

## GOMPHIDAE

### Rapids Clubtail (*Gomphus quadricolor*)

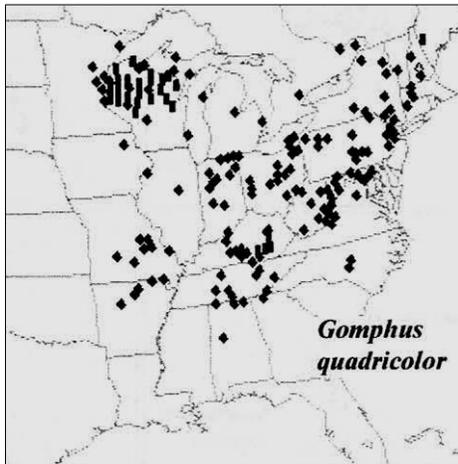
Pre-NYDDS Status: G3G4, S1S2

Draft Revised Status: S3

**Habitat Characteristics:** Larvae live in muddy pools in clear, cool streams where they have drifted from oviposition sites in rapids. Adult males perch on rocks in rapids or on sunny bare patches some distance from shore, while adult females inhabit forests on the riverbanks, moving to the rapids when ready to breed (Walker 1958; COSEWIC 2008). In New York, most NYDDS records came from medium-sized to larger creeks and rivers having relatively clean water and riffle/run reaches.



Stephen Diehl and Vici Zaremba 2009



(Donnelly 2004c)

**Distribution and Inventory Needs:** The center of distribution for *G. quadricolor* is in western Ohio in the southern Great Lakes forest ecoregion. New York lies near the northeastern range extent, with known populations extending to the northern New Hampshire/Maine border (Donnelly 2004c), although it was not found in Maine during a recent Atlas (Brunelle & deMaynadier 2005). This species is confined to the eastern part of New York in the northeast Lake Ontario/St. Lawrence, Champlain and upper Hudson watersheds. Widely scattered populations occur in nine counties from Rondout Creek in central Ulster County, northwestward to the Indian and Oswegatchie Rivers, and eastward to the upper Hudson River, and the Poultney and Mettawee Rivers along the Vermont

border. Additional inventory is warranted in the Susquehanna and Delaware watersheds, where the species was known historically, and in extreme southwestern New York since there are multiple records in adjacent Pennsylvania (Donnelly 2004c).

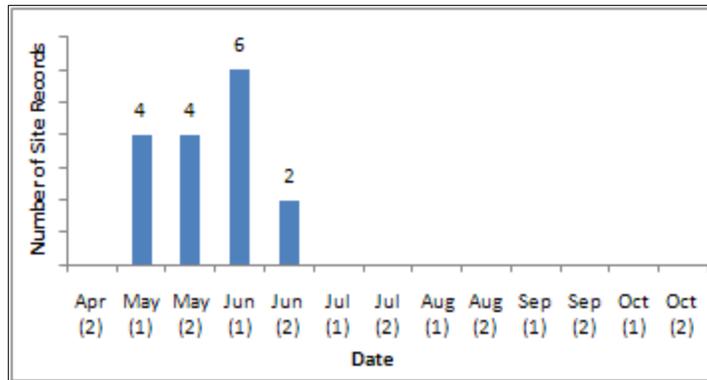
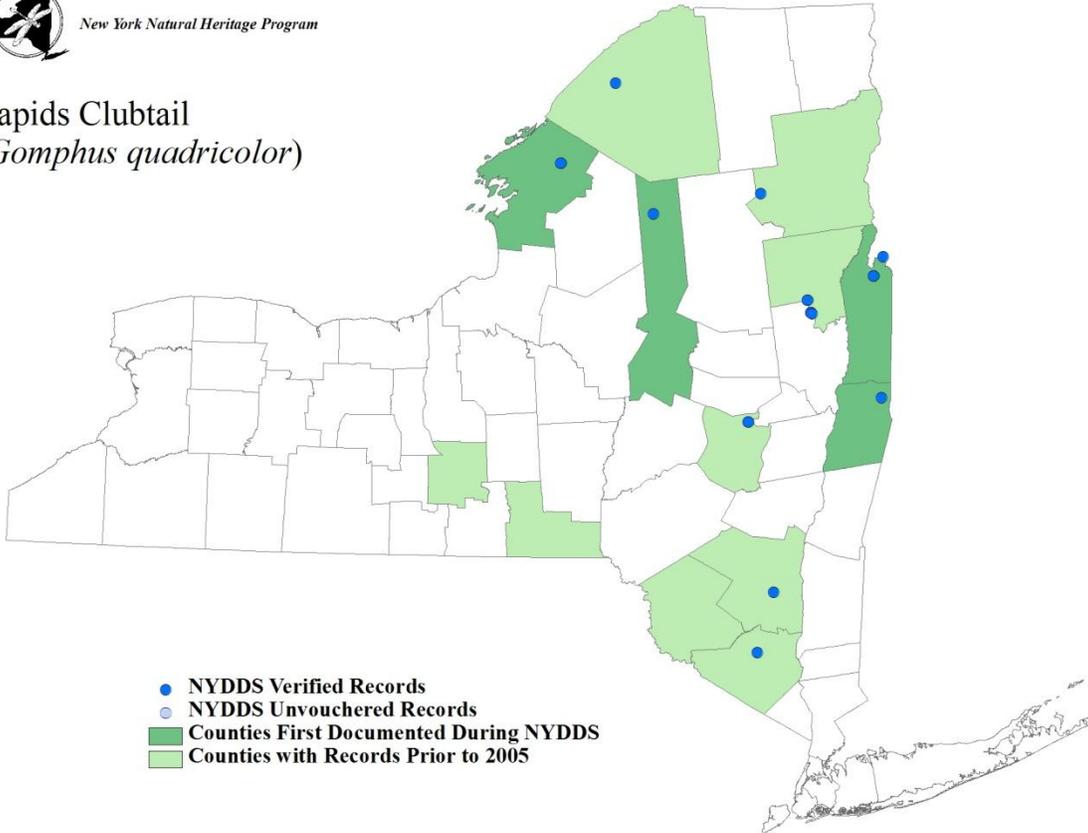
**Phenology:** Larvae emerge toward the end of May into early June and adults are observed throughout the month of June in New York. Larva collected in early spring and reared to adults in an indoor tank emerged earlier (1<sup>st</sup> half of May) than adults in the wild.





New York Natural Heritage Program

### Rapids Clubtail (*Gomphus quadricolor*)



## GOMPHIDAE

### Sable Clubtail (*Gomphus rogersi*)

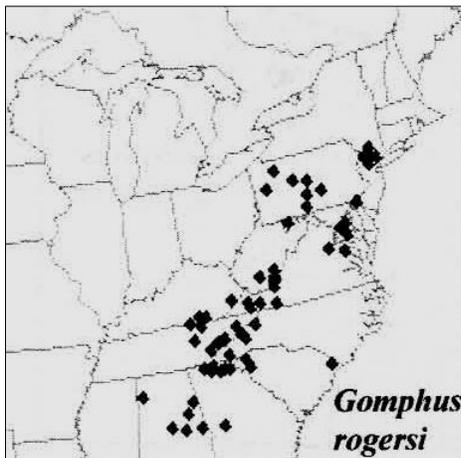
Pre-NYDDS Status: G4, S1

Draft Revised Status: S1

**Habitat Characteristics:** Sable Clubtails inhabit clear, moderately flowing small forest streams and brooks with a sand, silt or rocky substrate. Adults forage at forest edges, and perch on rocks, overhanging grass and floating plants (Dunkle 2000). In New York, an extant site occupied since 1995 is a cold headwater brook that runs through a mixed hardwood forest with occasional sunny and marshy openings. The brook is alternately wide (approximately 8 feet) and deep, and narrow (1-3 feet) with shallow, rocky riffles. In the sunny areas, the bank is lined with ferns and nettles. Boulders or moss-covered rocks line the stream in other areas. In places the stream bank is elevated 1-5 feet above the stream surface. New York's other known site is also a heavily forested stream outlet of gentle gradient connecting a small pond to a larger lake.



Tom Murray



(Donnelly 2004c)

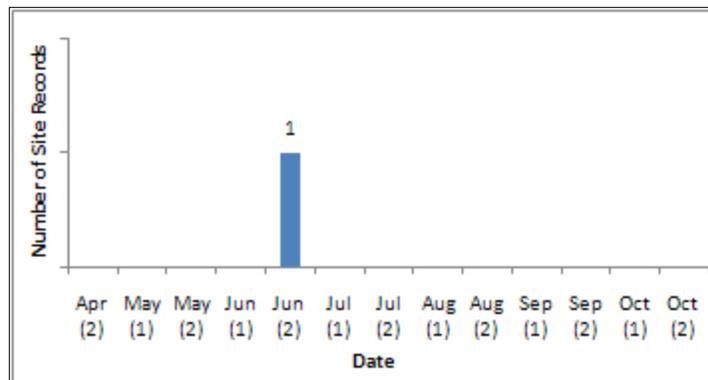
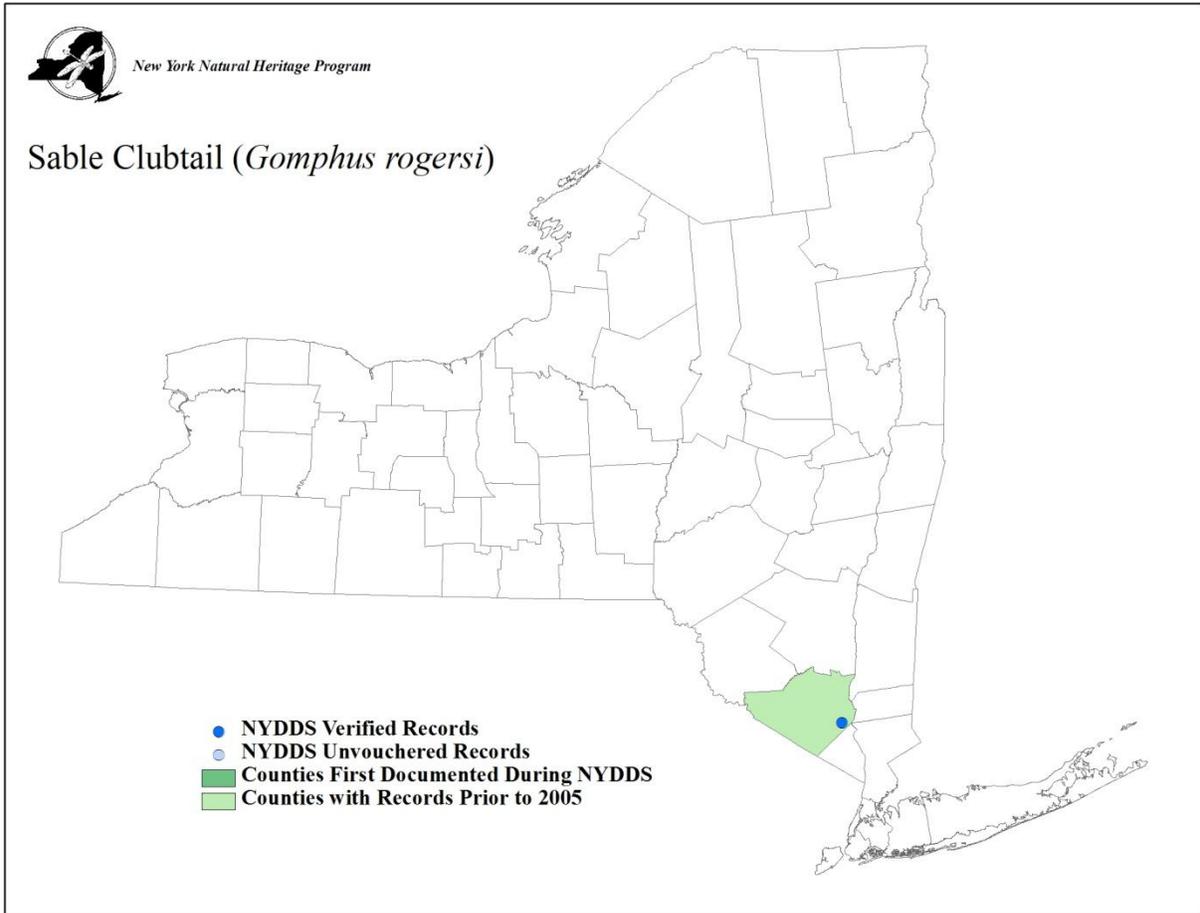
**Distribution and Inventory Needs:** The distributional center of *G. rogersi* occurs along the southern West Virginia/Virginia border in the Appalachian Blue Ridge ecoregion, extending south to central Alabama and north to the New Jersey/New York border. The northernmost locale in the species' entire range occurs on Deep Hollow Brook (last observed in 2008) at Harriman State Park and at nearly the same latitude in western Pennsylvania (Donnelly 2004c). These northwestern Pennsylvania records are over 35 years old, however, and more recently this species has been found in southern Pennsylvania only (Pennsylvania Natural Heritage Program 2010b). It is possible that this central Appalachian species is temperature-limited at its

northern range margin (Beatty & Beatty 1968), so a possible range contraction southward seems counter-intuitive in a warming climate.

New York's only two known populations appear to be rather stable since the northernmost occurrence has been extant for 15 years, and it was noted as "common" at the other site (Little Cedar Pond outlet) in Sterling Forest near the New Jersey border. However, the status of this population has not been re-confirmed since it was first found in 1989. The current status of the New Jersey sites adjacent to New York is unknown. It seems likely that this species occurs on additional favorable streams in Orange and Rockland Counties, especially in the heavily forested Harriman and Sterling Forest State Parks. An informative distribution model created by NY Natural Heritage also predicted potentially suitable habitat in central Ulster County, at the Ward Pound Ridge Reservation in Westchester County, and in the Hudson Highlands State Park on the Dutchess/Putnam County border (New York Natural Heritage Program 2007a).



