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Seasonal Variation in Diet of a Marginal Population of the Hispid Cotton Rat, *Sigmodon hispidus*

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ABSTRACT

Cotton rats live in oldfields, habitats with a variety of mostly herbaceous plants. Based on other studies, the hispid cotton rat, *Sigmodon hispidus*, eats many kinds of herbaceous plants but grasses predominate. In contrast, our population of cotton rats ate many monocots but mostly they were not grasses. Our study sought to determine the diet of the cotton rat in eastern Virginia, near the northern limit of distribution on the Atlantic Coast. Fecal samples, collected each month during an on-going capture-mark-release demographic study of the rodent community, were analyzed using a standard method. A greater variety of foods (including insects) was eaten in the summer and autumn than in winter and spring. In winter, when much herbaceous vegetation is standing dead, cotton rats supplemented their diets with pine bark. Cotton rats ate significantly greater proportions of monocots in winter and spring, an apparent response to the need for more calories to compensate for greater heat loss. In summer and autumn, cotton rats enhanced their diets with significantly greater proportions of the more nutritious but harder to digest dicots. Reproductive females ate significantly more dicots and less monocots than males and non-reproductive females, whose diets were similar. Key words: cotton rat, diet, fecal analysis, pine bark, plant availability, seasonal variation, *Sigmodon hispidus*

INTRODUCTION

Studies of diet, at their simplest, reveal whether mammals are herbivores, carnivores, omnivores, or consume specialized foods such as ants. When evaluated throughout an annual cycle, dietary studies also can indicate the role of that species in its community and how diet may change with the seasons, with the changing energy requirements of reproduction, impending migration or hibernation (Parker and Bernard, 2006). Diet can be assessed by direct observation, feasible primarily for large diurnal mammals, or by analysis of the contents of stomach or feces (Colgan et al., 1997).

Previous studies of the diet of the hispid cotton rat (*Sigmodon hispidus*), conducted using fecal analysis, have shown that this rodent is mostly herbivorous but occasionally also consumes insects. Examined in coastal Texas throughout an annual cycle (Kincaid and Cameron, 1985) and in western Kansas in the summer (Fleharty and Olson, 1969), the latter representing a marginal population, the diet of cotton rats varies greatly due to the large variety of plant species in their habitats and to their differences in nutrient

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content, secondary plant compounds, palatability and digestibility (Randolph et al., 1991). These features undoubtedly change during the year, with foods likely of poorest quality and lowest amount during the winter months. Diet may reflect the availability of plant species, but often it does not (Randolph et al., 1991).

Cotton rats consume mostly monocots, especially grasses, but also eat dicots (Kincaid and Cameron, 1985). Laboratory studies show that monocots are digested more rapidly and thus provide calories easily, whereas dicots are more nutritious but take longer to digest (Randolph et al., 1991). These factors can contribute to the differential selection of food plants by cotton rats of different reproductive states living in different months of the year. Knowledge of the diet of the cotton rat near the northern limit of distribution in the mid-Atlantic region will permit comparisons with more central and other peripheral populations. Using fecal samples collected throughout the year, our study sought evidence of seasonal variation in food selection, including information on the dominant plant species consumed in different seasons. We also compare differences in food selection among males, non-reproductive females, and reproductive females.

MATERIALS AND METHODS

Study Area

The study site was an 11-ha tract owned by The Nature Conservancy in southern Chesapeake, Virginia. The flora consisted of several monocots, including *Juncus effusus* and *J. tenuis* (soft rushes), *Schizachyrium scoparium* (little bluestem), *Allium vineale* (field garlic), *Carex* spp. (sedges), *Panicum* spp. (switchgrass), *Scirpus cyperinus* (a sedge, wool-grass), and *Microstegium vimineum* (Nepalese browntop grass). Also present was a variety of dicots: *Symphotrichum pilosum* (awl-aster), *Solidago* spp. (goldenrods), *Solanum carolinense* (horse nettle), *Campsis radicans* (trumpet creeper), *Lonicera japonica* (Japanese honeysuckle), *Apocynum cannabinum* (hemp-dogbane), *Eupatorium capillifolium* (small dog-fennel), *Rubus allegheniensis* (blackberry), and *Ambrosia artemisiifolia* (common ragweed). The site was being rapidly invaded by loblolly pine (*Pinus taeda*) trees that gradually decreased the amount of herbaceous ground cover, originally dominant. In the wettest areas, soft rushes, wool grass and asters were the dominant plants. In addition to cotton rats, other small mammals in the community, in order of their decreasing abundance, were: *Microtus pennsylvanicus* (meadow vole), *Reithrodontomys humulis* (eastern harvest mouse), *Oryzomys palustris* (marsh rice rat), *Mus musculus* (house mouse), and *Blarina carolinensis* (southern short-tailed shrew).

Field Methods

A 1-ha grid, consisting of eight rows of traps with eight stations at 12.5 m intervals along each row, was placed in a grassy section of the field in December 2002. Every coordinate had two Fitch live traps (Rose, 1994) that were baited with birdseed and filled with polyfill as insulation in the winter months. The traps were set one afternoon and then checked for three consecutive mornings each month. Half sheets of copy paper, placed under the mesh when setting traps, collected feces on the first morning of trapping. The feces from each animal were folded in the paper, which was labeled with information on sex, weight, date, and tag number, and then stored in a freezer. Fecal samples from 53 cotton rats, with 10-15 samples per season, were analyzed. The seasons were defined as autumn (September-November), winter (December-February),

spring (March-May) and summer (June-August).

Because the cotton rats analyzed in our study were part of an ongoing capture-mark-release study (which followed the guidelines of the American Society Mammalogists for the use of wild mammals in research: Gannon et al., 2007), analysis of diet using only fecal samples was possible. For each animal, we also recorded information on its reproductive status. For males, the testes were recorded as scrotal (reproductive) or abdominal (not reproductive). For females, reproductive information included if pregnant, whether vagina was perforate or not, nipple size (small, medium, and large), and the condition of pubic symphysis (closed, slightly open, or open). Together these features permit an assessment of reproductive condition (McCrary and Rose, 1992).

Lab Analysis of Plant Parts and Fecal Samples

Each month during spring and summer of 2006, plants were collected and identified in the field; identifications were verified by a plant expert (Dr. Rebecca Bray and Jay Bolin) in the department. Later, parts of the plants were used to make reference slides for each species, using the procedures of Davitt and Nelson (1980). Pieces of a plant were placed in a lactophenol-blue stain for 7 d and then macerated in a Waring blender for 3-5 min. The smallest plant particles were removed from the surface of the water using a tiny wire loop, placed on a microscope slide (two slides per reference plant), and then dried on a hot plate. Once the slide was dry, a mounting medium and coverslip were added to create a semi-permanent reference slide for each plant species (Davitt and Nelson, 1980).

Five to six fecal pellets per sample were also subjected to the lactophenol-blue stain, then ground with mortar and pestle, the smallest pieces again were looped from the surface of the water, mounted on a slide and dried. Two slides per sample were prepared as before. Twenty-five random microscope fields were examined per slide (50 fields/sample). If 100X magnification was inadequate for identification, higher magnification was used.

The reference slides were used to identify the plant fragments in each fecal sample. Unique micro-anatomical features, such as epidermal hairs, size/shape of cells, trichomes, and stomates were used to identify the plant pieces (Sparks and Malcheck, 1968). For each fecal sample slide all particles of each plant species (plus unidentifiable pieces) were counted in each field of view. After these values were summed in all 50 fields, these totals were divided by the total number of fragments of all the species (and unidentifiable parts) per sample and then multiplied by 100 to give percent frequencies of species consumed by the cotton rat (Holecheck and Gross, 1982). This method resulted in a list of the plant species in each fecal sample and their relative proportions, expressed as percent frequencies. Five categories were used: unknown (unidentifiable fragments caused by excessive digestion or distortion), monocots, dicots, pine bark and insects. This information was then merged with information on the sex, reproductive status of the animal and season to give a picture of the changing diet of the cotton rat throughout the year.

Fecal samples used in the analysis were collected from September 2004 through August 2005. Plant abundances were not determined due to the rapid succession in the oldfield between the time the fecal samples were collected and the time that plant samples were collected (spring and summer 2006).

Data analysis

All statistical tests for the diet analysis were performed using SPSS for Windows

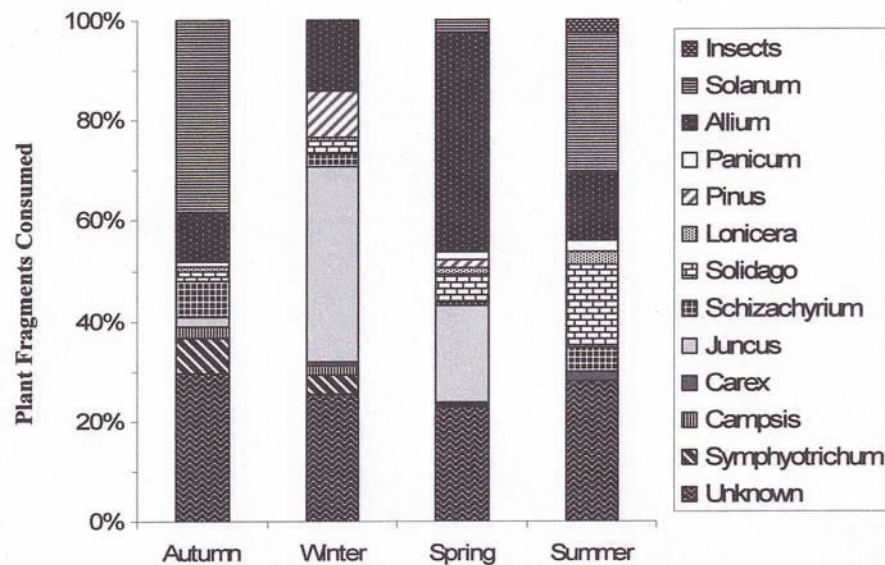


FIGURE 1. Percentages of insects and plant species identified in fecal samples in each of four seasons ($n = 53$: 10-15 per season).

2005, version 14.0, with significance levels of $P < 0.05$ (SPSS Inc., Chicago, Illinois). The percent frequencies of diet were tested for normality and homogeneity of variances using Kolmogorov-Smirnov and Shapiro-Wilk tests of normality. The unidentifiable components, monocots, and dicots for the seasons were normally distributed but due to the multiple zeros recorded for pine bark and insects, those variables were not normally distributed. After multiple transformation attempts, the tests of normality still could not be met satisfactorily for pine bark and insects. Therefore, percent frequencies were used in a general linear model (GLM) multivariate analysis (MANOVA) to compare the diet composition between season and sex in relation to major food types. If there was a significant effect from either the season or sex on a major food type in the GLM MANOVA, a one-way ANOVA Ryan-Einot-Gabriel-Welsch-F test (REGWF) was performed to test the significance of each major food type individually against each season or sex.

RESULTS

Effects of Season on Percent Food Consumption

The percent of unknown plant fragments was relatively constant across the four seasons, ranging from 22-29% (Fig. 1). The following were the primary foods consumed: monocots (*Juncus*, *Schizachyrium*, *Allium*, *Carex*, and *Panicum*), dicots (*Symphyotrichum*, *Solidago*, *Solanum*, *Campsis*, and *Lonicera*), pine bark, and insects; these four groups were used in analysis.

The most important plant species varied among seasons (Fig. 1). In autumn, *Solanum* represented 39% of the diet, with *Symphyotrichum*, *Schizachyrium*, and *Allium*

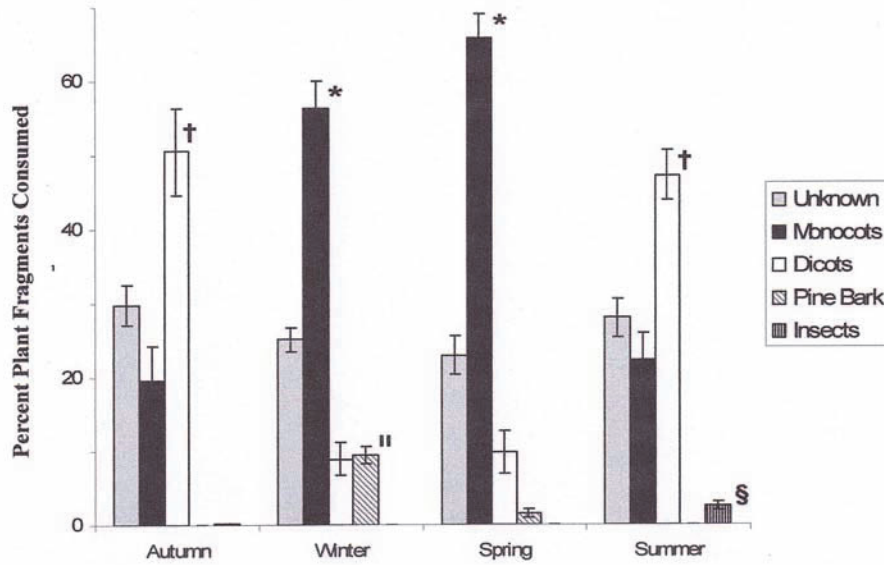


FIGURE 2. Percentages (mean \pm 1 SE) of plant fragments, and insects, separated into food categories eaten for each season. The following symbols are used: † proportions of dicots consumed were significantly greater in summer and autumn than winter and spring ($P < 0.01$), * proportions of monocots consumed were significantly greater in winter and spring than summer and autumn ($P < 0.01$), †† proportions of pine bark consumed was significantly greater in winter than spring, and ††† proportions of insects consumed was significantly greater in summer than autumn ($P < 0.01$).

as minor (7-10%) components. During winter, the diet primarily consisted of *Juncus* (39%), *Allium* (14%), and pine bark (9%). In spring, *Juncus* and *Allium* were dominant again, but their proportions were reversed: 44% for *Allium* and 20% for *Juncus*. Finally, in summer, a greater variety of plants was eaten, with *Solanum*, *Solidago*, and *Allium* consumed the most at 28%, 17%, and 14%, respectively. Despite its availability, *Juncus* was not eaten in summer, perhaps due to the variety of other plant species available then.

In winter and spring, monocots were 56% and 66% of the identifiable diet and dicots were only 9% and 10%, respectively (Fig. 2). The greater use of monocots in winter and spring versus summer and autumn was significant based on the post-hoc REGWF test ($P < 0.01$). A significantly greater proportion of pine bark was eaten in the winter than in spring ($P < 0.01$). In summer and autumn, dicots made up 47% and 50%, respectively, seasons when monocots constituted less than 25% of the diet (Fig. 2). This preference for dicots in the summer and autumn was significantly greater ($P < 0.01$) than in the winter and spring. Significantly ($P < 0.01$) more insects were eaten in summer (2.5%) than in autumn (0.1%); both are seasons of greatest availability.

Effects of Sex on Percent Food Consumption

Over the year, males ($n = 18$) ate 43% monocots and 30% dicots and non-

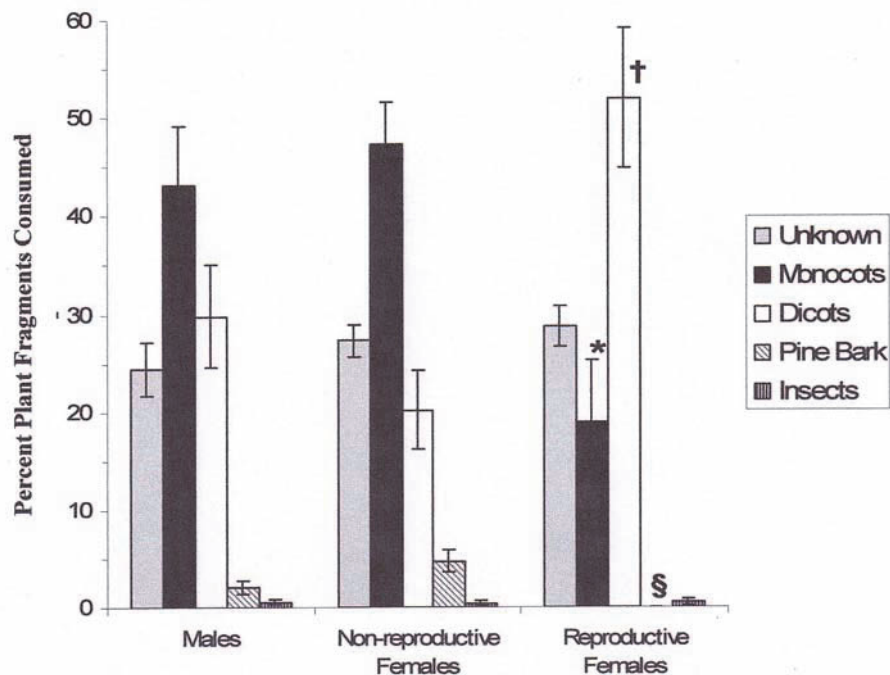


FIGURE 3. Percentages (mean \pm 1 SE) of plant fragments, and insects, separated into food categories for males (M), non-reproductive females (NRF) and reproductive females (RF), with $n = 18$, $n = 27$, and $n = 8$, respectively). The following symbols are used: *proportions of monocots consumed by RF was significantly less than M and NRF ($P < 0.05$), † proportions of dicots consumed by RF was significantly greater than M and NRF ($P < 0.05$) and § proportions of pine bark consumed by RF was significantly less than M and NRF ($P < 0.05$).

reproductive ($n = 27$) females consumed similar proportions, at 47% and 20%, respectively (Fig. 3). However, reproductive females ($n = 8$) consumed 19% monocots and 52% dicots. Post-hoc tests showed that reproductive females ate significantly ($P < 0.05$) less monocots and more dicots than males and non-reproductive females. Males and non-reproductive females consumed significantly ($P < 0.05$) more pine bark (2% and 4.7%, respectively) than reproductive females, which ate none. The amount of insects consumed, never greater than 1%, did not differ among the three groups. Males and non-reproductive females consumed relatively similar proportions of monocots, dicots, pine bark, and insects ($P > 0.10$).

