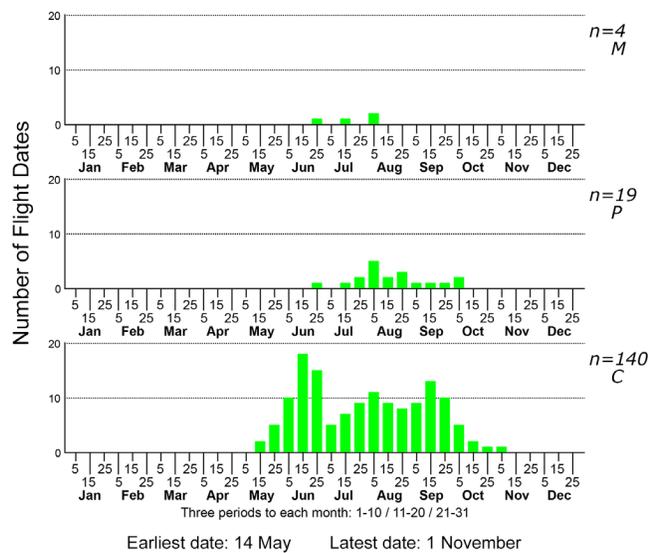
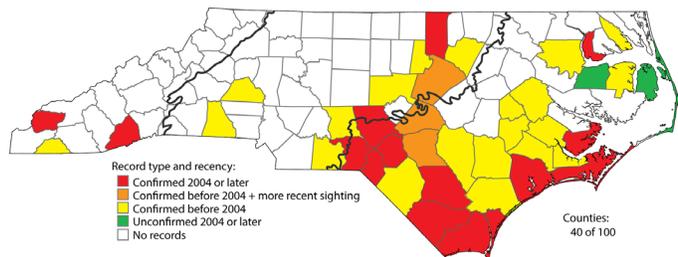
Status: G5/N5/S4

Flight: From mid-May to early November in the Coastal Plain and late June to early October in the Piedmont. The three Mountain records are from late June to early August.

Habitat: Primarily at ponds and lakes with much emergent vegetation along the shore.

Behavior: Unlike most other *Celithemis* pennants, adults seldom stray far from ponds or small lakes and may forage well out in the water and perch on logs and other material emerging from the water.

Comments: Despite it having been found in 40% of the counties in North Carolina, including all in the southern Coastal Plain, it and the Double-ringed Pennant (*C. verna*) are the only ones (of seven species) in the genus that are not common (at least locally) in the state. It is most likely to be seen by working the margins of beaver ponds and man-made ponds in the Sandhills region, but males may perch on vegetation well out from shore (where binoculars or a telephoto lens may be needed for identification).



Celithemis elisa (Hagen, 1861) — Calico Pennant

Distribution: Statewide, undoubtedly occurring in all counties, but definitely scarce toward the coast.

Abundance: Fairly common to common in much of the state, but less numerous in the middle and higher elevations in the Mountains, and in the far eastern counties. High counts of:
 100 – Moore, 24 April 2022
 75 – Onslow, 12 June 2016
 40 – Orange, 1 June 2010

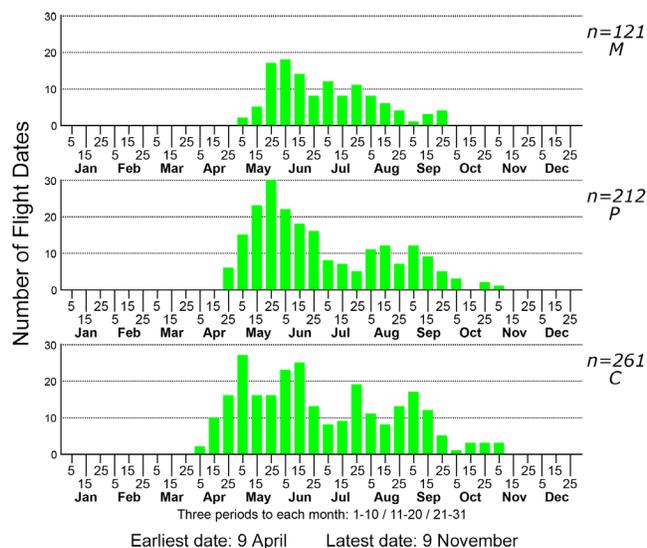
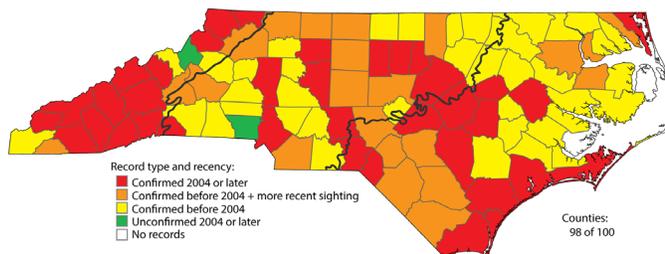
Status: G5/N5/S5

Flight: Early April to early November in the Coastal Plain, late April to early November in the Piedmont, and early May to late September in the Mountains.

Habitat: As with other *Celithemis*, it breeds at ponds and smaller lakes, typically with much vegetation along the shoreline. It occasionally breeds at slow creeks and rivers.

Behavior: Adults fly at ponds and perch on twigs and vegetation around pond margins. They also forage well away from water, preferring open habitats such as fields (rather than open woods and wooded margins). They are unwary when perching, as are most other pennants.

Comments: This is one of the more colorful of the dragonflies, and because it occurs statewide and in open habitats, and it flies for many months of the year, it is one of the dragonflies that beginners should be able to observe and learn. It is the second most reported *Celithemis* (behind only the Halloween Pennant, *C. eponina*) in North Carolina on iNaturalist.



Celithemis eponina (Drury, 1773) — Halloween Pennant

Distribution: Statewide. This is one of the very few species with records for all 100 counties.

Abundance: Common over the Piedmont and Coastal Plain, but only uncommon to fairly common in the Mountains. Abundance across the state is relatively low until July or August, and it is often missed on late spring and early summer field trips. High counts of:
 100 – Orange, 16 August 2009
 75 – Orange, 9 July 2012
 65 – Wake, 19 July 2014

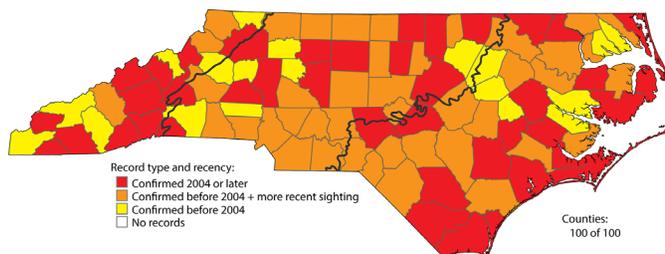
Status: G5/N5/S5

Flight: An extended flight season, covering most of the warmer months, from late April to early November.

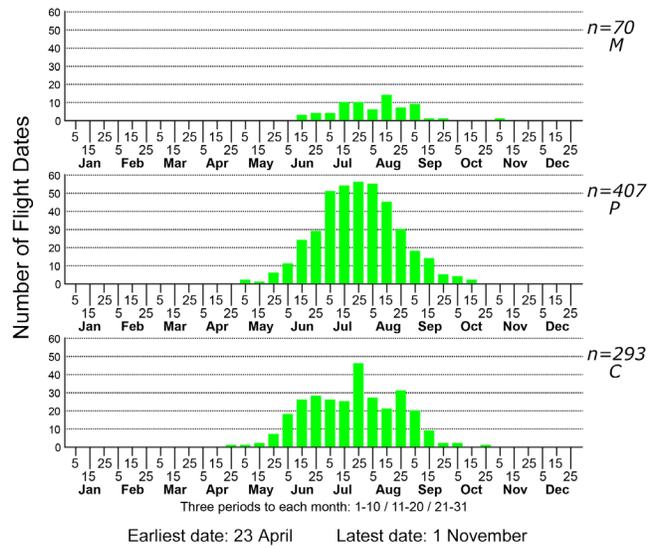
Habitat: Breeds at ponds and lakes, and sometimes at marshes.

Behavior: This *Celithemis* pennant forages farther away from water than all others and is actually not often seen at breeding waters. They are characteristically seen perching on the tips of blades of grasses or tall herbs in a field or powerline clearing, usually well removed from forested areas.

Comments: In many respects, this is the most atypical of the *Celithemis* pennants. It often resembles a butterfly or moth



in flight because the wings are heavily suffused with amber or ochre coloration so as to appear almost opaque. The many dark bands on the wings also might fool an observer into thinking it is a butterfly or moth. It seems to “enjoy” flying in windy weather, with choppy wing beats. As with the Calico Pennant (*C. elisa*), this species should be easily seen and learned by beginners.



Celithemis fasciata Kirby, 1889 — Banded Pennant

Distribution: Statewide, though not yet recorded from three counties.

Abundance: Fairly common to often common in the Coastal Plain and Piedmont. Fairly common in most of the Mountains, but certainly rare or absent at higher elevations. High counts of:

- 55 – Chatham, 11 June 2021
- 50 – Caswell, 21 July 2007
- 50 – Orange, 9 July 2012

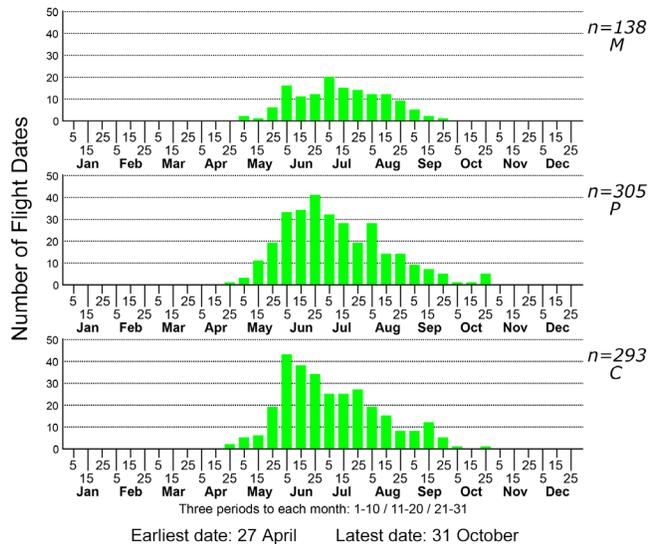
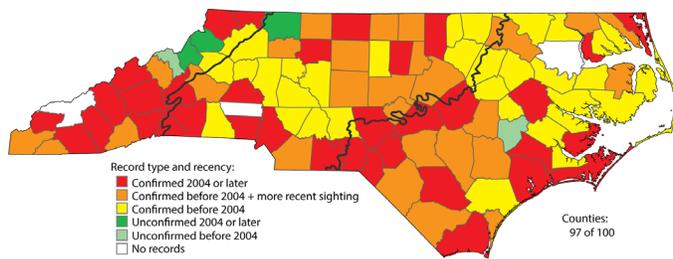
Status: G5/N5/S5

Flight: Late April to late October in the Coastal Plain and Piedmont; slightly shorter season in the Mountains.

Habitat: As with other pennants, it breeds at ponds and lakes, typically ones that are fairly open and frequently at man-made ponds.

Behavior: Males are most often seen along the margins of ponds, making short patrols out over the water. This species usually does not stray too far from the margins of ponds and lakes.

Comments: This is another of North Carolina’s numerous pennants, quite widespread in the state and not hard to find by walking around the margins of open ponds and lakes with some marshy or emergent vegetation along the shores.



Celithemis ornata (Rambur, 1842) — Ornate Pennant

Distribution: Primarily limited to the Coastal Plain, barely ranging into the extreme southeastern Piedmont, with odd outliers in the Mountains. Apparently absent in the extreme northeastern Coastal Plain.

Abundance: Fairly common to common in the Sandhills. Fairly common (to perhaps common) farther east in the southern half of the Coastal Plain. Rare in the northern half of the Coastal Plain, and very rare in the Piedmont and the Mountains. High counts of:

- 100 – Scotland, 6 May 2021
- 80 – Carteret, 7 May 2019
- 75 – Scotland, 8 June 2020

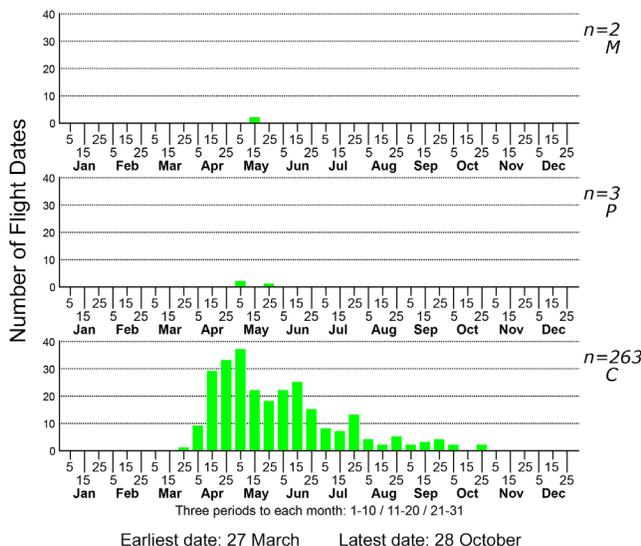
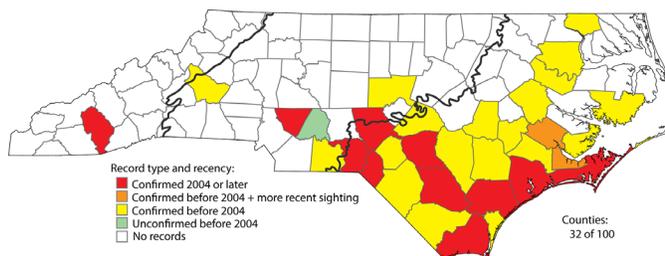
Status: G5/N5/S5

Flight: A very long flight period: late March to late October, though less common after June. Its flight is earlier in spring than most of the other *Celithemis* pennants. The two Mountain records are both in mid-May, where the flight probably lasts for several months.

Habitat: Ponds and smaller lakes with marshy or emergent vegetation along the margins.

Behavior: Males are often seen around the margins of ponds, perching on twigs and making short patrols. Adults forage short distances from water, usually in sunny areas, such as fields, but not nearly as much as do Halloween Pennants (*C. eponina*).

Comments: This species can be confused with Amanda’s Pennant (*C. amanda*), and both may occur at the same ponds. However, Amanda’s typically forages much farther from water than does the Ornate Pennant and its flight averages later in the season. As with so many other pennants, the best strategy to see an Ornate Pennant is to walk around a margin of a pond, such as in the Sandhills or lower Coastal Plain.