**Phenology:** This species could have a very narrow flight season in New York—all of the few (<1/2 dozen) sightings, both pre-NYDDS and during, fell between June 23-27, and it was not seen at a known site on July 11<sup>th</sup>. In northern New Jersey, its flight season is about a month long, from May 23-June 24 (Bangma & Barlow 2010).



## GOMPHIDAE

### Septima's Clubtail

(*Gomphus septima delawarensis*)

Pre-NYDDS Status: G2, S1

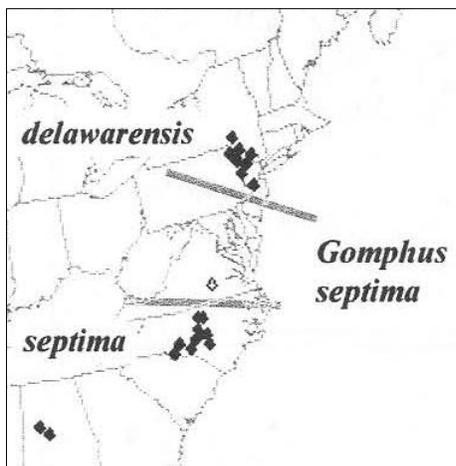
Special Concern

Draft Revised Status: S1



Steve Walter 2008

**Habitat Characteristics:** This species requires clean, rocky rivers with muddy and silty reaches. In the Delaware River, larvae inhabit relatively deep (> 1 meter) pools either immediately downstream of rapids or downstream of a tributary, especially where large amounts of mixed fine sediments have been deposited. Adults frequent regions of turbulent rapids with large emergent boulders, on which they often perch. They also spend much time at open areas away from the water and adults have been found perched on the ground or in low trees and shrubs especially along railroad rights-of-way. Emergence occurs farther up on the river banks (1-2 meters) than most other Gomphids (Soltesz 1995b; Donnelly & Carle 2000).



(Donnelly 2004c)

**Distribution and Inventory Needs:** *G. septima septima*, known only from Alabama (recently rediscovered) and North and South Carolina was first discovered in the 1930s (Westfall Jr 1956) while the Delaware River endemic *G. s. delawarensis* was discovered in 1993 (Donnelly & Carle 2000). It is not clear why this dragonfly was overlooked for so long, but Donnelly & Carle (2000) stated that it was different enough from its close relative *G. septima* that it could have been described as a full species, rather than a subspecies. It is endemic to only in the Delaware River in New York, Pennsylvania and New Jersey from Mercer County New Jersey (Bangma & Barlow 2010), north to the Pepacton Reservoir on the East Branch of the Delaware in Delaware County, a stretch of about

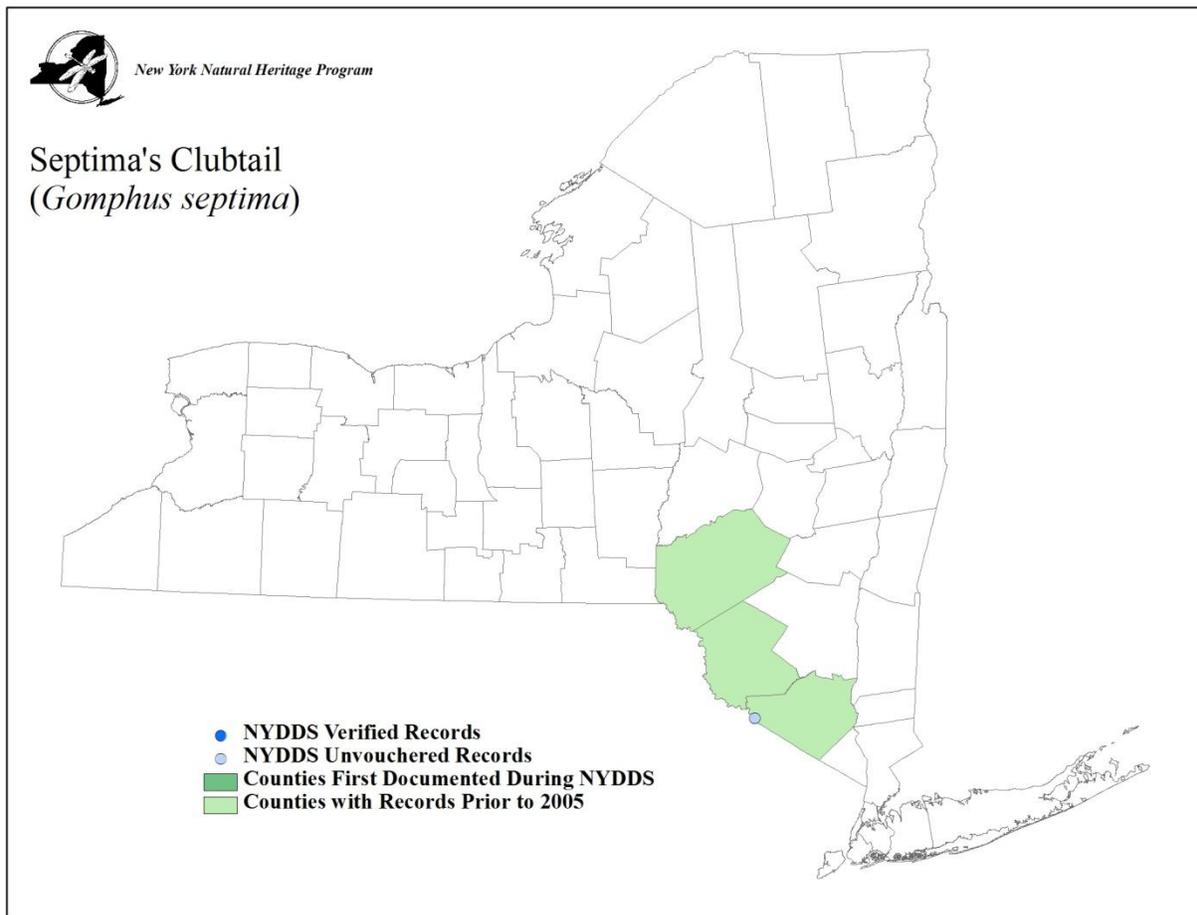
360 km.

Specific locations in New York include Port Jervis, Barryville, Minisink Ford, Tusten, Narrowsburg, Skinner's Falls, Cohecton, and Callicoon. Most specimens were found in 1994 and 1995 along a 50-km reach between Barryville and Callicoon, in Sullivan County when intensive collecting (~80 adults collected) was done for Donnelly & Carle's (2000) subspecific description. Upwards of 50 adults were taken over 20 days in 1994 (Bick 2003). The species has not been seen from 1996 to 2007 New York along the upper Delaware. On June 7, 2008 a single adult female was photographed at Port Jervis along the Delaware River. While the photo (above) is slightly uncertain since it could not be separated from *G. fraternus* by experts, it is a probable *G. septima* based on the location (Donnelly pers. Comm.) and the experience of the observer. Its status on the New Jersey side of the upper Delaware is unknown. There is a presumed uninhabited stretch of about 65 km between Callicoon, the northern-most known locale on the upper Delaware, to Downs ville in Delaware County on the east Branch, where a male and a



female were collected in 1995 (Donnelly 1999; Donnelly & Carle 2000). Further inventory along this stretch as well as along the west Branch, north of Hancock and the Beaverkill (upstream of the confluence with the East Branch) is urgently needed. The species was not detected in 2008 in the vicinity of Long Eddy, or in 2009 between Hankins to Cohecton and at Port Jervis (although weather conditions were poor in 2009).

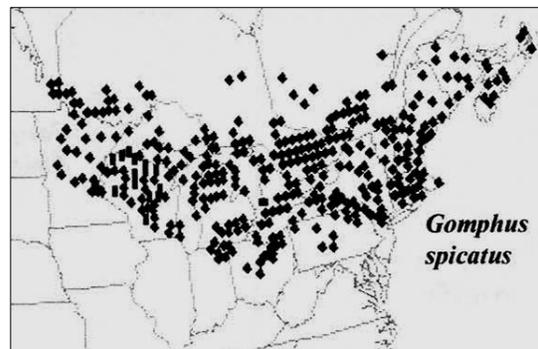
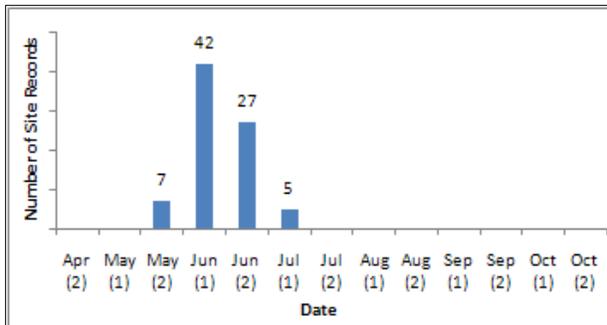
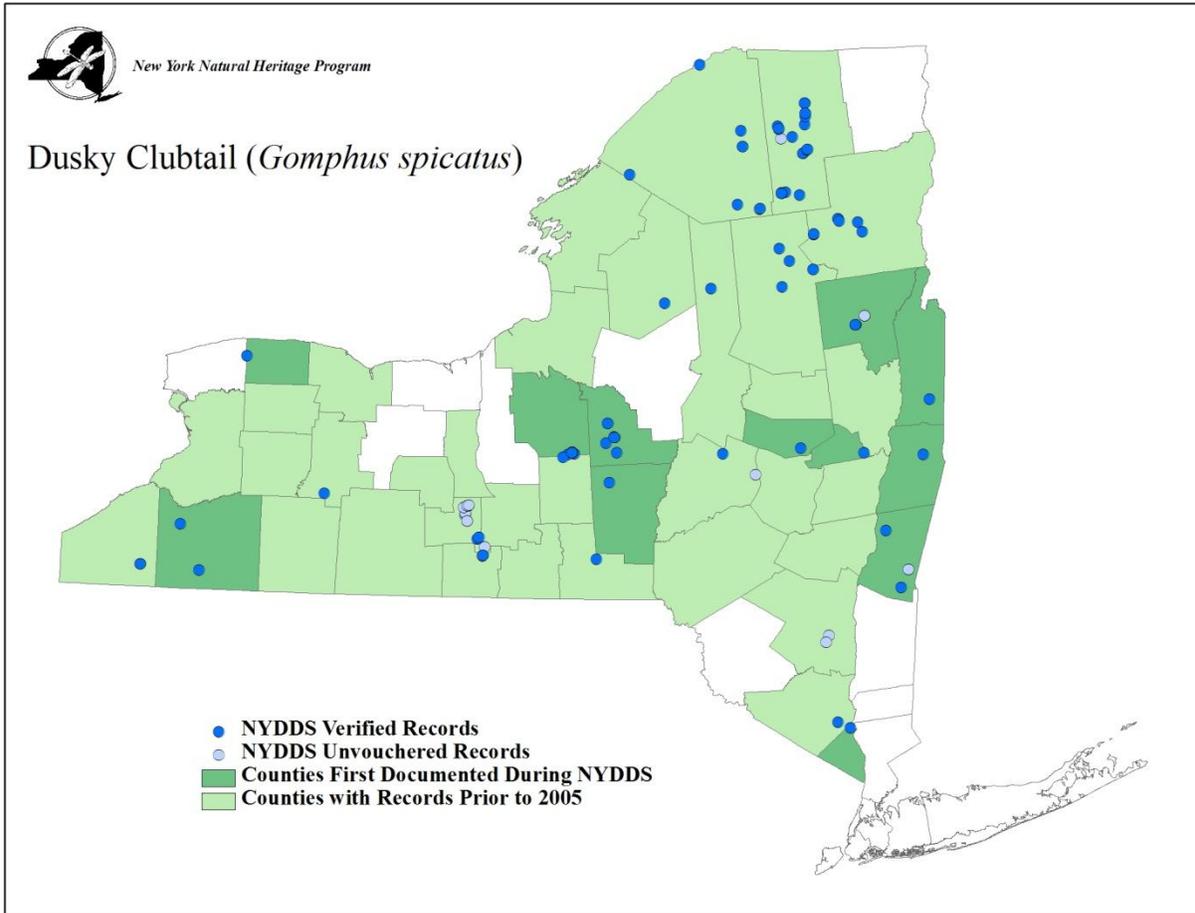
**Phenology:** Exuviae and adults have been collected along the upper Delaware from May 24-June 25, with the great majority of records (> 2/3) coming during the first half of June (Soltesz 1995b). The photo from 2008 was taken on June 7.



**GOMPHIDAE**

**Dusky Clubtail (*Gomphus spicatus*)**

Pre-NYDDS Status: G5, S5



(Donnelly 2004c)



## GOMPHIDAE

### Cobra Clubtail (*Gomphus vastus*)

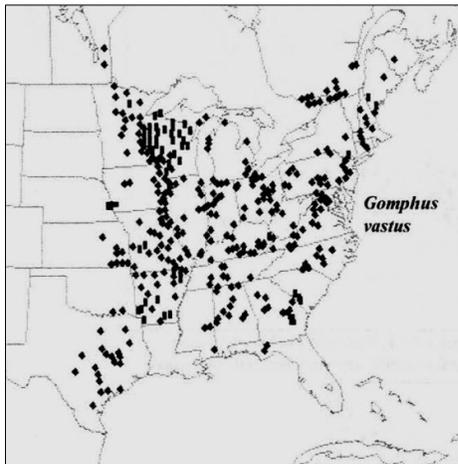
Pre-NYDDS Status: G5, SH

Draft Revised Status: S1

**Habitat Characteristics:** Cobra Clubtails inhabit large forested sandy-bottomed rivers with alternating stretches of sand and gravel and more rarely large wind-swept lakes. Along the Ottawa River in Quebec, large numbers of larvae emerged from heavily impacted areas with stone walls along the shoreline and some aquatic plants, debris, and sand/mud substrates (Hutchinson & Ménard 1999). Adults are believed to take refuge high up in large trees along the shoreline or in nearby uplands since they are seldom observed after emergence. During breeding mature males can be seen resting on sandy stretches of shoreline, or perched in overhanging vegetation (Massachusetts NHESP 2003).



