

Virginia Ground Spiders: A First List (Araneae: Gnaphosidae)

Richard L. Hoffman

Virginia Museum of Natural History
Martinsville, Virginia 24112

ABSTRACT

Forty-five species of ground spiders (gnaphosids) are documented as known members of the Virginia fauna, about 75% of an anticipated total of 60 to 65 species. Thirteen of the 45 species are listed for the state for the first time, some representing substantial range extensions, mostly from the south, but a capture of *Nodocion rufothoracicus* is the first record for that species east of the Mississippi River. One undescribed species, a minute form of *Drassyllus*, is known from Isle of Wight County. Twenty-four species are known from less than five counties, only six are known from more than 15; *Zelotes duplex* has been documented for 19 counties. Although many species are essentially statewide, at least at low elevations, 15 reflect lowland (austral) distributions, and five are chiefly or entirely restricted to higher elevations.

Key words: distribution, Gnaphosidae, ground spiders, Virginia.

INTRODUCTION

Ground spiders (gnaphosids) comprise an important and sometimes conspicuous element in the fauna of forest litter or dry open habitats, and are often taken in large numbers by standard pitfall trapping procedures. Some species, in both appearance and movement, are distinctive ant-mimics. Although the family has had its share of confusion and unsatisfactory taxonomy in the past, the North American species are now clearly defined and accessible for studies of their biology and distribution thanks to the series of excellent generic revisions generated by Drs. N. I. Platnick and M. Shadab (1975-1988). Because of their inclusion of spot maps, it is possible to learn quickly which species are known from particular areas, and those likely to be discovered by local field work.

As a result of extensive statewide inventory sampling carried out by the Virginia Museum of Natural History (VMNH), Division of Natural Heritage, Virginia Department of Conservation and Recreation (VDNH), and other parties involved in survey activities, knowledge of the Virginia fauna of gnaphosids has been substantially improved during the past two decades. Of the approximately 60 species whose known ranges imply local occurrence, 45 (or 75%) are now documented from captures within the Commonwealth. As this number obviously represents all of the abundant and widespread species (plus several of those seldom collected), it seems likely that a long time may pass before all of the

remaining 25% are finally discovered and accounted in a definitive report. Some may in fact even be represented in the extensive backlog of unidentified gnaphosids now accumulated at VMNH with little or no possibility of being studied in the foreseeable future.

It is virtually a characteristic of small arthropods that within a particular group of species some will be captured during almost every collecting effort while others – even some with extensive ranges – seem to be found only occasionally by serendipity. It is uncertain whether the latter are actually rare in the sense of existing only in small, widely separated populations, or whether they occupy habitats likely to be discounted by the anthropocentric bias of collectors. Among local gnaphosids this situation is demonstrated clearly in the genus *Sergiolus*. Known distributions suggest that seven species should occur in Virginia. Only one, *S. capulatus*, is frequently taken, with records for 15 counties across the state. Two others, *S. minutus* and *S. ocellatus*, are each known from two localities. A third species, *S. cyaneiventris*, has been found only once. Three others have yet to be captured in Virginia although they are widespread in eastern North America and are known from adjoining states. In this case, collector bias does not seem to be relevant, inasmuch as pitfall traps have been set in all parts of the state, in a wide spectrum of habitat types, and operated throughout the year.

Another interesting feature of small arthropods is the frequency with which they exhibit totally unpredictable, disjunct, distributions. For instance, the gnaphosid

Nodocion rufithoracicus is common and widespread in western North America (P&S 1980, map 2), but was unknown east of the 104th meridian until an adult male was collected in a remote, natural habitat in central Virginia. An analogous case is afforded by the minute lygaeid bug *Botocudo modestus*, which ranges from Arkansas and Missouri west to California, but occurs also on Wallops Island, Virginia (Hoffman, 1999). Such sporadic distributions imply that almost any gnaphosid known from east of the Rocky Mountains has the potential of being discovered in very localized Virginia populations, and postpones almost indefinitely achievement of a definitive number of endemic species. I have not compiled lists of species for other eastern states from the papers by Platnick & Shadab, but suspect that around 60-70 may be the maximum number (increasing southward) to be expected for most. The list of Maryland spiders compiled by Muma (1945) contains only 16 gnaphosids, but was based on a sampling interval of only four years with minimal use of pitfall trapping. Kaston (1981) tabulated 39 species for all of New England. Heiss & Allen (1986) reported 40 species for the relatively well-collected Arkansas, Gaddy (1985) listed 19 for South Carolina, and the gnaphosid fauna of Michigan is credited with 47 species (Sierwald et al., 2005). In view of these circumstances, the present list – based on authoritative published information and material at VMNH – is merely a progress report which provides a baseline to be augmented by future activities. Half a loaf is better than none, and a start must be made sometime.

Unless specifically stated otherwise, all samples listed in the following entries are in the Virginia Museum of Natural History, the acronym VMNH is therefore omitted. Numbers of specimens by sex are indicated as (male/female). Collection dates for pitfall trap samples are provided when known (e.g., 3 June-12 July), but in many cases the collector recorded only the date of actual removal from the trap; generally a trapping interval of about one month is to be assumed in such cases. The abbreviation DF denotes capture in a drift fence-pitfall combination. The acronym AMNH specifies the American Museum of Natural History collection.

The baseline reference for the following account is the series of generic revisions prepared by Drs. Platnick and Shadab from 1975 to 1988. Reference to these various papers follows a conventional abbreviation of their surname initials: e.g., P&S 1980.