DISCUSSION

Cotton rats are short-lived animals that grow rapidly with an average lifespan varying from 2-3 months depending on location (Cameron and McClure, 1988). Due to the short lifespan, cotton rats cannot substantially benefit from having selected or avoided certain plants earlier in the year (Randolph et al., 1991). At our site, they consumed varying proportions of 10 common herbaceous plants, a few insects when

available and at one time of the year, pine bark. During the year, different monocots and dicots were eaten, presumably depending upon their availability, palatability and nutritional values.

Proportions of monocots, dicots, pine bark and insects eaten varied with the season. Monocots typically were eaten more in the winter and spring, when they represented greater than 50% of the identifiable diet (Fig. 2). Especially in winter, relatively little living green herbaceous vegetation except *Allium* and *Juncus* (both monocots) was available (Fig. 1). During winter and spring, when the food selection likely was limited, cotton rats consumed pine bark to supplement their diets (Fig. 1). Even though pine bark contains noxious resins and tannins, cotton rats at our site consumed it in relatively large amounts, especially in late winter (Fig. 2). Cotton rats ate pine bark at a time when nutrient-rich sap is rising from the roots and when food quality probably is lowest in overwintering herbaceous plants. We assume they are improving their diets by eating bark. Other rodents known to eat the bark of conifers, not necessarily at one time of the year, include the Abert's squirrel (*Sciurus aberti*), which eats phloem and cambium of the bark of the ponderosa pine in western North America as the primary winter food (Snyder, 1992) and in the United Kingdom the introduced gray squirrel (*Sciurus carolinensis*) strips and eats pine bark, mostly in May-July, when bark is stripped most easily (Dagnall et al., 1998).

In summer and autumn the reverse pattern was observed, with cotton rats eating significantly more dicots than monocots; dicots comprised ca. 50% of their diet then (Fig. 2). The most common dicots eaten during the summer and autumn were *Solanum* (28 and 39%, respectively), and *Solidago* (17 and 2%) (Fig. 1). Although pine bark was not found in fecal samples from summer and autumn, insects were (Fig. 2). Kincaid and Cameron (1982) believed insect consumption, highest in the summer, was by incidental ingestion, but our results suggest active insect consumption. Of the 25 cotton rats sampled in summer and autumn, 10 (40%) had eaten insects (Fig 2). Active eating of insects is also supported by high infestation rates (25-73% per month, R. Rose, unpublished) in local cotton rat populations of the stomach worm, *Mastophorus muris*, for which insects such as crickets, grasshoppers, and others are the intermediate hosts.

Many studies (e.g., Fleharty and Olson, 1969; Kincaid and Cameron, 1985; Randolph and Cameron, 2001) have reported that cotton rats primarily eat grasses. In Kincaid and Cameron (1985), grasses were highly dominant, comprising the majority of foods consumed in most seasons and 74% of the diet across the year. After learning that foods of higher nutritional content, such as dicot leaves, were typically eaten in summer, Randolph and Cameron (2001) concluded that cotton rats had to compensate for the longer handling time of dicots by trying to decrease the search time. Fleharty and Olson (1969), in a summer-only study in Kansas, also found that dicots were consumed more than grasses then. The food consumed in the highest percentage volume was *Triticum aestivum* (wheat, a grass) at 20%, but in aggregate, forbs comprised 48% of summer diet (Fleharty and Olson, 1969). In our study, dicots were eaten in large amounts in summer and autumn, whereas monocots (including grasses) were consumed more in the winter and spring.

Kincaid and Cameron (1985) found that grasses were consumed most frequently during autumn and winter in the Texas coastal prairie, whereas dicots were consumed more in spring and summer. This is a seasonal shift in pattern compared to our results,

and is probably due to the geographic variation in flowering phenology of food plants. Further, our dominant and important plant species (*Juncus*, *Solanum*, *Allium*, *Solidago*) were absent in the Kansas study and, except for *Solidago*, in the Texas study too. All three studies showed dicots were consumed more than monocots in the summer and the opposite pattern in the winter. However, we never found grasses to be dominant plants in the diet. Of the grasses, *Schizachyrium* was consumed the most in autumn at 7% and *Panicum* the most in summer at 2%. Consequently, in our study grasses comprised only 5% of the average cotton rat diet, which is drastically different from the 74% reported by Kincaid and Cameron (1985). Besides these differences, pine bark, previously unreported as food of cotton rats, was an important component in the diet for a short period at the end of winter. Thus, our study shows the dietary flexibility required of small mammals that can continue to expand their distribution, as *Sigmodon hispidus* has done for the past century (Cameron and McClure, 1988).

Among the factors that determine which species of plants a cotton rat consumes are stage of growth, palatability (Flehart and Olson, 1969), and search, handling and digestion times (Randolph and Cameron, 2001). Dicots are high in protein but require longer handling times than monocots, whereas monocots have shorter handling times but are not as nutrient rich as dicots (Randolph et al., 1991). Randolph and Cameron (2001) found that differences in both search and handling times played a role in diet selection among seasons. This likely was the case in our study because cotton rats on our grid could find monocots easily during all seasons, with *Juncus* and *Allium* being widely distributed and common on the grid and among the few green foods available in winter and early spring. Accessible foods in winter and spring were mainly monocots, which are easy to break down and convert into energy rapidly. In summer, when cotton rats do not lose as much energy to heat loss as in other seasons, they can afford to eat foods that take longer to find and digest, such as dicots, because they do not need to catabolize energy so rapidly from food then, except perhaps for lactating females.

When examining food consumed over the entire year, a few differences were noted between the sexes (Fig. 3). Males and non-reproductive females consumed 2% and 4.7% of pine bark, respectively. (Pine bark was being consumed in late winter and early spring before females were actively breeding.) Randolph et al. (1991) reported that seasonal diets of males and non-reproductive females were similar except in winter. Our sample sizes were too small to examine differences between sexes among seasons, but males and non-reproductive females had similar diets across the year. Furthermore, reproductive females ate more dicots (52%) than either non-reproductive females or males (20 and 30%, respectively; Fig.3). Also reported by Randolph et al. (1991), this behavior suggests that reproductive females take an active role in meeting the nutritional requirements of pregnancy and lactation.

Randolph et al. (1995) reported that cotton rats fed lab chow had enough energy to meet reproductive requirements, but females in the field had levels of protein and phosphorus too low to meet the demands required for reproduction in both autumn and winter. Females need more energy during lactation than in pregnancy and are constantly balancing between energy lost through heat dissipation and reproductive costs. Due to the high nutritional demands of reproduction, it is important that females eat foods high in protein, which may be the reason reproductive females in our study ate relatively more dicots than non-reproductive females. In an experimental field

study in Texas during which high-protein foods were introduced into some natural habitats, cotton rats chose habitats with high quality foods even when covering vegetation was low, indicating an ability to evaluate food quality (Eshelman and Cameron, 1996). Males and non-reproductive females can afford to be less choosy about the foods they consume because they do not need as much energy (Randolph and Cameron, 2001), which may explain their similar diets.

In conclusion, cotton rats in eastern Virginia exhibited significant seasonal variation in food selection, including the unexpected consumption of pine bark and much lower proportions of grasses eaten than reported for other geographic populations. Significant diet differences were observed between reproductive females and either males or non-reproductive females. The catholic diet of the hispid cotton rat probably has contributed to its range expansion in the last 100 years, including into southeastern Virginia, where its path northward currently is blocked by the Chesapeake Bay and its associated large rivers.

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Graminicolous Fungi of Virginia: Fungi in Collections 2004-2007

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ABSTRACT

Fungus-grass associations recognized in Virginia from 2004 to 2007 are recorded. Many associations are new to the United States (U), eastern United States (EU), and Virginia (V); other associations extend the known distribution of those previously discovered. These reports contribute further to knowledge of the mycoflora of Virginia.

INTRODUCTION

Fungi identified on members of the plant family Poaceae since 2003 (Roane 2004) are catalogued here. The objectives were to collect grasses growing in diverse environments and determine which fungi were present or emerged from them. There was no attempt to demonstrate parasitism but merely to establish their presence. Thus, the catalogue becomes a contribution to the natural history of Virginia. As before, any fungus or grass-fungus association not listed by Farr et al. (1989) nor in the web-site (Farr and Rossman date unknown) is considered a new United States record (NR, U). Those not listed east of the Mississippi River are designated NR, EU; those new for Virginia are designated NR, V.

In previous publications, brief descriptions of collection sites were provided; in this publication, elevation and geographic coordinates of collection sites were also provided if feasible by using a hand-held Etrex® GPS receiver (Mfd. by Garmin Ltd., Olathe, Kan.). The instrument provided repeatable coordinate readings but elevations sometimes varied plus or minus 100'.

An acquisition number is provided for each collection. Each is preceded by R, Roane, the last two digits of the year followed by the acquisition number for the year (ex, R07-1). If the specimen originated from the Plant Disease Clinic, i.e., specimens sent in for identification, the Clinic acquisition number is also included (ex, Pl.Cl. 07-1). Collections of ample material will be deposited in the herbarium of the Systematic Mycology and Microbiology Laboratory, ARS, USDA, Beltsville, Md.

Several literature citations appear repeatedly; three that appear in the text are as follows: Ellis and Ellis, E and E; Roane and Roane, R and R; Shoemaker and Babcock, S and B. In text, N.S.R.R. = Norfolk Southern Railroad.

There have been several changes in the binomials of grasses since the publication of the catalogue by Farr et al. (1989). It is simpler to use the binomials listed by them

and recognize in synonymy the names appearing in the Flora of North America (1993), especially since the book by the former is more readily available to plant pathologists than the latter.

2004-2007 COLLECTIONS

Agropyron repens (L.) Beauv., Syn., *Elytrigia repens* (L.) Nevski, *Elymus repens* (L.) Gould, quackgrass

Ascomycotina:

Phaeosphaeria luctuosa (Niessl in Sacc.) Otani and Mikawa - Collected on White Top Mt., Grayson Co. below the roadside spring, June 27, 2004, El. 5019', N38° 38.058', W81° 36.014', R04-20. Ascospores measured 22-27 X 5µm; 5-septate, 3rd cell enlarged, apparently cause of leaf lesions. Illustrated by S and B (1989 pp. 1570-1571) and E and E (1985 pl. 171). NR, U.

Phaeosphaeria nigrans (Rob. ex Desm.) L. Holm - Collected at Walton, Montgomery Co., near Rt. 663 and N.S.R.R. crossing, July 20, 2004, El. 1740' N37° 9.173' W80° 31.01', R04-25. Ascospores 20-28 X 4-5µm, 5-septate, 2nd cell enlarged; on spikelets. Illustrated by S and B 1989, p. 1546 and E and E (1985 pl. 172). NR, U.

Phaeosphaeria tritici (Garov.) Hedj. - Site and dates of R04-25 above. Ascospores 15-17 X 3-4µm, 3-septate, 2nd cell enlarged. On blades. Illustrated by S and B (1989) p. 1528, R04-25. NR, U.

Basidiomycotina – Uredinales:

Puccinia recondita Rob. ex Desm., II, III – Collected at Walton, R04-25 (details above), and Burkes Garden, West end, Tazewell Co. along Rt. 625, July 10, 2005, El. 3161', N37° 05.730', W81° 18.528' R05-13, along Rt. 666, and at east end El. 3197', N37° 14.460', W80° 24.525', R05-14. These collections merely extend the known range in Virginia. Note: *P. recondita* was originally described as *P. triticina* Erikss., later as *P. rubigo-vera* by Winter in Rabenh., still later as *P. recondita* and recently back to *P. triticina* (Szabo et al. 2004). Since *P. recondita* was used in previous publications in this series, its use will be continued (R and R 1994, 1996, 1997; Roane 2004).

Deuteromycotina – Hyphomycetes:

Rhynchosporium secalis (Oud.) J. J. Davis – Collected at both Burkes Garden sites above, causing scald, R05-13-14, NR, V.

Deuteromycotina – Coelomyetes:

Phaeoseptoria festucae R. Sprague – Collected on White Top Mt., Grayson Co. below roadside spring, June 27, 2004, as described for R04-20 above (*P. luctuosa*). *P. festucae* var. *Muhlenbergia* is listed on *A. repens* in Wisconsin (Farr et al. 1989). However, this collection while fitting the concept of *P. festucae* in Sprague's key (Sprague 1950) does not clearly fit into a described variety. R04-20, NR, EU.

Stagonospora maculata Castellani and Germano – Collected at both Burkes Garden sites above, R05-13-14. Spores 25-34 X 3.0-3.5µm, slightly constricted at the 3-5 septa, mostly 4 septa. NR, U.

Stagonospora nodorum (Berk.) Cast. and Germ. – Mixed with *S. maculata* on foliage of Burkes Garden (R05-13) collection. Spores measured 17-21 X 2.5-3.0 μ m, with 3 septa, not constricted at septa. Reported only once before on *A. repens* in Giles Co. (Roane 2004).

Agrostis spp., bentgrass

Collections were made from only two species of *Agrostis*; they are cited by number in the entries below. *Agrostis gigantea* encompasses several species in grass literature but is used here as in the “Atlas of Virginia Flora. III” (Harvill et al. 1992).

1. *Agrostis gigantea* Roth, Syn., *A. alba*, *A. stolonifera*, bentgrass, redtop.
2. *Agrostis perennans* (Walter) Tuckerman, autumn bentgrass.

Ascomycotina:

Phaeosphaeria nigrans (Rob. ex Desm.) L. Holm – Collected on **2** in parking lot, Havens Wildlife Management Area. Rt. 622 = Bradshaw Rd., Roanoke Co., July 18, 2004, El. 1610', N37° 19.840', W80° 9.283', R04-23. Ascospores were 24-26 X 4-5 μ m, 5-septate, 2nd cell enlarged, associated with spots and blade wilt. Previously collected in this association in Pulaski Co. (R and R 1996).

Basidiomycotina:

Puccinia coronata Cda. – Crown rust, collected on **1** in west end Burkes Garden, Tazewell Co., Aug. 29, 2004. El. 3090', N37° 6.614', W81° 21.516', R04-40. This collection expands the known range of this association in Virginia (Roane 2004; R and R 1996).

Puccinia recondita Rob. ex Desm., leaf rust – Collected on **2** at Havens W. M. Area (site R04-23 as above), July 25, 2004, R04-28, and at Pandapas Pond, Montgomery Co., Sept. 4, 2005, R05-36, El. 2106', N37° 16.926', W80° 27.951'. These collections extend the known range of this association in Virginia.

Deuteromycotina – Coelomycetes:

Ascochyta sorghi Sacc. – Collected on **2** at the Havens W. M. Area, Roanoke Co., site above July 25, 2004, R04-28. NR, U.

Colletotrichum graminicola (Ces.) G. W. Wils. - Was collected on **1** in the west end of Burkes Garden, Tazewell Co. (El. 3090'), Aug. 29, 2004, R04-40, and on **2** at the Havens W. M. Area July 25, 2004, R04-28. These associations were reported by R and R (1996); they extend their known range.

Dilophospora alopecuri (Fr.:Fr.) Fr. – Collected at Butt Mt. Lookout Area, Giles Co. on **1**, Aug. 17, 2004. El. 4186', N37° 22.189', W80° 37.199'. It was found on plants with symptoms of bentgrass seed gall nematode [*Anguina agrostis* (Steinbuch, 1799) Filipjev, 1936] infection (Eisenback and Roane 2006). NR, U.

Septoria secalis Prill. and Delacr. – Collected on **2** on Gap Mt. along Forest Service Rd. ¼ mi. W. from highway U.S. 460, Montgomery Co., Aug. 14, 2005, El. 2377', N37° 16.743', W80° 29.022', R05-33. Although collected from three other locations, this is the first from Montgomery Co.

Andropogon spp., beardgrass

1. *Andropogon gerardii* Vitman, big bluestem.
2. *A. scoparius* Michx. = *Schizachyrium scoparium* (Michx.) Nash, little bluestem.

Ascomycotina:

Mycosphaerella recutita (Fr.:Fr.) Johans. – Collected on **2** at Pembroke quarry on Rt. 623, Giles Co., Sept. 2, 2007, R07-19, El. 1655', N37° 18.755', W80° 39.222'. Fungus fits description by Dennis (1978). Ascus averaged 32 X 10µm; ascospores 9-14 X 3-4µm. On leaves, especially in necrotic tips. NR, U.

Basidiomycotina:

Puccinia andropogonis Schwein. III. – Collected on **2** at N. side of N.S. R.R. off Rt. 660, 0.2 mi W. of underpass, Montgomery Co., Sept. 8, 2005, R05-41a, El. 1845', N37° 09.548', W80° 28.310'. NR, V.