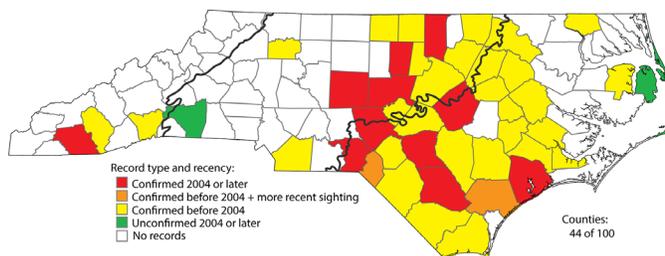
Celithemis verna Pritchard, 1935 — Double-ringed Pennant

Distribution: Primarily the western half of the Coastal Plain and the eastern Piedmont, with a few records for the southern Mountains and western Piedmont. In the Coastal Plain it is of spotty occurrence in the eastern counties and is likely absent in a few counties near the coast.

Abundance: Generally uncommon (and often local) in the inner half of the Coastal Plain and lower Piedmont, being most numerous in the Sandhills. Rare in the southeastern Coastal Plain, but very rare in most of the northern parts of the Coastal Plain, especially scarce in the northeastern counties. Very rare in the central and western Piedmont and southern Mountains.

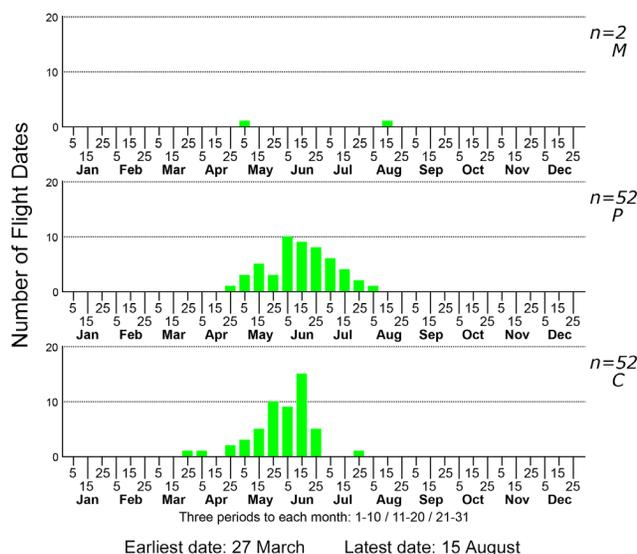
Flight: Flight period is shorter and earlier than for other pennants (except Ornate); mainly from late April to late July, rarely to mid-August. There are a few records for late March and early April, but not normally seen until around the first of May.

Habitat: As with other pennants, it breeds at ponds and small lakes with much vegetation along the shore.



Behavior: Males are usually seen along the shore of a pond, making short patrols over the water or perching on twigs. Adults may forage short distances from water.

Comments: This and the Red-veined (*C. bertha*) are the state's only two "scarce" *Celithemis* penants, and one may have to walk around several ponds or much lake shore (in the heart of the range) to find this species. Not helping is the fact that immatures and females are not overly easy to identify, and adult males look like small versions of Slaty Skimmers (*Libellula incesta*).



Dythemis velox Hagen, 1861 — Swift Setwing

Distribution: Primarily the Piedmont, but also widely scattered in the Mountains (mostly at low elevations) and in the Coastal Plain.

Abundance: Fairly common (and apparently increasing) in the Piedmont, except scarce to locally absent in parts of the northwestern portion of the province. Very rare in the central and southern (low) Mountains and Coastal Plain portion of the range. The species has slowly been expanding its range northeastward in recent decades. High counts of:

- 60 – Orange, 6 August 2002
- 25 – Durham, 20 June 2013
- 16 – Chatham, 1 August 2021

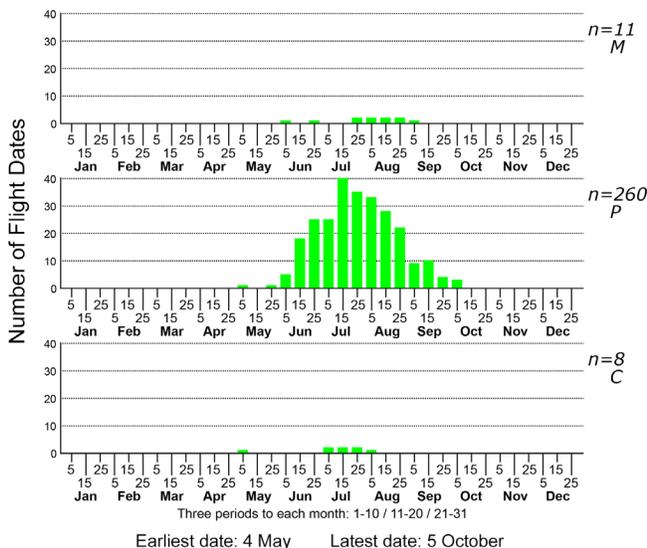
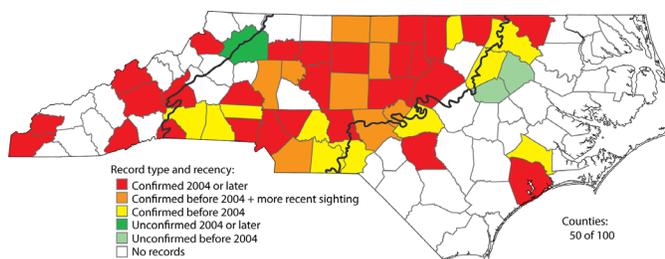
Status: G5/N5/S4S5

Flight: In the Piedmont, from early May to early October; however, most records fall between mid-June and mid-September. There are not enough data to define the flight periods in the Mountains or Coastal Plain.

Habitat: Ponds and small lakes but might breed also at slow rivers or wide creeks. These waters are typically in open or partly open situations.

Behavior: Males are almost always seen close to the margin of a pond or lake, perching usually several to many feet above water on twigs of small trees along the margin. They typically perch in a "sprinter's stance," with abdomen raised, seemingly ready to bolt at any moment.

Comments: This is North Carolina's only *Dythemis* (setwing), and thus it looks and acts like no other dragonfly in North Carolina. It is somewhat wary, and people typically need binoculars (or a net) to see them well.



Erythemis simplicicollis (Say, 1840) — Eastern Pondhawk

Distribution: Statewide; occurs in all 100 counties.

Abundance: Abundant in every county, more so in the Coastal Plain than farther west. This is the most omnipresent odonate in North Carolina, seen on more field trips than any other species.

High counts of:

- 800 – Bladen, 19 June 2022
- 500 – Durham, 7 July 2007
- 500 – Currituck, 24 June 2019

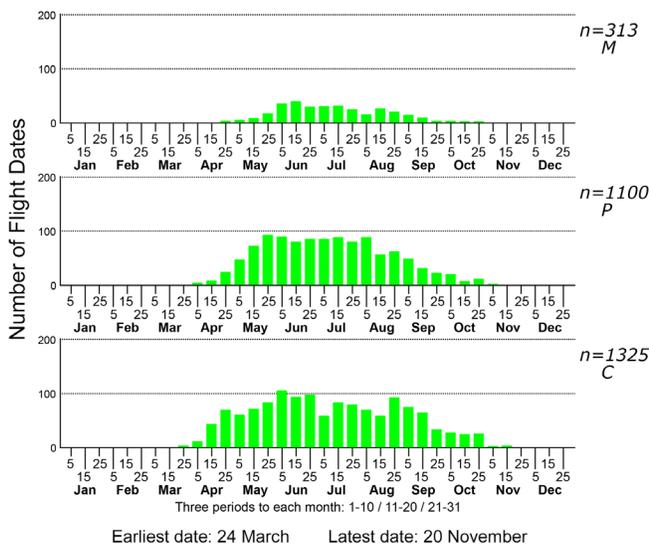
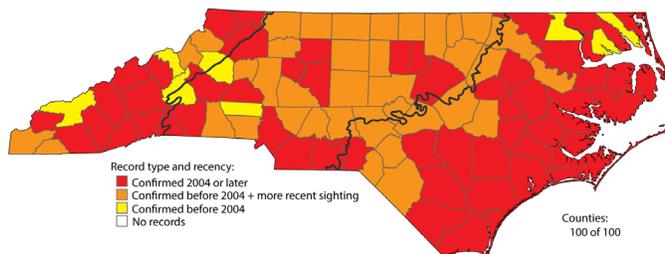
Status: G5/N5/S5

Flight: Long flight season in all three provinces; late March to mid-November in the Coastal Plain, slightly more narrow in the Piedmont (early April to early November) and Mountains (late April to late October).

Habitat: Still (lentic) waters: ponds, lakes, swamps, and slower portions of river or creeks.

Behavior: Adult males are found closer to water than are females and immatures, but they often are seen feeding well away from water. Females and immatures commonly forage far from water, along wooded roads and trails, in fields, and other open sites, though favoring areas close to woods. They often perch flat on the ground (as do many skimmers and some clubtails) or rocks, but they also perch on twigs and other vegetation (including on lily pads).

Comments: This and the Blue Dasher (*Pachydiplax longipennis*) are the most abundant dragonflies in North Carolina, probably numbering in the tens of millions. In fact, pondhawks are so abundant in some areas in the Coastal Plain and they devour so many other insects that they nearly deplete sites of smaller butterflies, for example. This is the state's most voracious species, even consuming other pondhawks! It takes practically no time to become familiar with the species, and they are adept at following you as you walk a dirt road or powerline clearing, ready to pounce on anything, butterfly, moth, bee, etc., flushed by your footsteps.



Erythrodiplax berenice (Drury, 1773) — Seaside Dragonlet

Distribution: Strictly coastal, though found around the inner margins of Albemarle and Pamlico sounds and along estuarine rivers.

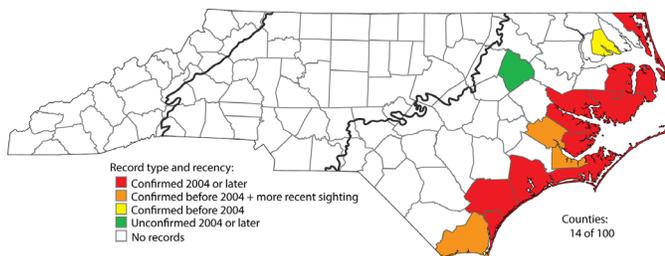
Abundance: Common, to locally abundant, at least along the southern and central coastal areas, and around the mainland side of Pamlico Sound. Less numerous around the margin of Albemarle Sound. High counts of:

- 540 – New Hanover, 22 August 2020
- 400 – Onslow, 25 June 2019
- 300 – Carteret, 9 June 2011

Status: G5/N5/S5

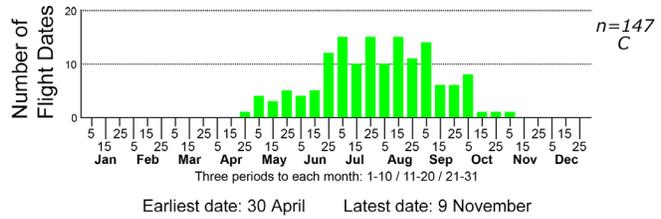
Flight: A very long flight period, from the end of April to early November. Mainly beginning in mid-May, and often not becoming numerous until June.

Habitat: Brackish to salt marshes and other wet grasslands close to the coast.



Behavior: Both sexes perch conspicuously on twigs or other low vegetation, usually near a marsh but at times hundreds of yards (m) from marshes.

Comments: This is one of only four “estuarine” dragonflies in North Carolina, along with Four-spotted Pennant (*Brachymesia gravida*), Needham’s Skimmer (*Libellula needhami*), and Marl Pennant (*Macrodiplax balteata*). This species is usually easily found in its restricted habitat, though it can be overlooked because of its small size.



Erythrodiplax minuscula (Rambur, 1842) — Little Blue Dragonlet

Distribution: Statewide and probably occurring in all 100 counties. However, distribution is somewhat spotty in the western half of the Piedmont, probably owing to its inconspicuous behavior and tiny size, making it hard to encounter where not numerous.

Abundance: Common in the southern half of the Coastal Plain; only fairly common in the northern Coastal Plain. Uncommon in the eastern half of the Piedmont, but rare to uncommon in the western Piedmont and Mountains. May be more numerous than observations suggest. High counts of:

- 400 – Carteret, 7 May 2019
- 250 – Craven, 28 October 2011
- 250 – Onslow, 29 May 2017

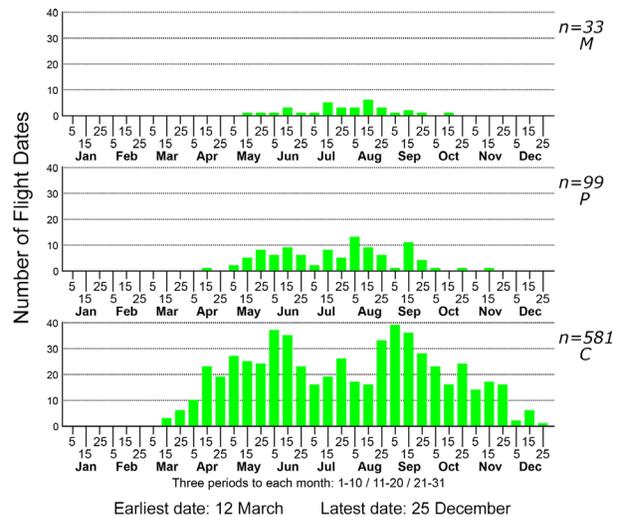
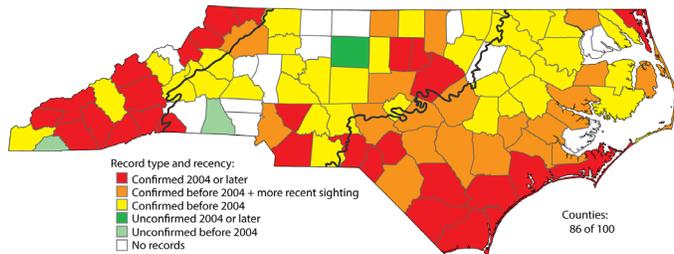
Status: G5/NNR/S5

Flight: A very long flight season. In the Coastal Plain from mid-March to late December, though not numerous until May through the end of November. The Piedmont flight is somewhat shortened, from mid-April to mid-November, but rare after late September. In the Mountains, it is mainly from mid-May to late September.

Habitat: Ponds, lakes, marshes, and slower portions of rivers, typically places in full or partial sun.

Behavior: Next to the Elfin Skimmer (*Nannothemis bella*), which is even smaller, this species is the most inconspicuous dragonfly that frequents open fields, powerline clearings, savannas, and other sunny places. Adults perch low in vegetation, often down in grasses and forbs, and make short flights, often barely above one’s ankles.

Comments: People who spend much time looking at wildflowers in savannas and powerline clearings become familiar with this species, as its favored foraging areas tend to be such diverse, moist, herbaceous areas.