Jeffrey Phippen 2008



(Donnelly 2004c)

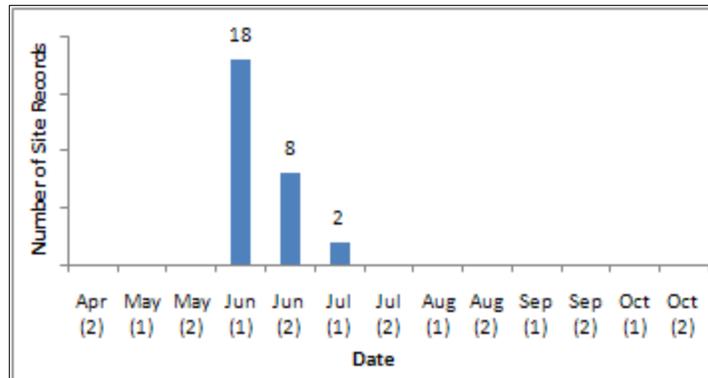
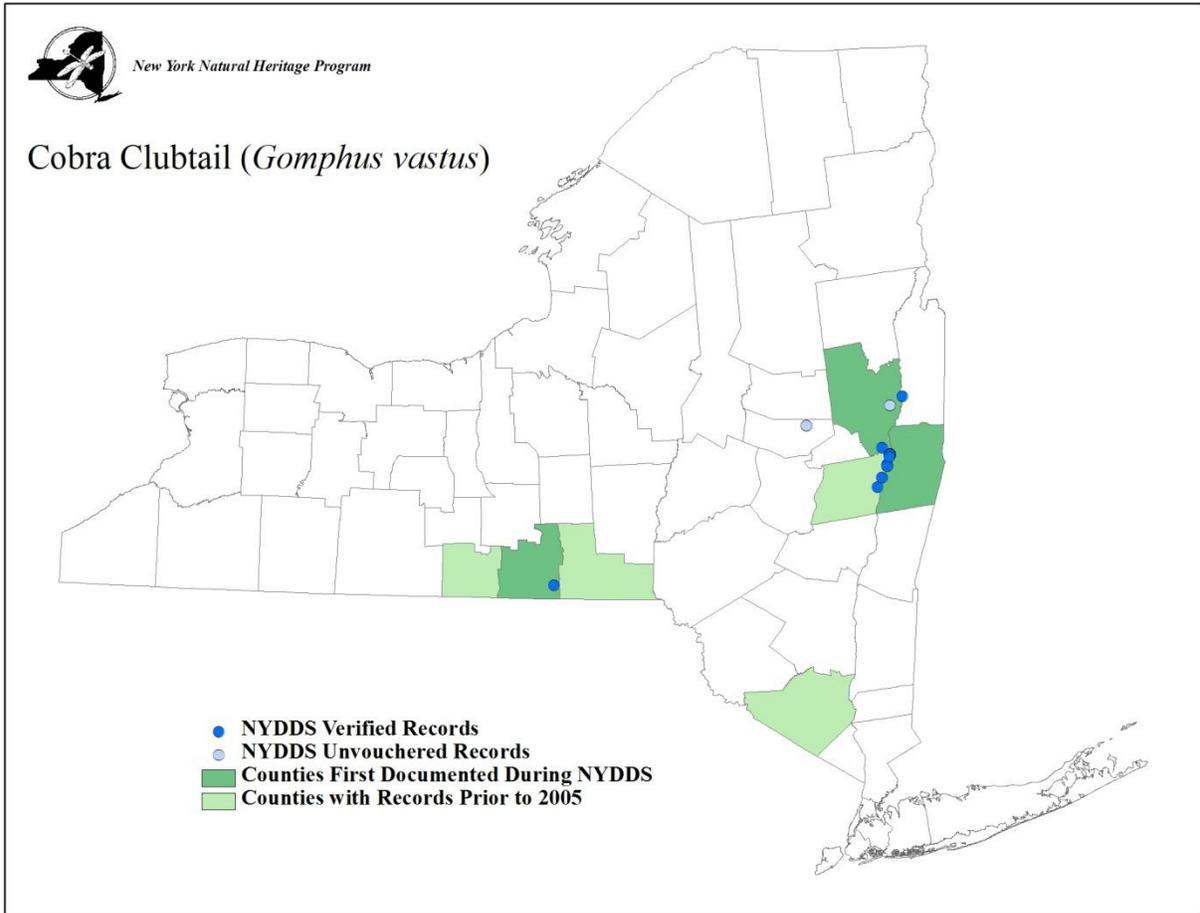
**Distribution and Inventory Needs:** This species is widely distributed in the eastern half of the US, with a distributional center along the Ohio River in southern Indiana in the southern Great Lakes forest ecoregion. It ranges northwest to Lake Winnipeg in southern Manitoba, east to New Brunswick, and south to Florida and Texas. New York is near the northeastern range extent (Donnelly 2004c) where the species was known historically only from the Hudson and Chemung Rivers. During the NYDDS, a large population was rediscovered along the mid Hudson River from around Albany north to Schuylerville and a short distance up the Mohawk River. The Susquehanna watershed population, known since 1940, is also apparently extant, as exuviae were found along the Susquehanna River

near Apalachin in Tioga County in 2009. This species also may occur in the Delaware River since exuviae have been collected on the New Jersey side of the river (Bangma & Barlow 2010), as well as farther upriver on the Mohawk where an unverified adult was reported near Lock 12 in Montgomery County. A pre-NYDDS vague record from Orange County (Donnelly 2004a) may have come from the Wallkill River. The species might also be looked for along northern Lake Champlain and/or the St. Lawrence River since there are several records from the Ontario/Quebec border very close to New York. A cluster of records in northwestern Pennsylvania suggests that additional inventory in the Allegheny watershed in southwestern New York is warranted.

**Phenology:** The great majority of records during the NYDDS were of exuviae; however, a few adults were collected. All of the encounters were primarily during the month of June, with one collection of an adult on July 10. This corresponds well with the flight season in Wisconsin (Wisconsin Odonata Survey 2009) and New Jersey (Bangma & Barlow 2010); however, in



Massachusetts (Massachusetts NHESP 2003) and Ohio (The Ohio Odonata Society 2000), it is seen through July and into August.



## GOMPHIDAE

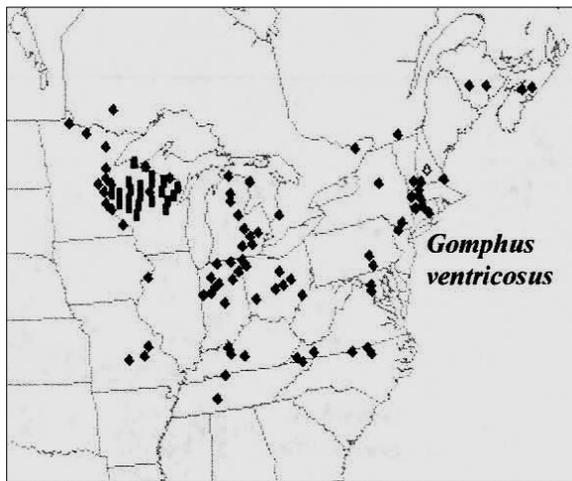
### Skillet Clubtail (*Gomphus ventricosus*)

Pre-NYDDS Status: G3, SH

Draft Revised Status: S1

**Habitat Characteristics:** Throughout its range, this species prefers small to large turbid rivers with partial mud bottoms, but good water quality. In the Midwest, it can sometimes be found on clean lakes with sand or sand-marl (calcium-rich) bottoms. An older locale in Pine Island of Orange County

(Donnelly 1999), presumably along the upper Wallkill River, was a slow moving creek with a muddy/muck bottom and stained/turbid water and grasses and woody shrubs along the banks. The newly documented Raquette River population occupies a rocky, deep river with clear water and a sand/gravel substrate.



(Donnelly 2004c)

Massachusetts and Connecticut as well as smaller rivers near the border with New York such as the Housatonic (Massachusetts NHESP 2003) suggest that it should occur in eastern New York. Extensive searches along the mid-Hudson during NYDDS however, failed to turn it up. It was formerly known in New York from two pre-1926 records, one from Pine Island, probably the upper Wallkill River (where it still occurs in New Jersey), and another from Old Forge, probably on the Moose River. A survey of the Moose River near Old Forge in 2009 turned up empty, but more inventory there is needed. In 2007 and 2008, a new population was documented in New York along the Raquette River between Potsdam and Massena on the northeast Lake Ontario/St. Lawrence Plain. Other large rivers draining the Adirondacks to the north including the Grass, Oswegatchie, St. Regis, and Chateaugay may also hold populations on their lowland reaches.

**Phenology:** Adults were collected in northern New York between June 8 and 25. In Massachusetts and Wisconsin (Massachusetts NHESP 2003, Wisconsin Odonata Survey 2009) the species is observed from late May to mid July, with the bulk of records coming in June.



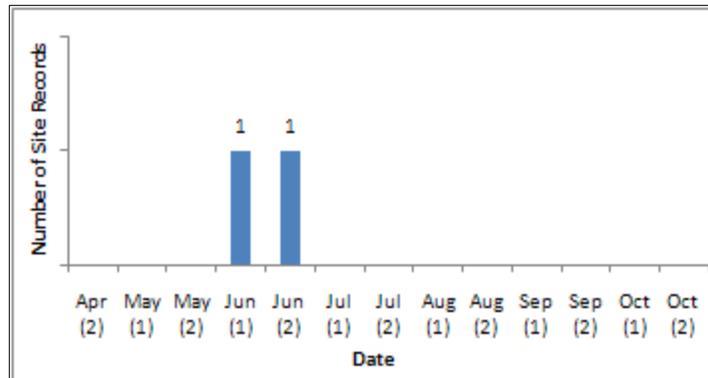
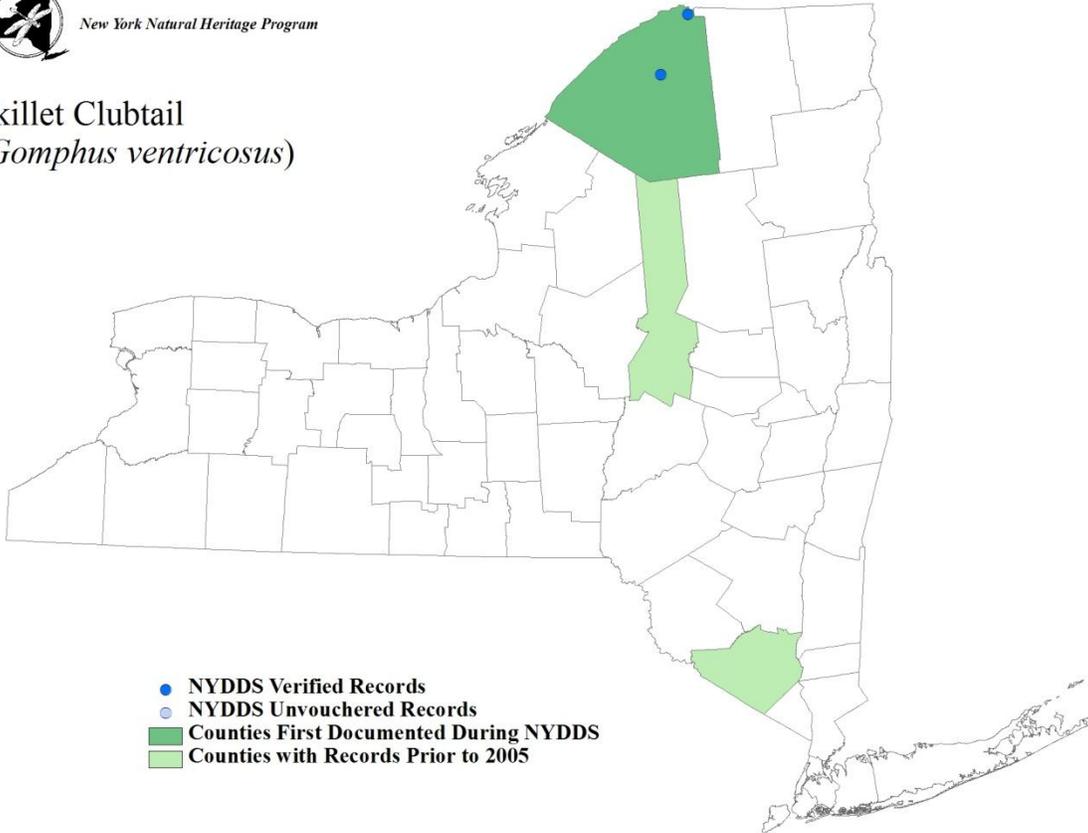
Jan Trybula 2007





New York Natural Heritage Program

### Skillet Clubtail (*Gomphus ventricosus*)



## GOMPHIDAE

### Green-faced Clubtail (*Gomphus viridifrons*)

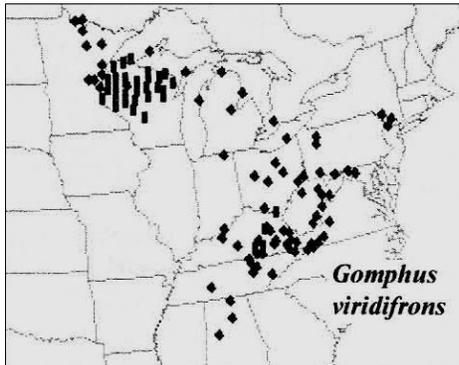
Pre-NYDDS Status: G3, S1

Draft Revised Status: S1

**Habitat Characteristics:** This species inhabits clean medium-sized rocky forest streams and small rivers with gravel/sand substrates and lightly silted rocks (Dunkle 2000). Adults fly 1-3 meters above the water surface, about 3-10 meters out from the shore often hovering near the head of riffles and rapids, or perching on shoreline vegetation and exposed rocks (Evans 2002). In New York a single larva was dredged from a sandy, pool-like backwater on the back side of an island in the Delaware River near Port Jervis. The main flow of the river is west of the island and the river is rapid, shallow, rocky and about 100 meters wide.