Deuteromycotina – Hyphomycetes:

Curvularia brachyspora Boedijn – Collected on **1** at a lot, SW corner Giles and Hearthstone Rds., Blacksburg, Montgomery Co., Oct. 9, 2006, R06-28, El. 2123', N37° 14.288', W80° 24.983'. Conidia are 3-septate, end cells lighter colored than two inner cells, 22-29 X 8-9µm, as described and illustrated by Ellis (1971). This fungus is described as being tropical by Ellis (1971) and Farr et al. (1989). NR, U.

Nigrospora sphaerica (Sacc.) E. Mason – Collected on **1** and **2** at site of *Puccinia andropogonis* above, Sept. 8, 2005, R05-41a, R05-42. It was collected on **1** at site of *C. brachyspora* above, Oct. 9, 2006, R06-28. Fungus is described as a weak parasite and common saprophyte. On **2**, NR, U.

Deuteromycotina – Coelomycetes:

Colletotrichum caudatum (Sacc.) Peck – Collected on **1** at site of *Puccinia andropogonis* above, Sept. 8, 2005, R05-42, and on **2** at the site of *M. recutita* above, Sept. 2, 2007, R07-19. Some authors assign this fungus to *Ellisiella caudata* Sacc. because the spores taper into an apical appendage. See Sutton (1980) for discussion of nomenclature. The fungus has been found previously on several other grasses (R and R 1996 pp. 202, 207; 1997 pp. 18, 38). On **1**, NR, U; on **2**, NR, V.

Phaeoseptoria festucae var. *andropogonis* R. Sprague – Collected on **1** at the site of *Puccinia andropogonis* above, Sept. 8, 2005, R05-42. Apparently causing leaf spots. The fungus was described in a publication by Greene (1949); there are no other records of this fungus. Spores measured 105-190 X 5-7µm, with 6-10 septa, usually constricted at the septa. NR, EU.

Stagonospora arenaria (Sacc.) Sacc. – Collected on **2** at the *Puccinia andropogonis* site above, R05-41a. This is a common gramminicolous pathogen causing a purple brown leaf blotch. Farr et al. (1989) list no Deuteromycotinae in Virginia. NR, V.

Stagonospora simplicior Sacc. and Briard – Collected on **2** along with *S. arenaria* above, R05-41a. They are very different; *S. arenaria* spores are 1-4, usually 3-4-septate, measure 25-60 X 3-5µm; those of *S. simplicior* are 3-septate, 24-44 X 9-11µm, characterized by blunt ends, and conspicuous vacuoles. Both are illustrated by Sprague (1950). NR, EU.

Anthoxanthum odoratum L., sweet vernalgrass

Deuteromycotina – Hyphomycetes:

Drechslera dematioidea (Bubák and Wróbl.) Subr. and P. C. Jain – Collected at Butt Mt. lookout and transmitter area, Giles Co., El. 4100', N37° 22.140', W80° 37.403', June 15, 2004, R04-13. This fungus is a common cause of leaf spots and wilted leaves on *A. odoratum* (R and R 1996) but this is the first report from Giles Co.

Aristida spp., three-awn

1. *Aristida dichotoma* Michx., triple-awn grass
2. *A. oligantha* Michx., prairie three-awn
3. *A. purpurascens* Poiret, arrowfeather

All *Aristida* collections are from the Pembroke quarry, Rt. 623, Giles Co., El. 1445', N37° 18.781', W80° 39.321', Oct. 22, 2006.

Ascomycotina:

Physalospora sp. – Large, black, erumpent, papillate ascocarps; no paraphyses; asci bitunicate; spores biseriolate, hyaline, granular, ellipsoid, 25-35 X 8-9µm. On leaves of **1** (R06-32) and **3** (R06-31). Sprague (1950) listed four *Physalospora* spp. on grasses none of which fits these Giles Co. collections; the closest is *P. rhodina* (Berk. And Curt.) Cooke having spores measuring 24-42 X 7-17µm. This is now *Botryosphaeria rhodina* (Cooke) Arx (Farr et al. 1989). Either *P. rhodina* or *B. rhodina* is an uncertain choice for this fungus. NR, U.

Deuteromycotina – Hyphomycetes:

Curvularia protuberata Nelson and Hodges – Found on incubated spikelets of **2**, R06-30. Fits description and illustration by Ellis (1971); spores 4-septate, slightly curved, protruding hilum, measuring 27-35 X 10-14µm. It has been previously collected on **2** (R and R 1996), *Tripsacum* and *Paspalum* (R and R 1997), and *Eragrostis* and *Sporobolus* (Roane 2004).

Exserohilum halodes (Drechs.) Leonard and Suggs – Produced on incubated spikelets of **1** and **2**; R06-32 and R06-31. Sometimes included in *E. rostratum* (Drechs.) Leonard and Suggs (Farr et al. 1989) but retained as a distinct species by Ellis (1971). **1** and **2**. NR, U.

Fusarium graminearum Schwabe and *F. poae* (Peck) Wollenweb. – Produced on different incubated spikelets of **3**, R06-31. Identified with the aid of keys and illustrations by Boothe (1971). NR, U.

Nigrospora sphaerica (Sacc.) E. Mason – Produced on incubated spikelets of **2** and **3**; probably a saprophytic association. NR, U.

Periconia byssoides Pers. ex Mérat – Produced on incubated spikelets of **2**, R06-30. No doubt this fungus is saprophytic. For morphology, see Ellis (1971). NR, U.

Deuteromycotina – Coelomycetes:

Colletotrichum caudatum (Sacc.) Peck – Produced on incubated spikelets of **2**, R06-30. This fungus was collected at the same site in 1995 (R and R 1996); it was listed under its synonym, *Ellisiella caudatum* Sacc.

Phoma sorghina (Sacc.) Boerma and VanKest. – Produced on incubated spikelets of 2, R06-30. NR, U.

Arrhenatherum elatius (L.) Presl., tall oatgrass

Deuteromycotina – Coelomycetes:

Stagonospora arenaria (Sacc.) Sacc. – Collected on Butt Mt. in tower area, Giles Co., June 15, 2004, R04-11, El. 4200', N37° 22.14', W80° 37.403', previously collected on Augusta-Nelson Co. line; new for Giles Co.

Arthraxon hispidus (Thunb.) Makino, small carpgrass

Ascomycotina:

Mycosphaerella holci Tehon – Collected at the parking area, Pandapas Pond, Montgomery Co., Sept. 4, 2005, R05-37, and along Peak Ck. at N.S. R.R. below Gatewood Dam, Pulaski Co., Aug. 19, 2007, R07-13, El. 2244', N37° 1.879', W80° 50.958'. Ascospores were 11-13 X 6-7µm. NR, U.

Deuteromycotina – Hyphomycetes:

Nigrospora sphaerica (Sacc.) E. Mason – Collected on foliage at the Pandapas Pond site above Sept. 4, 2005, R05-37; this is the first collection on this grass. It is illustrated and described by Ellis (1971). NR, U.

Deuteromycotina – Coelomycetes:

Microsphaeropsis olivacea (Bonord.) Höhn – A fungus on *A. hispidus* which keyed to *Coniothyrium* in several works (Barnett and Hunter 1998; Clements and Shear 1931; Sprague 1950; Stevens 1913) but to *Microsphaeropsis olivacea* (Bonord.) Höhn in Sutton's works (1973, 1980). It fits nicely into this taxon. Sutton (1980) lists a broad range of hosts, *Paspalum distichum* being the only grass host. This collection, R07-13, came from the Peak Ck., Pulaski site above. Spores were brown 1-celled, oval to ellipsoid, smooth, measuring 4-6 X 3-4µm. NR, U.

Arundo donax L., giant reed

Deuteromycotina – Hyphomycetes:

Bipolaris zeicola (G. L. Stout) Shoem. – One colony was detected in a collection on foliage of plants from the Virginia Tech Horticultural Garden, Blacksburg, Montgomery Co., Oct. 7, 2007, R07-28, El. 2166', N37° 13.188', W80° 25.466'. *B. zeicola* is a common maize leaf-blighting fungus. See comments under *Eragrostis* spp. NR, U.

Nigrospora sphaerica (Sacc.) E. Mason – In the same collection at the site above, R07-28, on the same foliage. NR, U.

Avena sativa L., oats

Deuteromycotina – Other:

Rhizoctonia solani Kühn = *Thanatephorus cucumeris* (A. B. Frank) Donk – Found on a Plant Clinic specimen (Pl. Cl. 07-353) from Orange Co., May 16, 2007, causing sharp eyespot of cereals, R07-1. The identification of *Rhizoctonia* spp. on grasses is difficult. See discussion by R and R 1994, p. 284. This is the first report of *R. solani* on oats in a commercial field in Virginia; it had been found only in experimental plantings.

Bouteloua curtipendula (Michx.) A. Gray, side-oats grama

One colony of *B. curtipendula* was visited; all entries below are from that colony. The site is on a shelf about 0.2 mi W. of Rt. 660, N. of N.S. R.R., Montgomery Co., El. 1845', N37° 9.548', W80° 28.310', collected Sept. 8, 2005, R05-40. None of the fungi identified correlated with leaf spots.

Deuteromycotina – Hyphomycetes:

Bipolaris zeicola (Stout) Shoem. – Brown conidia measuring 44-88 X 6-10µm, 6-10 septa. A frequent pathogen of maize. NR, U.

Nigrospora sphaerica (Sacc.) E. Mason – Emerged on incubated leaves and stems; no doubt, saprophytic. NR, U.

Periconia atra Cda. – On incubated leaves and stems. Illustrated and described by Ellis (1971). NR, U.

Deuteromycotina – Coelomycetes:

Amerosporium atrum (Fkl.) Höhn – On incubated material; illustrated by von Arx (1981). Spores measured 7-9 X 2µm. NR, U.

Heteropatella sp. – A fungus keying to *Heteropatella* sp. with 1-3- (mostly 3-) septate conidia measuring 33-41 X 5-6µm (Sutton 1980). Most species of this genus are not broader than 4µm. This collection fits fairly well into *H. antirrhini* Buddin and Wakefield but that taxon is a highly unlikely to be a grass fungus.

Brachyelytrum erectum (Schreb.) Beauv., long-awned wood grass

Deuteromycotina – Coelomycetes:

Stagonospora brachyelytri Greene – Collected on Taylor's Hollow Road, Rt. 712, 1.3 mi. From Rt. 723, July 17, 2005, R05-18, and Oct. 1, 2006, R06-22, Montgomery Co., El. 1505', N37° 12.418', W80° 21.035'. This fungus has been collected from three other counties (R and R 1996), in each case it appeared to cause spectacular, elongated leaf spots. Spores measured 30-35 X 5-6µm, were 1-3-septate, constricted at septa, rounded both ends. See Sprague (1950) for a description.

Amerosporium atrum (Fkl.) Höhn – Produced on incubated spikelets of 3, R06-31. This fungus has been collected on *Cynodon* and *Danthonia* (R and R 1996), and *Glyceria*, *Leersia*, and *Muhlenbergia* (R and R 1997), but not on *Aristida*. Illustrated by von Arx (1981). NR, U.

Bromus spp., brome grass

1. *Bromus inermis* Leyss., smooth brome.
2. *B. pubescens* Willd. including *B. purgans* L., Canada brome.
3. *B. racemosus* L., racemose brome.
4. *B. sterilis* L., barren brome.

See Harvill et al. (1992) for synonymy.

Ascomycotina:

Blumeria graminis (DC) E. O. Speer (formerly *Erysiphe graminis* DC) – The cause of powdery mildew on grasses has a broad host range. This collection, R07-20, was sent to the Plant Clinic (Pl. Cl. 07-384) on 1 from Shenandoah Co., May 17, 2007. NR, EU.

Paraphaeosphaeria michotii (West.) O. Erikss. – Found on inflorescences of a senescent roadside colony of **1** at the Pembroke quarry, Rt. 623, Giles Co., El. 1660', N37° 18.761', W80° 39.401', Sept. 2, 2007, R07-20. It is described and illustrated by S and B (1985), and E and E (1985). It has been collected on several grasses but no *Bromus* spp. (R and R 1996; Roane 2004). Ascospores are dark brown, constricted at the two septa, rounded both ends, measuring 16-24 X 4-5µm. See notes on *Coniothyrium* below. NR, U.

Phaeosphaeria nodorum (E. Müller) Hedj. – Present on inflorescences of **1** in collection above, R07-20. It is described and illustrated by S and B (1989), and E and E (1985). Ascospores were 5-septate, measured 22-25 X 4-5µm. It has been found on **1** in several northcentral states. NR, EU.

Phaeosphaeria luctuosa (Niessl) Otani and Mikawa – Collected on senescent foliage of **2**, behind upper cabin at Claytor L. State Pk., edge of woods, Pulaski Co., El. 1860', N37° 3.105', W80° 37.51', Oct. 15, 2007, R07-29. It is described and illustrated by S and B (1989), and E and E (1985). Note: *B. purgans* was the original identity of this collection. This taxon is now included in *B. pubescens* (Harvill et al. 1992). NR, U.

Deuteromycotina – Hyphomycetes:

Periconia atra Cda. – Appeared on incubated spikelets of **3** collected Oct. 1, 2006, at the Falls Ridge Nature Conservancy property, Fagg, Montgomery Co., El. 1495', N37° 11.523', W80° 31.166', R06-26. *P. atra* is described and illustrated by Ellis (1971). NR, U.

Periconia lateralis Ellis and Everh. – Produced on incubated spikelets of **2** collected along Walker Ck., Rt. 708 near Rt. 622, Giles Co., El. 1634', N37° 17.777', W80° 42.387', Oct. 22, 2006, R06-36. The fungus is described and illustrated by Ellis (1971). NR, U.

Deuteromycotina – Coelomycetes:

Colletotrichum graminicola (Ces.) G. W. Wilson. – On **4** collected June 10, 2007, at Ironto, Montgomery Co., along N.S. R.R. E. of m.p. 266, El. 1298', N37° 13.470' W80° 16.334', R07-5. This is a well-known fungus on many grasses. It was found in 1990 on **4** (R and R 1996).

Coniothyrium sp. – A fungus producing small (5 X 2-3µm), brown pycnidiospores appeared on incubated spikelets collected on **1** at the Pembroke quarry site above, R07-

20 S and B (1985) allude to *C. scirpi* = *C. zae* as being the anamorph of *P. michotii*. The spores in this collection were too small to be accommodated by this taxon.

Stagonospora bromi A. L. Smith and Ramsb. – Appeared on incubated inflorescences of **1** collected at the Pembroke quarry site above, R07-20. The fungus was found on **1** in Montgomery Co. in 1955 (R and R 1996). See Sprague (1950) for a description. New only for Giles Co.

Calamagrostis spp., reedgrass

1. *Calamagrostis X acutiflora* (Schad.) Rehb. var. 'Karl Foerster', a patented Hort. var. of feather reedgrass.
2. *C. arundinacea* Roth, Foerster's feather reedgrass.
3. *C. porteri* Gray, no common name.

Ascomycotina:

Phyllachora graminis (Pers.:Fr.) Nitschke – The tar spot fungus was prevalent on lower foliage of **1** collected at the Virginia Tech Horticultural Garden, Blacksburg, Montgomery Co., Oct. 7, 2007, El. 2100', N13.188', W80° 25.465', R07-26. *P. graminis* is unreported on *Calamagrostis* spp. in Virginia (Farr et al. 1989), but was rampant on the lower half of all plants of **1** in the Garden. NR, U.

Deuteromycotina – Hyphomycetes:

Curvularia inaequalis (Shear) Boedijn – Collected on **3** growing among rock outcrops at the towers, Butt Mt., Giles Co., El. 4200', N37° 22.137', W80° 37.413', Aug. 17, 2004, R04-34. Conidia were both straight and curved, 3-4-, mostly 4-septate, measuring 30-31 X 9-11µm. In 5-celled spores, the third cell was enlarged. Farr et al. (1989) do not list this host. NR, U.

Deuteromycotina – Coelomycetes:

Ascochyta graminea (Sacc.) Sprague and A. G. Johnson – Collected on **3** at the Butt Mt. site above, Apr. 24, 2004, R04-2. Spores measured 14-17 X 4-5µm. See note in next entry. NR, U.

Ascochyta sorghi Sacc. – Collected on **2** at the Community Arboretum, Va. Western Community College, Roanoke, Roanoke Co., El. 1094' N37° 14.695', W79° 58.455', Sept. 5, 2004, R04-43, and Sept. 9, R04-48. Sprague (1950) shows *A. sorghi* spores to be slenderer (11-21 X 1.6-4.0µm) than *A. graminea* (11-20 X 3.9-9.0); Punithalingam (1979) shows *A. sorghi* to measure 16-20 X 6-8µm and *A. graminea* 14-15 X 4-5µm, or virtually reverse to those of Sprague. I cannot resolve these differences so I have assigned these taxa as described by Sprague (1950). NR, U.

Colletotrichum graminicola (Ces.) G. W. Wilson – This fungus occurred on all three *Calamagrostis* species at all three locations. On **1**, **2**. NR, U.

Pseudoseptoria obtusa (Sprague and A. G. Johnson) Sutton – Found on overwintered culms and foliage of **3** at the Butt Mt. site, R04-2. Pycnidiospores were lunate, 22-25 X 4-5µm, with blunt ends, enclosing a single oil globule. While this fits the description of *P. obtusa* in Sprague's (1950) book, it also seems out of place; most of his records are from western grasses and the easternmost collection is from North Dakota. On the other hand, in Virginia *C. porteri* grows in high altitudes amid Canadian flora. NR, U.