Ladona deplanata (Rambur, 1842) — Blue Corporal

Distribution: Statewide, but of somewhat spotty occurrence in the Mountains, where found mainly at the lower elevations.

Abundance: Common to locally abundant in the southern Coastal Plain, and common to very common in the rest of the Coastal Plain and in the eastern and central Piedmont. Fairly common in the western Piedmont, but formerly rare to mostly now uncommon in the Mountains, where it seems to be increasing. High counts of:
 1200 – Onslow, 14 April 2019
 400 – Onslow, 9 April 2020
 220 – Carteret, 18 April 2018

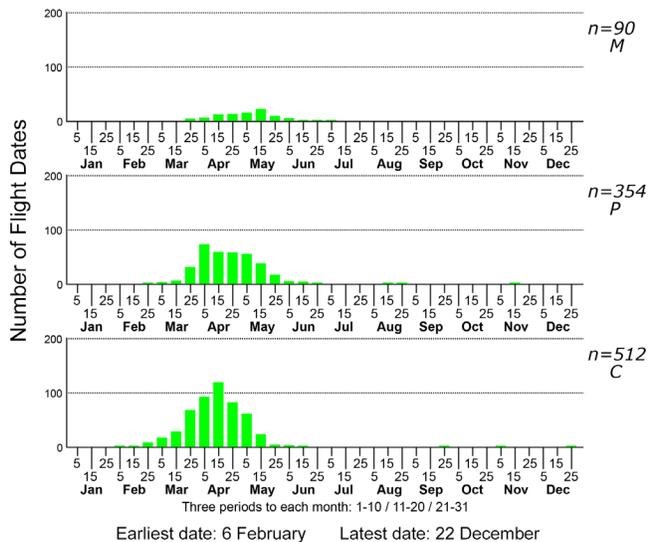
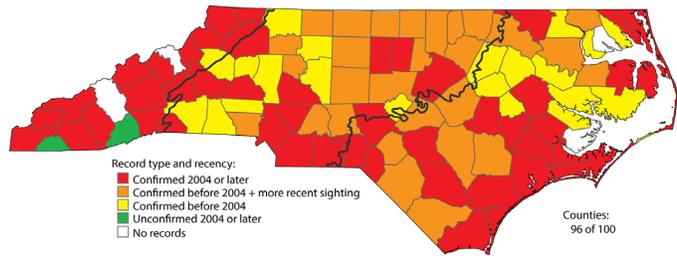
Status: G5/N5/S5

Flight: Essentially the spring only. In the Coastal Plain and Piedmont, the flight occurs from late February (rarely earlier) to mid-May, but sparingly to late-June, with several odd records for late summer, fall, and very early winter. The Mountain flight occurs from late March to early June, very rarely to early July.

Habitat: Ponds, lakes, and other slow-moving waters. Most numerous at nutrient-poor, acidic waters such as Carolina bay pools and lakes.

Behavior: Both sexes forage primarily by perching on the ground, and by making flights in open woods, powerline clearings, and other semi-open areas (typically somewhat close to woods).

Comments: This skimmer can be the most often seen dragonfly, along with the Common Baskettail (*Epiheca cynosura*), on a spring-season outing. Dozens can be seen in a day, mostly immatures and females. Because Blue Corporals usually perch on the ground on dirt roads, wide trails, and in powerline clearings, an observer quickly learns this species, often flushing them while looking for less common odonates or for butterflies.



Ladona julia (Uhler, 1857) — Chalk-fronted Corporal

Distribution: Recorded only from one county in the southern Mountains. This is a Northern species normally found south only to Virginia and West Virginia (Paulson 2011). One should not assume that it occurs in most Mountain counties.

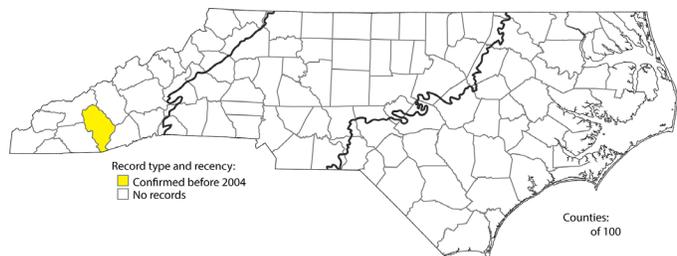
Abundance: Extremely rare in the Mountains. High counts of:
 No data

Status: G5/N5/S1

Flight: No flight date information for North Carolina, as the only record is for larvae, not adults. Records in Virginia fall between 4 June and 8 August (Virginia Department of Conservation and Recreation, Division of Natural Heritage and Virginia Department of Wildlife Resources 2013).

Habitat: Larvae were collected in a mountain bog (Yates 2003). Elsewhere in range, breeds at similar boggy ponds, lakes, and slow forested streams with acidic waters (Dunkle 2000).

Behavior: No observations for North Carolina. Elsewhere, it often forages well away from water, by perching on the ground, low vegetation, or tree trunks (Paulson 2011).



Comments: This is a very common dragonfly in Northern states. It often perches conspicuously on open ground and males are striking in appearance. If it were widely occurring in the North Carolina Mountains, there would certainly have been more records by now, as it is hard to overlook. The sole North Carolina record came from Panthertown Bog, where Yates (2003) collected 10 larvae. Because these larvae were identified by the late Dr. Michael May, a noted odonatologist, the NCNHP considers the record valid. This record does not appear on the Odonata Central map for the species, likely because there is no specimen or photo of an adult available for North Carolina.

Libellula auripennis Burmeister, 1839 — Golden-winged Skimmer

Distribution: Nearly statewide, though seemingly absent in the higher elevations in the Mountains, and of spotty occurrence in the Mountains and the western two-thirds of the Piedmont.

Abundance: Common in the Coastal Plain; uncommon to locally fairly common along the eastern edge of the Piedmont, but mostly uncommon in the Piedmont. Rare in the lower Mountains. High counts of:

- 325 – Onslow, 27 May 2019
- 300 – Beaufort, 29 June 2020
- 81 – Bladen, 9 July 2023

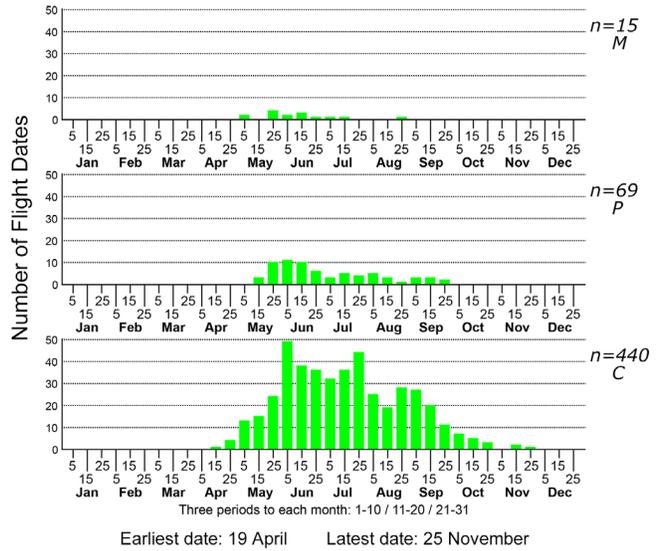
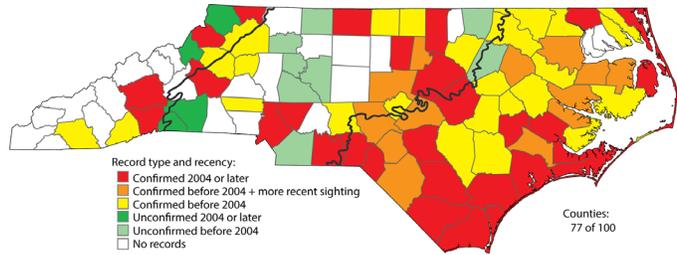
Status: G5/N5/S5

Flight: The flight is from mid-April into late November in the Coastal Plain, and from early May to late September (and certainly into October) in the Piedmont; the few Mountain records extend from early May to late August.

Habitat: Ponds, lakes, marshes, and ditches, typically in open/sunny places.

Behavior: Males perch conspicuously on twigs around a pond or lake shore and make patrols over the water. Adults frequently forage in fields, powerline clearings, savannas, and other open or semi-open areas well away from water.

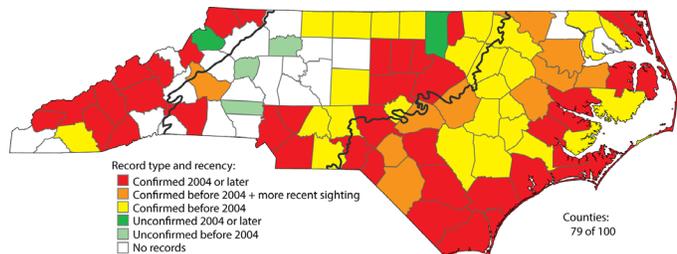
Comments: In the eastern parts of the Coastal Plain, care must be taken to differentiate this species from the closely related Needham's Skimmer (*L. needhami*), which generally is limited to brackish waters, though both species can occur in the same areas (up to a few miles [5–10 km] from tidal water).



Libellula axilena Westwood, 1837 — Bar-winged Skimmer

Distribution: Throughout the Coastal Plain and the eastern half of the Piedmont; spotty distribution in the western half of the Piedmont, though possibly occurs in all counties in the province; present over most of the Mountains, particularly the southern half of the province.

Abundance: Fairly common in the Coastal Plain, more so in the southern half of the province, where it can be common locally. Uncommon in the eastern half of the Piedmont, but rare farther west. High counts of:



50 – Bladen, 14 July 2021
 40 – Brunswick, 28 August 2010
 25 – Craven, 22 July 2007

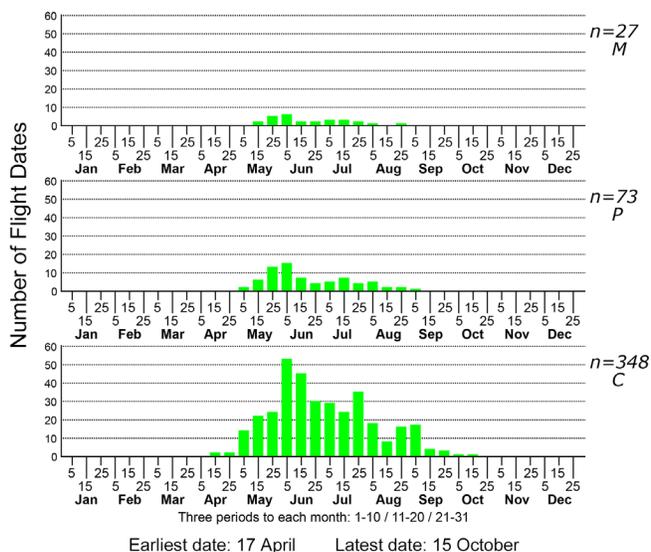
Status: G5/N5/S5

Flight: Mid-April to mid-October in the Coastal Plain, early May to at least to early September in the Piedmont, and at least from mid-May to late August in the Mountains.

Habitat: Ponds, pools in swamps and powerline clearings, and other still (lentic) waters close to forests.

Behavior: Males perch on twigs, often at least 6 feet (1.8 m) off the ground, along forested edges next to water, such as swampy pools or temporary ponds in a powerline. They make patrols back and forth over the water. Adult males and females typically forage close to forests and edges, such as along trails and powerlines through bottomlands and swamps.

Comments: Though not one of North Carolina's truly common skimmers, the Bar-winged is still a numerous dragonfly and not hard to find in some Coastal Plain locales. As indicated above, it usually does not forage far from forests, and one is not likely to see it in open fields.



Libellula cyanea Fabricius, 1775 — Spangled Skimmer

Distribution: Statewide, but of spotty distribution in the extreme eastern Coastal Plain. Even so, it might be found in all 100 counties.

Abundance: Common in the Mountains; fairly common (to locally common) in the Piedmont and most of the Coastal Plain. Seemingly scarce (if not locally absent) on the Outer Banks and in the Tidewater region. High counts of:

40 – Wilkes, 27 May 2018
 32 – Orange, 30 May 2019
 30 – Orange, 4 June 2009

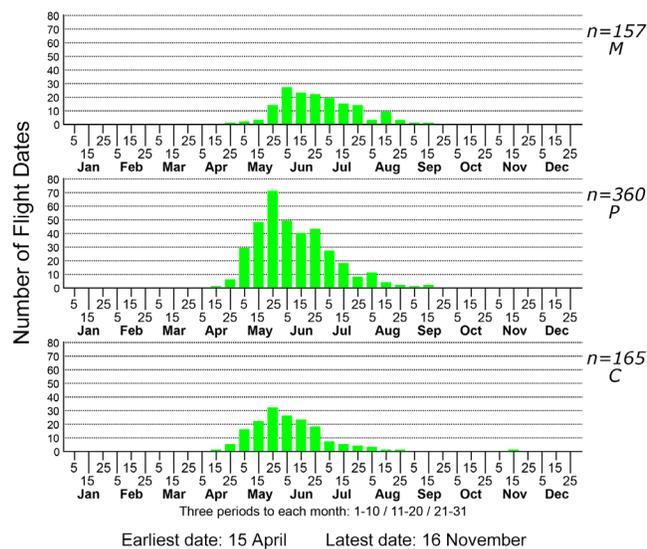
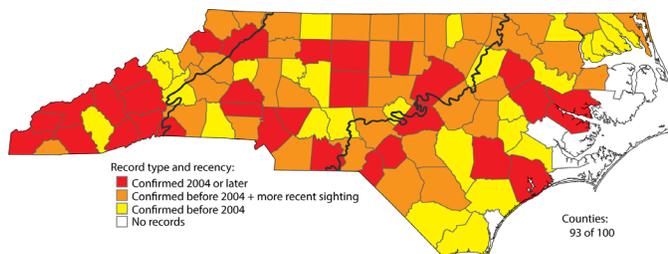
Status: G5/N5/S5

Flight: A slightly shorter flight period than for many other skimmers; mid-April to mid-September. In the Coastal Plain, the latest records are only to late August, except for an odd mid-November record.

Habitat: Ponds, small lakes, marshes, and other open waters with abundant floating or emergent vegetation.

Behavior: Males perch close to water and make short patrols. However, adults are typically seen well away from water, such as in powerline clearings, wide dirt roads, fields, and woodland edges. They perch on twigs, often fairly low, and can be conspicuous or unwary when perching.

Comments: This is the state's only dragonfly with black-and-white stigmas, rendering both males



and females easy to identify, even though their body colorations can cause some confusion with other skimmers. The species seldom occurs in large numbers or swarms, as do some skimmers, but a few can often be seen in the appropriate habitat and time of year.