For the purposes of a local listing, simple alphabetical sequence at the level of both genera and species seems the most practical method of presentation. A distribution of our genera into subfamilies is accessible in the “Spiders of North America: An Identification Manual” (Ubick et al., 2005), which provides keys to the genera of North America and excellent illustrations of important

structures. In the following list, species based on documented voucher specimens are numbered and set in **boldface** type; entries for probable additional taxa are placed in their correct position but are unnumbered and set in *italic* type.

ANNOTATED SPECIES LIST

1. **Callilepis pluto** Banks

This species is widespread in North America, from Maine to British Columbia, southward in the Appalachians and western mountain systems, but notably absent from the Mississippi embayment and the southeastern Coastal Plain (Platnick, 1975, fig. 1). In Virginia it is statewide, with collections from Augusta, Campbell, Fairfax, Giles, Greensville, Henrico, Henry, Isle of Wight, Mecklenburg, Northampton, Page, and York counties, and the City of Virginia Beach. The record for *C. imbecillis* from “top of Blue Ridge near Roanoke” by Crosby & Bishop (1926) is probably based on a specimen of *C. pluto*.

Callilepis imbecillis (Keyserling)

As documented by Platnick (1975, map 2), this species is almost completely allopatric with the foregoing, occurring along the Gulf Coast from southern Georgia to southern Texas, thence northward to Lake Superior and Ohio. Although no material intermediate between the two taxa has been reported, the illustrated differences in genital structures between them seem relatively trivial, and a case for subspecific relationship might be admitted. Inclusion of *C. imbecillis* as a possible member of the Virginia biota is based on a single male from First Landing State Park, Virginia Beach, which Dr. Platnick felt was this species although both male palpal organs seem a little deformed. Such an identification is at least plausible geographically.

Callilepis new species?

A specimen from Antioch Pines Natural Area Preserve, south of Zuni, Isle of Wight County, differs enough in palpal structure from the two eastern congeneric species that confirmation from larger series might justify recognition of the population as a distinct species.

2. **Cesonia bilineata** (Hentz)

This common and easily recognized eastern species occurs from Ontario to southern Florida, west and south through Texas to Tamaulipas, with outlying records for

Manitoba and New Mexico (P&S, 1980, map 1). It is widespread in Virginia although records are lacking for the higher mountains. Augusta, Campbell, Cumberland, Dickenson, Essex, Fairfax, Floyd, Greensville, Henrico, Isle of Wight, Loudoun, and York counties and the City of Virginia Beach (where it is abundant in First Landing State Park).

3. *Drassodes auriculoides* Barrows

The distribution of this spider is largely confined to northeastern United States (Cape Cod to Wisconsin, south to Tennessee, with a disjunct locality in the Ozarks). Virginia records are from Appomattox, Augusta, Cumberland, Giles, Greensville, Montgomery, Prince William, Page, and York counties, all but one at elevations below 1000 feet (300 m). Most collections are represented by single males only.

4. *Drassodes gosiutus* Chamberlin New State Record

The curious distribution of this species does not seem to conform to any biogeographic pattern. The nuclear part of the range appears to be in the southern Rockies, but with representation in the Great Plains, the Great Lakes region, southern Alabama, eastern Tennessee, and southern New York and adjoining states. Perhaps this pattern of discontinuity results from condensation of a previously continuous distribution. Our single Virginia record extends the range slightly southward from New Jersey: *Accomack County*: Chincoteague National Wildlife Refuge, Assateague Island, White Hills blueberry swamp, 14 October-5 November 1998, S. M. Roble (1/0).

Drassodes neglectus (Keyserling)

As documented by P&S (1976, map 1), this species reflects a typical boreal distribution, from Quebec to Alaska, south through the western mountains almost to Mexico, and from Wisconsin to Connecticut, with a single disjunct record for Pendleton County, West Virginia. There can be little doubt that *D. neglectus* will be discovered in the high mountains of Virginia along the West Virginia border (not improbably even much farther south).

Drassyllus adocetus Chamberlin

With a "lower austral" distribution between Long Island and central Florida, this species is surely native to the coastal region of Virginia. The male palpal organ is one of the most distinctive in the genus, and permits

identification with a degree of confidence not afforded by several other species of *Drassyllus*.

5. *Drassyllus aprilinus* (Banks)

This common species is widespread in eastern United States, from New England to Michigan, thence south to Florida and west to central Texas (with a disjunct site in San Luis Potosi). It competes with *D. novus* for the status of our most frequently collected *Drassyllus*, although virtually all of the VMNH pitfall captures consist of a single male. Although apparently statewide, *D. aprilinus* has so far not been collected in the southwestern third of the state, nor at any site above 300 m in elevation. Augusta, Botetourt, Carroll, Cumberland, Fairfax, Fluvanna, Greensville, Henrico, King George, Mecklenburg, Northampton, Page, Prince Edward, Sussex, Warren, and York counties, and the cities of Chesapeake and Virginia Beach. Collections were made in a wide variety of biotopes without any evident commonality.

6. *Drassyllus covensis* Exline New State Record

This species is known from only a few widely scattered sites, most of them at low elevations in southeastern United States, and the majority in the Mississippi embayment region. The few Virginia localities correspond to the general pattern of an austral distribution. *Greensville Co.*: DF site at end of Rt 666, 1 mile east of Claresville, 19 May-3 June, 1993, (1/0), 25 May-30 June 1994 (1/1), both VMNH surveys; DF site 2.3 miles northeast of Slate's Corner, 18 June 1990, J. C. Mitchell (1/0). *Mecklenburg Co.*: Elm Hill Wildlife Management Area, 5-22 April 1991, VMNH survey (1/0). *City of Chesapeake*: Fentress Naval Air Station, 11 May 1989 (1/0), 6 June 1989 (8/0), 7 September 1989 (3/0), 27 April 1990 (1/0), all Fentress collections by K. A. Buhlmann.