Septoria oudemansii Sacc. – Collected on 3 at the Butt Mt. site Aug. 17, 2004, R04-34. Although having 1- and 3-septate pycnidiospores as described by Sprague (1950), this fungus seems to be a misfit for *Septoria*. Spores measured 13-14 X 3.0-3.5µm for 2-celled, and 12-16 X 3-4µm for 4-celled. NR, U.

Stagonospora nodorum (Berk.) Cast. and Germ. – Collected on 2 Sept. 2 (R04-43) and Sept. 9, 2007 at the Roanoke Arboretum site above. On foliage, pycnidiospores are mostly 3-septate, measuring 15-20 X 2-4µm. This fungus causes leaf spots, glume blotch, and node rot of *Triticum* in Virginia and has been found on several other grasses (R and R 1994, 1996, 1997; Roane 2004). NR, U.

Wojnowicia hirta Sacc. – Collected on 3 at Butt Mt. site above. Pycnidia on overwintered culms; spores yellow-brown, usually 7-septate, 35-40 X 4-5µm; a weak pathogen on grasses (Sprague 1950). NR, U.

Chasmanthium latifolium (Michx.) Yates = *Uniola latifolia* Michx., wild oats

Ascomycotina:

Phaeosphaeria eustoma (Fkl.) L. Holm – Occurring on incubated leaves collected along Walker Ck. on Rt. 708 near Rt. 622, Giles Co., Oct. 22, 2006, R06-33, El. 1634', N37° 17.777', W80° 42.387'. From ascospore measurements, 13-16 X 5-6µm, 3-septate, this fungus fits *P. eustoma* but like collections on *Leersia virginica* (Roane 2004, p. 149), the cells contained a globoid vacuole or oil globule. This character is not noted in available descriptions of *P. eustoma* (S and B 1989). Thus, this collection is dubiously placed in *P. eustoma*. NR, U.

Deuteromycotina – Hyphomycetes:

Fusarium semitectum Berk. and Ravn. – Produced on incubated stems and leaves. Not known to inhabit grasses; more than likely a saprophyte. Collected at the Walker Ck. site above, R06-33. Identified from keys of Nelson et al. (1983).

Nigrospora sphaerica (Sacc.) E. Mason – Appeared on incubated leaves, stems, and spikelets collected at the Walker Ck. site above (R06-33). NR, U.

Periconia atra Cda. – Appeared on incubated leaves collected at the Walker Ck. site above (R06-33). Identified from keys of Ellis (1971). NR, U.

Tricothecium roseum (Pers.:Fr.) Link – Appeared on incubated stems collected at the Walker Ck. site above. It causes a pink head mold of sorghum and wheat. It is described and illustrated by Kendrick and Carmichael (1973), Carmichael et al. (1980), von Arx (1981), and E and E (1985). In older literature it is listed at *Cephalothecium roseum* (Stevens 1913; Heald 1933). NR, U.

Chloris verticillata Nutt., windmill grass

Collections were made from a colony of windmill grass growing in a traffic island at Avenham Ave. and Franklin Rd. in Roanoke, Aug. 17, 1994 (R and R 1996). The site was revisited on Sept. 9, 2004, R04-49, and some new fungi were found.

Deuteromycotina – Hyphomycetes:

Bipolaris spicifera (Bainier) Subr. – Appeared on incubated leaves and stems; conidia were cylindrical with rounded ends, consistently 3-septate, measuring 19-30 X 8-10µm, end cells lighter colored than the two central cells. It was also found in the

1994 collection (R and R 1996). Ellis (1971) makes no mention of cell color differences (under *Drechslera spicifera*) in four-celled species; this is more commonly a trait of *Curvularia* spp. They also list *Chloris* spp. as a host of *D. australiensis* (= *B. australiensis*) which is similar to *B. spicifera* but *D. australiensis* conidia are more elliptical and are 3-5 septate.

Fusarium oxysporum Schlecht.:Fr. – On incubated leaves. Identification was facilitated by the keys of Booth (1971) and Nelson, et al. (1983). *F. oxysporum* typically colonizes roots of various hosts; occurrence on aerial plant parts suggests it functioned as an saprophyte on *C. verticillata*. NR, U.

Idriella lunata Nelson and Wilhelm – Sporulated on incubated leaves and stems. The one-celled, lunate, hyaline conidia measured 11-13 X 2µm. This fungus is a cause of strawberry root rot. Thus, its identity on *Chloris* must be accepted with caution. NR, U.

Cinna spp., woodreed

1. *Cinna arundinacea* L., stout woodreed.
2. *C. latifolia* (Goepp.) Grisebach, drooping woodreed.

Ascomycotina:

Phaeosphaeria nigrans (Rob. ex Desm.) L. Holm – Occurred on **1** collected along wooded road behind barns at Glen Alton, Giles Co., Sept. 20, 2005, El. 2620', N37° 26.035', W80° 32.736', R05-45 and was collected on **2** off Rt. 725 at confluence of Toms and Poverty Creeks, Montgomery Co., Aug. 14, 2005, El. 1785', N37° 13.937', W80° 31.438', R05-34. *P. nigrans* is characterized by yellow brown 5-septate ascospores, the penultimate cell enlarged, measuring 17-24 X 3-4µm. It was collected previously in Washington (S and B 1989). NR, EU.

Cynodon dactylon (L.) Pers., Bermudagrass

Deuteromycotina – Hyphomycetes:

Bipolaris cynodontis (Marig.) Shoem. – Collected at Montgomery Tunnels, Montgomery Co., June 11, 2004, R04-09. Conidia measure 30-75 X 10-16µm (commonly 50 X 13µm), 3-9-septate (7-8) (Ellis 1971). This is a common leaf spotting fungus on *C. dactylon*.

Bipolaris sorokiniana (Sacc.) Shoem. – Occurred on specimens sent to the Plant Clinic (Pl. Cl. 04-1306) from the Virginia Beach Co. Agt., Oct. 21, 2004, R04-61. Spores measured 40-120 X 17-28µm (commonly 60-100 X 18-23µm), were 3-12-septate, dark brown (Ellis 1971). This is a common graminicolous fungus but has not been found on Bermudagrass in eastern U.S.A. before. NR, EU.

Bipolaris spicifera (Bainier) Subr. – Occurred on collections from the Montgomery Tunnels site above. Conidia measured 20-40 X 9-14µm (commonly 30-36 X 11-13µm) were consistently 3-septate (Ellis 1971).

Curvularia intermedia Boedijn – Occurred on the Pl. Cl. 04-1306 collection above. It is illustrated and described by Ellis (1971). Its was reported previously in Alabama on Bermudagrass. NR, V.

Dactylis glomerata L., orchardgrass

Ascomycotina:

Claviceps purpurea (Fr.:Fr.) Tul. – Collected along Rt. 666 W., Burkes Garden, Tazewell Co., July 10, 2005, R05-15, El. 3082', N37° 6.418', W81° 21.514'. This collection merely extends the known range of orchardgrass ergot in Virginia.

Deuteromycotina – Hyphomycetes:

Cercosporidium graminis (Fkl.) Deighton – The cause of leaf streak, this collection was sent to the Plant Clinic (Pl. Cl. 06-67) from Cumberland Co., Feb. 22, 2006, R06-2. It was causing leaf blades to wilt from tips downward in overwintering foliage. It is common on *D. glomerata*.

Drechslera dictyoides (Drechs.) Shoem. – This collection was sent to the Plant Clinic from Pennington Gap, Lee Co. (Pl. Cl. 06-395), May 15, 2006, associated with large areas of dead plants, R06-3. Conidia measured 100 X 15-17µm, had 6-11 septa; they may be as long as 240µm (Ellis 1971). This fungus frequently damages foliage of *Festuca elatior* (tall fescue) in Virginia but is previously unrecorded on *D. glomerata* (Farr et al. 1989). NR, U.

Fusarium roseum Link:Fr. – This fungus appeared on incubated leaves of plants sent to the Plant Clinic on Aug. 10, 2004 (Pl. Cl. 04-961) from Prince Edward Co., R04-53. Farr et al. (1989) list three *Fusarium* spp. on *Dactylis* but none had conidia matching the morphology of *Fusarium* in this collection. *F. roseum* provided the best match (Booth 1971; Nelson et al. 1983). NR, U.

Nigrospora sphaerica (Sacc.) Mason – appeared on incubated leaves of collection R04-53 above and on Pl. Cl. 04-1324 specimen from Pennington Gap, Lee Co., R04-62. It had been identified only once before on *Dactylis* (R and R 1996).

Rhynchosporium orthosporum Cald. – This specimen came from a field in Shenandoah Co. (Pl. Cl. 07-790) causing scald on about 80% of plants in a 10-acre field. The fungus has been found previously on orchardgrass in several locations (R and R 1996) but no such damaging occurrence has been observed, R07-11.

Deuteromycotina – Coelomycetes:

Colletotrichum graminicola (Ces.) G. W. Wils. – Was present on leaves of specimens R04-53 and -62 sited above. It appeared to be causing death of some plants in the Lee Co. sample, and spotting and dying of leaves in the Prince Edward Co. sample. *C. graminicola* is saprophytic on many grasses but is sometimes an aggressive pathogen.

Danthonia compressa Austin, mountain oatgrass

Basidiomycotina:

Ustilago residua G. P. Clinton – Cause of panicle smut, this specimen was collected at the Butt Mt. towers site, Giles Co., El. 4200', N37° 22.140', W80° 37.403', June 15, 2004, R04-08. Spores measure 5-7 X 7-10µm, are prominently verrucose, mostly globose. It has been collected before on *D. compressa* and *D. spicata* (R and R 1996). Smutted inflorescences and spores are illustrated by Fischer (1953).

Deuteromycotina – Hyphomycetes:

Curvularia inaequalis (Shear) Boedijn – Collected at the Butt Mt. site above, April 22, 2004, R04-3. This fungus has been collected once before on *Aristida oligantha* (R and R 1996) but is new for *Danthonia* spp. Conidia are relatively straight, measure 36-42 X 9-13µm, 3-4-septate, middle cell is widest in 5-celled conidia. Sprague (1950) describes it well, Ellis (1971) illustrates it. NR, U.

Another *Curvularia* also fruited in this collection; conidia had protruding hyla, measured 38-47 X 9-12µm, were 2-4-septate. It keyed out to *C. cymbopogonis* (Ellis 1971). It has been reported previously only on *Rottboellia cochinchinensis* in Louisiana (Farr et al. 1989). It seems unlikely that a fungus of tropical habitat would be present among Canadian flora in Virginia. However, it was identified on collections from *Bothriochloa* before (Roane 2004). NR, U.

Myrothecium verrucaria (Albertini and Schwein.) Ditmar:Fr. – This fungus fruited in a collection from the Butt Mt. site above, R04-3. Conidia were 1-celled, measured 10 X 3µm, most possessed two conspicuous vacuoles and perfectly fitted the description and illustrations by Ellis (1971). It was found on *Zoysia* in a collection from James City Co. in 2003 (Roane 2004). NR, U.

Deuteromycotina – Coelomycetes:

Colletotrichum graminicola (Ces.) G. W. Wils. – Collected at the Butt Mt. site above, R04-3, this is only the second collection of this fungus on *D. compressa* in eastern U.S.A. (R and R 1996); unusual for such an ubiquitous species on a widespread host.

Deschampsia flexuosa (L.) Beauv., hairgrass

Ascomycotina:

Paraphaeosphaeria michotii (West.) O. Eriks. – Collected at the Butt Mt. site above, June 15, 2004, R04-10. This fungus is characterized by brown, 3-celled ascospores biserially arranged in the ascus, constricted at the septa, rounded ends, measuring 16-17 X 4-5µm. It is described and illustrated by E and E (1985), and S and B (1985).

Deuteromycotinia – Hyphomycetes:

Bipolaris spicifera (Bainier) Subr. – Collected at the Butt Mt. site above, June 15, 2004, R04-10. See under *Chloris* for discussion. NR, U.

Deuteromycotinia – Coelomycetes:

Colletotrichum graminicola (Ces.) G. W. Wils. Also from the Butt Mt. collection above, June 15, 2004, R04-10, this common fungus has not been previously associated with *Deschampsia* spp. (Farr et al. 1989). NR, U.

Dichanthelium spp.

1. *D. boscii* (Poir.) Gould and Clark, no common name.
2. *D. clandestinum* (L.) Gould, deer tongue.
3. *D. sphaerocarpon* (Ell.) Gould, round fruited panic.

Ascomycotina:

Phyllachora punctum (Schwein.) Orton and Stevens – Collected on **2** at two Montgomery Co. locations: Between Rt. 683 and N.S. R.R., Walton, El. 1824', N37° 9.176', W80° 31.007', Aug. 2, 2005, R05-29. Road from parking area to Pandapas Pond, El. 2216', N37° 16.966', W80° 28.207', Sept. 4, 2005, R05-39. Ascospores measured 11-13 X 6-8µm; spermatia numerous as described by Orton (1944). Although reported from other *Dichantheium* spp., this is my first report on deer tongue. It is listed by Farr et al. (1989) from Virginia.

Deuteromycotina – Hyphomycetes:

Curvularia lunata (Wakk.) Boedijn – Occurred on leaves of **3** collected Aug. 15, 2004, R04-31, 1/8 mi below Gatewood dam, on Peak Ck., Pulaski Co. Although common on other grass species in Virginia (Farr et al. 1989; Roane 2004; R and R 1994, 1996), including *Dichantheium* spp., it has not been found on **3** before. The specimen was inadequate for an herbarium. NR, U.

Nigrospora sphaerica (Sacc.) E. Mason – Collected on **3** at the south end of the bridge at Pandapas Pond, Montgomery Co. Sept. 4, 2005, El. 2106', N37° 16.926', W80° 27.951', R05-35. This fungus has not been found on any *Dichantheium* spp. before (Farr et al. 1989). NR, U.

Tetraploa aristada Berk. and Broome – Collected on **3** at the Pulaski site above. R04-31. Although according to Farr et al. (1989) *T. ellisii* has been recorded more often in temperate North America, this specimen fits *T. aristata*. It is illustrated by Ellis (1971) and E and E (1985). NR, U.

Deuteromycotina – Coelomycetes:

Cylindrosporium glyceriae Ell. and Everh. – was collected on **3** at the Pulaski Co. site above, R04-31. The slender conidia were 0-3-septate, measured 15-28 X 2.0-2.5µm. It is described by Sprague (1950). NR, U.

Stagonospora simplicior Sacc. and Briard – A cause of leaf spots on several *Dichantheium* spp., this fungus is easily identified by its broad, vacuolate, pycnidiospores (see Sprague, 1950). It was collected on **1** off the Forest Service road ½ mile W. of U.S. 460 on Gap Mt., Montgomery Co., July 20, 2005, El. 2446', N37° 16.740', W80° 29.011', R05-21; on **2** upstream from entry bridge at Glen Alton, Giles Co., Sept. 20, 2005, El. 2577' N37° 25.798', W80° 33.065', R05-46; on **3** at south end of long bridge at Pandapas Pond site above, R05-35. It has been collected before on **1** and **2** but not **3**. On **3**, NR, V.

Digitaria filiformis (L.) Koel., fingergrass

Basidiomycotonia – Uredinales:

Puccinia substriata Ellis and Barth. – Collected at the Butt Mt. Tower site, Giles Co., Aug. 17, 2004, El. 4200' N37° 22.137', W80° 37.413', R04-36. This rust fungus was determined by eliminating those rusts listed on *Digitaria* spp. by Farr et al. (1989) which did not fit the descriptions given by Cummins (1971); only the *P. substriata* description fit. Urediniospores were ellipsoid to obovate, echinulate, 2-4-pored, measuring 26-35 X 26-33µm. Scarce, pedicellate teliospores measured 31-44 X 20-

24µm. The northernmost occurrence on *Digitaria* spp. in our region is on *D. cognata* = *Leptoloma cognatum* in North Carolina (Farr et al. 1989). NR, V.

Deuteromycotina – Coelomycetes:

Stagonospora carcinella Brun. – Collected at the Butt Mt. towers site above, R04-36. This fungus is listed on *Carex* and *Juncus* by Farr et al. (1989). Spores measured 13-17 X 5-6µm, were 3-celled, guttulate, fusiform, rounded but sometimes pointed at end. It is described and illustrated by Sutton (1980). Several graminicolous fungi are hosted by sedges and rushes. NR, U.

Echinochloa crusgalli (L.) Beauv., barnyardgrass

Deuteromycotina – Hyphomycetes:

Pyricularia grisea (Cooke) Sacc. – Collected at N.S. R.R. and Rt. 661 (Crismond Mill Rd.), Christiansburg, Montgomery Co., Sept. 3, 2006, El. 1922', N37° 8.849', W80° 26.695', R06-15. Common on *Digitaria* and *Setaria* spp., this fungus causes gray leaf spot of *E. crusgalli*. Spores were typical of those described and illustrated by Ellis (1971). NR, EU.

Eleusine indica (L.) Gaertn., goosegrass

Deuteromycotina – Hyphomycetes:

Bipolaris cynodontis (Marig.) Shoem. – Collected on Crab Ck. side of N.S. R.R. between Rt. 663 and R.R., Montgomery Co., July 20, 2004, El. 1740', N37° 9.175', W80° 31.01', R04-26. Conidia were mostly 5-8-septate, measured 42-56 X 12-14µm. A cause of leaf spot on *Cynodon dactylon*, it is widespread in Virginia but this is the first collection on goosegrass outside of Florida. NR, V.