Libellula flavida Rambur, 1842 — Yellow-sided Skimmer

Distribution: Almost statewide, but nearly absent from the extreme eastern and northeastern Coastal Plain. Of spotty occurrence in the Mountains and western half of the Piedmont, though likely present in all counties in those provinces.

Abundance: Uncommon to locally fairly common in the Sandhills; generally uncommon and local elsewhere over the Coastal Plain, Piedmont, and lower Mountains. Rare in the eastern portions of the Coastal Plain and presumably the middle elevations of the Mountains. High counts of:

- 13 – Cumberland, 15 June 2023
- 11 – Jackson, 26 June 2018
- 10 – Moore, 5 June 2004

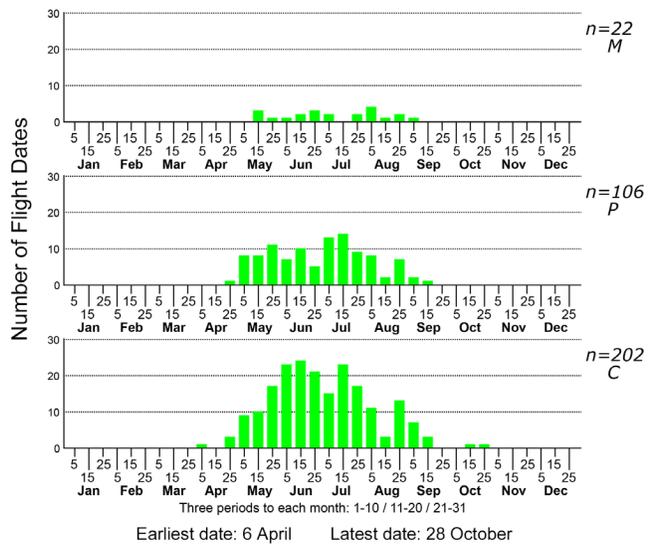
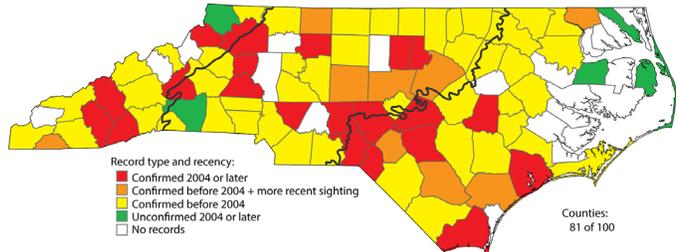
Status: G5/N5/S4S5

Flight: Downstate, mainly from late April to mid-September; flies at least from mid-May to early September in the Mountains.

Habitat: More specialized than with other skimmers, being restricted more to seepages, small streams, and boggy spots, often with *Sphagnum*, such as pools in powerline clearings.

Behavior: Males perch fairly low on vegetation and make short patrols over their pools and other small patches of water, typically in partly sunny areas.

Comments: This is one of the state’s least numerous skimmers. They do not stray too far from boggy places with *Sphagnum* or other partly open mucky soils. It is somewhat local in occurrence, as such boggy wetlands are not widespread across a given county.



Libellula incesta Hagen, 1861 — Slaty Skimmer

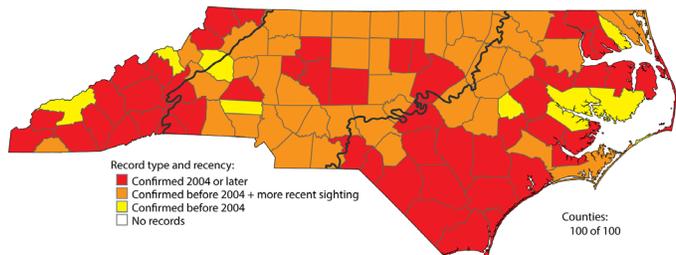
Distribution: Statewide, occurring in all 100 counties.

Abundance: Very common to abundant, though usually not in large swarms. Abundance seems similar all across the state, though it might be slightly less numerous in the Mountains. High counts of:

- 850 – Wake, 6 July 2013
- 465 – Wake, 19 July 2014
- 355 – Wake, 6 September 2013

Status: G5/N5/S5

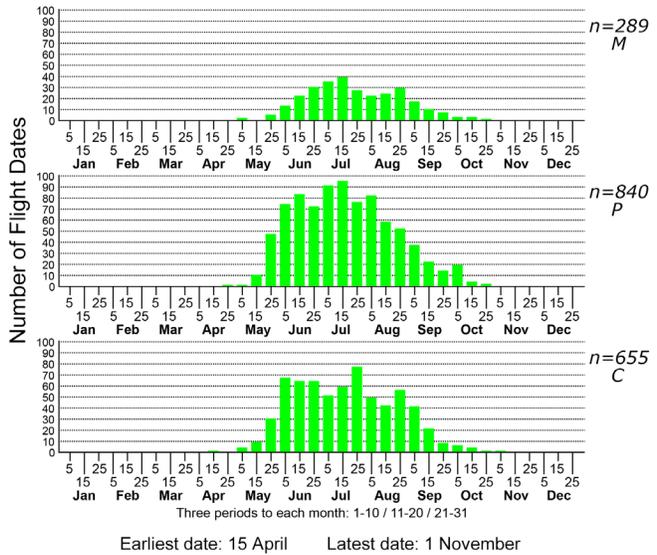
Flight: Flies from mid-April to early November in the Coastal Plain; season slightly constricted in Piedmont and Mountains.



Habitat: Widespread around still (lentic) waters of ponds, lakes, marshes, pools, and puddles, and slow portions of rivers or creeks; typically in wooded or partly wooded situations.

Behavior: Males are very conspicuous for a dragonfly, as they perch on bare twigs or other vegetation around a pond or lake margin and make constant forays, often chasing anything that flies nearby. Adults forage some distance from water, but not in large numbers in fields or other treeless areas.

Comments: It is difficult to visit a pond or lake margin in the summer without seeing a Slaty Skimmer. It is definitely one of the state's most abundant dragonfly species.



Libellula luctuosa Burmeister, 1839 — Widow Skimmer

Distribution: Essentially statewide; only two extreme eastern Coastal Plain counties lack records. Presumably present in all counties.

Abundance: Generally, very common in the Piedmont and lower Mountains. Fairly common in the western Coastal Plain, though numbers decrease toward the coast, such that it is scarce in the eastern counties. Common in the middle elevations of the Mountains. One of the more numerous dragonflies in the Mountain province. High counts of:

- 200 – Caswell, 21 July 2007
- 150 – Orange, 21 June 2021
- 120 – Orange, 4 June 2019

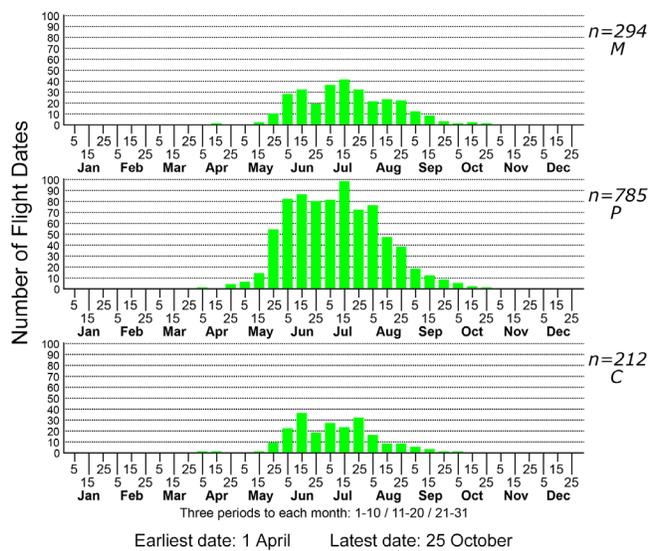
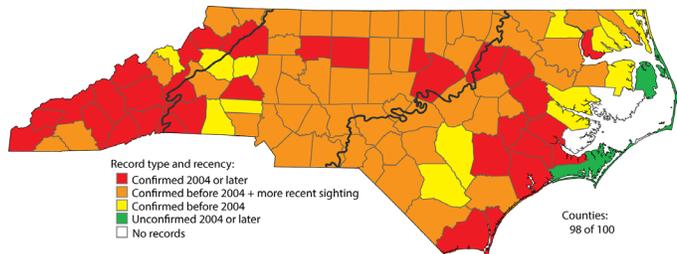
Status: G5/N5/S5

Flight: Early April to late October, but not numerous until late May.

Habitat: Typical breeding sites as for other skimmers: ponds, small lakes, marshes, and pools.

Behavior: Unlike most other skimmers, this species typically moves away from water to spend most of its time foraging in fields, powerline clearings, woodland borders, and other sunny to partly sunny places. Adults often perch on twigs of woody plants or on herbaceous vegetation in such open areas.

Comments: Numbers of the species are seldom large at any given locale, as they seem territorial, and swarms are not generally noted. Nonetheless, it can occasionally be the most often seen dragonfly on a walk in the Piedmont, especially away from pond margins.



Libellula needhami Westfall, 1943 — Needham’s Skimmer

Distribution: Essentially coastal, though it does occur on the mainland side of Pamlico Sound and up estuarine rivers as far as tidal waters are present. A collection record for the northeastern Piedmont is perhaps open to question, as this seems much too far inland. However, a resident population was discovered in an inland county in the southeastern Coastal Plain in 2022.

Abundance: Common and widespread in coastal counties. Very rare away from a county that touches tidal water. High counts of:

- 500 – Onslow, 14 July 2017
- 400 – Hyde, 8 July 2015
- 250 – Onslow, 20 July 2017

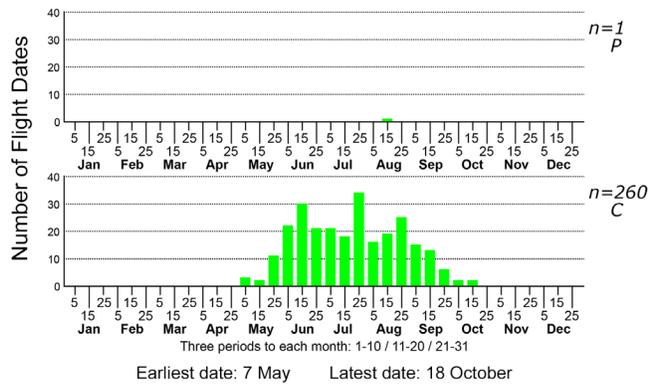
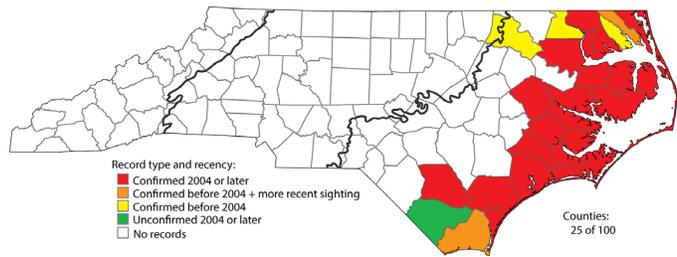
Status: G5/N5/S5

Flight: Early May to mid-October; however, most records fall from late May to late September.

Habitat: Brackish waters of marshes, tidal ponds, and other bodies of water in coastal areas; fresh-water pools and ponds farther inland.

Behavior: Adults move away from tidal marshes and pools to forage in fields and other uplands, where they might come into competition with the closely related Golden-winged Skimmer (*L. auripennis*).

Comments: An observer usually does not have to work hard to find this species, as it is conspicuous around tidal water. Care must be taken away from tidal areas to distinguish this species from the very similar Golden-winged Skimmer.



Libellula pulchella Drury, 1773 — Twelve-spotted Skimmer

Distribution: Mountains, Piedmont, and western half of the Coastal Plain; seemingly absent in most of the eastern half of the Coastal Plain.

Abundance: Uncommon to locally fairly common in the Mountains, where resident. Very uncommon in the Piedmont as a whole, though a migrant through much of the province, and in the eastern portions can be rather rare and is not resident there. A rare migrant in the western half of the Coastal Plain. High counts of:

- 14 – Henderson, 4 September 2011
- 10 – Durham, 4 September 2020
- 9 – Buncombe, 27 May 2012

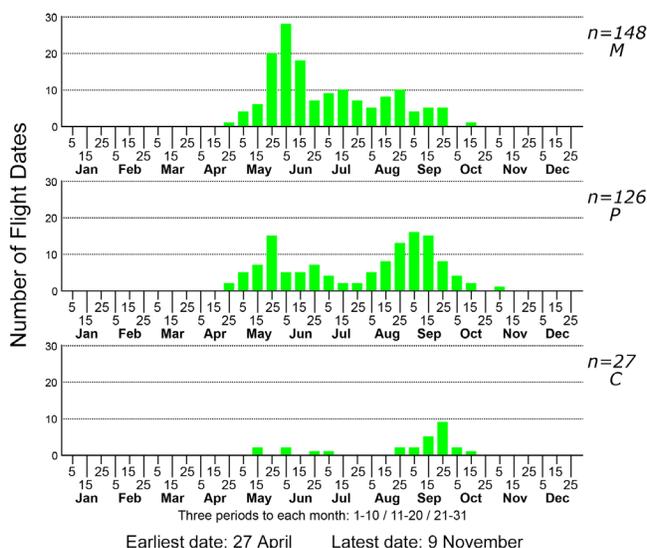
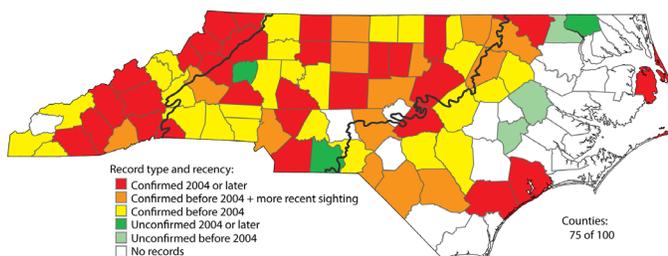
Status: G5/N5/S4

Flight: Late April to mid-October in the Mountains and Piedmont, with a stray record for early November. The clear dip in records in midsummer in the Piedmont flight chart is a strong indication that the species is mainly a migrant, seen mostly in spring/early summer and late summer/fall. In the Coastal Plain, where migratory, the dates range from mid-May to mid-October, with most being from late August into October.

Habitat: Ponds, lakes, and marshes, typically in open situations; may oviposit in small, temporary pools.

Behavior: Males are very conspicuous as they patrol, often hovering, over their pools and ponds. Adults are similar to other skimmers in that they often forage well away from water in fields and wooded borders.

Comments: This species is one of the few dragonflies that is partly migratory in the state. Much is still to be learned about its biology in North Carolina.