7. *Drassyllus creolus* Chamberlin & Gertsch

The distribution of this species in southeastern United States closely parallels that of *D. aprilinus*; both appear to prefer lowlands with only a few localities in the Appalachians. It was documented by P&S (1982) from Fairfax County and Chesapeake City, to which we can add two sites in the central Piedmont region: *Cumberland Co.*: DF in recently clearcut woods, 2 km south of Columbia, 1 May 1990 (1/0) and 16 June 1990 (1/0), both J. C. Mitchell. *Pittsylvania Co.*: DF site in sandy bottomland, 1.5 miles ENE of Axton, 13 May 1992, VMNH survey (3/2).

8. *Drassyllus depressus* (Emerton)

This subboreal species is distributed widely across northern United States and southernmost Canada with extensions southward through the Rockies and disjunct populations in the Central Highlands and the Atlantic Coast. P&S (1982) cited a collection from Augusta County; we can extend the range slightly southward with the following records: *Montgomery Co.*: pitfall trap in corn field at Riner, June 1992, M.S. Clark (1/0). *Northampton Co.*: Savage Neck Dunes Natural Area Preserve, DF by interdunal ponds, 20 May-23 June 1999, A. C. Chazal & A. K. Foster (1/0).

9. *Drassyllus dixinus* Chamberlin

New State Record

Endemic to southeastern United States, this species ranges from eastern Texas to northern Florida, thence north in the interior to Illinois and along the Atlantic coast to Maryland. Most VMNH records are from subaritime sites, with two only for the central Piedmont. Accomack, Cumberland, Mecklenburg, Northampton counties and the City of Virginia Beach.

10. *Drassyllus dromeus* Chamberlin

New State Record

To a considerable extent, the known range of this species parallels that of *Drassodes gosiutus*, with a nuclear area in the southern Rockies and the Great Plains and apparently disjunct populations in Missouri, Alabama, and southern New England. Our single Virginia record (identity confirmed by Dr. Platnick) extends the distribution of the latter group about 120 miles (193 km) southward, insignificant spatially but useful in helping define this eastern segment of the overall range. *Accomack Co.*: Chincoteague National Wildlife Refuge, Assateague Island, White Hills swamp DF site, 1-25 June 1998, S. M. Roble (2/0).

11. *Drassyllus ellipes* Chamberlin & Gertsch

New State Record; new northern localities

P&S (1982, map 24) examined specimens of this manifestly austral species from only six localities in Arkansas, Alabama, Florida, Georgia, and North Carolina. The following records for Virginia suggest that the species is not uncommon in the northernmost end of its range: *Greensville Co.*: DF site 1 mile E of Claesville, 19 May-3 June 1993 and 25 May-30 June 1994, VMNH survey (6/4). *Henry Co.*: Martinsville, 24 April 1998, S. Wolen (1/0). *Mecklenburg Co.*: Elm Hill Wildlife Management Area, 5-22 April 1991, VMNH survey (3/0).

Pittsylvania Co.: DF site on Sandy River, ca 1.5 miles ENE of Axton, 13 May 1992, VMNH survey (3/0). *Prince Edward Co.*: Hampden-Sydney College, berleseat oak wood and litter, 14 November 1991, W. A. Shear (1/0). *City of Chesapeake*: Fentress Naval Air Station, 11 May 1989, K. A. Buhlmann (3/1). *City of Virginia Beach*: Oceana Naval Air Station, 3 May 1991, K. A. Buhlmann (2/1).

12. *Drassyllus eremitus* Chamberlin

The range of this species is almost exclusively confined to North America east of the Mississippi River, from southernmost Quebec to the tip of Florida. It was recorded by P&S (1982:11) from the City of Suffolk; VMNH records add the two "Eastern Shore" counties: *Accomack Co.*: Assateague Island, DF in the "White Hills" dune ridge, 26 June-10 July 1998, S. M. Roble (1/0). *Northampton Co.*: Savage Neck Dunes Natural Area Preserve, DF in north dunes, 9 May-1 June 2004, Dorothy Field (2/0).

13. *Drassyllus fallens* Chamberlin

A species of northeastern North America, *D. fallens* ranges from Nova Scotia to Wisconsin, and south through the Appalachians to northern Georgia. In Virginia it occurs in both the mountains and Piedmont, and is one of the few gnaphosids found at elevations above 4000 feet (1200 m). It was recorded for Amherst and Fairfax counties by P&S (1982:11); VMNH samples add the following localities: *Cumberland Co.*: DF in pine woods, 5.5 km SSW of Columbia, 1 August 1990, J. C. Mitchell (1/0). *Grayson Co.*: Grayson Highlands State Park, DF site below contact station, 4000 ft., 5-19 May 1991, (1/0), same site, 19 May-2 June 1991 (2/1), both VMNH surveys. *Patrick Co.*: Clark's Creek, 3 miles SW of Ararat on Rt.669, 27 June 1992, R. L. Hoffman (0/1). *Pittsylvania Co.*: DF site 1.5 miles ENE of Axton, 13 May-15 June 1992, (1/0), same site, 15 June-16 July 1992 (1/0), both VMNH surveys.