Myrothecium carmichaelii Grev. – Occurred on incubated leaves collected from site R04-26 above. *M. roridum* is more likely to be found here but the conidial dimensions, 11-12 X 2µm, set it aside from *M. roridum* (6-8 X 1.5-2.5µm). Ellis (1971) in side by side illustrations clearly distinguishes the two species. However, Farr et al. (1989) do not list *M. carmichaelii* and Ellis does not list a grass host. NR, U.

Deuteromycotina – Coelomycetes:

Colletotrichum graminicola (Ces.) G. W. Wils. – This was the predominant fungus in this collection, R04-26. This collection merely extends the known range of the association.

Phoma sorghina (Sacc.) Boer., Doren., and VanKester. – Present on foliage from site R04-26 above. Spores measured 5-7 X 2-3µm. It keyed to *Phyllosticta sorghina* (Synonym of *Phoma sorghina*) in Sprague's (1950) keys. NR, U.

Elymus spp., wild rye

1. *Elymus riparius* Wieg., river bank wild rye
2. *E. virginicus* L., Virginia wild rye

Basidiomycotina – Uredinales:

Puccinia montanensis Ellis – Collected on **1** along Walker Ck., Rt. 708, above bridge on Rt. 622, Giles Co., El. 1634', N37° 17.777', W80° 42.387', Oct. 22, 2006, R06-37. Pedicels on teliospores were absent or very short; however, no paraphyses were observed. Teliospores were photographed, to be included with specimen. Spores matched well with those shown by Cummins (1971). The fungus usually occurs on western *Elymus* spp., but is known in Kentucky and West Virginia. NR, V.

Ascomycotina:

Phaeosphaeria eustoma (Fkl.) L. Holm – Collected on **1** at two locations: R04-33, along the road to Gatewood Dam, Pulaski Co., Aug. 15, 2004, El. 2192', N37° 2.341', W80° 50.07', R04-32; at Falls Ridge at edge of field between parking area and waterfall, Fagg, Montgomery Co., Aug. 20, 2006, El. 1495', N37° 11.523', W80° 31.166', R06-11. The 3-septate spore dimensions on R06-11 fit well within those published, 20-30 X 7-8µm (Ellis 1985); those from R04-32 had the proper morphology, but were smaller, 13-16 X 3-4µm and this morphology did not match any other 4-celled *Phaeosphaeria*. NR, U.

Phaeosphaeria nigrans (Rob. ex Desm.) L. Holm. – Collected on spikes of **1** at the Falls Ridge site, R06-25, above, Oct. 1, 2006. Ascospores measured 20-28 X 5µm were mostly 6-celled, the penultimate cell larger than others. The fungus fruited on incubated florets; illustrated by Ellis and Ellis (1985) and S and B (1989). NR, U.

Phyllachlora graminis (Pers.:Fr.) Nitschke – The cause of tar spot, common on *Elymus* spp., this fungus was found on **1** along Walker Ck., Giles Co., site R06-37 above; at the Falls Ridge site R06-11 above; along the road to Gatewood Dam, Pulaski Co. site R04-32 above; at Rt. 600 and 1st N.S. R.R. underpass, Parrott, Pulaski Co., El. 1688', N37° 12.197', W80° 36.600', Nov. 2, 2007, R07-34. This last collection had been colonized by *Fusarium sambucinum* Fkl. (R and R 1997, p. 22); on **2** at Roane's Wharf, Gloucester Co. off Rt. 686, July 23, 2005, El. 5', N37° 21.902', W76° 27.783', R05-22. *P. graminis* is encountered in Virginia wherever *Elymus* spp. grow.

Deuteromycotina – Hyphomycetes:

Bipolaris cynodontis (Marig.) Shoem - Fruited on senescent leaves of **1** from site R07-34 above. Conidia measured 45-55 X 12-15µm were 6-9-, mostly 6-septate; the morphology fitted published descriptions very well (Sprague 1950; Ellis 1971). It has been found only once previously in Virginia (Roane 2004).

Bipolaris sorokiniana (Sacc.) Shoem. – Also fruited on leaves of **1** from the Pulaski Co. site above, R07-34. Conidia are much larger and darker than those of *B. cynodontis*, measuring 85-105 X 17-21µm, mostly 9-septate. It has been found previously on **1** in Virginia. (R and R 1997).

Fusarium moniliforme J. Sheld. – Occurred on incubated spikelets of **1** collected at site R06-25 above. This is a common maize pathogen that also is facultative on many plants. It was found in an effort to seek seed-borne fungi. NR, U.

Fusarium roseum Link:Fr. – Also occurred on spikelets of **1** in the same collection, R06-25. *Fusarium* species were identified with the aid of keys by Boothe (1971) and Nelson et al. (1983). NR, V.

Nigrospora sphaerica (Sacc.) E. Mason – Occurred on foliage of **1** collected along Walker Ck., Oct. 22, 2006, site R06-37 above. It had been collected previously in Montgomery Co. (R and R 1997).

Periconia atra Cda. – Found on incubated spikelets and foliage of **1** at site R06-37 above. It is characterized by tight terminal clusters of brown, spherical, conidia measuring 5-9µm diameter (Ellis 1971). Probably saprophytic. NR, U.

Periconia lateralis Ellis and Everh. – Characterized by a terminal, sterile projection of the conidiophore, with brown, spherical conidia measuring 8-15 µm produced laterally, subterminally. Collected on **1** at three locations: Along Walker Ck., Giles, Oct. 22, 2006, R06-37, on incubated spikelets and foliage; at Falls Ridge, Montgomery Co., Oct. 1, 2006, on incubated spikelets R06-25, and foliage Aug. 20, 2006, R06-11; at Parrott, Pulaski Co., R07-34, on incubated foliage. Ellis (1971) lists several grass hosts, but Farr et al. (1989) list only two. NR, U.

Deuteromycotina – Coelomycetes:

Colletotrichum graminicola (Ces.) G. W. Wils. - On culms and leaf sheaths of **1** collected at Parrott, Pulaski Co., Nov. 2, 2007, R07-34. This merely extends the range of this association in Virginia.

Stagonospora nodorum (Berk.) Cast. and Germ. – This is the glume blotch fungus of wheat that also occurs on many other grasses. It was found on **1** along the road to Gatewood Dam, Pulaski Co., Aug. 15, 2004, R04-32. Farr et al. (1989) list several *Elymus* spp. as hosts but not *E. riparius*. NR, U.

Eragrostis spp., lovegrasses

1. *Eragrostis cilianensis* (All.) Lutate, stinkgrass.
2. *E. pectinacea* (Michx.) Nees, tufted lovegrass.
3. *E. pilosa* (L.) Beauv., India lovegrass.
4. *E. spectabilis* (Pursh.) Steudel, purple lovegrass.

Basidiomycotina – Ustilaginales:

Ustilago spermophora Berk. and Curtis – Causing seed smut, characterized by enlargement of scattered ovaries into sori 1-2 mm diam. Collected on **1** in a field, N.E. corner of Clay and Jefferson St., Blacksburg, Montgomery Co., Oct. 7, 2004, R04-57, El. 2170', N37° 13.97', W80° 24.02', and on **2** between N.S.R.R. and Rt. 663, Crab Ck. side, Walton, Montgomery Co. Aug. 14, 2004, R04-33, El. 1740', N37° 9.173', W80° 31.01'. In each case, 1% or less of spikelets were infected. It has been collected previously on **1** in Montgomery Co. (R and R 1997) and on **2** in Giles and Pulaski Cos. (Roane 2004). This is a first report for this association on **2** in Montgomery Co.

Deuteromycotina – Hyphomycetes:

Bipolaris cynodontis (Marig.) Shoem. – Collected on **2** at the Walton, Montgomery site above, R04-33. Conidia were 5-8-septate, 34-70 X 10-17µm, as depicted by Ellis (1971). This is the first collection in Montgomery Co. but was collected in Pulaski Co. (R and R 1997).

Bipolaris nodulosa (Berk. and Curtis) Shoem. – Causing leaf spots on **1** in Roane's Garden, 607 Lucas Dr., Blacksburg, Montgomery Co., Sept. 2, 2004, R04-42, El. 2167', N37° 14.465', W80° 24.686'. Conidia were 4-9-septate, measured 45-61 X 14-16µm,

slightly narrower than published by Ellis (1971) but conforming to width published by Sprague (1950). This is a new record on **1** only in Montgomery Co.

Bipolaris sorokiniana (Sacc.) Shoem. – Also collected on **1** from Roane's garden site above, but on Sept. 11, 2006, R06-18. Conidia were dark brown, 5-9-septate, 50-105 X 17-24 μ m, well within published dimensions (Ellis 1971; Sprague 1950). Although the fungus has a very broad host range, this is the first report on **1** in eastern U.S.A. NR, EU.

Bipolaris zeicola (Stout) Shoem. – Collected on **1** from Roane's garden, Sept. 11, 2006 site R06-18. Although first described on maize by Stout (1930), this fungus remained obscure until 1941, when Ullstrup (1944) rediscovered it and named it *Helminthosporium carbonum*. With 6-12 septa, conidia measure 30-100 X 14-16 μ m (Ellis 1971; Sprague 1950) may be dark brown, more cylindrical than for *B. sorokiniana* with which it may be confused. This is the first collection on **1**. NR, U.

Curvularia lunata (Wakker) Boedijn – This fungus occurred on senescing leaf tips of **3** in a parking area between New R. and N.S.R.R., Glen Lyn, Giles Co., July 31, 2005, El. 1510' N37° 22.251' W80° 28.107'. Conidia were asymmetrical, 3-septate, measuring 18-24 X 8-10 μ m, end cells hyaline, others dark. Fits well with description by Ellis (1971); known on other *Eragrostis* spp. but not on **3** (R and R, 1997). NR, U.

Curvularia protuberata Nelson and Hodges – Collected on **3** at Walton, Montgomery Co. in a parking area between N.S.R.R. and Rt. 683, creek side, El. 1824', N37° 9.176', R05-28, Aug. 2, 2005. Conidia with protruding hila, were 4-septate, end cells mostly hyaline, measuring 27-35 X 10-14 μ m. Not reported on **3** before. NR, U.

Found on incubated spikelets of **4** from the Pembroke quarry, Giles Co., El. 1655', N37° 18.781', W80° 39-321', R06-27, Oct. 8, 2006. Conidia as in R05-28 above. New association for **4**. NR, U.

Exserohilum halodes (Drechs.) Subr. and Jain – Collected on **1** at Roane's garden site R06-18 above, Sept. 11, 2006. Conidia cylindrical to ellipsoidal, with protruding hila, measured 68-75 X 16-19 μ m, had 6-8 septa, characterized by a dark septum for each end cell (Ellis, 1971). NR, U.

Exserohilum monoceras (Drechs.) Leonard and Suggs – Collected on **3** at the Walton site above, Aug. 2, 2005, R05-28. Conidia were more fusiform than those of *E. halodes* above, measuring 70-110 X 15-20 μ m, were 6-9 septate. NR, U.

Fusarium avenaceum (Fr.:Fr.) Sacc. – Collected on **1** in Roane's garden, R06-18, cited above; appeared on incubated leaves and spikelets. Determined from keys of Boothe (1971) and Nelson et al. (1983). NR, U.

Myrothecium roridum Tode:Fr. – Collected on **2** at the Walton site above, R04-33, Aug. 14, 2004. Characterized by sessile sporodochia subtended by fringes of white hyphae. Conidia measured 8-11 X 3.0-3.5 μ m (longer than published by Ellis 1971), were cylindrical, hyaline (but black in mass). It has been collected on *Glyceria* and *Poa* (this publication) but not on *Eragrostis* spp. NR, U.

Nigrospora sphaerica (Sacc.) E. Mason – Fruited on incubated spikelets of **4** collected at the Pembroke quarry site above, R06-27, Oct. 8, 2006. This fungus has been found on many grasses in Virginia but not on *Eragrostis* spp. NR, U.

Deuteromycotina – Coelomycetes:

Colletotrichum caudatum (Sacc.) Peck – Fruited on foliage and spikelets of **4** collected at the Pembroke quarry site above, R06-27, collected Oct. 8, 2006 and on

foliage from the same site, R02-18, collected Sept. 2, 2007. Macroscopic appearance is similar to that of *C. graminicola*, but conidia terminate in an unbranched, filiform appendage 10-16µm long (Sutton 1980). It is reported on **4** in Oklahoma (Farr et al. 1989). NR, EU.

Macrophoma phlei Tehon and G. L. Stout – Collected on foliage of **4** at the Pembroke quarry site above, Oct. 8, 2006, R06-27 and Sept. 2, 2007, R07-18. Pycnidiospores measure 25-27 X 8-11µm, are produced in large dark pycnidia (Sprague 1950). Not reported on *Eragrostis* spp. (Farr et al. 1989). NR, U.

Phoma sorghina (Sacc.) Boer., Doren., and VanKest. – Collected on **3** at the Walton site above, R05-28, Aug. 2, 2005. Pycnidiospores measured 5-6 X 2-3µm; illustrated and described (under *Phyllosticta*) by Sprague (1950). Not reported on *Eragrostis* spp. (Farr et al. 1989). Collected on **4** at the Pembroke quarry site, R06-38, Oct. 8, 2006. NR, U.

Stagonospora montagnei Cast. and Germ. = *S. graminella* (Sacc.) Sacc. – Occurred on foliage of **3** collected at the Walton site above, R05-28. In Sprague's (1950) key the fungus is *S. graminella* and is considered by him to be definitely saprophytic. Pycnidiospores were pale yellow brown, 1-3-septate, slightly constricted at septa, measuring 15-20 X 3-5µm. Only *S. maculata* on **2** (R and R 1997, p. 16) has been previously reported from *Eragrostis* spp. NR, U.

Stagonospora spp. – A fungus resembling *S. simplicior* was collected on **4** at the Pembroke quarry site Oct. 8, 2006, R06-27. *S. simplicior* conidia are described as having 3 septa (Sprague, 1950). The R06-27 collection invariably had 4 septa measured 23-28 X 8µm. From appearances it was a 4-septate version of *S. simplicior*. Each cell was filled with a single large guttule as in *S. simplicior*. Whether or not it is *S. simplicior*, it seems unique and is reported for the first time. NR, U.

Festuca spp., fescue

1. *Festuca elatior* L. (including *F. arundinacea* Schreb., and *F. pratensis* Huds.), Syn. *Schedonorus arundinaceus* (Schreb.) Dumort, meadow fescue.
2. *F. obtusa* Biehler, nodding fescue.
3. *F. rubra* L., red fescue.
4. *F. valesiaca* Schleich. Ex Gaud., cv. 'Glaucantha'.

Ascomycotina:

Claviceps purpurea (Fr.:Fr.) Tul. – The ergot fungus is widely distributed on **1** in Virginia but this collection came from **3** at the parking area for Havens Wildlife Management Area, Rt. 622, = Bradshaw Rd., Roanoke Co., El. 1610', N37° 19.840', W80° 9.283', July 25, 2004, R04-27. This is my first collection on **3**, but Farr et al. (1989) list it as occurring in eastern states. NR, V.

Phaeosphaeria nigrans (Rob. Ex Desm.) L. Holm. – Collected on **4** at the Community Arboretum, Roanoke, Roanoke Co., Sept. 9, 2004, El. 1090', N37° 14.713', W79° 58.442'. This is an ornamental species, not listed by Farr et al. (1989). Ascospores were 5-septate, 23-24 X 3-4µm, penultimate cell enlarged; illustrated by E and E (1985) and S and B (1989). NR, U.

Basidiomycotina – Uredinales:

Puccinia coronata Cda., II, III., orange crown rust – Although Farr et al. (1989) list this rust as occurring in the range of the host on **1**, only one previous collection is recorded in Virginia (R and R 1997). The following simply confirm its broad distribution: Collected by E. L. Stromberg at the Northern Piedmont Agricultural Research Center, Orange Co., Sept. 19, 2006, R06-19; at Dixie Caverns, Roanoke Co., Dow Hollow Rd., El. 1204', N37° 15.51', W80° 10.635', Sept. 9, 2004, R04-50; Roane's garden, 607 Lucas Dr., Blacksburg, Montgomery Co., El. 2175', N37° 14.464, W80° 24.577', Oct. 3, 2004, R04-52.

Deuteromycotina – Hyphomycetes:

Periconia atra Cda. – Occurred on pedicels and spikelets of **1** collected at Walton Montgomery Co., between N.S.R.R. and Rt. 663, creek side, July 20, 2004, R04-24, El. 1740', N37° 9.173', W80° 31.01'. The brown, spherical, verruculose conidia measure 5-9µm (Ellis, 1971). This fungus has been found on several grasses in Virginia (this report); this is the first collection from **1**. *P. atra* is not listed by Farr et al. (1989). NR, U.

Spermospora subulata (R. Sprague) Sprague – Collected on **2** at the gate to the FAA Center, White Top Mt., Grayson Co., El. 5520', N36° 38.30', W81° 36.33', June 27, 2004, R04-14. Conidia were hyaline, 1-3-septate, the terminal cell tapering into a whip-like projection, measuring 20-25 X 2-3µm. Prior to 1996, *S. subulata* had been reported only from the northern Rocky Mts. West to the Pacific (Farr et al. 1989) but has been collected on *Arrhenatherum*, *Bromus*, and *Danthonia* in Virginia (R and R, 1996), and now, *Festuca*. NR, U.