Libellula semifasciata Burmeister, 1839 — Painted Skimmer

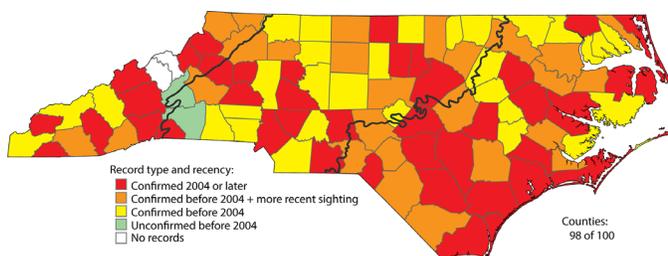
Distribution: Statewide; likely occurs in all 100 counties.

Abundance: Fairly common to occasionally common in the southern half of the Coastal Plain; uncommon to locally fairly common in the northern Coastal Plain and in the lower Piedmont; uncommon in the remainder of the Piedmont and lower Mountains; scarce at higher elevations. High counts of:

- 85 – Onslow, 16 April 2021
- 65 – Onslow, 21 April 2019
- 60 – Camden, 14 May 2019

Status: G5/N5/S5

Flight: Mid-March to mid-September, and rarely to early October, in the Coastal Plain and Piedmont; however, not numerous after late July in the Coastal Plain and after mid-June in the Piedmont and Mountains. In the Mountains, the flight occurs from mid-April to mid-September, but it is scarce after mid-summer. As with many species,

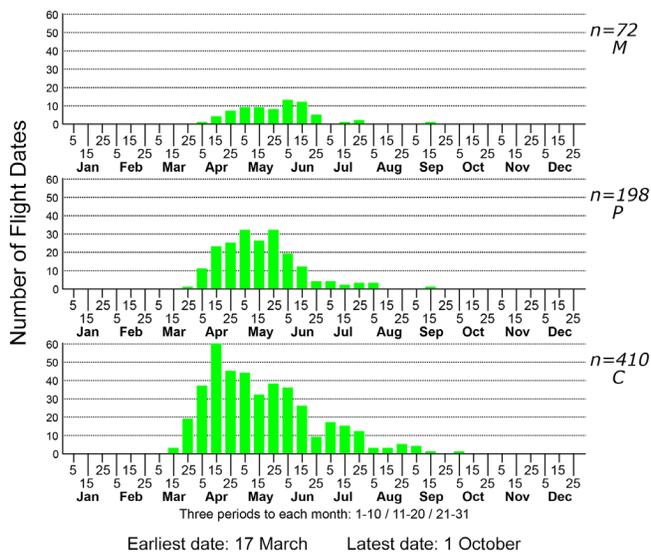


the flights across the state appear to be moving earlier every few years, a sign of climate change.

Habitat: Marshes, bogs or boggy areas, grassy ponds, and other pools; favors semi-wooded areas. Usually not seen around larger ponds or lakes.

Behavior: Less likely to spend much time around ponds, pools, and marshes than most other skimmers. Instead, adults are typically seen foraging well away from water (thus not making it clear what might be the breeding habitat), often in fields, savannas, powerline clearings, and woodland borders. They often perch conspicuously on tips of twigs or grass stems.

Comments: This skimmer seldom occurs in swarms, but is often seen daily, at least in the southern Coastal Plain in the first part of the flight season. Because of their flashy wing pattern individuals are easily noticed, even by beginners or casual observers.



Libellula vibrans Fabricius, 1739 — Great Blue Skimmer

Distribution: Statewide, lacking records now for just one mountain county. Certainly is present in all 100 counties.

Abundance: Common, to locally abundant, in the Coastal Plain; common in the eastern and central Piedmont; somewhat less numerous (fairly common, at least locally) in the western Piedmont and lower Mountains. This is one of the most numerous dragonflies in swamps and bottomlands. High counts of:

- 200 – Robeson, 27 May 2017
- 180 – Bladen, 1 August 2021
- 125 – Martin, 28 June 2012

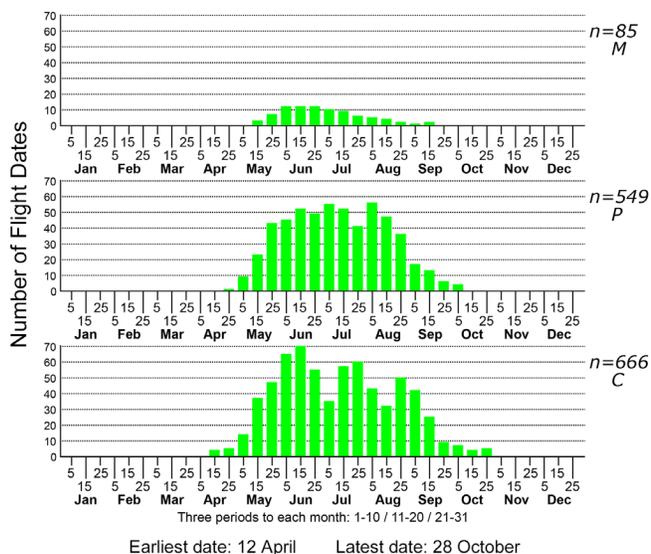
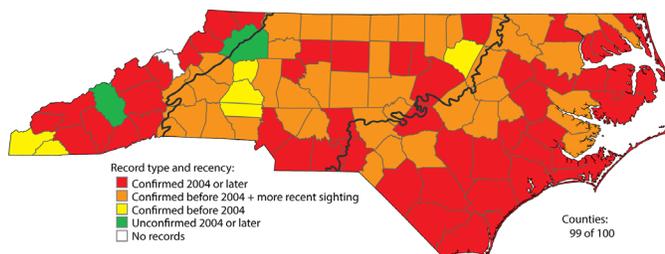
Status: G5/N5/S5

Flight: Mid-April to late October in the Coastal Plain; slightly shorter season in the Piedmont and Mountains.

Habitat: Still (lentic) or slow-moving waters in mostly shaded areas, such as swamps and swampy pools, wooded beaver ponds, and very slow-moving streams.

Behavior: Males commonly perch around the margins of swampy pools and other wet areas in swamps and bottomlands. Adults typically stay close to forested areas, such as along roads through bottomlands and swamps. They usually perch on twigs of trees along the wooded edges, often 5–10 feet (1.5–3 m) high. They can be quite pugnacious, with much chasing of other Great Blue Skimmers in their small territories.

Comments: This species is one of the most common dragonflies (next to Eastern Pondhawk, *Erythemis simplicicollis*) that one sees along roads through swamps and bottomlands, especially as seen from bridges over swampy rivers and creeks.



Macrodiplax balteata (Hagen, 1861) — Marl Pennant

Distribution: Coastal and Tidewater counties only. Ranges north in its overall range only to southeastern Virginia (Paulson 2011).

Abundance: In recent years, generally uncommon to (and very locally) fairly common along the coast. High counts of:

- 20 – Hyde, 8 July 2015
- 16 – Onslow, 28 August 2018
- 15 – Carteret, 4 October 2014

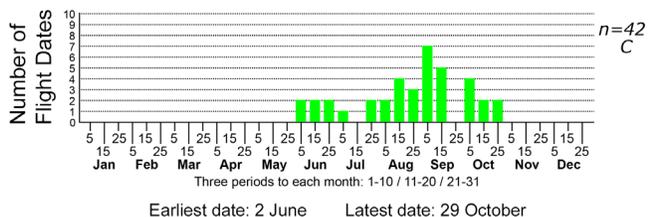
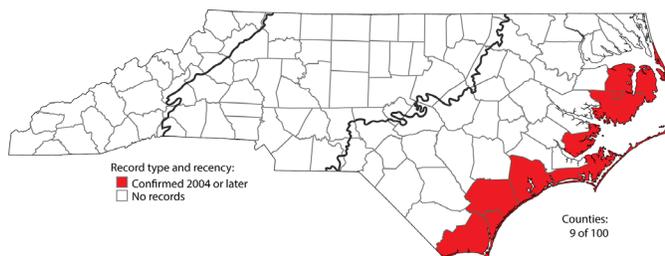
Status: G5/N5/S2S3

Flight: The flight occurs from early June to the end of October; however, most records are from mid-August into October. This pattern of flight dates may suggest that the species is primarily a post-breeding migrant/stray from farther south.

Habitat: A fairly wide array of sunny coastal habitats used in North Carolina, from salt marshes to freshwater lakes and ponds.

Behavior: Males perch at the pools or marsh edges, often on twigs or stems in the water; they make forays over the water. However, they may occur in fields or other open areas somewhat far away from coastal water. Apparently, females also stay close to water when foraging.

Comments: Although most records appear to be of post-breeding migrants, evidence of breeding at ponds on the Outer Banks has been accumulating over the past five years and breeding was confirmed there in 2023.



Nannothemis bella (Uhler, 1857) — Elfin Skimmer

Distribution: Restricted to the Sandhills region, plus the adjacent western Coastal Plain and the southeastern edge of the Piedmont.

Abundance: Uncommon to locally common in the Sandhills, but as it is one of the world's smallest dragonflies, it is very easily overlooked. Very rare to rare east of the Sandhills and in the adjacent southeastern edge of the Piedmont. High counts of:

- 300 – Scotland, 8 May 2017
- 275 – Scotland, 11 May 2018
- 150 – Scotland, 7 May 2017

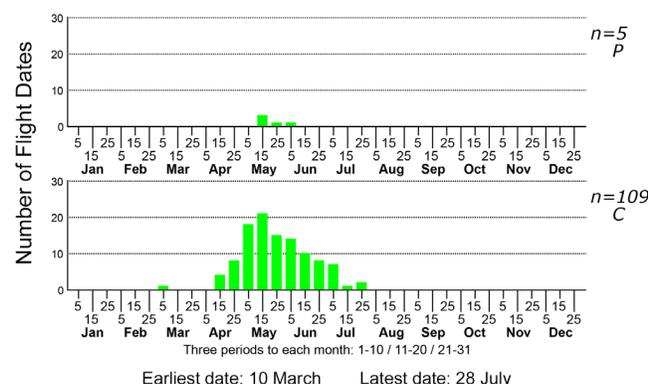
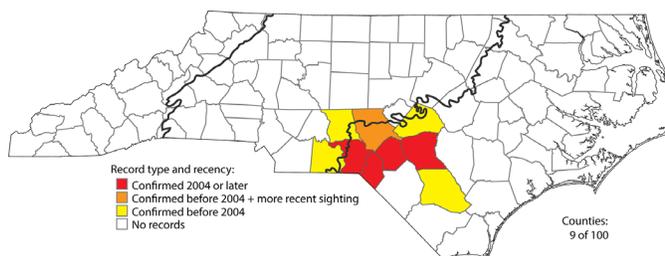
Status: G4G5/N4/S3S4

Flight: A rather narrow flight period; mid-April to late July. A 2018 record from March 10 is extremely early.

Habitat: Highly restricted to boggy spots, with much *Sphagnum*; often at seepages. These can be around the margins of beaver ponds or man-made ponds, damp places in powerline clearings, and natural fire-maintained seepage slopes.

Behavior: Adults perch and fly very close to the ground/water, often no more than 4–5 inches (10–13 cm) off the ground, amid grasses, sedges, and rushes. They seldom rise above the height of the herbaceous vegetation.

Comments: To see the species, one must go to boggy places around a pond margin or a wet powerline clearing in



the Sandhills and...expect to get one's feet damp. They can be confused with Little Blue Dragonlet (*Erythrodiplax minuscula*), which shares its habitat but is slightly larger and has a less obvious club. Be careful where you step, as you might have them underfoot!

Orthemis ferruginea (Fabricius, 1775) — Roseate Skimmer

Distribution: Widely scattered over the Coastal Plain and Piedmont, with two recent sightings from the Mountains. Greatly expanding its range northward and westward; thus, the county map will likely become out-of-date very quickly.

Abundance: Increasing in recent years; 90% of records from the last 20 years. Generally uncommon to locally fairly common in coastal counties. Very rare visitor or stray farther inland and northward. High counts of:

- 9 – Onslow, 5 October 2017
- 7 – Onslow, 3 November 2017
- 7 – Brunswick, 20 October 2021

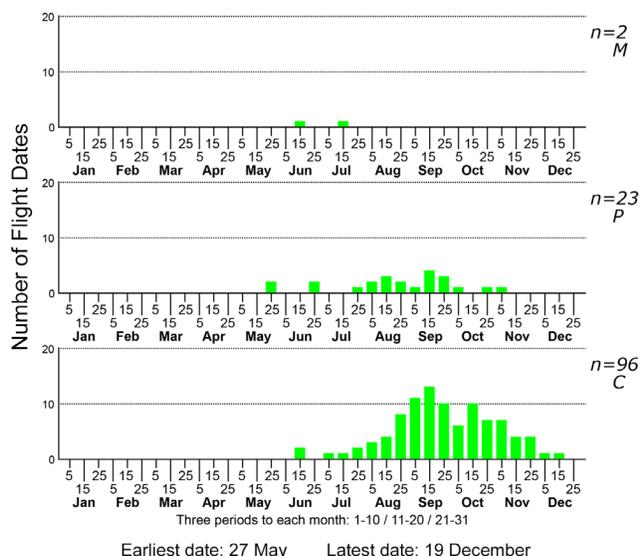
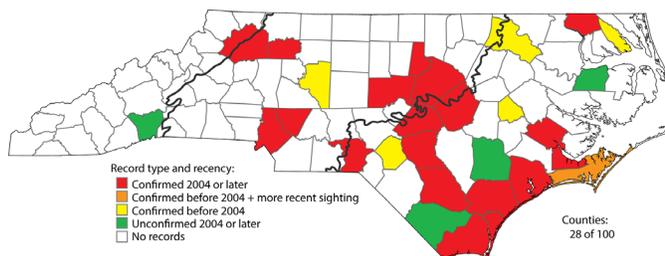
Status: G5/N5/S3S4

Flight: Late May to mid-December; mostly from late August to mid-November. These dates suggest a fall migrant species, moving north after breeding farther to the south. However, there are a few sites along and near the coast, and now at a single known site in the central Piedmont, where it is a resident.

Habitat: Generally, at ponds, marshes, and lakes. Despite it being seen mainly near the coast, most breeding waters are probably fresh, though it does use brackish waters.

Behavior: Males are very conspicuous as they perch on twigs at their pools or ponds; they are quite active and do much chasing and patrolling. Adult males and females will often feed well away from pools, as do most other skimmers.

Comments: The deep rose-pink color of the male's abdomen is not often seen in the animal kingdom, even in birds or butterflies, and is more reminiscent of the rosy color of the petals of many wildflowers!



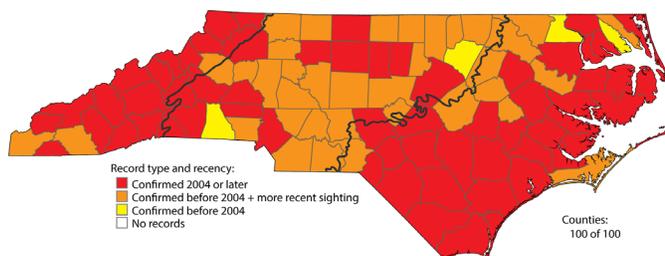
Pachydiplax longipennis (Burmeister, 1839) — Blue Dasher

Distribution: Statewide, occurring in all 100 counties.