14. *Drassyllus frigidus* (Banks)

The range of this spider is similar to that of the preceding species but does not extend into peninsular Florida. P&S (1982:53) recorded it from Fairfax and Montgomery counties, VMNH material adds three more: *Augusta Co.*: DF in mature mixed hardwoods, ca 5 miles west of Stokesville, 24 April 1989, Barry Flamm (1/1). *Cumberland Co.*: DF in clearcut site 2 km SSW of Columbia, 1 May 1990, J. C. Mitchell (4/0). *Mecklenburg Co.*: DF beside Lake Gaston, Elm Hill Wildlife Management Area, 27 November 1975-24 February 1996

(1/0), VMNH survey. It probably occurs sporadically also in our Coastal Plain.

15. *Drassyllus louisianus* Chamberlin
New State Record; northernmost localities

Like *D. ellipes*, this rarely collected species is confined to the Coastal Plain of southeastern United States, known only from four localities in Louisiana, Mississippi, South Carolina, and North Carolina.

VMNH collections extend the known range northward some 150 miles (240 km) from Beaufort County, North Carolina, and open the possibility for discovery in Delaware and New Jersey. *Northampton Co.*: Savage Neck Dunes Natural Area Preserve, SW of Eastville, 9-28 May 2004, Dorothy Field (1/0). *York Co.*: ponds at Grafton, 21 March 1991, VDNH survey (2/0). *City of Chesapeake*: Fentress Naval Aviation Landing Field, 9 April 1990, K. A. Buhlmann (3/0). *City of Virginia Beach*: First Landing State Park, "mesic DF site", 14 April 1989, Buhlmann (5/0).

16. *Drassyllus novus* (Banks)

Ranging from northern New York to Wisconsin and southwest to Missouri, this species was not recorded by P&S (1982:45) from the Atlantic and Gulf Coastal Plains, and from only a single locality (Durham, NC) in the Piedmont. In Virginia, a statewide distribution is implied by captures in the following political entities: Augusta, Campbell, Chesterfield, Dickenson, Fairfax, Fluvanna, Greensville, Henrico, Isle of Wight, King George, Lunenburg, Mecklenburg, Northampton, Rockbridge, Rockingham, Warren, and York counties, and the City of Virginia Beach. The species has usually been found in considerable numbers at all of the sites where pitfall trapping was employed, and was especially abundant at First Landing State Park. Nonetheless, it seems to avoid upland regions, and none of our capture sites are above 2000 feet (600 m) ASL.

Drassyllus rufulus (Banks)

Having been recorded for North Carolina, Maryland, and West Virginia, this species will surely be established as a native of Virginia through future collecting.

17. *Drassyllus* new species
New State Record

A single minute male (length 2.5 mm!) from Antioch Pines Natural Area Preserve, Isle of Wight Co., was identified as an undescribed species by Dr. Platnick in August, 2008. Formal publication of a name for this

spider is deferred pending accumulation of additional material.

18. *Gnaphosa fontinalis* Keyserling
New state record

The distribution of this species is largely confined to eastern United States, extending rather obliquely southwest from New York to Texas (and northern Mexico); there are no Coastal Plain records between North Carolina and Arkansas. The treatment by P&S (1975:54) cited relatively few collections, and none for Virginia, a curious circumstance in light of its status as our most abundant species of the family. Like *G. sericata*, it seems to largely avoid the Appalachian region, with no local capture sites above 1000 feet (300 m) ASL. Augusta, Botetourt, Cumberland, Dickenson, Essex, Greensville, Henrico, Henry, Isle of Wight, King George, King & Queen, Mecklenburg, Prince Edward, Roanoke, and York counties, and the cities of Chesapeake, Suffolk, and Virginia Beach.

Surface activity of adults is reflected by the distribution of captures, mostly pitfall (trapping periods which overlapped two months were not counted). Since a number of the pitfalls were operated throughout the year, the lack of records for August and December-March is not "collector bias." The following numbers represent collections, not individuals:

April	1	August	0
May	6	September	1
June	16	October	2
July	6	November	1

Most samples contained multiple individuals of both sexes, as many as 13 are documented but usually recorded simply as "many" or "numerous", even for the late-year collections in October. A survey of the collection sites produced no apparent common biotope features. Sandy, sea-level dunes, pine barrens, marshy swales, recent clearcut sites, floodplains, and mixed mesophytic forests all produced rich harvests of *G. fontinalis*. Notably, no specimens were taken during extensive pitfall trapping at two sites (Accomack and Northampton counties) on the "Eastern Shore" although the abundance of the species at First Landing State Park certainly reflects tolerance of maritime habitats.

19. *Gnaphosa muscorum* (L. Koch)
New State Record; southernmost Appalachian locality

This species is our single local gnaphosid with a Holarctic distribution: western Europe and boreal North America, where it extends across northernmost Alaska

and Canada, thence south through the western Cordillera almost to Mexico (where it surely must also occur). In the United States, *G. muscorum* is abundant in the Great Lakes region and New England, with a disjunct Appalachian locality at Spruce Knob, West Virginia. It is here documented as a member of the Virginia fauna: *Augusta Co.*: 5 miles W of Stokesville, 7 August 1989, pitfall in mature hardwoods, B. Flamm (3/0). Presence of the species elsewhere in the western tier of Virginia counties may be assumed.

20. *Gnaphosa parvula* Banks

This boreal spider ranges from Alaska to Nova Scotia, southward to Colorado and West Virginia. P&S (1975: 51) record it from Chincoteague Island, Accomack County, which is entirely plausible in light of numerous coastal records slightly to the north.