Tom Murray



(Donnelly 2004c)

**Distribution and Inventory Needs:** *G. viridifrons* is rare throughout its range (Walker 1958) and the center of its distribution is in the southern Great Lakes forest ecoregion, along the northern Ohio/Indiana border, ranging north to northern Minnesota and south to central Alabama (Donnelly 2004c). A cluster of three records from the Delaware River in New York (Sullivan, Orange Counties) and New Jersey (Sussex County) constitute the northeasternmost occurrence of this species (New York Natural Heritage Program 2007c). Here, adults have not been observed since 1940 and just a single larva collected from Port Jervis was reared to emergence

in 1994, while only exuviae have been found in nearby New Jersey (Bangma & Barlow 2010). Further inventory along the Upper Delaware River may yet prove fruitful because it is rather remote, although unsuccessful surveys have been conducted over the past five years, including in the vicinity of Port Jervis. A cluster of records in the Allegheny National Forest in northwestern Pennsylvania (Evans 2002) suggests that additional inventory in the Allegheny watershed in southwestern New York is warranted. Bier & Rawlins (1994) found thriving populations of larvae and adults from the main stem of the Clarion River; prior to this, the species was thought to have been extirpated from Pennsylvania.

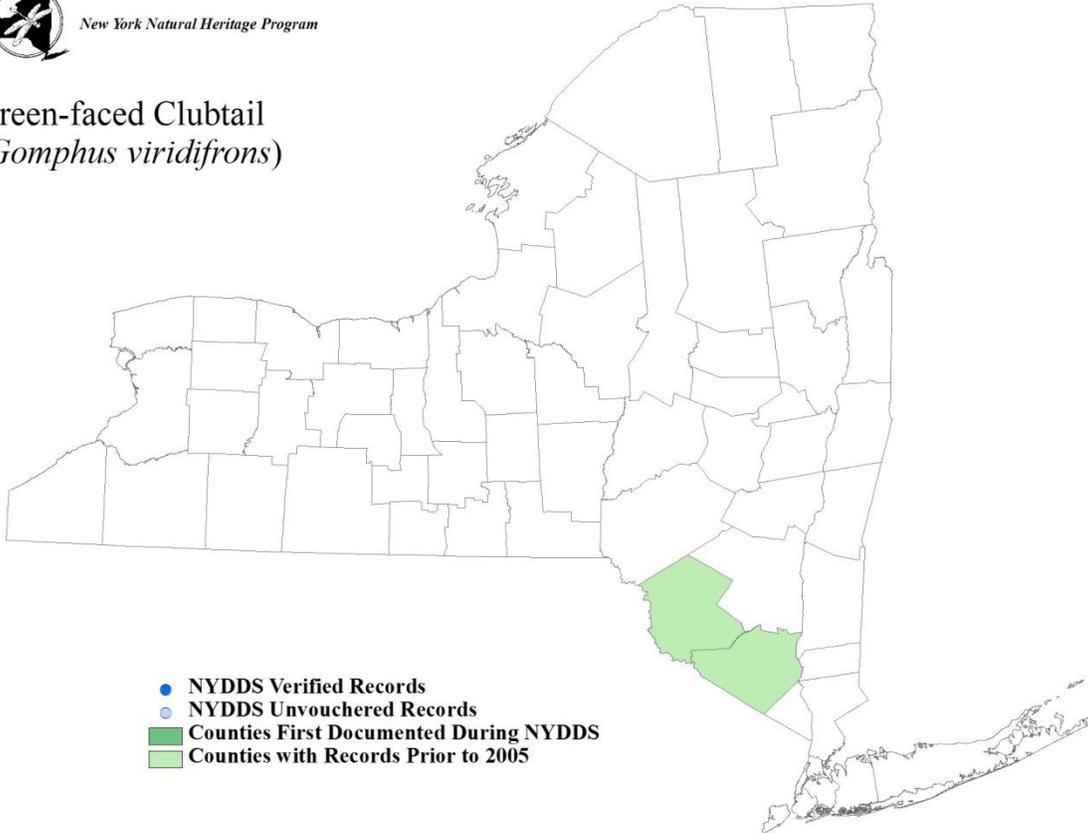
**Phenology:** No phenology chart was generated for this species since it was not found during the NYDDS. Only a single adult has ever been taken in New York, at Barryville along the Upper Delaware on July 23. Exuviae have been collected on the New Jersey side of the river between June 9 and 25 (Bangma & Barlow 2010). The flight season in the midwest (western Pennsylvania, Ohio and Wisconsin) is from late May to late July, with the bulk of records coming in mid-June (The Ohio Odonata Society 2000, Evans 2002; Wisconsin Odonata Survey 2009).





New York Natural Heritage Program

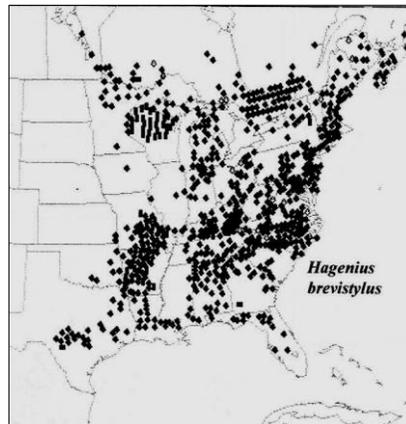
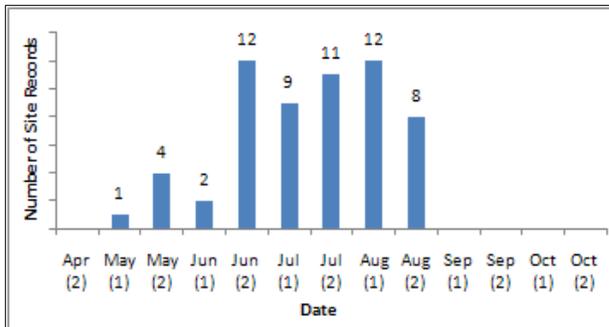
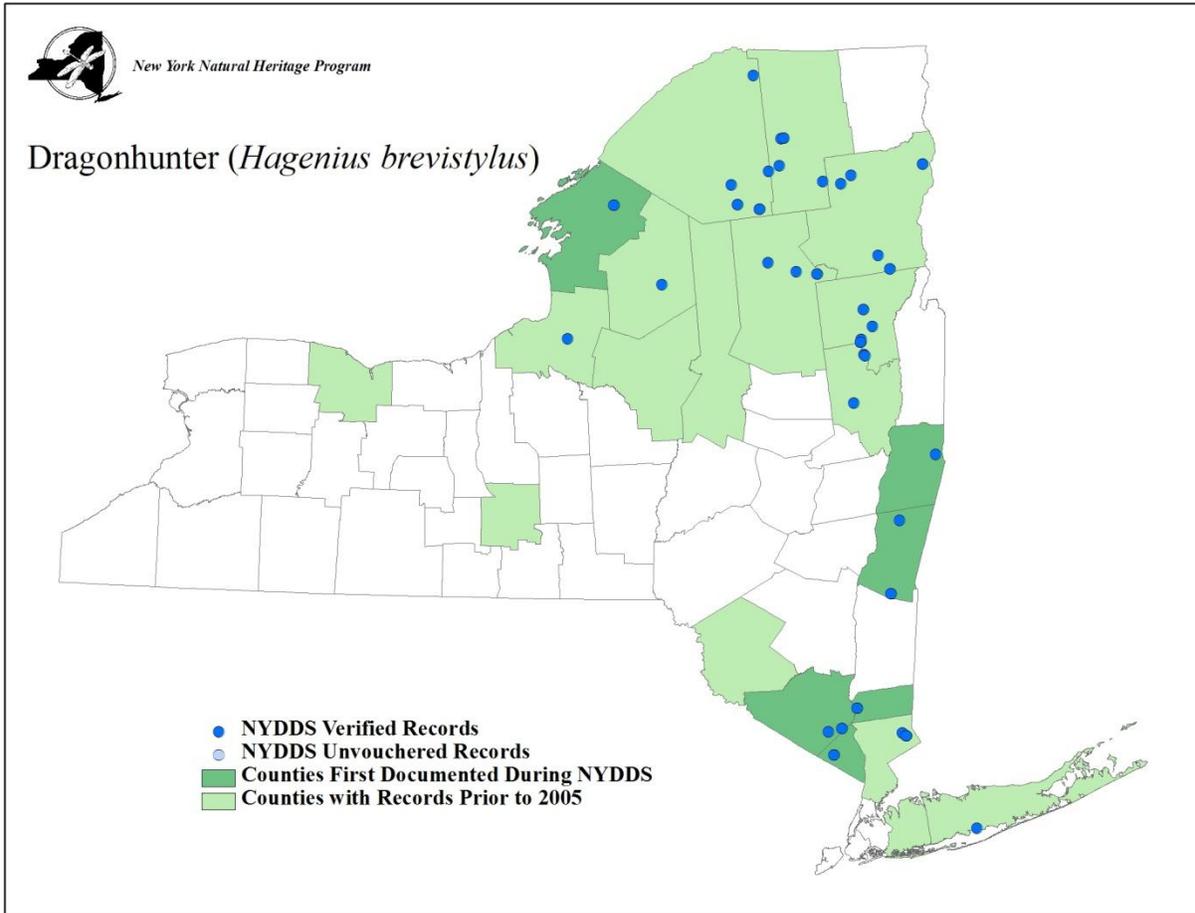
### Green-faced Clubtail (*Gomphus viridifrons*)



**GOMPHIDAE**

**Dragonhunter (*Hagenius brevistylus*)**

**Pre-NYDDS Status: G5, S5**



(Donnelly 2004c)

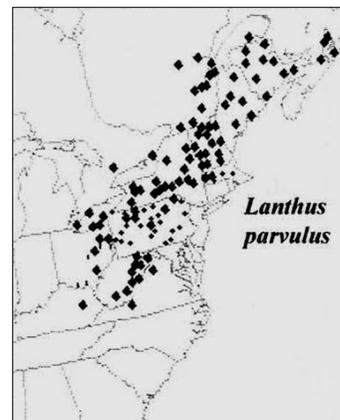
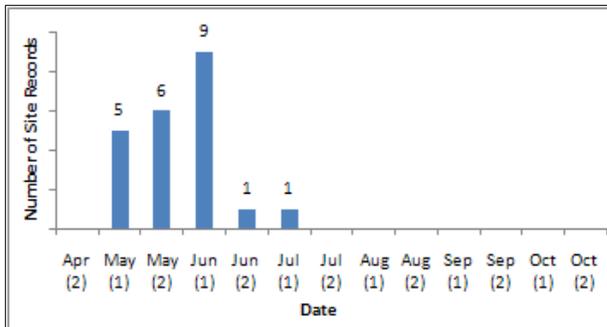
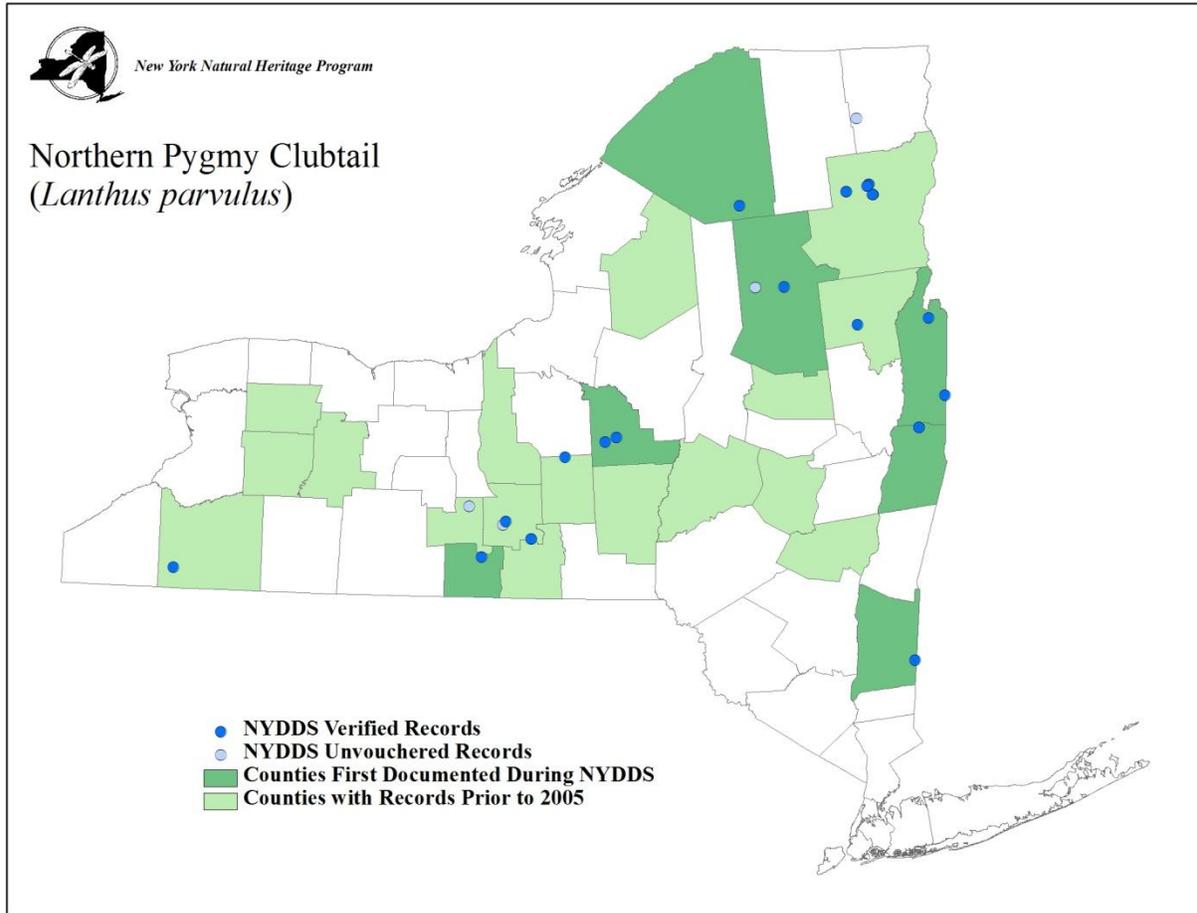