Abundance: Abundant throughout. This is arguably the most numerous dragonfly in North Carolina (and the eastern United States), possibly even outnumbering the ubiquitous Eastern Pondhawk (*Erythemis simplicicollis*). High counts of:

- 1225 – Wake, 6 July 2013
- 965 – Wake, 12 June 2013
- 885 – Wake, 19 July 2014

Status: G5/N5/S5

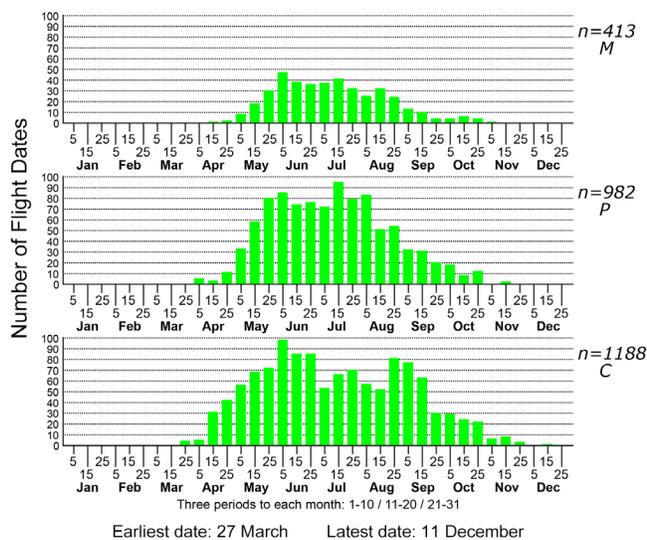


Flight: Throughout most of the odonate flight season. Downstate, from late March or early April to late October, rarely mid-December; slightly shorter season in the Mountains.

Habitat: A wide range of still (lentic) water, from ponds, lakes, ditches, canals, pools, and marshes; occasionally in slow-moving portions of rivers or creeks.

Behavior: Males are frequently seen perching on twigs or herbaceous vegetation along the margin of a pond, making short forays over the water for patrolling purposes. Both sexes feed well away from water, especially females. They perch conspicuously, typically within 3–4 feet (0.9–1.2 m) of the ground, in fields, powerline clearings, savannas, and many other places, both in full sun or partial shade.

Comments: The number at a given body of water often equals or exceeds the number of all other dragonflies species combined! Total numbers of Blue Dashers in North Carolina must be in the tens of millions.



Pantala flavescens (Fabricius, 1798) — Wandering Glider

Distribution: Essentially statewide, but not as widespread in the Mountains as downstate. Presumed to occur in all 100 counties.

Abundance: Abundance is difficult to assess or describe, as it is migratory and does not establish permanent colonies, though generally fairly common to common across the state, being somewhat more numerous in the Coastal Plain and eastern Piedmont than farther westward. Seems to be most often seen along or near the coast in the fall, migrating southward (presumably). High counts of:

- 200 – Onslow, 27 September 2017
- 75 – Wake, 26 August 2021
- 50 – New Hanover, 13 September 2015

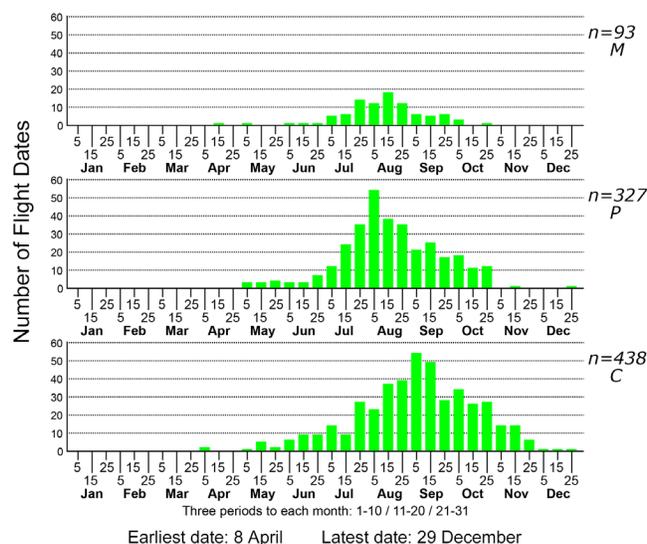
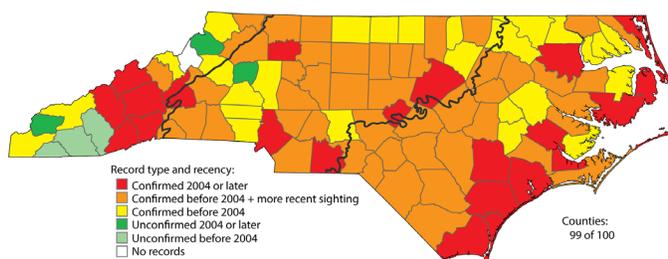
Status: G5/N5/S5

Flight: Mainly from early May to mid-November, though the highest numbers of individuals are seen from late August to late September.

Habitat: Uses small, temporary puddles and pools for depositing eggs. These can be rainwater pools on city streets, as well as puddles in powerline clearings and other ephemeral ponds. Forages over all types of open country, from fields, marshes, towns, dunes, and even offshore!

Behavior: Spend most of their time in wide-ranging flights, often 5–10 feet (1.5–3 m) or higher. Like swallows and swifts, these dragonflies seldom seem to perch, but when found hanging from a twig, they can be somewhat unwary. Observers frequently see individuals in cities and towns, laying eggs on shiny car hoods.

Comments: Wandering Gliders can literally be seen anywhere, from downtown streets to over the Gulf Stream. Because



they are constantly on the wing, identification can be difficult, and often one may assume that an amber-colored dragonfly, with no obvious wing markings, is a Wandering Glider, especially if seen close to the coast in the fall.

Pantala hymenaea (Say, 1840) — Spot-winged Glider

Distribution: Essentially statewide, although a few counties in the Piedmont and about half of Mountain counties lack records.

Abundance: As with the Wandering Glider (*P. flavescens*), this is a migratory species, constantly on the move, with abundance difficult to assess. Usually much less numerous than Wandering Glider, though it can occur in swarms, more so than does the Wandering. Generally uncommon in the Coastal Plain and Piedmont, though it may be fairly common at times, especially in the Coastal Plain. Very rare to rare in most of the Mountains. High counts of:

- 75 – Durham, 25 July 2010
- 50 – Wake, 25 May 2008
- 50 – Madison, 11 July 2020

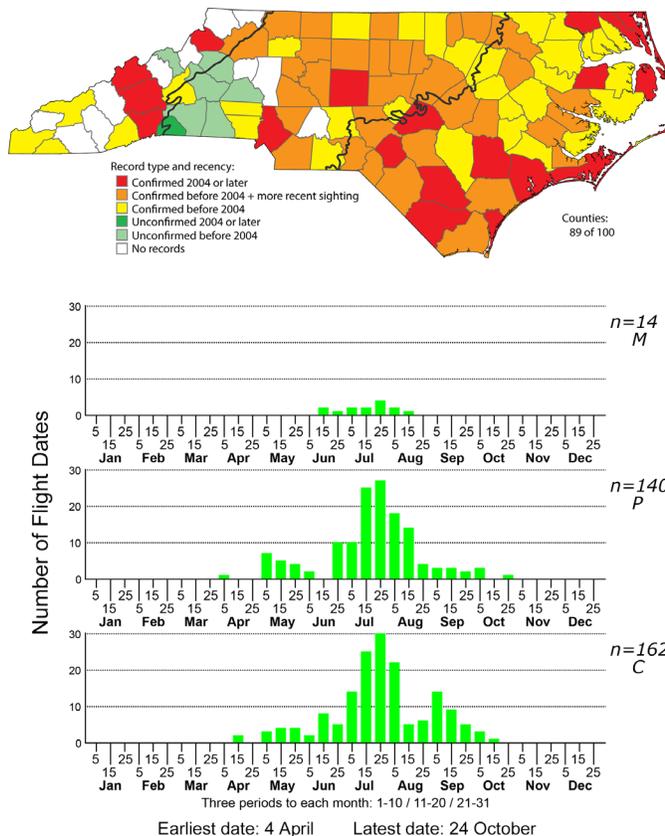
Status: G5/N5/S5

Flight: Early April to late October downstate, though the bulk of the records are from late June to mid-September; the few Mountain records are from mid-June to mid-August, but the flight there is certainly longer than just two months.

Habitat: Similar to Wandering Glider, it uses small, temporary puddles, pools, and shallow ponds for breeding and open habitats for foraging.

Behavior: Like Wandering Gliders, spend much time on the wing, but seldom seem to enter cities to oviposit on shiny car hoods and rainwater pools in streets. Adults forage widely over all types of habitats, especially open areas along and near the coast.

Comments: This species is not familiar to casual observers because adults infrequently perch, and identification must often be made in flight, which can be difficult. The small dark patch at the base of the hind wing and overall browner color help distinguish it from Wandering Glider.



Perithemis tenera (Say, 1840) — Eastern Amberwing

Distribution: Statewide, although not yet recorded from one Mountain county.

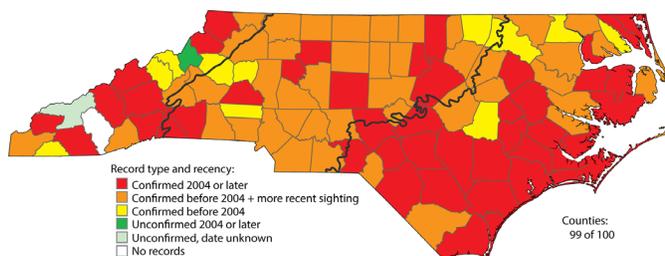
Abundance: Common to locally abundant essentially statewide, but slightly less numerous (but still common) in the Mountains. High counts of:

- 325 – Wake, 4 July 2013
- 315 – Wake, 13 June 2014
- 250 – New Hanover, 8 June 2018

Status: G5/N5/S5

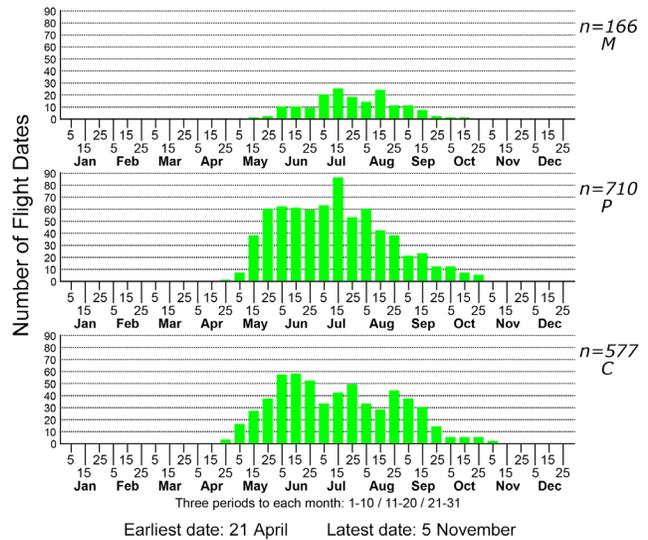
Flight: Downstate, the flight occurs from late April to early November; in the Mountains, from mid-May to mid-October.

Habitat: Ponds, small lakes, marshes, and pools are used for breeding. Slow-moving portions of rivers or creeks may be used on occasions.



Behavior: Adults often perch conspicuously on the tips of twigs and grasses, close to water. Adults will forage long distances from water, and they are among the most “urban” of dragonflies, often found in gardens, arboretums, and other places in cities where suitable prey items might occur.

Comments: This is a conspicuous dragonfly, despite being one of the smallest species.



Plathemis lydia (Drury, 1773) — Common Whitetail

Distribution: Statewide, occurring in all 100 counties.

Abundance: Very common to abundant across the state, not seeming to vary considerably in numbers from one province to another. Though seldom occurring in large swarms, it is among the most widespread species in terms of habitats from wet to dry, wooded to open. High counts of:

- 80 – Wake, 6 August 2020
- 55 – Wake, 27 April 2013
- 55 – Durham, 30 May 2015

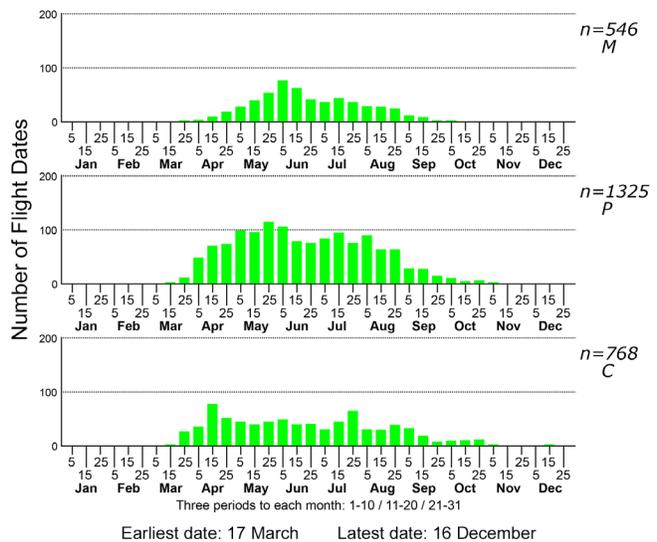
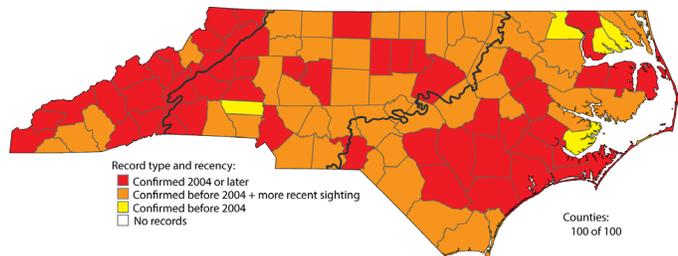
Status: G5/N5/S5

Flight: Nearly the entire odonate flight season, from mid-March to early November, sparingly into December.

Habitat: Ponds, lakes, swamps, seeps, pools, and other open water. Probably uses smaller, temporary pools and ditches more than most other dragonflies.

Behavior: Adults commonly perch flat on the ground, especially on mud or other damp ground, such as pond shores, muddy spots in powerline clearings, and so forth. They also perch more often on concrete, wood, and other man-made structures than do most other dragonflies. They forage well away from water, in fields, woodland borders, powerline clearings, as well as at pond margins, and they often come into urban habitats such as gardens and yards.