21. *Gnaphosa sericata* (L. Koch)

Although this spider is widespread in much of North America (New York to Utah, south through Mexico and Florida; one record for eastern Cuba), it seems to avoid the Appalachian region. Available Virginia records (all below 1000 ft. [300 m] ASL) reflect this preference for low elevations: Accomack, Campbell, Cumberland, Fairfax, Mecklenburg, and Roanoke counties, and the City of Virginia Beach. Our material was mostly taken by pitfall traps in a variety of biotopes, most apparently sandy or dry, the capture dates ranging from mid-April to early September.

22. *Haplodrassus bicornis* (Emerton)

Occupying two primary centers of abundance in the Cordilleran region and New England, this species is also represented southward by several apparently disjunct populations. P&S (1975:14) recorded material from Virginia Beach. Specimens accumulated at VMNH in the past two decades are from Accomack, Augusta, Cumberland, Fluvanna, Greensville, Isle of Wight, Mecklenburg, and Northampton counties, and the City of Virginia Beach. All but the Augusta County samples are from the non-mountainous part of the state, below 1000 feet (300 m) ASL.

Haplodrassus hiemalis Emerton

Transcontinental from Alaska to Newfoundland, south to Michigan and New Jersey with a disjunct enclave in Colorado and Wyoming, this species is certainly likely to be discovered in northern Virginia and/or on the Eastern Shore.

23. *Haplodrassus mimus* Chamberlin.

Another species with an austral distribution, *H. mimus* has been documented from mostly lowland localities between New Jersey and Louisiana; a record for Chicago, IL, appears a little aberrant in this overall context. The female type specimen was captured at Great Falls in Fairfax County, aside from this we have only a sample from *Mecklenburg Co.*: Elm Hill Wildlife Management Area, DF site by Lake Gaston, 24 February-3 April 1996, VMNH survey (13/1). This site is a sandy floodplain field subject to occasional cultivation, only a few yards from the lake shore.

24. *Haplodrassus signifer* (C. L. Koch)

Although this spider occurs from British Columbia to Newfoundland, and south into Florida and central Mexico, our Virginia localities suggest a lowland distribution within the Commonwealth: Accomack, Cumberland, Fairfax, Pittsylvania, and Sussex counties and the City of Virginia Beach. Most VMNH collections contain only single males; sizable samples were collected only in Virginia Beach (First Landing State Park).

25. *Herpyllus ecclesiasticus* Hentz

This common gnaphosid, easily recognizable among our local species by the conspicuous serrate light band on the abdominal dorsum, occurs everywhere in the United States east of the Rockies. In Virginia it is statewide, from sea level up to at least 3000 ft. (900 m) ASL: Accomack, Augusta, Caroline, Dickenson, Fairfax, Franklin, Giles, Henry, Highland, King George, Montgomery, Northampton, Rockingham, and Warren counties, and the cities of Norfolk and Virginia Beach. Habitats range from beach dunes and swales to recent clearcut sites and old growth mixed hardwoods. VMNH specimens have been taken inside residences more than all other members of the family collectively.

26. *Litopyllus temporarius* Chamberlin

A species confined to eastern United States, *L. temporarius* is essentially statewide in Virginia although most of our records are for sites below 2000 ft (600 m) ASL: Appomattox, Augusta, Dickenson, Fairfax, Greensville, Henry, Mecklenburg, Nelson, and Northampton counties, and the City of Virginia Beach.

Micaria browni Barnes

This scarce species, endemic to southeastern United States, was described from the Shackleford Banks, North

Carolina (only 125 miles [200 km] south of Virginia) and is likely to be found here. It does not appear to be restricted to littoral or subarctic habitats.

27. **Micaria delicatula** Bryant
New State Record

Although the majority of localities known for this near relative of *M. longipes* are clustered between New Jersey and Massachusetts, it has been recorded by P&S (1988: 52), on the basis of two females, from Aiken County, South Carolina. Although the following Virginia collection is located midway in the hiatus, confirmation of the SC locality from males would be desirable. *City of Virginia Beach*: Pendleton Navy Base, dune DF site, 21 September 1989, K. A. Buhlmann (2/0).

Micaria elizabethae Gertsch

Having been documented for New Jersey and North Carolina, this species will almost certainly be found in Virginia through future collecting efforts.

Micaria emertoni Gertsch

This species of continent-wide distribution perhaps affords another case of extreme fragmentation of a formerly continuous distribution. It occurs in the Coast Range of Oregon, the Rockies from Alberta to the Mexican Plateau, the Great Lakes region, and a coastal strip from Maine to Maryland. The record for Dorchester County in the latter state implies presence of *M. emertoni* in the nearby Eastern Shore counties of Virginia.

28. **Micaria longipes** Emerton

The extensive distribution of this species in North America excludes only the Pacific Coast states and the southeastern Coastal Plain east of Texas. Although it has been recorded from the Blue Ridge in western North Carolina, the few Virginia records are dominantly from the lower eastern half of the state: Accomack, Augusta, Cumberland, Fairfax, and Prince Edward counties, and the City of Suffolk. At the DF sites in both Augusta and Cumberland counties, the species was captured only in recently clearcut stands to the exclusion of adjacent plots of undisturbed broadleaf forest similarly sampled with pitfalls. The site in Accomack County is in open dune country only a few meters above sea level. P&S (1988: 50) reported a number of captures in “cultivated fields, grasslands, pastures, prairies, and sand” as noted on collection labels, collectively suggesting a preference by this species for dry open habitats.