**GOMPHIDAE**

**Northern Pygmy Clubtail (*Lanthus parvulus*)**

**Pre-NYDDS Status: G4, S3,S4**

**Draft Revised Status: S3**



(Donnelly 2004c)

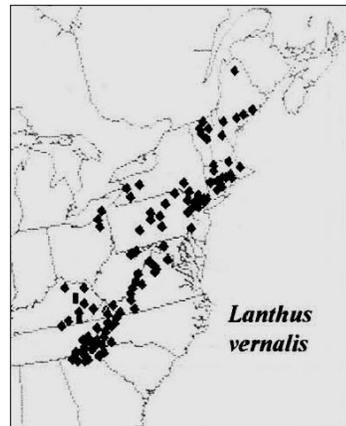
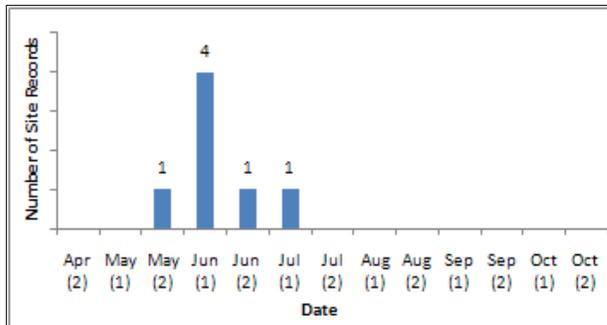
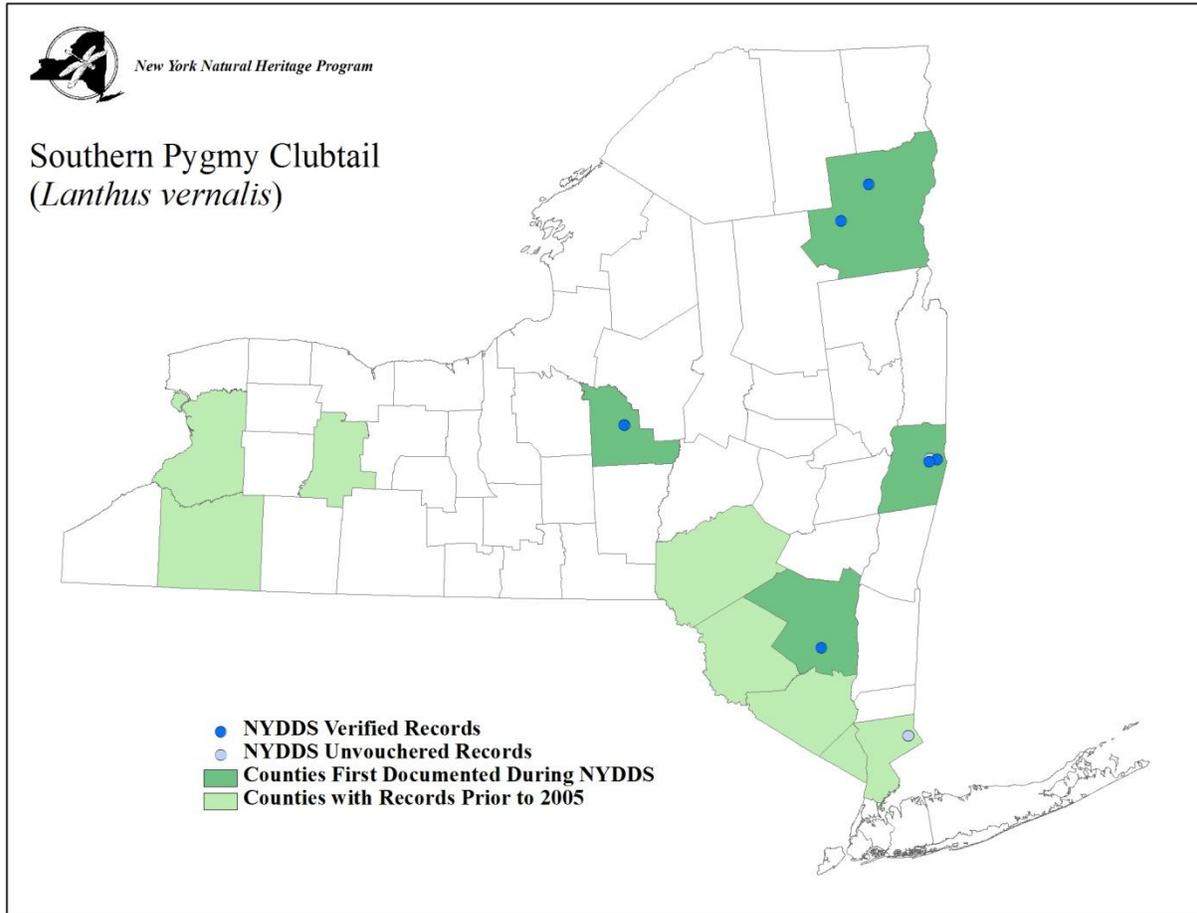


**GOMPHIDAE**

**Southern Pygmy Clubtail (*Lanthus vernalis*)**

**Pre-NYDDS Status: G4, SU**

**Draft Revised Status: S1**



(Donnelly 2004c)



## GOMPHIDAE

### Extra-striped Snaketail (*Ophiogomphus anomalus*)

Pre-NYDDS Status: G4, S1

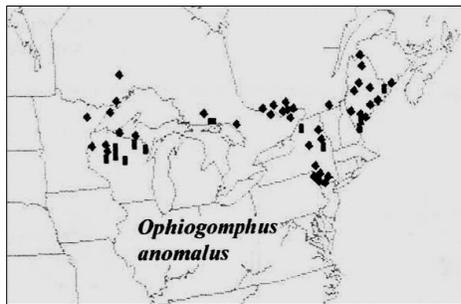
Special Concern

Draft Revised Status: S2S3

**Habitat Characteristics:** Like the Pygmy Snaketail, the Extra-striped Snaketail, is typically a species of medium sized and larger rivers. The rivers where it occurs may be rocky, gravelly or quite sandy, and are typically clear and cool with a moderate or fast flow, areas of riffle/run, and bordered by forested landscapes (New York Natural Heritage Program 2010). In the Delaware River, Soltesz found exuviae at sites of swift, but not turbulent, current, and with sand and/or gravel on the downstream side of boulders or among cobbles (Soltesz 1995b).



Denis A. Doucet



(Donnelly 2004c)

**Distribution and Inventory Needs:** The Extra-striped Snaketail is a northern species, occurring from eastern Minnesota and Wisconsin into southern Ontario, southern Quebec, Maine, New York, and in New Jersey and Pennsylvania, on the Delaware River (Donnelly 2004c). Prior to 1993, this species was known in New York from a single specimen collected in 1951 at Port Jervis, which is located at the junction of the Delaware and Neversink Rivers, in Orange County. The Extra-striped Snaketail was a possible candidate for federal

listing in the early 1990s at which time the New York Natural Heritage Program began survey efforts for this species. A single exuviae was collected on the Delaware River at Cochecton in 1993. Additional exuviae were collected in 1994, 1995, and 1997 and the species was discovered on the upper Hudson River north of Warrensburg in 1995 (New York Natural Heritage Program 2010). Extensive, subsequent surveys of the Upper Hudson revealed a large population occupying a stretch of some 27 miles, from Lake Luzerne north to Riparius (Novak 1998) and also occurring just downstream of the Spier Falls dam below Lake Luzerne in Saratoga County. The Moose River (Oneida County) and the Raquette River, St. Regis River, and West Branch St. Regis River (St. Lawrence County) were added to the state distribution in 2001, 2002, 2003, and 2003 respectively (New York Natural Heritage Program 2010), bringing the total number of rivers for New York to six. An Essex County record on the Ausable River (Donnelly 1999), was subsequently determined to be a possible error.

During the NYDDS, Extra-striped Snaketails were recorded many times on the upper Hudson River, as this river was utilized on a few occasions to train volunteers in the collection of exuviae and larvae, and to search for specimens of *Ophiogomphus* that may represent a new species or subspecies (Donnelly 2008b). In addition to the Upper Hudson, this species was again recorded on the West Branch of the St. Regis River, but no new rivers were added to the known distribution of the Extra-striped Snaketail in New York over the course of the NYDDS. The exuviae of this species is very distinctive and efforts to locate new populations of this state Special Concern species should continue at any medium to large-sized rivers where exuviae



collection did not take place during the NYDDS. Rivers with clean water, some finer substrates, and a forested buffer should be the highest priority for future surveys.

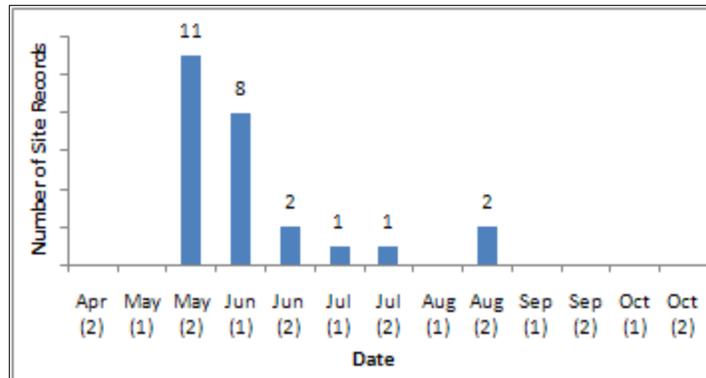
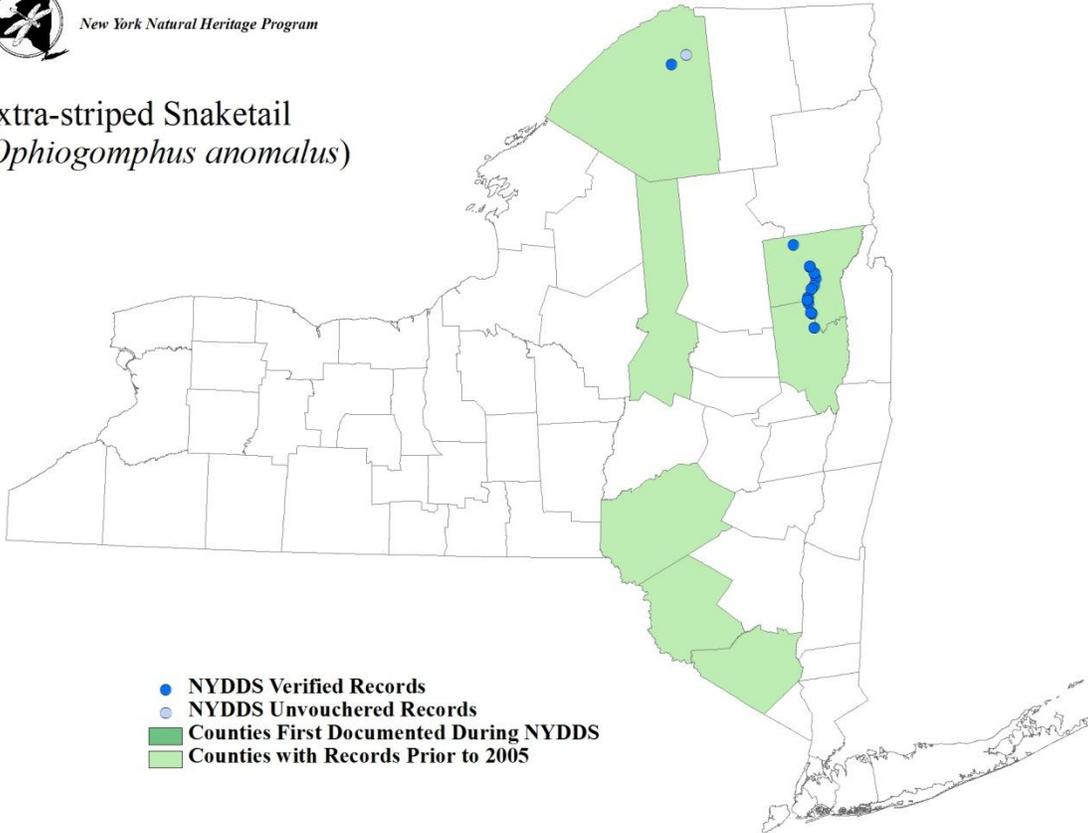
**Phenology:** The flight season in the north central states extends from mid May into early August (Mead 2003). This corresponds quite well with the records documented during the Maine Dragonfly and Damselfly Survey which shows the earliest date as May 25, and the latest date as July 26, but with nearly 75% of all records from the three middle weeks of June (Brunelle & deMaynadier 2005). A study of co-occurring Snaketail species in Maine (Bradeen 1996, Gibbs *et al.* 2004), and collection of exuviae in New York and elsewhere, indicate Extra-striped Snaketails emerge en masse in early summer as do the other species of snaketails, with this species among the earliest to emerge. During a 1997 study on the upper Hudson River in New York, no exuviae were found during surveys on June 3 and June 6, with the first exuviae encountered on June 9 and large numbers encountered on June 10 (Novak 1998). Adult Extra-striped Snaketails, like Pygmy Snaketails, apparently spend much of their time in the tree canopy (Mead 2003), and lesser amounts of time at the water. This behavior, in combination with its rarity, lead to a paucity of adult Extra-striped Snaketail records during the NYDDS, with nearly all records for the project being based on the collection of exuviae, or the rearing of larvae. Larva collected in early spring and reared to adults in an indoor tank emerged earlier (2nd half of May) than adults in the wild. Although diligent searching turned up exuviae in August, these are almost certainly persistent from emergence earlier in the summer. However, the adult flight season in New York may well extend into August as indicated for the north central states by Mead (2003).





