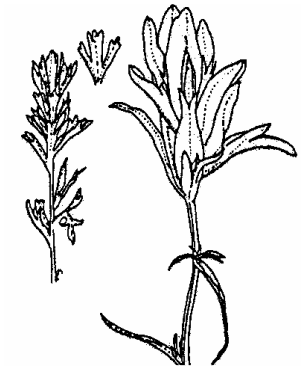

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Publication of the Wyoming Native Plant Society

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Posted at www.uwyo.edu/wyndd/wnps/wnps_home.htm

In this issue:

Pioneering Champion

Emerging leaves of plains cottonwood (*Populus deltoides* var*. occidentalis; P. deltoides* ssp. *monilifera; P. sargentii*) lend green brilliance to waterways across lower elevations of Wyoming, befitting its status as the State Tree. The original State Tree designation in 1947 was inspired by a regal plains cottonwood tree near Thermopolis that burned down in 1955.

Plains cottonwood still reigns in Wyoming's champion tree register, kept by the State Division of Forestry (http://slf-web.state.wy.us/forestry/champtree.aspx). The plains cottonwood title is held by a tree of 31 ft circumference, 64 ft height, and with a crown span of 100 ft in Albany County, the largest of all Wyoming's plains cottonwood trees. This individual is also larger in circumference and crown spread than all other known species of champion trees in the state.

The wind-borne seeds of plains cottonwood require bare, moist soil and colonize river floodplains. Once established, plains cottonwood is the fastest-growing tree on the plains. This same pioneering ability is a setback under altered water flows, drought and competition in floodplain succession or competition from non-native species. Nowadays, it is common to find mature plains cottonwood trees and stands in the wild that have no young trees in the vicinity, though it is still springing up in native plant landscaping. BH

Plains cottonwood (*Populus sargentii*). In: Britton, N.L., and A. Brown. 1913. *Illustrated flora of the northern states and Canada*. Vol. 1: 591. Courtesy of Kentucky Native Plant Society. Scanned by Omnitek Inc.

WNPS News

– Coming Attractions

2007 Wyoming Plant Conference The 2007 Wyoming Plant Conference agenda, March 20-21 (ten presentations, two workshops, reception, and displays), is posted at: www.uwyo.edu/wyndd/wnps/wnps_home.htm . This event will take place on campus at the University of Wyoming, Laramie, in the Wyoming Union (March 20; 8:30-4:30) and the Aven Nelson Building (March 21; 9:00-5:30).

You can register on the first day of the conference if you haven't already. Workshop registrations are full.

Other Conference co-sponsors include the UW Departments of Botany, Geography, Renewable Resources, and Plant Sciences, Wyoming Natural Diversity Database, U.S. Forest Service, Bureau of Land Management, National Park Service and U.S. Fish and Wildlife Service. Questions? Contact: Bonnie Heidel (bheidel@uwyo.edu; 766-3020) or Ann Boelter (boelter@uwyo.edu; 766-2604).

2007 WNPS Annual Fieldtrip/ Meeting: Mark your calendars - June 16 will be the statewide WNPS annual meeting gathering at Casper Mountain. We will explore "fresh" fire ecology and __ vegetation.

Contact Lynn Moore (lmflora@alluretech.net; or 307-472-3603 (evenings); to stake out a Casper Mountain campsite at Lodgepole Pine campground!

Look for information on meeting times, maps, and agenda in the May newsletter! The 2007 WNPS Annual Meeting and fieldtrip will be held in central Wyoming out of Casper (contact: Lynn Moore). Watch for plans in the March issue.

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Contributors to this issue: Nancy Bockino (NB), Beth Burkhart (BB), Bonnie Heidel (BH), Andrew Kratz (AK), Adam Rollins (AR), Amy Taylor (AT). Please send news and announcements - the next newsletter deadline is April 24.

Newsletter Editor: Bonnie Heidel (Laramie; bheidel@uwyo.edu)
Teton Chapter: PO Box 82, Wilson, WY 83014 (Joan Lucas, Treasurer)
Bighorn Native Plant Society: PO Box 21, Big Horn, WY 82833 (Jean Daly, Treasurer)
Webmaster: Melanie Arnett (arnett@uwyo.edu)

New Members: Please welcome the following new members to WNPS: Megan Bowes, Boulder, CO; Charles Craighead, Moose; Henry Holdsworth, Jackson; Jennifer Jones, Laramie; Bethany Lewis, Boulder, CO; Jake Powell, Buffalo; Gregory & Cerrina Smith, Cheyenne.

Scholarship News: See research reports from 2006 WNPS Markow Scholarship scholars, Nancy Bockino and Adam Rollins, in this issue.

Upcoming Programs of the Teton Chapter of the Wyoming Native Plant Society:
Both programs will be held at the Wyoming Game & Fish Office, 420 North Cache Street in Jackson. For more information, contact: Amy Taylor 733-3776.

Wednesday, March 21, 7:00 p.m.
"Haderlie Farms - From Dairy Farm to Herb Farm"
Program by Curtis Haderlie of Wind River Herbs, Star Valley, Wyoming.

Tuesday, April 3, 7:00 p.m.
"Landscape Change in Arctic Alaska: Observations through Repeat Photography"
Thesis research presented by Forrest McCarthy, a Jackson resident and graduate student at the University of Wyoming, Department of Geography.

Wyoming Native Plant Society
P.O. Box 2500
Laramie, WY 82073

WNPS Board – 2006-07

President: Beth Burkhart '07	605-673-3159
Bonnie Heidel '06	742-9523
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Sec.-Treasurer: Ann Boelter	745-5487
Board Members: Dave Scott '07	690-1683
Mike Evans '06	326-8217
Curtis Haderlie	690-4381

THANKS to all who voted. Newly-elected Board members have '07 after their name. The '06 Board members come off in summer.