Micaria longispina Emerton

Eastern records for this rare species extend from Nova Scotia to Florida, but restriction to a coastal habitat seems excluded by inland records for Arkansas, the Great Lakes region, and Alberta, collectively suggesting a continent-wide range now in the last stages of condensation.

29. **Micaria punctata** (Banks)

New State Record; new northeasternmost locality

Although the distribution of this tiny spider is extensive – Nebraska and Texas east to Florida and northward to North Carolina – it embraces relatively few capture localities. Our single Virginia site constitutes only a negligible extension of the known range: *City of Virginia Beach*: Dam Neck Navy Base, 14 May 1991, K. A. Buhlmann (1/0).

Micaria riggsi Gertsch

While the majority of the range of this species occurs in the Cordilleran mountain systems and the Great Lakes region, a disjunct record for the Great Smoky Mountains implies that *M. riggsi* may be expected in the higher mountains of western Virginia.

Nodocion floridanus (Banks)

A widespread species over most of eastern United States, *N. floridanus* has been found just a few miles west of the Virginia state line in Pocahontas County, West Virginia, leaving little doubt that it occurs in many of our western counties.

30. **Nodocion rufithoracicus** Worley

New State Record; disjunct eastern locality

Known to P&S (1980, map 2) only from west of the 100th meridian, this species has appeared – against all probability – in a Virginia pitfall collection. *Cumberland Co.*: pitfall site in recent clearcut, 5.5 km south of Columbia, 15 August 1990, J. C. Mitchell (AMNH 1/0). While the shape of the retrorse tibial apophysis of the male palp readily distinguishes this species from the common eastern *N. floridanus*, the identification of our specimen was further verified by Dr. Platnick. As the pitfall sample was sorted in the VMNH laboratory under my direct supervision, the possibility of a clerical error in labeling can be excluded. That only one specimen was obtained by a year-long sampling effort suggests local rarity. Conceivably, although improbable statistically, the specimen may have been introduced into the remote and undeveloped Virginia locality through some form of

commerce, or, equally unlikely, blown in on an air current when still a juvenile.

Sergiolus bicolor Banks

Although only a few localities are known for this species, they collectively embrace most of eastern United States and it thus seems probable that the species may be discovered in eastern Virginia.

31. ***Sergiolus capulatus*** (Walckenaer)

Represented over much of North America east of the Great Plains, this colorful species is likewise widespread in Virginia, from sea level to above 4000 ft. (1200 m) ASL in the western mountains. It has been found in a wide variety of biotopes, including residences, and is frequently found running in open places during the day. Records are for Augusta, Bland, Dickenson, Fairfax, Grayson, Greenville, Henrico, Henry, Isle of Wight, Mecklenburg, Northampton, Prince Edward, Rockingham, Warren, Wythe, and York counties, and the City of Virginia Beach. It probably occurs in every county in the state.

32. ***Sergiolus cyaneiventris*** (Simon)

New State Record

With a chiefly lowland range extending from New England to Texas, this species was not represented by Virginia specimens when the genus was revised by P&S (1981), and seems to be rarely collected north of Florida. VMNH has only a single specimen (identity verified by Dr. Platnick) from *York Co.*: Naval Weapons Station, in hardwoods DF site, 16 July 1990, VDNH survey (1/0).

33. ***Sergiolus minutus*** (Banks)

New State Record

Having been documented by P&S (1981) from North Carolina and the District of Columbia, this small species could reasonably be expected to occur also in Virginia. VMNH material is from *Mecklenburg Co.*: Elm Hill Wildlife Management Area, DF in sandy open field by Lake Gaston, 10 July-1 August 1995, VMNH survey (1/0). *City of Virginia Beach*: Dam Neck Navy Base, DF in swale, 7 September 1990, VDNH survey (0/1).

Sergiolus montanus (Emerton)

Dominantly a species of the Cordilleran region and West Coast, this species occurs sparingly in the Great Lakes region and is known from a few sites as far south as Texas and South Carolina. It seems likely that

specimens will eventually be captured in Virginia.

34. ***Sergiolus ocellatus*** (Walckenaer)

This spider occurs widely in North America, from Saskatchewan to Nova Scotia, south to eastern Texas and southern Georgia; in peninsular Florida it is replaced by *S. kastoni*. In Virginia it is rarely collected, but apparently occurs nearly statewide. P&S (1981) cited specimens from Giles County, VMNH adds *Roanoke Co.*: Back Creek District, Bandy Road, in swimming pool, 14 June 1993, M. W. Donahue (1/0) and *City of Virginia Beach*: Dam Neck Navy Base, DF in swale, 7 September 1990, VDNH survey (1/1); DF in dunes, 1 August 1989, VDNH survey (1/0)

35. ***Sergiolus tennesseensis*** Chamberlin

This rarely collected spider is widespread in northeastern United States, from North Dakota and Colorado east to Virginia; there are no records for either the southeastern states or New England. P&S (1981) cited material from *Giles Co.*: no locality given but almost certainly Mountain Lake, 9 July 1935, Horton H. Hobbs, Jr. (AMNH 0/1) and *Page Co.*: east of Luray, 5 July 1933, W. J. Gertsch (AMNH 0/2).

Sergiolus unimaculatus Emerton

Another seldom-collected species, *S. unimaculatus* is known only from several collections in the Great Lakes region, and along the Atlantic coast from Maine to Florida. That R. D. Barnes (1953) obtained specimens on three occasions at Beaufort, North Carolina, suggests that this spider will surely be collected in maritime habitats in the Virginia Beach region and the Eastern Shore counties.