New York Natural Heritage Program

### Extra-striped Snaketail (*Ophiogomphus anomalus*)



## GOMPHIDAE

### Brook Snaketail (*Ophiogomphus aspersus*)

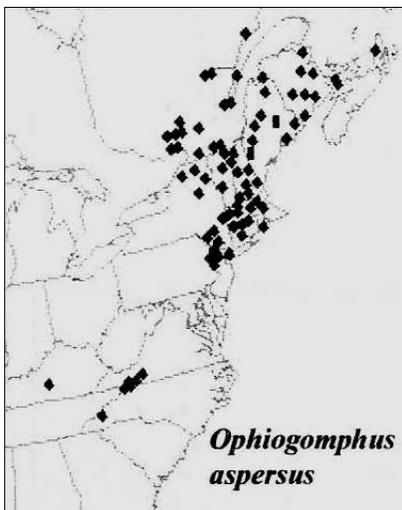
Pre-NYDDS Status: G3G4, S2

Draft Revised Status: S3

**Habitat Characteristics:** Throughout its range, the Brook Snaketail inhabits clear, rapid-flowing streams that are shallow with sandy and rocky substrate (Dunkle 2000, Needham *et al.* 2000). It is often found near riffles at open areas of streams where the banks are brushy (Dunkle 2000). It may also be found in fast-flowing areas of larger rivers with similar substrate (New York Natural Heritage Program 2010). These habitat descriptions correspond well with records obtained during the NYDDS, where either sand/gravel or rock/boulder were listed as the substrate at all of the sites where this species was recorded. The majority of sites were bordered by woods, as would have been expected based on New York records from prior to the NYDDS, but interestingly, adjacent agriculture was noted at several sites, all of which were outside of the Adirondacks.



Stephen Diehl and Vici Zaremba 2009



(Donnelly 2004c)

**Distribution and Inventory Needs:** The Brook Snaketail is a northeastern species, occurring from New Brunswick, Nova Scotia, and Quebec, south through New England and New York and into the Appalachians in Virginia, North Carolina, and Kentucky (Abbott 2010). Within that range the species has been described as spottily distributed or localized (Nikula *et al.* 2003). Older records of the Brook Snaketail in New York suggested this clubtail might be restricted to the Adirondacks and the Delaware River/Catskills area (Donnelly 1992), but it was subsequently found in Columbia County as well (Donnelly 1999). During the NYDDS, Warren, Washington, Rensselaer, Dutchess and Montgomery Counties were added to New York's distribution. While these records indicate the Brook Snaketail is more widespread in New York than previously believed, it is undoubtedly more common in the Adirondacks than

elsewhere in the state. The Brook Snaketail was not found in the lake plains and southern tier counties of western New York and it is quite likely absent from these regions as dozens of streams, creeks, and rivers in those parts of the state were surveyed. Unlike some of the other snaketails, the Brook Snaketail spends considerable time perching on rocks and shoreline shrubs, and can be netted with patience and perseverance. The collection of exuviae or larvae reared to emergence offer an excellent means of locating this species and a number of the new locations were identified with these methods. The Brook Snaketail should be sought on other Adirondack and Delaware/Catskill waters as well as on the creeks of the heavily wooded Tug Hill Plateau. The Schoharie Creek, Montgomery County record is intriguing. This creek flows north out of the Catskills, emptying into the Mohawk River and raising the possibility of additional locations farther west in lower elevations of the Mohawk Valley.



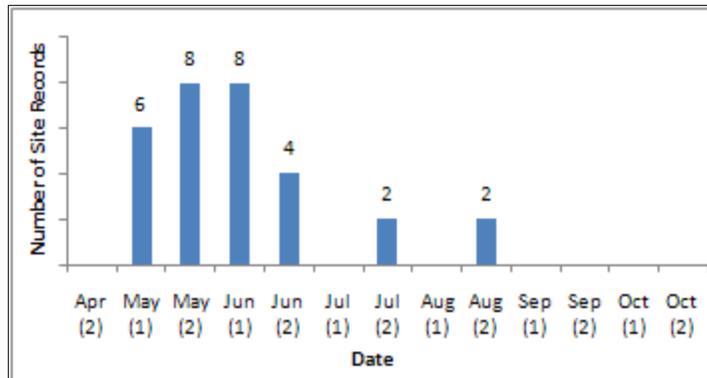
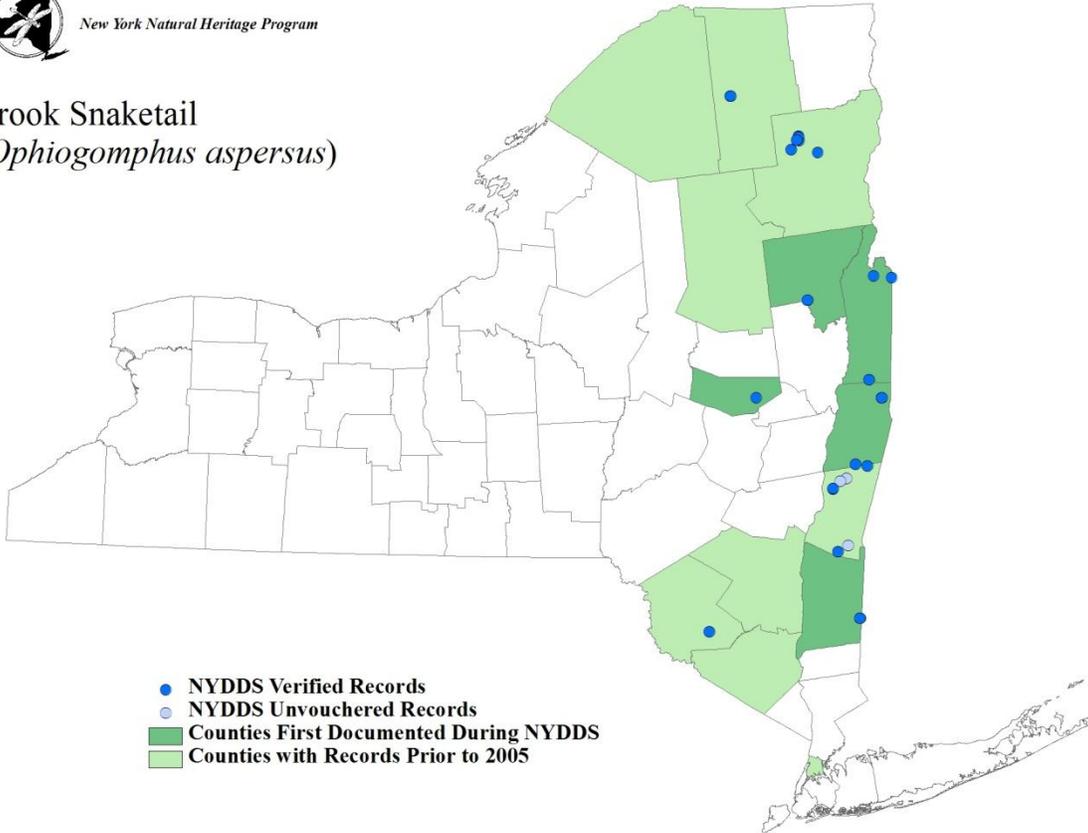
**Phenology:** Nikula *et al.* (2003) shows a flight season extending from early June into very early September, while Donnelly (1999) shows a range of dates from June 11 through August 18 for New York. Most of the May dates represent tank-reared specimens that were collected and reared to adult in early spring. However, an exuvia was collected on May 23 from Columbia county. Brook Snaketails emerge en masse in early summer as do the other species of snaketail. A study of co-occurring Snaketail species in Maine (Bradeen 1996, Gibbs *et al.* 2004) indicated that Brook Snaketails tend to emerge somewhat later than several of the other snaketail species. In New York, Brook Snaketail exuviae are typically first encountered in early June. As with other clubtail species, recently emerged adults use sunny openings away from the streams for at least a few days before reappearing at the waterside. Similar to the dates shown in Donnelly (1999), adult records from the NYDDS are spread across the majority of the summer into August. The August dates suggest that this species may fly a bit later in the summer than some of the other snaketail species, which would be in keeping with the slightly later emergence dates found by Bradeen (1996).





New York Natural Heritage Program

### Brook Snaketail (*Ophiogomphus aspersus*)

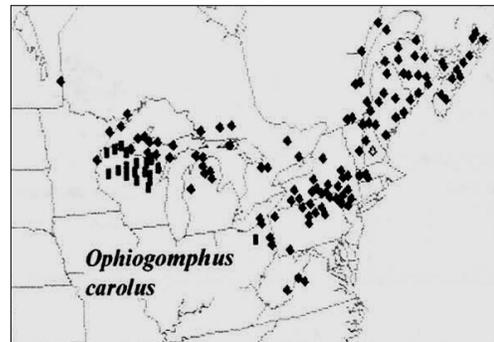
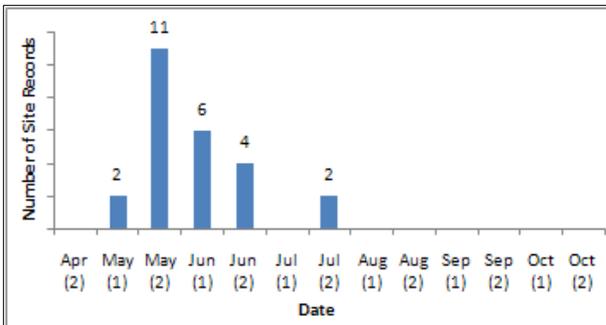
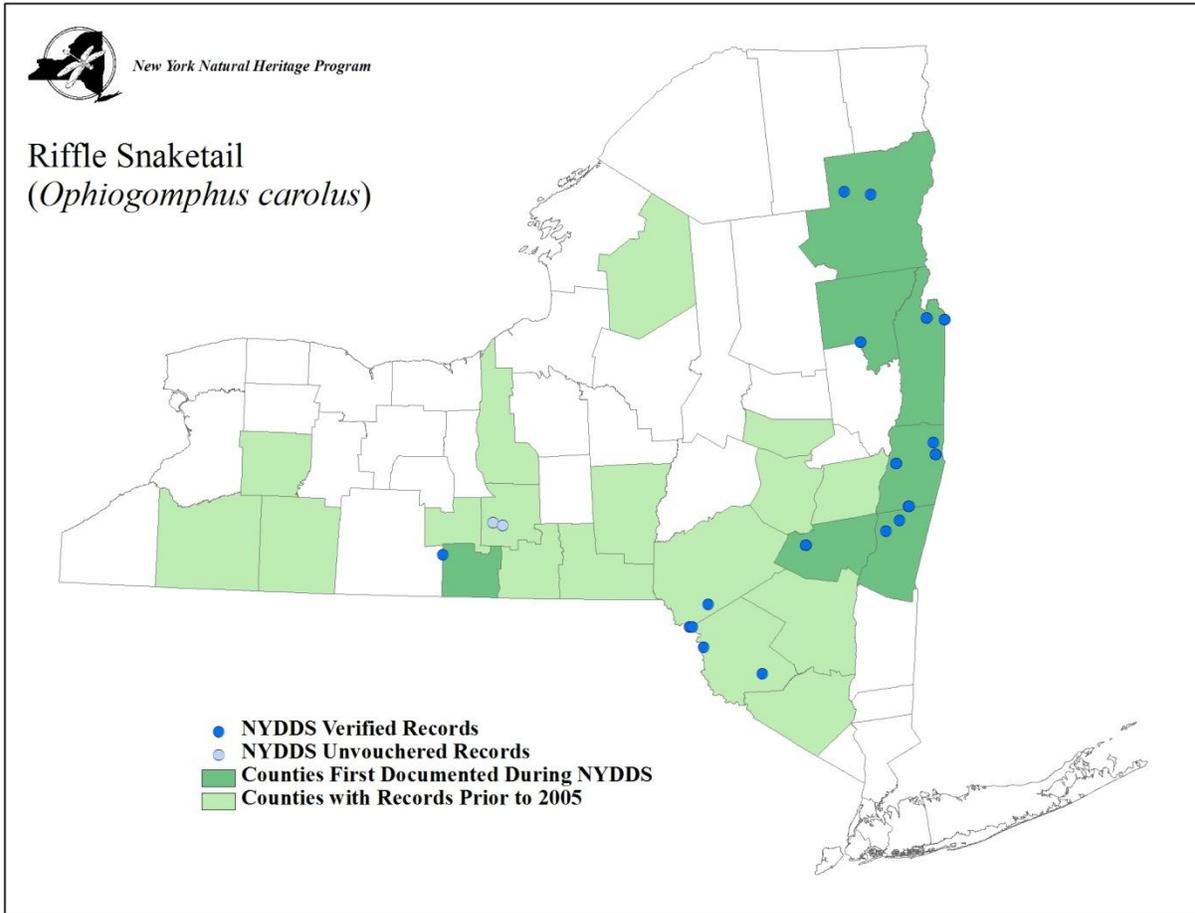