Deuteromycotina – Coelomycetes:

Colletotrichum graminicola (Ces.) G. W. Wils. – Numerous associations between *C. graminicola* and *Festuca* spp. have been reported (Roane 2004; R and R 1996; 1997), the following notes simply add to host and pathogen range. On **1**, Stromberg collected it Sept. 19, 2006 at the Orange Co. site above, R06-19; it was collected on **3** at the White Top Mt. site June 27, 2004, R04-14.

Dinemasporium strigosum (Pers.:Fr.) Sacc., anamorph of *Phomatospora dinemasporium* J. Webster – Collected on **3** at the Havens Wildlife site above, R04-27, July 25, 2004. It was collected on **4** at the Roanoke Arboretum site above, R04-47, Sept. 9, 2004. Conidiomata are superficial, dark, setose, rounded but becoming cup-shaped. Conidia are slightly curved, setulae at both ends, measuring 8-19 X 1.5-2.5µm, illustrated and described by E and E (1985) and Sutton (1980). **3** and **4**, NR, U.

Phaeoseptoria urvilleana (Speg.) Sprague – Collected on **1** at the Walton, Montgomery Co. site, R04-24, above. This fungus, determined from Sprague's (1943, 1950) keys, is originally from Argentina, but fits perfectly with description by Sprague (1943). Pycnidiospores were 5-7-septate, measuring 30-85 X 4-6µm. It has been found previously on *Elymus*, *Holcus*, *Hystrix*, *Phragmites*, *Spartina* (R and R 1997), *Agrostis* and *Digitaria* (Roane 2004). Sprague (1950) describes it as saprophytic. Several of the collections above were found above 4000'. NR, U.

Phoma sorghina (Sacc.) Boer., Doren., and VanKest. – Collected on foliage of 3 at Havens Wildlife Management Site R04-27 above. Spores measured 4-6 X 3 μ m. The fungus appeared to be associated with leaf spots. NR, U.

Stagonospora avenae (Frank) Bissett – Collected June 20, 2005, R05-7, on 2 at Little Montgomery, Montgomery Co. along Rt. 613 El. 1998', N37° 1.533', W80° 32.475'. Spores were mostly 3-septate, 25-30 X 3-5 μ m. Fits descriptions and illustrations given by Bissett (1982) and Sprague (1950). NR, U.

Glyceria melicaria (Michx.) Hubb., melic-like mannagrass

Myrothecium roridum Tode:Fr. – Collected May 8, 2004 at Little Montgomery, Montgomery Co. site above. On incubated foliage; spores in this collection measured 7-8 X 2 μ m, were bacillar, smooth, occasionally navicular, with rounded ends. See *Eragrostis*, this publication and Ellis (1971). NR, U.

Hakonechloa macra (Munro) Makino, Japanese forest grass

Deuteromycotina – Hyphomycetes:

Drechslera poae (Baudys) Shoem. – A cause of eyespots on this grass and *Poa* spp., was collected on Sept. 2, 2004, at the Roanoke Community Arboretum, Western Virginia Community Coll. Roanoke Co., El. 1094', N37° 14.695', W79° 58.455', R04-46. Conidia were light brown, mostly 6-8-septate, measuring 70-90 X 20-28 μ m. NR, U.

Exserohilum halodes (Drechs.) Leon. and Suggs – Found on leaf sheaths collected at the site above, R04-46, Sept. 9, 2004. Conidia are cylindrical to ellipsoidal, have protruding hila, end cells delimited by dark septa, usually 6-8 septa, measuring 40-90 X 11-19 μ m. NR, U.

Nigrospora sphaerica (Sac.) E. Mason – Appeared on incubated foliage from the Arboretum site above, R04-46. NR, U.

Holcus lanatus L., velvetgrass

Basidiomycotina – Uredinales:

Puccinia coronata Cda., II, III. – Collected at the “S” curve on Rt. 723, near north fork of Roanoke R. at Ellett, Montgomery Co., June 19, 2007, R07-9, El. 1550' N39° 13.179, W80° 21.883. Apparently, *P. coronata* is common on every colony of *H. lanatus*. The alternate host, *Rhamnus* spp., is rare in Virginia so the fungus may have adapted an autoecious form of life, surviving only as uredinia.

Deuteromycotina – Coelomycetes:

Colletotrichum graminicola (Ces.) G. W. Wils. – Collected at the gate to the FAA Center, White Top Mt., Grayson Co., June 27, 2004, R04-15, El. 5520', N36° 38.30' W81° 36.331'. This report merely provides more specifics about the White Top Mt. site for collection R94-33 (R and R 1997).

Hystrix patula Moench, Syn., *Elymus hystrix* L., bottle brush grass

Ascomycotina:

Phaeosphaeria eustoma (Fkl.) L. Holm – Collected along road up White Top Mt., Grayson Co., El. 5019', N36° 38.117', W81° 35.314', June 27, 2004, R04-21. Ascospores were 3-septate, measuring 15-24 X 4-5µm. Three fungi are morphologically very similar, *P. eustoma*, *P. nodorum*, and *P. tritici*. From descriptions by S and B (1989), this fungus fits best into *P. eustoma*. NR, U.

P. nigrans (Rob. ex Desm.) L. Holm – Collected on spikelets at the parking area, Falls Ridge, Fagg, Montgomery Co., Oct. 1, 2006, R06-29, El. 1495', N37° 11.523', W80° 31.166'. Ascospores 5-septate, measured 25-30 X 3-4µm. Description fits that by S and B (1989). Previously collected in Virginia (R and R 1997).

Deuteromycotina – Hyphomycetes:

Fusarium avenaceum (Fr.:Fr.) Sacc. – Collected on spikelets along Walker Ck., Rt. 708 near Rt. 622, Giles Co., Oct. 22, 2006, R06-35, El. 1634', N37° 17.777', W80° 42.387'. Identified from keys of Boothe (1971) and Nelson et al. (1983). NR, U.

Periconia atra Cda. – Collected on spikelets at the Walker Ck. site above, R06-35. Also collected at the Falls Ridge, Montgomery Co., site above, R06-29. See under *Elymus* and *Festuca*, this publication. NR, U.

P. lateralis Ellis and Everh. – Collected on spikelets at the Walker Ck., Giles Co., site above, R06-35. See under *Elymus*, this publication. NR, U.

Deuteromycotina – Coelomycetes:

Phoma sorghina (Sacc.) Boer., Doren., and Van Kest. – An oft-collected fungus, found on spikelets at the Walker Ck., Giles Co., site, R06-35, and at the Falls Ridge, Montgomery Co., site, R06-29. Spores are oval, 4-5 X 1.5-2.0µm. NR, U.

Leersia spp., ricegrass

1. *Leersia oryzoides* (L.) Swartz, rice cutgrass.
2. *L. virginica* Willd., whitegrass.

Ascomycotina:

Paraphaeosphaeria michotii (West.) O. Eriks. – Collected on Sept. 20, 2005, on 1, R05-43, at shores of upper pond to the left of entrance, Glen Alton, Giles Co., El. 2627', N37° 25.746', W80° 33.114'; and Oct. 22, 2007 at head of cove between swimming pavilion and superintendent's residence, Claytor L. State Pk., Pulaski Co., El. 1848', N37° 3.203', W80° 37.46', R07-33. Ascospores are dark brown, 2-septate, constricted at septa, rounded ends, measuring 14-18 X 4-5µm. The fungus is described and illustrated by S and B (1985). It was originally described and illustrated by Stout (1930) from collections on maize as *Leptosphaeria zaeae*. NR, V.

Phaeosphaeria eustoma (Fkl.) L. Holm – Collected Aug. 14, 2005, R05-32, on 2 in field at the junction of Rt. 708 and Forest Service Rd., Montgomery Co., El. 2000', N37° 15.135', W80° 32.011'; and Aug. 29, 2004, on along Rt. 666, Burkes Garden, Tazewell Co., El. 3090', N37° 6.614', W81° 21.516', R04-39. In both collections the fungus appeared to cause leaf spots. Ascospores are 3-septate with enlarged second cell, measuring 15-18 X 4-6µm. Characteristically, there is a single, large globule

filling each cell. This is not mentioned by S and B (1989). For further discussion, see Roane (2004, p. 149). On 1, NR, U.

P. nigrans (Rob. and Desm.) L. Holm – Collected on 1 Sept. 20, 2005, at the upper pond, Glen Alton, Giles Co., R05-43 site above, and on 2 Sept. 4, 2005, along the wooded trail south of Pandapas Pond, Montgomery Co., El. 2168', N37° 16.891', W80° 27.924'. Ascospores were 5-septate, second cell enlarged, 15-24 X 3-4µm, associated with bright tan lesions. Farr et al. (1989) report it from Wisconsin and New York. NR, V.

Deuteromycotina – Hyphomycetes:

Bipolaris leersiae (Atk.) Shoem. – Collected on 2 at three locations; at the Forest Service Rd. site above, R05-32, Montgomery Co., Aug. 14, 2005; along the wooded trail of site R05-38, Montgomery Co., at the field where Rt. 703 ends and meets the Forest Service road, Montgomery Co., site R05-32 above, Aug. 14, 2005; and along road below Gatewood Dam, Pulaski Co., El. 2307', N37° 2.376', W80° 51.572', R07-12. Spores were 7-10-septate, measured 50-85 X 10-14µm. The fungus was associated with leaf spots; the Pulaski collection expands its known range for Virginia.

Nigrospora sphaerica (Sacc.) E. Mason – appeared on incubated foliage of 2 collected below Gatewood Dam, site R07-12, above Pulaski Co., Aug. 19, 2007 and at site R05-32 above, Montgomery Co., Aug. 14, 2005. NR, U.

Tetraploa ellisii Cke. – Appeared on incubated foliage of 1 collected at the Claytor Lake Park, Pulaski Co., site R07-33 above, Oct. 22, 2007. Conidia had more than 4 cells in their columns. The key by Ellis (1971) distinguishes *T. ellisii* from *T. aristata*; the latter is found more frequently. NR, U.

Lolium multiflorum Lam., Italian ryegrass

Basidiomycotina – Uredinales:

Puccinia coronata Cda. II, III. – Collected by grower D. Smythers, 163 Fairfield Rd., Woodlawn, Carroll Co., July 23, 2005, R05-23 (Pl. Cl. 05-999). *P. coronata* is widespread on *Lolium* spp. in Virginia but this is the only collection from Carroll Co.

Deuteromycotina – Hyphomycetes:

Drechslera dictyoides (Drechs.) Shoem. – Collected with the same material as R05-23 above. Conidia characterized by tapering from widest first and second basal cell to tip; 5-6-septate, 92-103 X 12-15µm Ellis (1971). Associated with wilted, necrotic leaf tips. NR, V.

Miscanthus sinensis and varieties, Eulalia

1. *Miscanthus sinensis* Anderss.
2. *M. sinensis* var. 'purpurens'
3. *M. sinensis* var. *zebrinus* Beal, zebragrass

Note: It may not be necessary to list varieties of *M. sinensis* separately but they seem to support different fungi. *M. sinensis* is not listed in Farr et al. (1989) perhaps because no fungi had been listed on it before 1989. Variety *purpurens* is listed by Still (1994) but without an author of the trinomial. Variety *zebrinus* is listed in most comprehensive treatments of Poaceae.

Deuteromycotina – Hyphomycetes:

Bipolaris cynodontis (Marig.) Shoem. – Collected on **2** at the Community Arboretum, Virginia Western Comm. Coll., Roanoke Co., Sept. 9, 2004, El. 1088', N37° 14.709', W79° 58.455', R04-46. Conidia 7-10-septate, 49-64 X 12-13µm, ellipsoidal-cylindrical, broadest at middle, tapering to rounded ends (Ellis 1971). Apparently the cause of leaf spots. On **2**, NR, U.

Epicoccum nigrum Link – Generally considered as one of the sooty mold saprophytes, and therefore usually ignored but on **1** appeared to be associated with purple-margined leaf spots. A description appears in Ellis' (1971) book under *E. purpurascens*, synonym for *E. nigrum*. Collected on Plant Clinic specimen 04-289 (R04-05), dated May 12, 2004 from Saunders Bros. Nursery, Piney River, Nelson Co. NR, U.

Nigrospora sphaerica (Sacc.) E. Mason – Collected on **1** at Virginia Tech Horticultural Gardens, Blacksburg, Montgomery Co., El. 2166', N37° 13.188', W80° 25.466', Oct. 7, 2007, R07-27. Conidia of this fungus remind me of a ripe olive on a golf tee. NR, U.

Deuteromycotina – Coelomycetes:

Colletotrichum graminicola (Ces.) G. W. Wils. – Collected on **3** at the Community Arboretum site above in a different area, El. 1082' N37° 14.699', W79° 58.448', Sept. 9, 2004, R04-45. The white or yellow bands of zebragrass are very much more susceptible to colonization by *C. graminicola* than the green leaf area, to the extent that banded areas on lower leaves are almost universally colonized. On **3**, NR, V.

Stagonospora culmicola (Sacc.) Cast. and Germ. – Collected on **3** at the R04-45 site immediately above, Sept. 9, 2005. In old literature, this fungus is assigned to *Hendersonia* (Sprague 1950). Pycnidiospores were 3-7-, mostly 5-septate, measuring 30-38 X 3-5µm, often accompanying *C. graminicola*. NR, U.

Stagonospora simplicior Sacc. and Briard. – Appeared on incubated leaves of **1** collected at the Va. Tech Horticultural Garden site, El. 2166', N37° 13.188', W80° 25.466', R07-27; associated with leaf spots. This fungus has short, broad, 3-septate spores with large globules in each cell, measuring 24-44 X 9-11µm; they are easily distinguished from other *Stagonospora* spores. NR, U.

Muhlenbergia spp., muhly

1. *Muhlenbergia mexicana* (L.) Trinius, Mexican muhly, wirestem muhly.
2. *M. schreberi* Gmel., nimblewill.
3. *M. sylvatica* (Torrey) Gray, woodland muhly.
4. *M. tenuiflora* (Willd.) B.S.P., slender-flowered muhly.

Ascomycotina:

Phyllachora vulgata Theiss and Syd., cause of tar spot – Collected on **2** from three locations: Backyard at 907 Mason Dr., Blacksburg, Montgomery Co., Oct. 6, 2004, R04-54; along road from parking area to Pandapas Pond, Montgomery Co., El. 2216', N37° 16.966', W80° 28.107', Oct. 16, 2005, R05-42; head of cove between swim beach and superintendent's residence, Claytor L. State Pk., Pulaski Co., El. 1848', N37° 3.203', W80° 37.46', Oct. 15, 2007, R07-30. On **3**, below Gatewood Dam, Pulaski Co.,

El. 2113', N37° 2.368', W80° 51.573', Aug. 15, 2004, R04-30. *P. vulgata* is described by Sprague (1950). On **3**, NR, V.

Sordaria fimicola (Rob. ex Desm.) Ces. and DeNot. – Typically a dung fungus, also known on *Zea*; collected on **2** at Wind Rock on Appalachian Trail 1/8 mi. N. of Rt. 613, Giles Co., El. 4125', W37° 24.855', W80° 31.166', Aug. 27, 2006, R06-17. The fungus has black, one-celled ascospores measuring 25-28 X 17-20µm. It is discussed and illustrated in many mycology textbooks. NR, U.

Basidiomycotina – Uredinales:

Puccinia schedonnardi Kell. and Swingle – Collected on **1** from the town park behind 607 Lucas Dr., Blacksburg, Montgomery Co., El. 2175' N37° 14.440', W80° 24.575', Nov. 1, 2004 R04-63; and on **2** at the Mason Dr. site above, Oct. 6, 2004, R04-54. It was previously collected in Virginia on **1** (Roane 2004).

Deuteromycotina – Hyphomycetes:

Bipolaris cynodontis (Marig.) Shoem. – Collected on **1** in the town park area behind 607 Lucas Dr., the site immediately above, Nov. 1, 2004, R04-63; on **2** at the Claytor L. State Pk. site above, Nov. 20, 2004, R04-64, and at the Pandapas Pond site above, Oct. 16, 2005, R05-49; on **3** at the Gatewood Dam site above, Aug. 15, 2004, R04-30; on **4** along Peak Ck. below Gatewood Dam, at N.S.R.R. bridge, Pulaski Co., El. 2110', N37° 1.879', W80° 50.968', R07-14. Conidia were mostly straight, cylindrical or slightly elliptical, widest near middle, 5-8-septate, measuring 40-65 X 5-8µm. On **4**, NR, U.

Curvularia brachyspora Boedijn – Appeared on incubated leaves and stems of **2** collected Aug. 27, 2006 at the Wind Rock, Giles Co. site above, R06-17. Conidia were nearly straight, 3-septate, middle septum median, second or third cell may be enlarged, measuring 23-30 X 9-10µm. See Ellis (1971). NR, U.

Drechslera dematioidea (Bubák and Wróbl.) Subr. and Jain – Appeared on incubated leaves of **3** collected along Walker Ck., Rt. 708 near Rt. 622, Giles Co., Oct. 22, 2006, El. 1634', N37° 17.777', W80° 42.387', R06-34. Conidia were yellow-brown, straight or slightly curved, cylindrical to clavate, widest at middle, rounded ends, 3-6-septate, mostly 35-45 X 9-12µm. See Ellis (1971) and Sprague (1950). NR, U.