36. ***Sosticus insularis*** (Banks)

Although peripheral areas are very poorly represented in collections, the range of this species generally extends southwest from New England to Texas. In Virginia, the few records are grouped in the extreme southeast and along the western border of the state. Absence of Piedmont localities may be only an artifact of inadequate collecting efforts. *Augusta Co.*: 5 miles west of Stokesville, DF site in recent clearcut, mixed hardwoods forest, 7 September 1988 (1/0), 15 October 1988 (1/0), 9 July 1989 (1/1), all Barry Flamm. *Dickenson Co.*: Breaks Interstate Park, 4 miles north of Haysi, 1-14 July 2000, R. Vigneault (0/1). *Greenville Co.*: DF site 1 mile east of Claresville, 25 May-30 June 1994, VMNH survey (1/0). *City of Virginia Beach*: First Landing State Park, dune DF site, 26 July 1989, VDNH survey (1/0).

37. “*Synaphosus*” *paludis* (Chamberlin)

New State Record; new northernmost locality

Southeastern United States: southern Illinois to Texas, east to Georgia. Our single Virginia capture thus represents a substantial northward extension of the range along the Atlantic Coast. *City of Virginia Beach*: Back Bay National Wildlife Refuge, 0.3 km south of Black Gut, 21 May-22 June 2000, Duran & Farrell (1/0).

The status of this species was mentioned by Ovtsharenko et al. (1994) as not congeneric with the type species *Synaphosus syntheticus* (Chamberlin) or other members of this genus now known to be largely endemic to Eurasia and Africa. They postulated that the North American occurrence of *S. syntheticus* – from Georgia to California – is the result of anthropochoric influences. To date, *paludis* has not been relocated in its correct genus, although Ovtsharenko et al. (1994) presumed that it too is an “introduced” species from a source area perhaps in East Africa. This possibility does not account for the typical Lower Austral range of the species nor that the known capture sites do not show a close correspondence with urban situations, port cities, or such likely habitats for an alien spider to occupy.

38. *Talanites echinus* (Chamberlin)

The relatively small geographic range of this spider seems to be centered on the Southern Appalachians (West Virginia to Georgia), and our few Virginia records from the central Alleghanies conform to that pattern. *Botetourt Co.*: Roaring Run Furnace, off Va. 621, ca. 6 miles northeast of Eagle Rock, 25 May 1996 (3/1) and 27 April-4 May 1996 (2/1), M.W. Donahue & R. S. Hogan. *Giles Co.*: Mountain Lake (P&S, 1976). *?Roanoke Co.*: “Poor Man’s Mountain”, without collector or date (P&S, 1976), is probably an error for Poor Mountain, south of Salem.

The generic name *Rachodrassus*, used for this species by P&S (1976), was subsequently considered a junior subjective synonym of *Talanites* by Platnick & Ovtsharenko (1991).

39. *Urozelotes rusticus* (L. Koch)

With a dispersal ability matched by very few other spiders, this species has achieved a cosmopolitan synanthropic distribution. In their review of this genus, Platnick & Murphy (1984) established a list of 20 junior synonyms based on specimens of *U. rusticus* collected nearly everywhere in the world except the Indo-australian region; they also provided our only Virginia record, Fairfax County, without further attribution.

Presumably it may be expected in any of our metropolitan centers.

Zelotes aiken Platnick & Shadab

Although most records for this species are in Texas and the Ozark region, it has been documented as close to Virginia as eastern South Carolina, and is therefore a likely candidate for discovery in Virginia.

40. *Zelotes duplex* Chamberlin

Eastern United States, from Massachusetts and Michigan south to Florida and southern Texas. In Virginia it ranks as one of the five most common gnaphosids, and occurs statewide, from sea level to 4000 ft. (1200 m) ASL in the Alleghanies. Alleghany, Amelia, Augusta, Bath, Bland, Botetourt, Dickenson, Fairfax, Floyd, Giles, Greensville, Henrico, Isle of Wight, King George, Northampton, Pittsylvania, and York counties, and the cities of Suffolk and Virginia Beach. As the biotopes at the capture sites vary greatly, from coastal dunes to northern hardwood forests, the species may be considered as truly euryzonal.

41. *Zelotes exiguoides* Platnick & Shadab

New State Record

This species is known from only a few localities dispersed across North America from Washington to New Hampshire. Our single Virginia locality represents only a minor southern extension from Westmoreland Co., Pennsylvania, but additional captures farther south in the Alleghanies seem very likely. *Clarke Co.*: Blandly Farm, 3 km south of Boyce, 21 May 1991, D. R. Smith, ex Malaise trap (1/0).

Zelotes fratris Chamberlin

The range of this spider is truly boreal, extending across North America from the Yukon to Nova Scotia, southward in the western states through most of California, Arizona, and New Mexico. In eastern North America all of the known localities lie north of the limits of glaciation except for disjunct sites on Roan and Grandfather mountains, North Carolina. These latter records open the possibility that *Z. fratris* may be expected to occur in the Mount Rogers-Whitetop range above 5000 feet (1500 m), although it was not found during prolonged pitfall trapping at that elevation at Grayson Highlands State Park and on Whitetop Mountain.

42. *Zelotes hentzi* Barrows

Vancouver Island to Nova Scotia, southward to Colorado, east Texas, and Florida. The apparent absence

from the southwestern states is notable. Virginia records indicate a statewide distribution from sea level to nearly 5000 feet (1500 m) at Mount Rogers, and a variety of biotopes. Accomack, Augusta, Cumberland, Fairfax, Floyd, Grayson, Henry, Montgomery, Warren, and York counties, and the City of Virginia Beach. Most samples contain only single specimens.