**GOMPHIDAE**

**Riffle Snaketail (*Ophiogomphus carolus*)**

**Pre-NYDDS Status: G5, S4**

**Draft Revised Status: S2S3**



(Donnelly 2004c)



## GOMPHIDAE

### Boreal Snaketail (*Ophiogomphus colubrinus*)

Pre-NYDDS Status: G5, S1

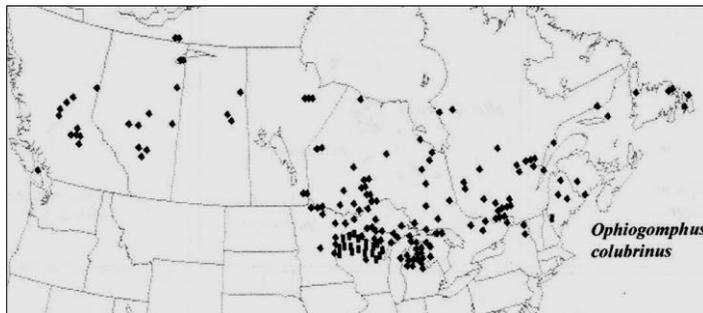
Draft Revised Status: S1

**Habitat Characteristics:** The Boreal Snaketail inhabits clear, rapid, streams and rivers with gravel substrate (Dunkle 2000, Mead 2003), but has also been found on lakes with gravel or sand bottoms (Jones *et al.* 2008). Adults may be found patrolling areas of moving water or perched on rocks, logs, sandy beaches, or bushes (Harding *et al.* 1998, Mead 2003), whereas juveniles have been noted perching in tree canopies (Mead 2003).

The previously recorded locations for the Boreal Snaketail in New York are also on rivers, principally nearer to the headwaters where the rivers are rapid and shallow with sand, gravel, rock, and boulder substrate, and are primarily bordered by trees and shrubs (New York Natural Heritage Program 2010). Associated species flying with the Boreal Snaketail in these New York locations include Superb Jewelwing (*Calopteryx amata*), Maine Snaketail (*Ophiogomphus mainensis*), Brook Snaketail (*Ophiogomphus aspersus*), Mustached Clubtail (*Gomphus adelphus*), and Zebra Clubtail (*Stylurus scudderi*).



Denis A. Doucet



(Donnelly 2004c)

### Distribution and Inventory Needs:

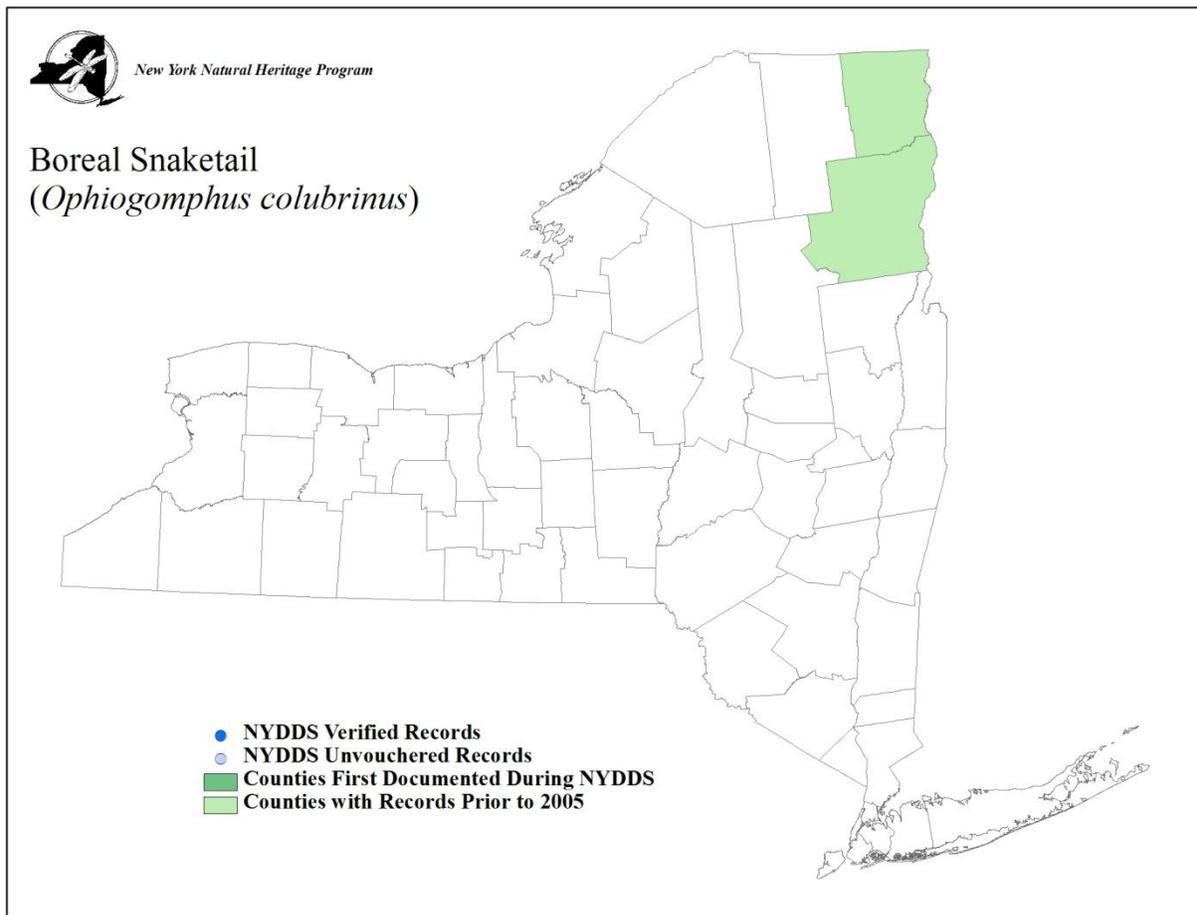
As its name implies, the Boreal Snaketail is a species of northern distribution, and it has the most northern range of any clubtail (Mead 2003). The range extends from the western provinces of British Columbia and Alberta, eastward across Canada, to Ontario, Quebec, and New Brunswick. In the United States, it occurs in Maine, New

Hampshire, and New York, as well as in Michigan, Wisconsin, Minnesota, and Wyoming (Needham *et al.* 2000). The Boreal Snaketail was first documented in New York in 1995, with a number of subsequent records in 1996. All of these records are from the Ausable River in the central Adirondacks, including both the East and West Branch. Some of the recorded locations were documented only by the collection of exuviae. Although the original New York location, the Ausable River along Riverside Drive near Lake Placid, and nearby stretches of the Ausable was searched on several occasions, no Boreal Snaketails were documented during the NYDDS. There is no evidence that changes have occurred in the Ausable River in the vicinity of the previously documented records, so additional surveys would be desirable to confirm the continued presence of this species in New York.

**Phenology:** Mead (2003) shows the adult flight season for the Boreal Snaketail in the Minnesota/Wisconsin/Michigan area to be from approximately mid-June through August. Needham *et al.* (2000) show extreme dates of May 9 and September 3 from Ontario, but these



dates are well outside the mid-June through August dates shown by both Mead (2003) and Jones et al. (2008). The initial specimen for New York was collected on June 29, with a number of additional adults recorded at the same location the following year on July 19. Donnelly (1999) also lists a date of August 14, and while not specified as such, this date is likely an adult record as opposed to an exuvia. All New York records fit in well with other published information, showing a flight season in New York running largely from mid-June through August.



## GOMPHIDAE

### Pygmy Snaketail (*Ophiogomphus howei*)

Pre-NYDDS Status: G3, S1

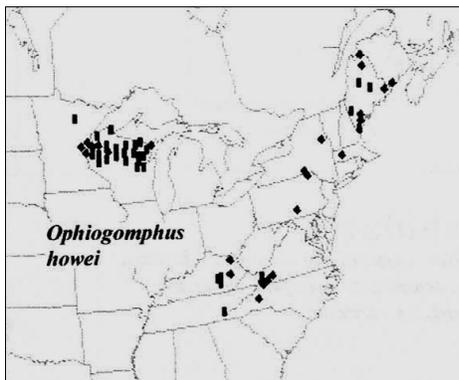
Special Concern

Draft Revised Status: S1



Denis A. Doucet

**Habitat Characteristics:** More so than the other snaketails, the Pygmy Snaketail appears to be restricted to large, clear rivers with gravelly or sandy substrates and bordered by forested habitats (Dunkle 2000, Nikula *et al.* 2003, Mead 2003). In New York, the section of the upper Hudson River where it occurs in greatest abundance, is particularly sandy in nature. Interestingly, it co-occurs with the Common Sanddragoon (*Progomphus obscurus*), as well as all five of New York's other Snaketails, in this river reach. Although both Mead (2003) and Dunkle (2000) indicate this species does not breed in sections of river immediately downstream of dams, Pygmy Snaketail exuviae in emergence posture/attachment were found in the upper Hudson River immediately downstream of the Spier Falls Dam at Corinth in 1999 (New York Natural Heritage Program 2010). The river remains clear with sandy/gravelly substrate in this section, and while it is possible the larvae floated down from upstream and emerged below the dam, it is equally possible that the dragonflies are indeed ovipositing in this stretch of river below the dam.



(Donnelly 2004c)

**Distribution and Inventory Needs:** The Pygmy Snaketail has a disjunct range, with populations occurring in the eastern and north-central United States. The eastern range extends from Maine and Massachusetts into eastern New York, south in the Appalachians through eastern Pennsylvania into Tennessee, Virginia, and Kentucky. The western range is smaller, including only northern Wisconsin, the western part of Michigan's Upper Peninsula and eastern Minnesota (Needham *et al.* 2000, Mead 2003). The species is very localized in both the eastern and western portions of its' range.

Initially described from specimens collected on the Susquehanna River in Pennsylvania in 1924, an earlier record from the Susquehanna River in Broome County, New York had been overlooked. This record, based on a specimen in the Museum of Comparative Zoology at Harvard University, was collected by Nathan Banks. Although the year is not included with the label data, it can be assumed to be circa 1890s as that was when Banks was most active as a collector (Soltesz 1995a). In 1967, Donnelly found the Pygmy Snaketail on the Susquehanna River upstream of Binghamton, just inside Pennsylvania, not far from the New York State line (Soltesz 1995b, Donnelly 1999). A number of surveys on the Susquehanna were conducted in 1996, but was unable to locate the species in the New York stretch of the river (New York Natural Heritage Program 2010). The Pygmy Snaketail was rediscovered in New York in 1995 when exuviae were collected from two sites on the upper Hudson River just north of



Warrensburg, by Bob Barber. Subsequent surveys on the upper Hudson indicated the Pygmy Snaketail occurs from Lake Luzerne north to The Glen, a stretch of approximately 27 miles (Novak 1998). In 1999, it was found on the upper Hudson south of Lake Luzerne, just downstream of the Spier Falls Dam, as well as on the Schroon River which flows into the upper Hudson at Warrensburg. The NYDDS re-confirmed Pygmy Snaketails on the Upper Hudson in the Lake Luzerne area and one new location between Lake Luzerne and the Spier Falls location, at Corinth, but limited surveys on the Schroon River failed to re-confirm the species there. Widespread survey efforts on other southern tier and Adirondack rivers, did not reveal the Pygmy Snaketail on any new rivers during the NYDDS. However, not all of those surveys included early summer collection of exuviae. Nearly all New York records for this species, both pre-NYDDS and during the project, stem from the collection of exuviae. Fortunately, the small exuviae are very distinctive and easily identified. Surveys downstream of the Spier Falls Dam to determine if this species is ovipositing in that area would be valuable and complete surveys of the Schroon River are also in order. Although the number of suitably large and sandy rivers in New York may be limited, exuvial collections, especially from early June, may yet reveal additional populations.