Exserohilum halodes (Drechs.) Leonard and Suggs – Appeared on incubated leaves and stems of **2** collected Aug. 27, 2006, at the Wind Rock, Giles Co. site above (R06-17). Conidia were yellow-brown, widest near middle, end cells usually delimited by a thick, dark septum, had a protruding hilum, were 7-9-septate, 55-80 X 14-15µm. See Ellis (1971) and Sprague (1950). NR, U.

Nigrospora sphaerica (Sacc.) Mason – Collected on **3** below Gatewood Dam, Pulaski Co. site R04-30 above, Aug. 15, 2004. It was reported on **3** from Montgomery Co. by R and R (1997).

Periconia atra Cda. – Collected on **1**, **2**, and **3**. On **1**, in town park behind 607 Lucas Dr., Montgomery Co. site R04-63, Nov. 1, 2004. On **2**, at the Pandapas Pond site R05-49, above, Oct. 16, 2005. On **3** at the Walker Ck., Giles Co. site R06-34 above, Oct. 22, 2006. Conidia are spherical, verruculose, 5-9µm, diam. See Ellis (1971) for description. On **1**, **2**, **3**. NR, U.

Periconia byssoides Pers. – Collected on **1** at Claytor L. State Pk., Pulaski Co., on point uplake from swim beach, Nov. 20, 2004, R04-64. Conidia are spherical, larger (10-12 μm) than for *P. atra* above and have morphologically different conidiophores. See Ellis (1971). NR, V.

Periconia lateralis Ell. and Everh. – Collected on **2** and **3**: On **2**, at head of cove between swim beach and superintendent's residence Claytor L. State Pk., Pulaski Co., Oct. 15, 2007, R07-30; on **3** at the Walker Ck., Giles Co. site, R06-34 above, Oct. 22, 2006. Conidiophores extend to a tapering point beyond sporulation site. Conidia are spherical, verruculose, 8-15 μm diam., Ellis (1971). On **2**, NR, V; on **3**, NR, U.

Deuteromycotina – Coelomycetes:

Ascochyta graminea (Sacc.) Sprague and Johnson – Collected on **1** at the town park site behind 607 Lucas Dr., Blacksburg, Montgomery Co., Nov. 1, 2004. See Sprague (1950) and Punithalingam (1979). It persisted at this site from Nov. 2003 to summer 2007.

Colletotrichum graminicola (Ces.) G. W. Wils. – Collected on **2** on point uplake from swim beach, Claytor L. State Pk., Pulaski Co., Nov. 20, 2004, R04-64.

Stagonospora montagnei Cast. and Germ. = *S. graminella* Sacc. – Collected on **2** at the Claytor L. State Pk. site immediately above, R04-64. Sprague (1949) provides a description under *S. graminella* and a comparison with other similar species. Farr et al. (1989) list it on *Muhlenbergia* spp. only from New Mexico. Pycnidiospores measured 20-22 X 3-4 μm , were usually constricted at the 3 septa. It was collected on **2** at another site in the park (R and R 1997).

Deuteromycotina – Other:

Rhizoctonia solani Kühn, cause of summer blight – Collected on **2** in field next to parking area Aug. 20, 2006, at Falls Ridge, Fagg, Montgomery Co., El. 1455' N37° 11.523', W80° 19.247', R06-07. Summer blight also occurred on plants of *Festuca elatior* close by. Farr et al. (1989) have a long list of hosts for this fungus, including many grasses. On **2**, NR, V.

Panicum spp., panic grass

1. *Panicum anceps* Michx., flat-stemmed panic grass.
2. *P. virgatum* L., switchgrass.

Deuteromycotina – Hyphomycetes:

Bipolaris sorokiniana (Sacc.) Shoem. – Collected Oct. 7, 2007 on **2** at Horticultural Gardens, Virginia Tech, Blacksburg, Montgomery Co., El. 2166', N37° 13.215', W80° 25.458', R07-25. A well-known fungus with a broad graminicolous host range. It was associated with leaf spots; seems to be universally present on **2** (R and R 1997; Roane 2004).

Nigrospora sphaerica (Sacc.) E. Mason. – Collected on **2**, Oct. 7, 2007, at the Horticultural Garden site above, R07-25. This fungus has been reported numerous times on grasses in this report, yet is not reported on **2**. NR, U.

Deuteromycotina – Coelomycetes:

Amerosporium atrum (Fkl.) Höhn – Collected July 20, 2005, on **1** on Gap Mt. Forest Service Rd., about ½ mi W. of U.S. 460, Montgomery Co., El. 2378', N37° 16.755', W80° 28.971', R05-20. The genus *Amerosporium* is described by Sutton (1980). *A. atrum* is characterized in a key to Sphaeropsidales and illustrated by von Arx (1981). NR, U.

Stagonospora simplicior Sacc. and Briard – Collected on **1** during a revisit to site R05-20 above, Aug. 5, 2005, R05-31. It is characterized by easily recognized broad, 3-septate conidia measuring 24-44 X 9-11 μm, usually having a single large globule in each cell (Sprague 1950). NR, U.

Paspalum spp.

1. *Paspalum dilatatum* Poir., Dallis grass.
2. *P. laeve* Michx., smooth or field paspalum.

Ascomycotina:

Claviceps paspali Stevens and Hall, in honeydew or *Sphacelia* (conidial) stage – Collected on **1**, Oct. 15, 2007, at the head of the cove between the swim beach and Supt. residence, Claytor L. State Pk., Pulaski Co., El. 1848', N37° 3.203', W80° 37.460', R07-31. I could find only one paper describing the conidia of the honeydew stage (Brown and Ranck 1915). Stevens and Hall (1910) who described the sclerotia and ascomata did not describe conidia. In this collection, R07-31, conidia were hyaline, 1-celled usually cylindrical, with rounded ends 7-14 X 4-6 μm. Brown and Ranck (1915) described them as, “single celled, about 5 μ wide and 15 μ long, oblong, hyaline, with contents homogeneous except for a cluster of granules at each end”. This description fits the Claytor L. State Pk. collection. No name has been applied to this anamorphic stage as it has for *C. purpurea*, *Sphacelia segetum* Lév. *C. paspali* is very common on *P. dilatatum* but by Oct. 15 it is usually in the sclerotial stage or the host has been killed by frost.

Deuteromycotina – Hyphomycetes:

Curvularia lunata (Wakk.) Boed. – Collected on **2**, Sept. 14, 2007, along the sloping lawn south of the Solitude parking lot, Virginia Tech, Blacksburg, Montgomery Co., El. 2037', N37° 13.560', W80° 25.553', R07-22. The fungus was abundantly present on necrotic blades, Conidia are asymmetrical, end cells light, 3-septate, middle septum not median, measuring 20-32 X 9-15 μm (Ellis 1971). On **2**, NR, U.

Myrothecium atroviride (Berk. and Br.) Tulloch – Collected on the Solitude lawn site above, R07-22, Sept. 14, 2007. Sporodochia were sessile, conidia olive-brown, measuring 11-13 X 3.0-3.5 μm. Illustrated by Ellis (1971). On **2**, NR, U.

Pennisetum glaucum (L.) R. Br., pearl millet

Ascomycotina:

Gibberella zeae (Schw.) Petch, the cause of scab and head blight. – Sent to the Plant Clinic (Pl. Cl. 04-1301) Oct. 10, 2004, by Carl Stafford, Co. Agt., collected on Mt. Pony Farm, Culpeper Co., R04-59. Nearly all kernels on several heads were covered by ascomata bearing asci with hyaline, 3-septate ascospores measuring 18-25 X 3-4 μm.

Conidia of the *Fusarium graminearum* anamorph were also prevalent. A 5-acre crop being produced for bird seed was totally destroyed. Farr et al. (1989) do not list *Pennisetum* as a host. NR, U.

Phaeosphaeria tritici (Garev.) Hedj. – Present on the pedicels of the specimen above, R04-59. Ascospores were 3-septate, measured 18-20 X 4-5 μ m. (See S and B 1989). NR, U.

Phalaris arundinacea L., reed canary grass

Two types of *Phalaris arundinacea* were found on White Top Mt., Grayson Co.; the typical green-leaved type and *P. a.* var. *picta* L., ribbon grass, with white-striped leaves.

Ascomycotina:

Phyllachora phalaridis Orton – Found on *P. arundinacea* opposite a spring on road up White Top Mt., Grayson Co., El. 5025', N36° 38.049', W81° 36.22', June 27, 2004, R04-18. Ascospores measured 9-10 X 4-6 μ m. For details see Orton (1944) and Sprague (1950). In Farr et al. (1989), *P. phalaridis* is reported only from Mississippi and Massachusetts. NR, V.

Deuteromycotina – Coelomycetes:

Septoria bromi Sacc. var. *phalaricola* Sprague – Collected on same plants as in R04-18 above. Pycnidiospores usually 3-septate, occasionally 4-septate, 30-55 X 2-3 μ m. Sprague (1950) provides a key to *Septoria* spp. Farr et al. (1989) list collections only from Washington and Oregon. NR, EU.

Stagonospora foliicola (Bres.) Bubák – Found on same plants in collection R04-18 above and also on *P. a.* var. *picta*, R04-19, at the same White Top Mt. location as above. Pycnidiospores of *S. foliicola* are very different from those of *S. bromi* var. *phalaricola*. The former causes tawny blotch, a widespread disease of *Phalaris*. Spores are blunt at the base, acute at the apex usually constricted at the 6-12 septa, measuring 40-90 X 5-7 μ m (Sprague 1950). On *P. a.* var. *picta*, NR, V.

Phleum pratense L., timothy

Deuteromycotina – Hyphomycetes:

Bipolaris sorokiniana (Sacc.) Shoem. – Although *B. sorokiniana* has a very wide host range, it has not been found previously on *Phleum* in eastern U.S.A. This specimen, R06-9, was sent to the Plant Clinic (Pl.Cl. 06-886) from Orange Co., July 27, 2006. The 7-10-septate, dark brown conidia are variously shaped but most are elliptical-ovate, measuring 60-100 X 10-20 μ m. NR, EU.

Deuteromycotina – Coelomycetes:

Colletotrichum graminicola (Ces.) G. W. Wils. – Collected June 27, 2004, at the gate to the FAA Center, White Top Mt., Grayson Co., El. 5510', N36° 38.30' W81° 36.331', R04-16. Acervuli were prevalent on leaf sheaths.

Stagonospora maculata Cast. and Germ. – Associated with leaf spots collected July 10, 2005, along Rt. 666 W, Burkes Garden, Tazewell Co., El. 3082', N37° 6.418', W81° 21.214', R05-16. This fungus known primarily for its damage to orchardgrass, *Dactylis*

glomerata, has a relatively small host range. Spores are described by Sprague (1950) as fusiform, rounded ends, constricted at the 3 or 4 septa, measuring 27-40 X 5.0-6.5µm. NR, U.

Poa spp., bluegrass, speargrass

1. *Poa alsodes* Gray, woodland bluegrass.
2. *P. compressa* L., Canada bluegrass.
3. *P. pratensis* L., Kentucky bluegrass.
4. *P. sylvestris* Gray, sylvan or woodland bluegrass.

Ascomycotina:

Paraphaeosphaeria michotii (West.) O. Eriks. – Collected on **2**, Aug. 17, 2004 at the Butt Mt. overlook, Giles Co., El. 4200', N37° 22.137', W80° 37.413', R04-35; on **4**, May 8, 2004, at Little Montgomery, Montgomery Co., near end of Rt. 613, El. 1998', N37° 1.533', W80° 32.475'. The fungus is characterized by brown cylindrical ascospores, constricted at the 2 septa, rounded ends, measuring 14-22 X 3-6µm, described and illustrated by Dennis (1978), and S and B (1985). On **2** and **4**, NR, U.

Phaeosphaeria eustoma (Fkl.) L. Holm – Occurred on spikelets of **2** collected along Taylor's Hollow Rd., Rt. 712, Ellett, Montgomery Co., El. 1505', N37° 12.418', W80° 21.035', Oct. 1, 2006, R06-23. Ascospores are 3-septate, penultimate cell enlarged, measuring 17-29 X 4-5µm (S and B 1989). On **2**, NR, U.

Sordaria fimicola (Rob. ex Desm.) Ces. and DeNot. – Collected on **2**, Aug. 27, 2006, on Appalachian Trail 1/8 mi toward Wind Rock from Rt. 613, Giles Co., El. 4125', N37° 24.855', W80° 31.166', R06-14. Ascospores are black, subglobose to elliptical, uniseriate, measuring 19-25 X 10-13µm (Dennis, 1978). It was collected on *Muhlenbergia schreberi* at this same site. It is illustrated in many mycology textbooks. NR, V.

Basidiomycotina – Uredinales:

Puccinia brachypodii Otth var. *poae-nemoralis* (Otth) Cummins and H.C. Greene. – Collected on **2** at four locations: On bank of New River, ¼ mi. above Belspring but in Montgomery Co., El. 1656', N37° 11.058', W80° 35.304', June 30, 2004, R04-22; at the Wind Rock site above, Giles Co., Aug. 8, 2006, R06-5; at the Taylor's Hollow Rd. site above, Montgomery Co., Oct. 1, 2006; on Rt. 603, Rocky Gap–Captain Road, Craig Co., El. 2437', N37° 22.671', W80° 26.799', Aug. 26, 2007, R07-15. Collections had stages II and III; the fungus was identified with the aid of keys by Cummins (1971); it is characterized by “cylindric-capitate or capitate, paraphyses, ...usually geniculate and with a constricted neck” (Cummins 1971). The fungus seems to be universally associated with **2** in southwestern Virginia.

Puccinia recondita Rob. ex Desm., leaf rust – Collected on **2** at Montgomery Tunnels, Montgomery Co., El. 1815', N37° 9.466', W80° 19.175', June 11, 2004, R04-12. Widespread on **3**.

Deuteromycotina – Hyphomycetes:

Bipolaris sorokiniana (Sacc.) Shoem. – Collected on **4** June 20, 2005 at Little Montgomery, Rt. 613, Montgomery Co. El. 1998', N37° 1.533', W80° 32.475', R05-10.

A widespread fungus on grass hosts. This specimen sporulated at the nodes; appeared to be causing a nodal rot. On **4**, NR, U.

Curvularia inaequalis (Shear) Boedijn – Sporulated on incubated pedicels and spikelets collected on **2** at the Wind Rock, Giles Co. site above, Aug. 27, 2006, R06-14. Conidia are straight or slightly curved, 4-septate, center cell largest, end cells lighter colored, measuring 27-34 X 9-11 μ m. NR, U.

Curvularia lunata (Wakk.) Boedijn – Collected on **4** at the Little Montgomery site above on Rt. 613, Montgomery Co., May 8, 2004, R04-4, Conidia were curved, 3-septate, penultimate cell enlarged, end cells hyaline, measuring 22-30 X 9-11 μ m (Ellis 1971). NR, U.

Myrothecium gramineum Lib. – Collected on **3** at the Montgomery Tunnels site above, June 11, 2004, R04-12. Setose sporodochia bear pale olivaceous conidia measuring 7-10 X 2 μ m (Ellis 1971). On **3**, NR, V.

Myrothecium roridum Tode:Fr. – A specimen of **3** sent to the Plant Clinic (Pl.Cl. 05-1027) from a grower in Albemarle Co., July 28, 2005, who complained that something on the grass was making horses ill. We could not attribute the problem to any fungus. The sporodochia of *M. roridum* lack setae, conidia were pale olive, cylindrical, with rounded ends, measuring 6-8 X 1.5-2.5 μ m (Ellis 1971). NR, U.

Nigrospora sphaerica (Sacc.) E. Mason – Collected on **2** at the Butt Mt., Giles Co. site above, Aug. 17, 2004, R04-35; described and illustrated by Ellis (1971). On **2**, NR, U.

Periconia byssoides Per. ex Merat – Collected June 11, 2004, on **3** at the Montgomery Tunnels, Montgomery Co. site above, R04-12. Fungus appeared on incubated foliage and inflorescence parts. Conidia were spherical, brown, verrucose, measuring 10-15 μ m dia. (Ellis 1971). On **3**, NR, U.

Deuteromycotina – Coelomycetes:

Ascochyta sorghi Sacc. – Collected on three *Poa* spp.: On **1** on bank of New R., ¼ mi. above Belspring, Montgomery Co. side, June 14, 2005, R05-6, El. 1656', N37° 11.058', W80° 35.304', apparently causing blade necrosis; previously collected on **1** (Roane, 2004). Collected on **2** at New R. site above June 30, 2004, R04-22. Possibly causing leaf tip necrosis. Collected previously in Montgomery Co. (R and R 1997). Collected on **3** at the Montgomery Tunnels site June 11, 2004, R04-12. See Sprague (1950) for description and illustration. On **3**, NR, U.

Ascochyta subalpina Sprague and Johnson – Collected on nodes of **4** at the Little Montgomery site above R05-10, June 20, 2005. Spores were 1-septate, bacillar, measuring 11-14 X 2 μ m. Both Sprague (1950) and Punithalingham (1979) devote considerable discussion to distinguishing this species. In keys of Sprague, it is difficult to distinguish it from *Septoria oudemansii* (see below). This material seems to fit best *A. subalpina*. NR, U.