Comments: This may be the most conspicuous dragonfly in North Carolina, especially to the layman; they are impossible to miss or overlook when present, as they perch on the ground where observers frequently walk. It is the most frequently reported dragonfly in the state on iNaturalist.



Sympetrum ambiguum (Rambur, 1842) — Blue-faced Meadowhawk

Distribution: Throughout the Piedmont and the western three-fourths of the Coastal Plain and scattered in the Mountains, but presumably rare to absent at middle and higher elevations.

Abundance: Uncommon to locally fairly common, but easily overlooked, in the Piedmont and Coastal Plain. Rare in the Mountains, as well as in the eastern Coastal Plain. High counts of:

- 50 – Wake, 21 September 2008
- 28 – Wake, 9 October 2014
- 21 – Wake, 1 October 2014

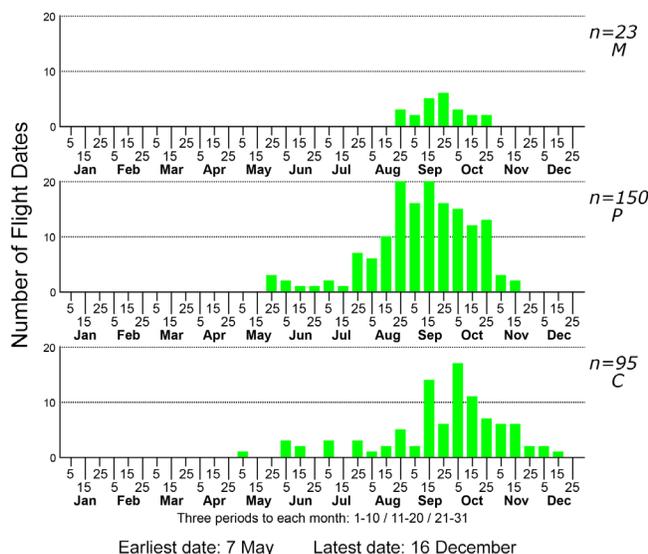
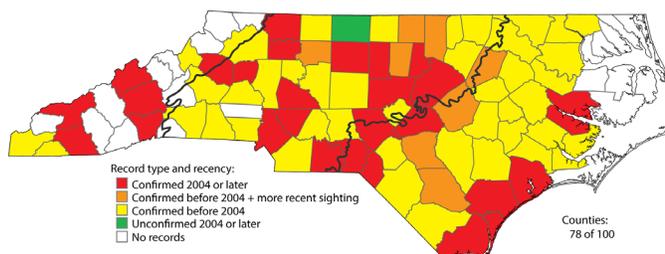
Status: G5/N5/S5

Flight: Downstate, it occurs from early May to late November (and sparingly to mid-December in the Coastal Plain), though mainly is present from late July to late October. In the Mountains, the meager dates fall between late August and late October. One of the relatively few dragonflies whose peak numbers are in the fall season (e.g., September and early October).

Habitat: Small, semi-shaded or shaded pools in floodplains, swamps, or marshes.

Behavior: Adults often perch on twigs or leaves fairly high off the ground, typically 5 feet (1.5 m) or higher, especially when these perches are along a forest edge. Males perch closer to ground when at ponds.

Comments: Although males are quite colorful, their habit of perching in shade or partial shade in moist woods and borders, combined with a fairly small size (under 1.5 inches [38 mm]), makes them hard to see and become familiar with.



Sympetrum corruptum (Hagen, 1861) — Variegated Meadowhawk

Distribution: Recorded at several sites along the coast and at scattered locations in the Piedmont and Mountains. Resident in the western and central parts of the continent, but mainly a migrant or stray on the East Coast (Paulson 2011).

Abundance: Casual to now a very rare stray. High counts of:

- 2 – New Hanover, 23 October 2019
- 1 – Carteret, 30 October 2007
- 1 – Onslow, 17 October 2019

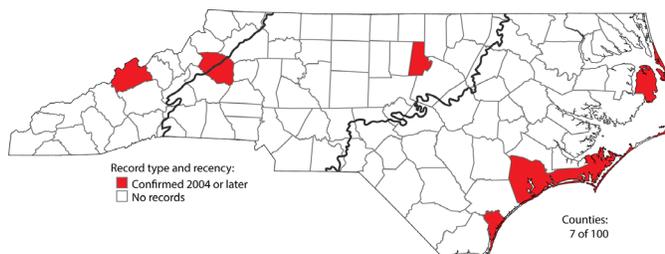
Status: G5/N5/SNA

Flight: As expected for a migrant, recorded only in spring and fall. All six of the spring records are from the Piedmont and Mountains, whereas all five of the fall dates are from the coast.

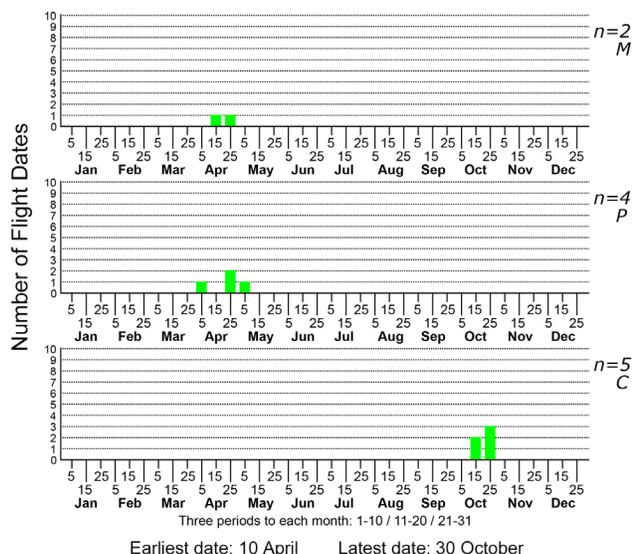
Habitat: As a stray to the East Coast, could be seen practically anywhere. Coastal habitats have included dunes on barrier islands, a sandy lawn, a limesink pond, and a saltmarsh. Inland records came from a dry wooded area near a river, an upland powerline clearing, and a small area of standing water in a mountain forest.

Behavior: Adults perch fairly low to, or on, the ground.

Comments: The pattern of occurrence in North Carolina indicates that eastbound strays in autumn are stopped by



the Atlantic Ocean, where they are found in coastal habitats. There is some spring migration (from where?) back to the north or northwest, where a few are detected in the Piedmont and Mountains. A female observed at a coastal site in October 2019 appeared to be egg-laying while a male patrolled nearby, suggesting a first possible breeding in the state.



Sympetrum internum Montgomery, 1943 — Cherry-faced Meadowhawk

Distribution: Reported only from a single county in the southern Mountains. This is a Northern and Midwestern species, ranging generally south to Virginia and Kentucky (Paulson 2011).

Abundance: Probable stray. High counts of:
No data

Status: G5/N5/SU. As a probable stray in the state, we suggest that a State Rank of SNA would be more appropriate than the current SU.

Flight: No data for North Carolina, but presumably a fall vagrant, as flight occurs from June into September or October in nearby states (Paulson 2011).

Habitat: No data for North Carolina. Elsewhere, known from marshy edges of lakes and ponds (Paulson 2011).

Behavior: Probably like other meadowhawks.

Comments: North Carolina’s only record (Odonata Central record 254353) is of an adult specimen collected in Macon County. Unfortunately, this Dot Map Project record (Donnelly 2004b) provides no collector name, no date, no specific location, or other details, nor is the specimen housed at FSCA.



Sympetrum obtrusum (Hagen, 1867) — White-faced Meadowhawk

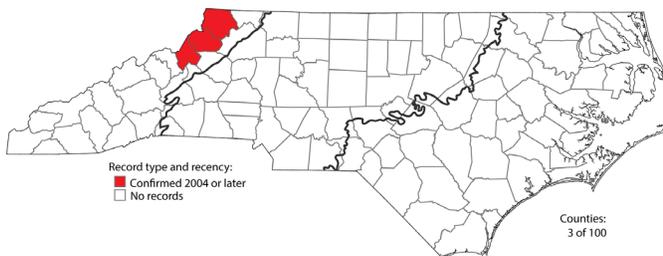
Distribution: Northern Mountains only, which represents the southern end of this species’ range (Paulson 2011).

Abundance: Presumed very rare to rare, though it has been found in recent years in each of the three counties within the known range. High counts of:

- 2 – Watauga, 8 August 2011
- 1 – Avery, 25 September 2008
- 1 – Ashe, 2 October 2005

Status: G5/N5/S1

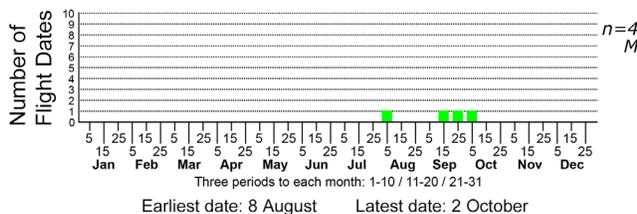
Flight: Mid-summer to fall, with records from 8 August to 2 October.



Habitat: Mountain bogs and marshes.

Behavior: Often associated with forests; adults forage in nearby fields or clearings near water, perching on the tips of grasses and forbs (Paulson 2011).

Comments: White-faced, Cherry-faced (*S. internum*), and Ruby (*S. rubicundulum*) meadowhawks are very difficult to identify reliably from a single typical aspect photo. Clear close-up photographs of the male hamules or female subgenital plate are required to confirm species identity.



Sympetrum rubicundulum (Say, 1840) — Ruby Meadowhawk

Distribution: Throughout the Mountains and foothills of the Piedmont and also present in the northern half of the Piedmont. Apparently absent from the southeastern portion of the Piedmont and all of the Coastal Plain.

Abundance: Fairly common, to locally common, in the Mountains; uncommon in the foothills, but rare in the northern Piedmont. Surprisingly there is only one recent record for the Piedmont east of the foothills, suggesting a population decline there. High counts of:

- 50 – Madison, 19 May 2019
- 33 – Buncombe, 8 June 2012
- 30 – Avery, 23 July 2009

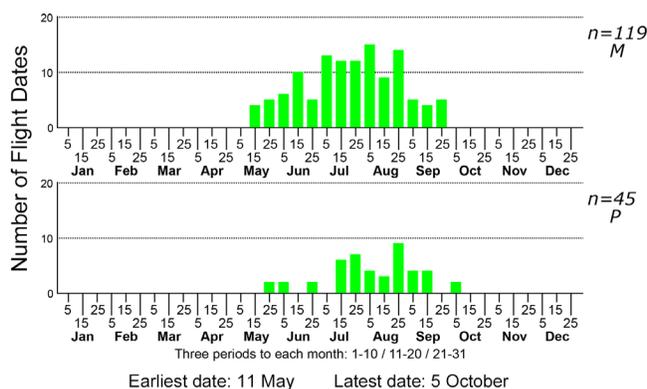
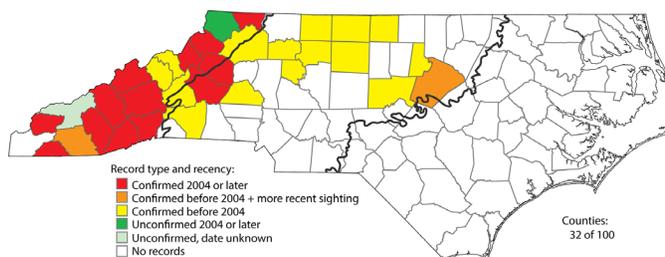
Status: G5/N5/S4

Flight: Unlike most other meadowhawks, this species flies mainly in summer. The Mountain flight occurs from mid-May to late September and the Piedmont flight is from late May to early October.

Habitat: Mainly breeds at temporary pools and ponds, marshes, and other small bodies of water.

Behavior: Adults forage away from breeding pools, perching on twigs and other vegetation, often fairly low.

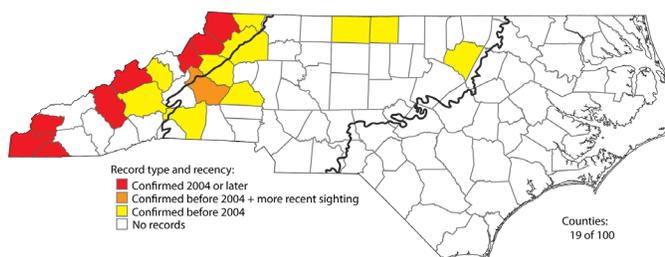
Comments: This species is only infrequently reported in the Piedmont, despite the great increase in the number of odonate watchers in this province. This strongly indicates that the species has declined east of the Mountains, as Cuyler’s many collections from the Piedmont have not been backed up by recent photos and observations. In this latter region, it is clearly outnumbered by Autumn (*S. vicinum*) and Blue-faced (*S. ambiguum*) meadowhawks.



Sympetrum semicinctum (Say, 1840) — Band-winged Meadowhawk

Distribution: Throughout the Mountains and foothills of the Piedmont; formerly in the northern Piedmont away from the Mountains.

Abundance: Uncommon in the northern Mountains, but rare in the central and southern Mountain counties; rare in the Piedmont foothills. Very rare east of the foothill ranges in the northern Piedmont. We have no recent reports



from east of the Mountains/foothills, which clearly indicates that the species has declined in recent decades in the Piedmont, as any bright red dragonfly is bound to attract attention! High counts of:

- 8 – Ashe, 9 August 2007
- 6 – Watauga, 4 September 2017
- 5 – Cherokee, 9 June 2023

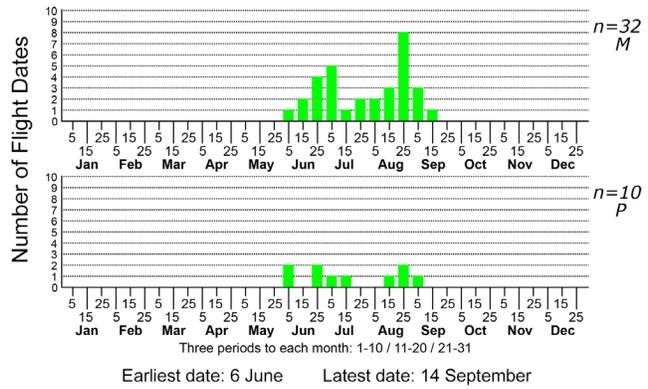
Status: G5/N5/S3

Flight: Early June to mid-September in the Mountains; early June to early September in the Piedmont.

Habitat: Unusual for most dragonflies, it favors marshes, bogs, and wet meadows for breeding, as opposed to open ponds, lakes, rivers, or wide streams.

Behavior: Adults forage from tips of grasses and sedges in or very close to marshes and bogs.

Comments: Because this species seems to be tied to a fairly limited and specific habitat—marshes, wet meadows, and bogs—it can be readily searched for. It is more widespread in the Mountains than is the White-faced Meadowhawk (*S. obtrusum*), which also can occur in cool/cold bogs, marshes, and other open wetlands.