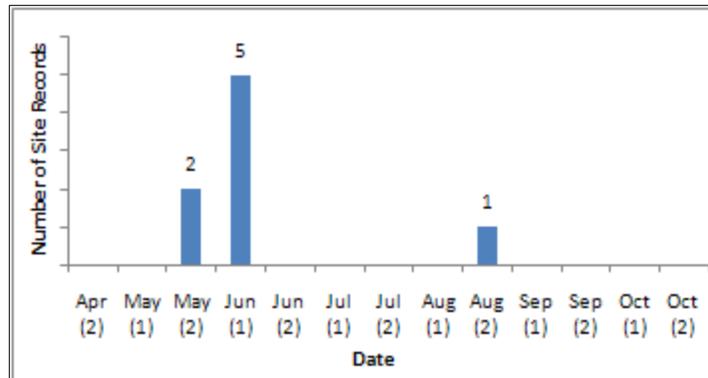
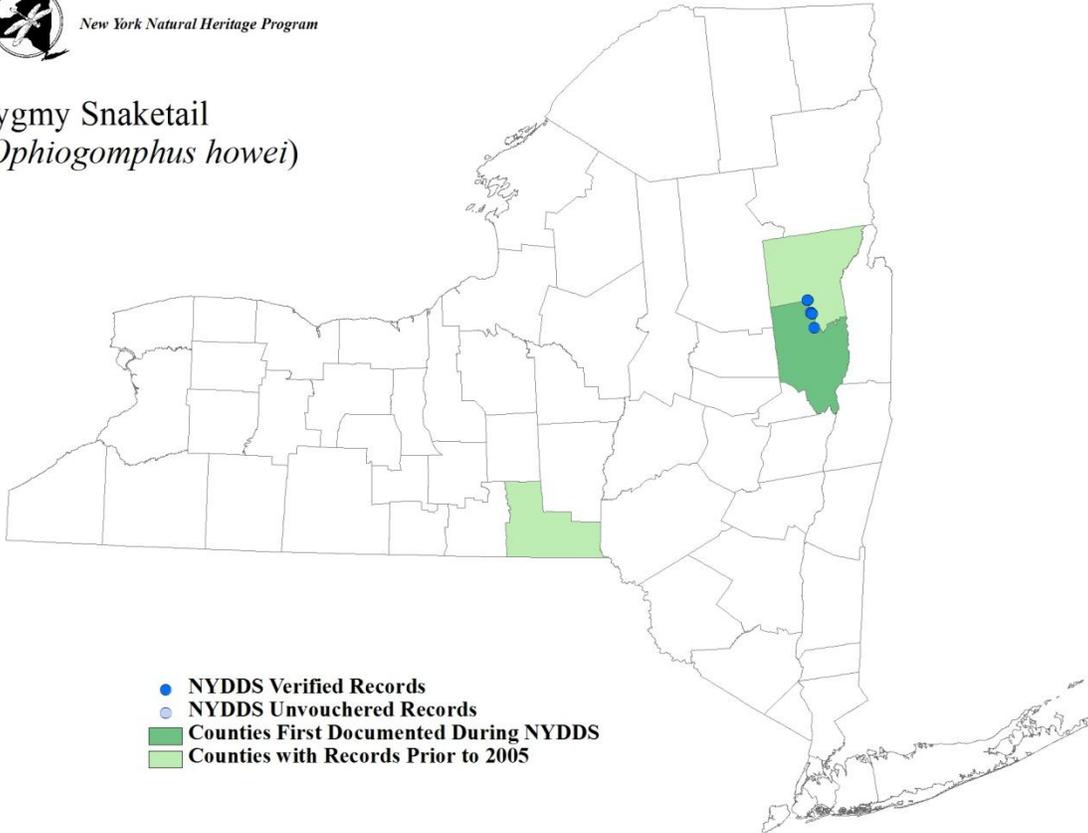
**Phenology:** The flight season in the central portion of the Pygmy Snaketail range is listed as mid-June to mid-July (Mead 2003). This corresponds quite well with the records documented in Maine during the Maine Dragonfly and Damselfly Survey which shows the earliest date as May 25, and the latest date as July 7, but with nearly 75% of all records during the second half of June. A study of co-occurring Snaketail species in Maine (Bradeen 1996, Gibbs *et al.* 2004), and collection of exuviae in New York and elsewhere, indicate Pygmy Snaketails emerge en masse in early summer as do the other species of snaketail. Adult Pygmy Snaketails apparently spend much of their time in the tree canopy (Nikula *et al.* 2003, Mead 2003), and lesser amounts of time at the water. This behavior, in combination with the species rarity in New York, lead to a paucity of adult Pygmy Snaketail records, where virtually all adult records are based on individuals observed or collected, during, or just after, emergence. Exuviae have been collected as early as June 4 (New York Natural Heritage Program 2010). During intensive exuviae collection efforts on the upper Hudson River in 1997, the first Pygmy Snaketail exuvia was collected on June 10, but the vast majority were not collected until June 12 and 15 (Novak 1998). Larva collected in early spring and reared to adulthood in an indoor tank emerged earlier (2nd half of May) than adults in the wild. There was at least one exuvia collected on August 19 during the NYDDS, presumably from a May or June emergence.





New York Natural Heritage Program

### Pygmy Snaketail (*Ophiogomphus howei*)

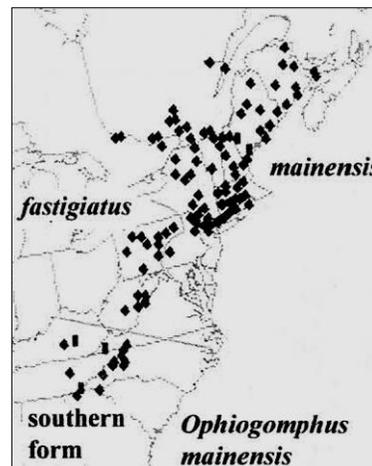
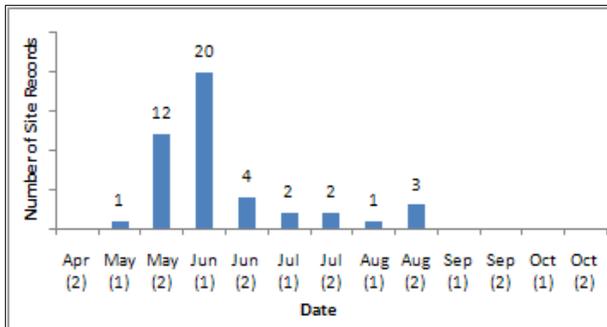
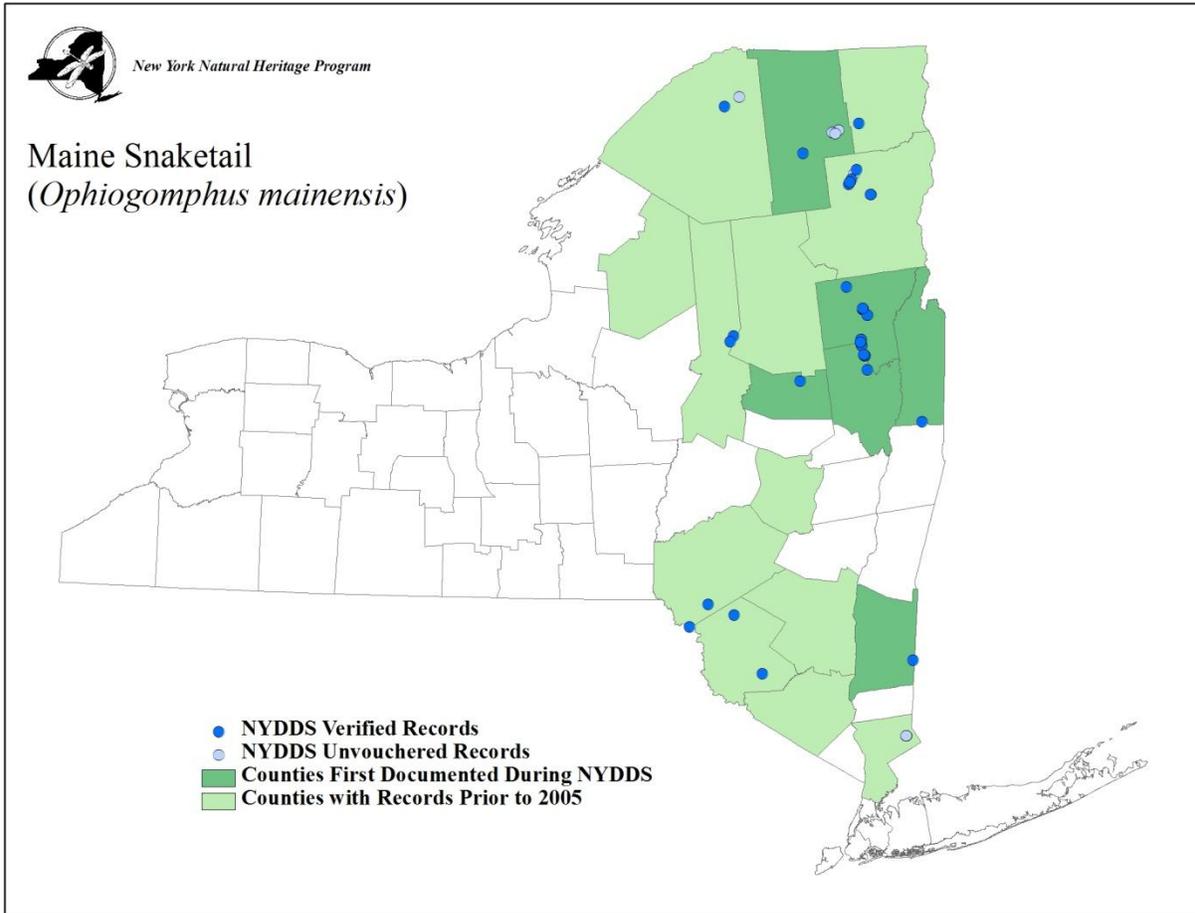


**GOMPHIDAE**

**Maine Snaketail (*Ophiogomphus mainensis*)**

**Pre-NYDDS Status: G4, S3**

**Draft Revised Status: S3**



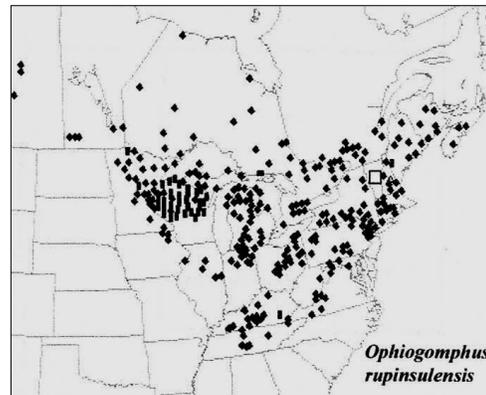
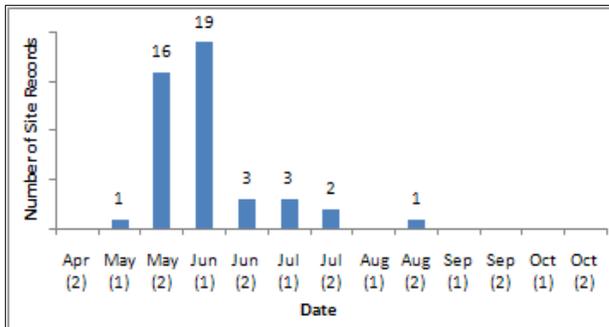
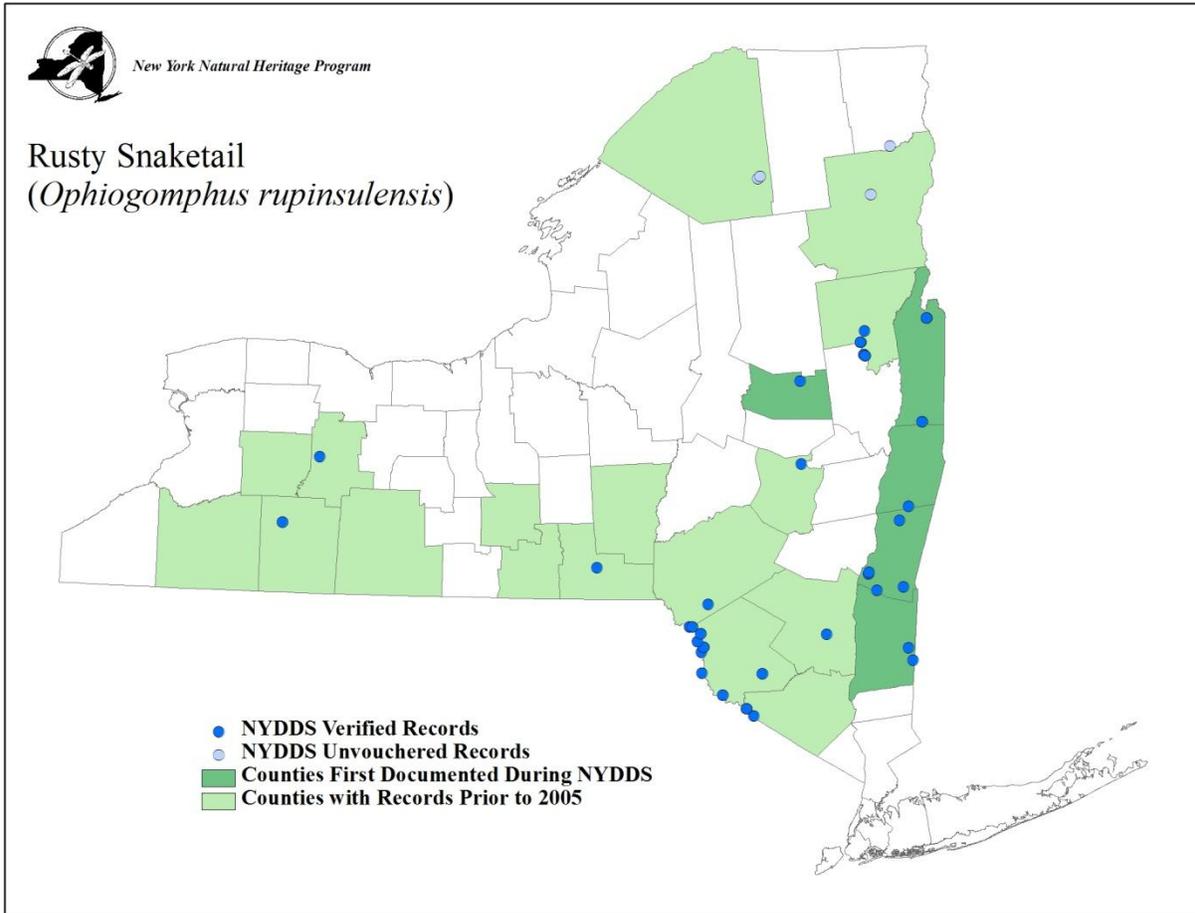
(Donnelly 2004c)



**GOMPHIDAE**

**Rusty Snaketail (*Ophiogomphus rupinsulensis*)**

**Pre-NYDDS Status: G5, S3S4**



(Donnelly 2004c)