Colletotrichum graminicola (Ces.) G. W. Wils. – Collected on three species: On **2** the New R. bank site above, R04-22. Fruited on leaf sheaths. On **3** at Ironto, east of N.S.R.R. M.P. 266, Montgomery Co. El. 1298', N37° 13.47', W80° 16.334', June 10, 2007. On **4** at Little Montgomery, Montgomery Co., along Rt. 613, site R04-4 above, May 8, 2004. On **4**, NR, U. On **2** NR, V.

Coniothyrium scirpi Trail – Collected on spikelets of **2** at the Butt Mt., Giles Co. site above, Aug. 17, 2004, R04-35. This fungus is the anamorph of *Paraphaeosphaeria*

michotii (see above) which was present on leaves of **2** of this collection. For further discussion of the anamorph-teleomorph relations, see *C. zae* in Sprague (1950), *P. michotii* in S and B (1985), and *Leptosphaeria michotii* in Dennis (1978). On **2**, NR, U.

Dinemasporium strigosum (Pers. ex Fr.) Sacc. – Collected on **2** July 8, 2006 along Appalachian Trail, at Wind Rock, 1/8 mi. N. of Rt. 613, Giles Co., site R06-5 above, El. 4125', N37° 24.855', N80° 31.166'. This fungus is described and illustrated by Sutton (1980). On **2**, NR, U.

Septoria oudemansii Sacc. – Fruited on leaves and florets of **2** collected Oct. 1, 2006, along Taylor's Hollow Rd., Rt. 712, Ellett, Montgomery Co., El. 1505', N37° 12.418', W80° 21.035', R06-23; on **2** collected Aug. 8, 2006, at the Wind Rock, Giles Co. site R06-5 above; and on spikelets of **2** collected Aug. 27, 2006 at the Wind Rock site, R06-14 above. This fungus has conidia more like those of *Ascochyta*. In the collections above they measured 14-17 X 2µm, were widest at the single median septum. See Sprague (1950) for further discussion. On **2**, NR, V.

Schizachyrium scoparium (Michx.) Nash, little bluestem – See *Andropogon scoparius*.

Secale cereale L., rye

Basidiomycotina – Uredinales:

Puccinia recondita Rob. ex Desm., II, III – Collected June 12, 2008 at Little Montgomery, Montgomery Co. along Rt. 613, El. 1998', N37° 1.533' W80° 32.475', R05-5. This is a common leaf rust of cereals and grasses. It occurs on rye throughout Virginia.

Deuteromycotina – Hyphomycetes:

Bipolaris sorokiniana (Sacc.) Shoem. – A common fungus on cereals in Virginia, it has not been collected on rye before. It was collected on rye growing from straw mulch at the Little Montgomery site above, R05-5. NR, V.

Setaria faberi Herrm., giant foxtail

All fungi on this host were collected at the parking area between Rt. 663 and the N.S.R.R., Walton, Montgomery Co., El. 1824', 37° 9.176', W80° 31.007' on Aug. 2, 2005, R05-30.

Deuteromycotina – Hyphomycetes:

Drechslera erythrospila (Drechs.) Shoem. Associated with leaf spots. Conidia measured 62-65 X 11-15µm, were 8-10-septate, cylindrical, with rounded ends. See Ellis (1971) for description and illustrations. NR, U.

Pyricularia grisea (Cooke) Sacc. – The cause of gray leaf spot of several grasses, this fungus has pear-shaped, 2-septate conidia, sometimes with protruding hilum, measuring 17-28 X 6-9µm. See Ellis (1971) for illustration and description and R and R (1996) and Roane (2004) for additional distribution.

Deuteromycotina – Coelomycetes:

Phoma sorghina (Sacc.) Boer., Doren., and VanKest. – Pycnidiospores measured 6-7 X 2-3 μ m. It is widely distributed in Virginia. NR, U.

Sorghastrum nutans (L.) Nash, Indian grass

Deuteromycotina – Coelomycetes:

Stagonospora simplicior Sacc. and Briard – Collected Sept. 16, 2007 at old garden area, Glen Alton, Giles Co., near Big Stony Ck., El. 2606', N37° 25.860', W80° 33.004', R07-23. The broad 3-septate, globulate spores measuring 24-44 X 9-11 μ m are readily distinguished from other *Stagonospora* spp. (Sprague 1950). Causes a leaf spot common on *S. nutans*.

Sorghum bicolor (L.) Moench, grain sorghum, broom corn, sweet sorghum, etc.

Deuteromycotina – Hyphomycetes:

Gloeocercospora sorghi Bain and Edgerton – Causing seedling leaf spot on Pl. Clinic specimen 07-610, R07-8, received June 18, 2007 from Allen Straw, S. W. Agri. Res. and Ext. Ctr., Glade Spring for grower Bill Sally of Scott Co. On adult plants, causes zonate leaf spot. Spores are described by Sprague (1950); a complete description and illustrations are in the Compendium of Sorghum Diseases (Frederiksen, 1986). NR, V.

Stenotaphrum secundatum (Walt.) Kuntze, St. Augustine grass

Ascomycotina:

Gaeumannomyces graminis (Sacc.) von Arx and D. Olivier, cause of take-all – Plant Clinic specimen sent in by J. Orband, Ext. Agt., and Joan Ward, grower from Hampton, York Co., Aug. 22, 2006, Pl. Cl. 06-1049, R06-20. Runner hyphae and hyphopodia were clearly evident and are diagnostic. NR, V.

Sphenopholis intermedia (Rydb.) Rydb., slender wedgegrass

Note: This species has also been named *S. intermedia* var. *obtusata* (Torrey) K. S. Erdman. (Gould and Shaw 1983). T. F. Wieboldt of the Massey Herbarium at Virginia Tech identified this specimen.

Basidiomycotina – Uredinales:

Puccinia eatoniae Arth.; II, III – Collected at Little Montgomery, Montgomery Co. on Rt. 613, ¼ mi. from junction with Rt. 620, June 12, 2005, El. 1998', N37° 1.533', W80° 30.475', R05-4. The taxonomy of *S. intermedia* has been revised since the publication by Farr et al. (1989), this collection is considered a NR, V.

Tridens flavus (L.) Hitchcock, purpletop, grease grass

Ascomycotina:

Phaeosphaeria eustoma (Fkl.) L. Holm – Collected at head of the cove between the swim beach and superintendent's residence, Claytor L. State Pk., Pulaski Co., Oct. 22,

2007, El. 1848', N37° 3.203', W80° 37.460', R07-32. Ascospores were 3-septate, constricted at septa, measured 17-29 X 4-6µm, penultimate cell enlarged, fruiting on leaf sheaths. It was identified from keys in E and E (1985); it has been collected in another part of the Park (R and R 1997).

Basidiomycotina – Uredinales:

Puccinia windsoriae Schw., II, III – Collected at the United Methodist Church area near intersection of Rts. 603 and 713, Montgomery Co. Oct. 17, 2004, R04-58; and at the Claytor L. State Pk. site above, R07-32, Oct. 22, 2007. Stages and II, III present. This rust apparently is ubiquitous on *T. flavus* in Virginia (Roane 2004; R and R 1997).

Deuteromycotina – Hyphomycetes:

Curvularia clavata Jain – Collected at the Claytor L. State Pk. site above, R07-32, Oct. 22, 2007. The mostly straight 3-septate conidia, are widest at penultimate cell, middle cells darker than end cells, measuring 25-27 X 8-9µm. Determined from keys by Ellis (1971). NR, U.

Curvularia protuberata Nelson and Hodges – Collected at a field on NW corner of Clay and Jefferson Sts., Blacksburg, Montgomery Co., Oct. 8, 2004, El. 2170', N37° 13.970', W80° 24.202', R04-56. With 4 septa, protruding hila, and being relatively short, 35-42 X 80-12µm, this fungus easily keys to *C. protuberata* (Ellis 1971). This collection widens the range of this association in Virginia.

Deuteromycotina – Coelomycetes:

Neottiosporina paspali (Atk.) Sutton and Alcorn – Initially described as *Stagonospora paspali* (Sprague 1950), *Neottiosporina* was separated because the gelatinous sheath surrounding young conidia may adhere to terminal or basal cells as appendages. In this collection, no appendages were observed. However, the 2 septa separate the cells uniformly; conidia were hyaline, cylindrical, sometimes constricted at septa, ends rounded, many with a large vesicle in each cell, measuring 20-24 X 7-8µm. The source of the report of its previous occurrence in Virginia is obscure (Farr et al. 1989; Sprague 1950).

Rhynchosporina tridentis Sprague and Rogerson – The cause of a leaf spot and by virtue of its prevalence, eventual wilting of the leaves. Collected at the Blacksburg site above R04-56, Oct. 5, 2004; and in a field adjacent to the N.S.R.R. crossing of Rt. 603, Ellett, Montgomery Co., Aug. 20, 2006, El. 1462', N37° 11.219', W80° 21.019', R06-6. Like *Puccinia windsoriae*, it is ubiquitous in Virginia on *T. flavus* (R and R 1997).

Stagonospora montagnei Cast. and Germ. [= *S. graminella* (Sacc.) Sacc.] – Fruited in some of the summer blight lesions (see *Rhizoctonia solani* below), collected Aug. 20, 2006 at Rt. 603 and N.S.R.R., site R06-6 above. Pycnidiospores were straight or curved, cylindrical 3-septate, sometimes constricted at septa, measuring 23-28 X 2-4µm. The fungus was determined from a key by Sprague (1950). NR, U.

Stagonospora simplicior Sacc. and Briard – Associated with oval leaf spots with brown margins, bleached centers, collected at the Claytor L. State Pk. site above, R07-32, Oct. 22, 2007. The broad, 24-44 X 9-11µm, 3-septate pycnidiospores, with large vacuoles, are easily recognized. NR, U.

Deuteromycotina – Other:

Rhizoctonia solani Kühn, cause of summer blight, sharp eyespot, and brown patch of grasses – Collected Aug. 20, 2006, at the Rt. 603, N.S.R.R. crossing area, R06-6, cited above. Although the disease is called spring blight it is common on many grasses well into autumn. No spores are produced but it has mycelial characteristics that make it easily identifiable (Couch 1995, p. 61). NR, V.

Triticum aestivum L., wheat

Deuteromycotina – Hyphomycetes:

Hymenula cerealis Ellis and Everh. (= *Cephalosporium gramineum* Nisikado and Ikata) – Collected at Wildwood Pk., Radford, Montgomery Co., June 10, 2005, El. 2220', N37° 7.855', W80° 34.003', R05-3. Several volunteer wheat plants grew where wheat straw was used to mulch a seeding of ryegrass beside a new walkway. It had been found in volunteer rye where rye straw was used to mulch a new seeding (R and R 1994). Collected in a commercial field at Riner, Montgomery Co., El. 2115', N37° 3.062', W80° 25.511', R06-4, 'Cephalosporium stripe' had never before been found in a commercial wheat field in Virginia, but had been found in two locations used for experimental plants (R and R 1994; Schmale et al. 2007).

Zea mays L., maize, corn

Basidiomycotina – Uredinales:

Puccinia sorghi Schwein. II, III – corn or maize rust – Collected in Roane's garden, 607 Lucas Dr., Blacksburg, Montgomery Co., Sept. 2, 2004, R04-41, El. 2165', N37° 14.464', W80° 24.577'. *P. sorghi* is widespread on maize in Virginia; this collection was made because many uredinea were colonized by *Sphaerellops filum* (Biv.- Bern. ex Fr.) Sutton, a hyperparasite of rust fungi (see below).

Deuteromycotina – Hyphomycetes:

Bipolaris maydis (Nisikado and Miyake) Shoem., cause of southern corn leaf blight – Collected from sweet corn by grower T. Baker, Virginia Beach, Aug. 18, 2004, R04-38 (Pl. Cl. 04-1012). Southern corn leaf blight was once a devastating disease in southeastern Virginia but now it is controlled by resistant hybrid varieties. A history of this disease is under its teleomorph, *Cochliobolus heterostrophus* (R and R 1994).

Deuteromycotina – Coelomycetes:

Colletotrichum graminicola (Ces.) G. W. Wils., causing anthracnose – This collection was on sweet corn grown by J. Bates, Amelia Co., sent to the Plant Disease Clinic (Pl. Cl. 04-1202, R04-51) Sept. 21, 2004. Under some conditions anthracnose may be very damaging to field or sweet corn in Virginia.

Phoma sorghina (Sacc.) Boer., Doren. and VanKest. occurred on the sweet corn collection above. It was also found in the collection from Virginia Beach site above, R04-38. In this collection only *B. maydis* caused damage. It was collected on corn at Warsaw, Richmond Co. in 1951 under its old name, *Phyllosticta sorghina* Sacc. (R and R 1994).

Sphaerellopsis filum (Biv.-Bern. ex Fr.) Sutton – This hyperparasite of rust fungi occurred in the uredinial sori of *Puccinia sorghi* above, R04-38, from Roane's garden. It has occurred in several rusts collected in Virginia but has not been reported in *P. sorghi*. Spores are 1-septate, measure 17-20 X 5-6µm. Sutton (1980) describes and illustrates the fungus; he lists 27 synonyms for *S. filum*. NR, U.

Stagonospora arenaria Sacc. – occurred on the sweet corn collection from Amelia Co., R04-51, cited above. No *Stagonospora* spp. are listed on corn by Farr et al. (1989). Pycnidiospores for this collection were cylindrical, 3-4-septate, uniformly 33-35 X 3-4µm. *Stagonospora* spp. are distributed widely on hosts; it is surprising that this should be the first on corn. Unfortunately, the grower did not furnish enough material for a voucher specimen. NR, U.

DISCUSSION

Many new fungus-host associations are reported but no new species of fungi are recognized. Apparently, most fungi in these new associations have a broader host range than previously reported. These new associations have been recognized primarily because the effort to find them is a pioneer enterprise for Virginia. Very few reports have been issued from Virginia since Sprague's (1950) book (Farr et al. 1989). Most Virginia reports cited in his book were issued when the U.S.D.A. Bureau of Plant Industry prior to 1940 was at Arlington Farm, site of the Pentagon. There, numerous grasses were grown, many were plant introductions, to evaluate or enhance their usefulness for forage, turf, and soil conservation. They were scrutinized for plant disease fungi and new findings were promptly reported. Such activity has ceased or greatly declined or most fungus host associations on grasses examined have already been reported. The great number of new associations reported by Roane (2004), R and R (1996, 1997) and the current paper can be attributed to the remoteness of collections and the lack of curiosity of competent mycologists or plant pathologists.

There must be many more new associations awaiting discovery. The great majority of collections reported here have come from Montgomery and the surrounding counties, Craig, Roanoke, Floyd, Pulaski, and Giles, at little more than one-seventeenth of Virginia's 100 original counties. Counties in the Coastal Plain and Piedmont are poorly represented as are those of the northern mountains and the far Southwest. Thus, most of Virginia remains a frontier for fungus-host exploration. Another factor is the rarity of some grass species. Upon examining the distribution maps in the Atlas of the Virginia Flora (Harvill et al. 1992) one can see that many species are known in very few counties, several only on Eastern Shore, and several only in southeastern counties. Roane (1991) describes several as very rare. These remain unexamined. Another factor is sample size. Most reports herein were generated by examining a few leaves, stems, or inflorescences of a particular species, only an infinitesimal portion of perhaps billions of plants; ex, *Agrostis alba*, *Andropogon virginicus*, *Cynodon dactylon*, *Dactylis glomerata*, *Digitaria sanguinalis*, etc. How many fungi are overlooked?

One question that spurred interest in this project, do wild grasses harbor disease – causing fungi of cereal, turf, and forage crops? *Puccinia recondita*, a pathogen of wheat, was found on a number of grasses. However, rust fungi are notoriously specialized in their host ranges, a situation that is well documented in plant pathology literature. *Colletotrichum graminicola*, the anthracnose fungus, was found on the most host species. This ubiquitous fungus is usually saprophytic, but a field of oats in

Pulaski Co. was completely destroyed by it (R and R 1994). It wreaked havoc to corn on Northern Neck for several years, yet in most encounters it seems to be a saprophyte starting early decomposition of its host. Several fungi in the genera *Bipolaris* and *Drechslera* that cause serious diseases of economic plants were found on wild hosts. It is not known whether these fungi could colonize cultivated species; that could be determined only by tedious fungus isolations from various hosts and subsequent inoculation of economic grasses. From the current studies and our other reports (Roane 2004; R and R 1996, 1997), only host-fungus associations have been observed or broadened, not pathogenic capabilities.

The innocuous practice of using cereal straw for mulching new lawn seedings may have undesirable consequences. On three occasions, cereal plants growing from seed in the straw mulch were observed to have symptoms of *Cephalosporium* stripe. Twice, rye growing from seed in rye straw was observed displaying stripe symptoms (Jones et al. 1980). Once, wheat straw mulch produced striped wheat plants (Roane, see *Triticum*, this publ.). None of these incidences were in sites that threatened commercial crops; however, it is an established fact that distributing straw from fields with plants infected by *Hymenula cerealis* is a means of further disseminating this destructive fungus.

The reporting of fungus-grass host associations is a contribution to the natural history of Virginia. Since these surveys have covered a relatively small portion of Virginia and many species have not been examined, there remains an opportunity for further discovery. The surprising, sometimes fantastic morphology of microfungi can in itself be an infectious stimulant.

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