Sympetrum vicinum (Hagen, 1861) — Autumn Meadowhawk

Distribution: Statewide, with records for all but three counties.

Abundance: Fairly common and widespread in the Mountains and Piedmont; uncommon to (at least formerly) fairly common in the Coastal Plain, but oddly there are few recent records for most of the Coastal Plain. Most numerous in the Mountains, where the three largest daily counts have been made. Clearly the most numerous of the meadowhawks in North Carolina. High counts of:

- 30 – Watauga, 18 September 2015
- 30 – Alleghany, 27 September 2017
- 25 – Alleghany, 27 September 2017

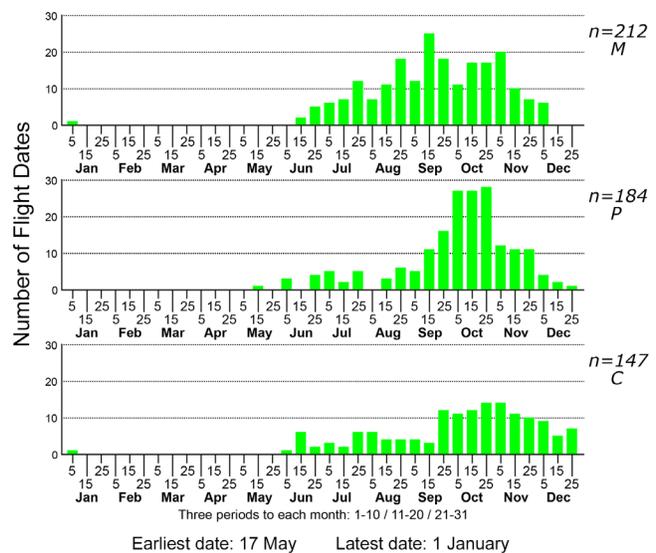
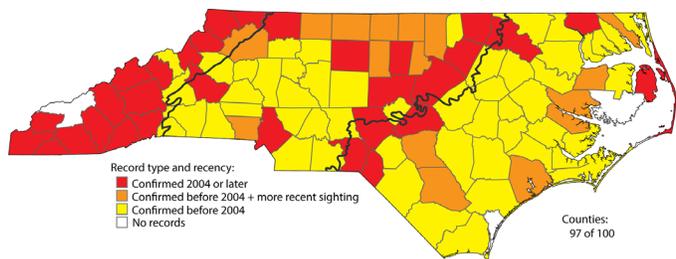
Status: G5/N5/S5

Flight: Flies from mid-May into early January. It is probably the most frequently seen dragonfly species in November and December, and the bulk of its flight takes place in fall, September into November.

Habitat: Still (lentic) waters of ponds, marshes, and slow creeks, typically in wooded or semi-shaded places.

Behavior: Adults are frequently seen in fields, powerline clearings, and woodland borders in the fall, often perching on the tips of grasses or forbs or twigs. However, it is a fairly small species and can easily be overlooked.

Comments: Of all of the numerous dragonflies in North Carolina, this is probably the one that most observers do not see their first individual of the year until September or even October, making it clear why the former common name of Yellow-legged Meadowhawk lost out to Autumn Meadowhawk.



Tramea carolina (Linnaeus, 1763) — Carolina Saddlebags

Distribution: Statewide; obviously occurs in all 100 counties, though lacking a record for one Mountain county.

Abundance: Common and widespread in the Coastal Plain and Piedmont and can be very common at times in the Coastal Plain, especially close to the coast. Fairly common in the Mountains. High counts of:

- 100 – New Hanover, 1 June 2018
- 75 – Onslow, 12 June 2016
- 60 – Bladen, 1 August 2021

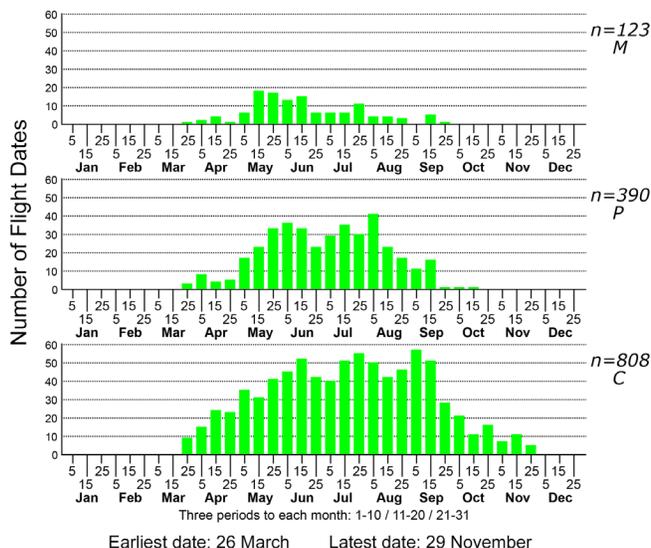
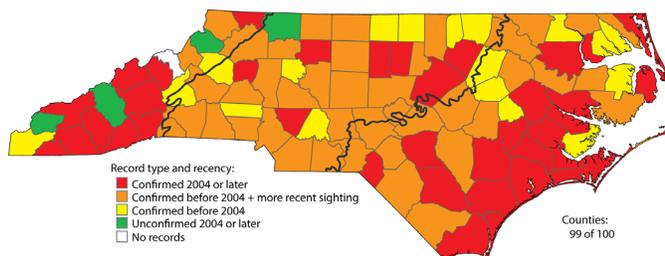
Status: G5/N5/S5

Flight: Begins in late March and extends to late November in the Coastal Plain, mid-October in the Piedmont, and mid-September in the Mountains.

Habitat: Breeds at ponds, lakes, marshes, and other open, still (lentic) waters.

Behavior: Males are often seen flying over ponds and lake margins, usually higher above water than other species, and perching on twigs farther from shore than most species. Adults are most frequently seen in gliding flight well above head height, typically 8–15 feet (2.4–4.5 m) off the ground, usually over open country.

Comments: This and the Black Saddlebags (*T. lacerata*) are frequently seen gliding over one’s head when the observer is walking near the beach, in a field, in an open garden, or near a large pond. The two can be difficult to distinguish until they appear in front of a dark background and the observer can see the abdomen color (or the large pale abdomen spot of the Black Saddlebags). This species is partially migratory, and large numbers can sometimes be seen along the coast in fall.



Tramea darwini Kirby, 1889 — Striped Saddlebags

Distribution: A stray to the East Coast of the United States, with records for six counties in the Coastal Plain and one in the Piedmont.

Abundance: Formerly a very rare stray to the coast and lower Coastal Plain but increasing in records in the past few years (due to more observers?); now a rare coastal stray/visitor. Accidental inland. High counts of:

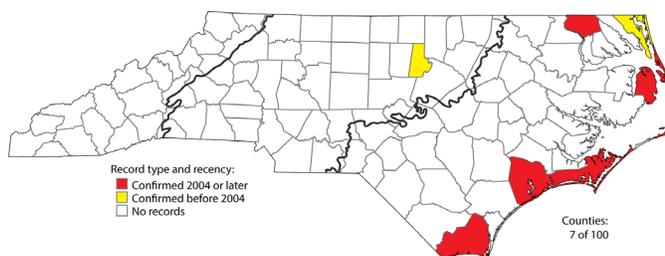
- 3 – Gates, 10 September 2014
- 2 – Brunswick, 29 October 2006
- 2 – Currituck, 9 August 1969

Status: G5/NNR/SNA

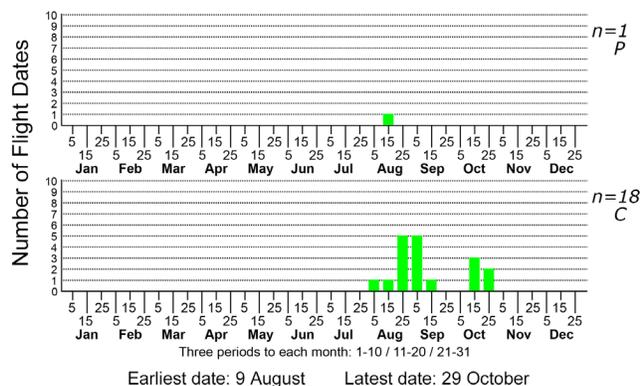
Flight: Only in late summer and fall. The state’s records occur between early August and late October.

Habitat: In North Carolina, the species can occur anywhere, primarily near the coast, as it is a stray.

Behavior: As with other saddlebags, adults spend most of the time in flight, perching infrequently. They often hover or glide, with seemingly little effort. Owing to the dark patch on the wings near the body, and its habit of flying at eye level or above, it could easily be overlooked as another saddlebags species or a Spot-winged Glider.



Comments: Unusual for a stray, several individuals remained at one site (Merchants Millpond State Park in Gates County) from August into October 2004. The scientific name was changed from *T. calverti* to *T. darwini* in 2021 (Lorenzo-Carballa et al. 2021).



Tramea lacerata Hagen, 1861 — Black Saddlebags

Distribution: Essentially statewide, with only two widely scattered counties lacking records. Certainly present in all 100 counties.

Abundance: Reasonably common across the state, with abundance seemingly quite similar in each province. Statewide abundance is slightly less than that of the Carolina Saddlebags (*T. carolina*), but there are many more records of the Black Saddlebags for the Mountains than there are for the Carolina Saddlebags. Carolina outnumbers the Black in the Coastal Plain. High counts of:

- 45 – Durham, 4 October 2009
- 45 – Wake, 19 July 2014
- 25 – Wake, 26 July 2014

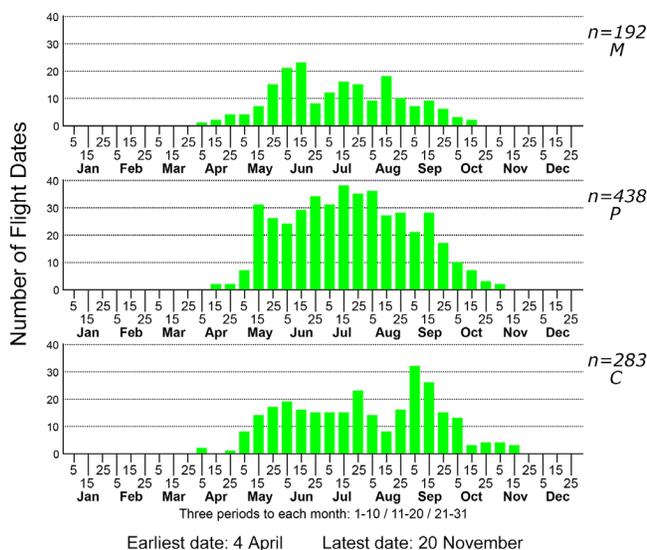
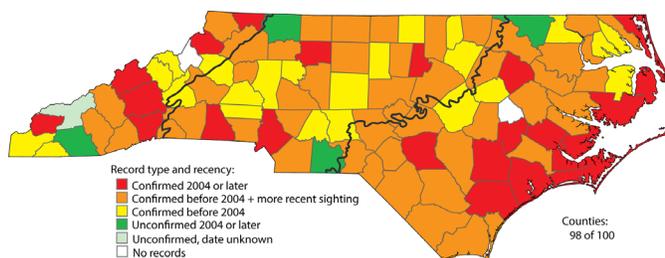
Status: G5/N5/S5

Flight: Flight begins in April in all three provinces, though it is scarce before mid-May; season extends into November in the Coastal Plain and Piedmont, but it ends in mid-October in the Mountains.

Habitat: Ponds, lakes, marshes, and other still (lentic) water in open places.

Behavior: Essentially the same as for Carolina Saddlebags (*T. carolina*). Usually seen in flight, gliding or slowly flapping, above head-height, seldom coming to a perch.

Comments: Black Saddlebags and Carolina Saddlebags are about the same size, often fly together, and are similar in abundance. Exactly what micro-habitat, prey, or other niche features differentiate these two is not obvious. As with the Carolina, some individuals along the coast are probably migrants, but it is not nearly as numerous a fall migrant along the coast as is the Carolina.



Tramea onusta Hagen, 1861 — Red Saddlebags

Distribution: A stray with records scattered across all three provinces.

Abundance: Presumed very rare migrant, and perhaps mainly near the coast. However, as it looks very similar to Carolina Saddlebags (*T. carolina*), most people would easily overlook the species. High counts of:

- 3 – Ashe, 4 August 1972
- 2 – New Hanover, 27 November 2015
- 2 – New Hanover, 28 November 2015

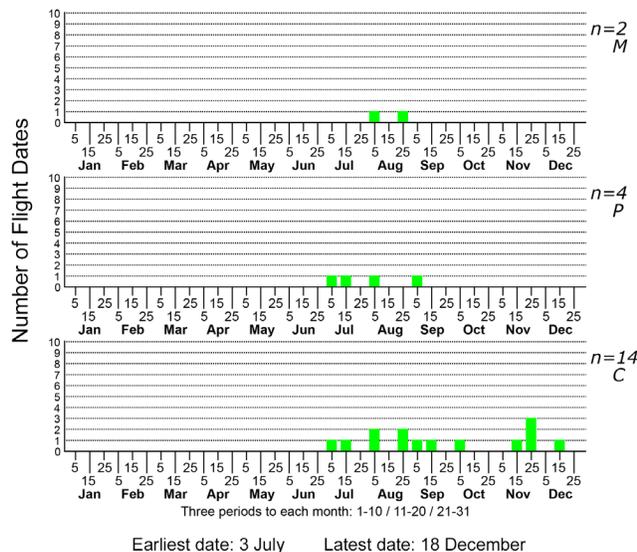
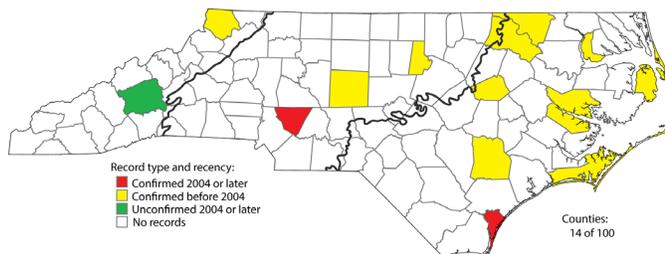
Status: G5/N5/SNA

Flight: Early July to mid-December.

Habitat: Recent records are from the vicinity of ponds. Paulson (2011) indicates that lakes and ponds are primary habitats, as well as canals and other slow-moving waters.

Behavior: Similar to other saddlebags, which typically fly above or at head height over mainly open areas, such as ponds and fields. They perch, somewhat infrequently, at the tips of stems.

Comments: The state’s records suggest that this species may be a regular fall visitor to southeastern North Carolina and not just a casual stray, as it appears to be for the rest of the state. However, assessing its true status is complicated by the difficulty in distinguishing this species from the very similar and much more abundant Carolina Saddlebags.



Earliest date: 3 July Latest date: 18 December

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