Zelotes laccus Barrows

This scarce species was known to P&S (1983, map 19) from less than a dozen localities dispersed widely across eastern North America. Records for New Jersey, Ohio, and North Carolina imply that *Z. laccus* probably occurs in at least the western mountainous parts of Virginia.

43. *Zelotes lymnophilus* Chamberlin
New State Record; northernmost locality,
disjunct from Georgia

One of the more localized members of the genus, *Z. lymnophilus* is known only from Florida and Georgia, with a single remote locality in Texas. Our single specimen from Virginia (identification confirmed by Dr. Platnick) extends the range some 400 miles (640 km) northeast from Screven Co., Georgia, along the Coastal Plain: *City of Suffolk*: South Quay pine barrens, ca. 10 km SE of Franklin, 4 April-6 June 2003, S. M. Roble (1/0).

The record for "Raven Ranch" in Kerr Co., Texas, attributed to D. Mulaik and R. Scott, may be held in suspicion: experience with other arthropod groups has shown that specimens in R. V. Chamberlin's collection from "Raven Ranch" were often mislabeled (including species endemic to Costa Rica and Peru) and that most of Russell Scott's material probably came from Tennessee rather than Texas. The possibility that *Z. lymnophilus* does occur naturally in eastern Texas and other Gulf Coast states, certainly may not be excluded, however.

44. *Zelotes pseustes* Chamberlin

Although the majority of known records for this species are clustered in central Texas and Tamaulipas, a few captures have been made from Florida to Long Island. Virginia localities observe this general Lower Austral pattern: *Greensville Co.*: DF site 1 mile E of Claresville, 25 May-30 June 1994, VMNH survey (0/1). *Mecklenburg Co.*: Elm Hill Wildlife Management Area, DF beside Lake Gaston, 1-29 October 1995, VMNH survey (2/0). *City of Suffolk*: South Quay pine barrens, 10 km SE of Franklin, 16 September-5 November 2003. S. M. Roble (4/0); same site, 18 December 2002-4 April 2003. *City of Virginia Beach*: First Landing State Park,

8-13 June 1970, R. L. Hoffman (AMNH 1/0); scrub DF site, 16 November 1989, K.A. Buhlmann (1/0).

45. *Zelotes pullus* (Bryant)

The great majority of localities for this species are limited to the Atlantic Coastal Plain between Massachusetts and Florida. P&S (1983) cited Fairfax County and Norfolk City. VMNH samples are from farther inland: *Henry Co.*: Martinsville, Beaver Creek meadow, 2 September 2008, R. L. Hoffman (1/0). *Roanoke Co.*: Back Creek, in pool strainer, 29 August 1994, M. W. Donahue (1/0).

SUMMARY

Barring unpredictable and improbable future discoveries like that of *Nodocion rufothoracicus*, existing information justifies an estimate of about 60 species of gnaphosids native to Virginia. We have records for 45, or 75% of that total, which while admittedly incomplete does allow for the compilation of a few statistics and definition of some apparent distributional patterns occupied by these spiders.

Of the 45 species now listed for Virginia, no fewer than 13 are additions to the previously known fauna. While most of these merely fill in existing lacunae between documented states, others represent range extensions of some magnitude: *Drassyllus louisianus*, ca. 150 miles (240 km) northward from North Carolina; *Zelotes lymnophilus* ca. 400 miles (640 km) northeast from Georgia, and *Nodocion rufothoracicus*, ca. 1200 miles (1930 km) east from Colorado.

Although this tabulation is obviously only a first stage in our knowledge of Virginia gnaphosids, a few generalizations may be drawn from the existing data. One is that most species are generally statewide, except perhaps only at lower elevations; some reflect dispositions toward boreal climates (psychrophilic), others for austral conditions (thermophilic).

Some species are abundant in the sense of being captured almost everywhere collection has been done. In terms of county/city records, 24 species are known from less than five, only six from more than 15. The most abundant species are *Zelotes duplex* (19 counties), *Drassyllus aprilius*, *D. novus*, and *Gnaphosa fontinalis* (all 18), *Sergiolus capulatus* (17), and *Herpyllus ecclesiasticus* (16).

A pervasive pattern noted during examination of numerous distributional maps for gnaphosids in the Platnick & Shadab revisions involves ranges, often discontinuous, centered on the central and southern Rocky Mountains, the Great Lakes region, and New England-eastern Canada. In a number of cases (e.g.,

Drassodes gosiutus, *Drassyllus dromeus*, and *Gnaphosa pumila*), the latter area extends southward along the Atlantic seaboard at least as far as Virginia. Even in those cases in which the Rocky Mountains are not occupied, the Great Lakes–coastal extension remains evident. A similar pattern (which could be informally designated as “Lacomaritime”) has been noted for a variety of other animals, among them insects:

1. *Teratocoris discolor* Uhler (Miridae: Heteroptera), cf. Hoffman, 1999;
2. *Limnephilus moestus* Banks (Limnephilidae: Trichoptera), cf. Hoffman & Parker, 1997 (with map);
3. *Neoconocephalus lyristes* Rehn & Hebard (Tettigonidae: Saltatoria), cf. Walker, 1978, map p. 31.;
4. *Hygrotus impressopunctatus* Schaller (Coleoptera: Dytiscidae), cf. Cross, 1972.

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