Treasurer's Report: Balance as of 3/1/07: General Fund: $1550.60; Markow Scholarship Fund: $1636.50. Total Funds: $3187.10.

Invitations from the President

Treatment for Plant Blindness

By Beth Burkhart

As the new president of the Wyoming Native Plant Society (WNPS), my best hope is to continue the great tradition I've come to associate with this organization – providing a forum for people from a wide variety of perspectives to communicate for a shared goal of botanical appreciation and stewardship in the state of Wyoming. There are two activities sponsored by WNPS going on in 2007 that I hope members will consider taking advantage of:

1) Wyoming Plant Conference in Laramie, March 20-21; and
2) WNPS annual meeting/field trip in the Casper area, June 16

The Conference agenda is posted on the WNPS homepage, and registration is open from now until the Conference. Details on the annual meeting/field trip will be forthcoming in the May newsletter and on the WNPS website. Both are great opportunities for plant-minded people to interact and learn from other plant-minded people – and have a lot of fun!

Another one of my hopes is to help combat "plant blindness", the focus of a campaign by a couple of botanist-educators (James Wandersee and Elizabeth Schussler). They introduced the term "plant blindness" in 1998 as the inability to see or notice plants in one own's environment, leading to the inability to recognize the importance of plants in the biosphere and in human affairs. There are several causes of plant blindness, but Wandersee and Schussler argue that the primary contributor is the nature of the human visual information-processing system (www.botany.org/bsa/psb/2001/psb47-1.pdf). Researchers have calculated that each second, the eyes generate more than 10 million bits of data for visual processing, but the brain processes only about 40 bits and only about 16 bits reach our conscious attention. How does the brain decide which bits to focus on? Put simply, the brain searches for movement, colors, patterns, and objects that are potential threats. Since plants are static, blend in with the background, and don't typically threaten humans, they don't get visual attention. Wandersee and Schussler's solution to plant blindness includes several components, with the most important being plant mentors. "Our research has shown that having a plant mentor in one's life makes a pivotal difference in whether one notices, appreciates, seeks to understand, and cultivates plants," says Wandersee. "Without informal or formal horticultural or botanical education…, one is not likely to care about plants or to realize that all life depends on plants."

I invite all WNPS members to pause and think of yourself as a plant mentor or becoming one!

I look forward to meeting many of you over the next year – in person or otherwise. Please feel free to contact me with any ideas or suggestions for WNPS in the months ahead. (BB)

Disturbance Interactions: Mountain Pine Beetle and Blister Rust in Whitebark Pine

By Nancy Bockino

Introduction

Whitebark pine (*Pinus albicaulis* Englem.) is a keystone species at high elevation in the Greater Yellowstone Ecosystem (GYE). Periodic cone crops from this pine produce abundant lipid-rich seeds that are an essential vegetative food source for some wildlife species, including the grizzly bear (*Ursus arctos horriblis*). The Clark's nutcracker (*Nucifraga columbiana*) is the primary dispersal vector for the wingless seeds, and therefore plays a mutualistic role in the regeneration process. In addition, whitebark pine directly influence watershed quality by regulating snow accumulation and retention, facilitating regeneration after a disturbance, and stabilizing soil and rock on steep, harsh sites (Tomback et al. 2001). Whitebark pine distribution includes treeline and subalpine habitat in the Rocky Mountains from Alberta to Wyoming, and in the North American coastal range from British Columbia to the Sierra Nevada Mountains in California. The whitebark pine populations in the GYE are some of the most extensive in the lower 48 states.

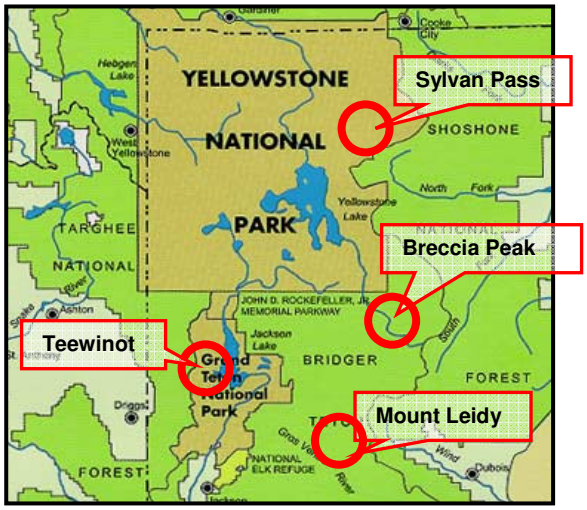
Historically, the principle source of cyclic tree mortality in whitebark pine ecosystems was the mountain pine beetle (*Dendroctonus ponderosae* Hopk.). The mountain pine beetle is a host specific, native insect that reproduces within the subcortical region of coniferous trees. Unlike many other phytophagus insects, reproductive success of the mountain pine beetle is contingent on the death of its host (Raffa & Berryman 1983). Although periodic epidemics of bark beetles result in widespread tree mortality, these outbreaks are within the historic range of variability of disturbance in whitebark pine ecosystems. These epidemics are an important component of stand dynamics, as they initiate regeneration by increasing light and nutrient availability, and stimulate primary productivity and energy flow much like a stand-replacing fire (Romme et al. 1986).

Large diameter, multi-trunk, whitebark pine on Mount Leidy, Bridger-Teton National Forest. Crown color indicates the tree was attacked one year prior. Photo taken August 2006 by Nancy Bockino

In contrast to the mountain pine beetle, blister rust is an exotic pathogen introduced to North America in 1910 and continuous source of disturbance, rather than cyclic. Mycelium from this fungus penetrates the tree's living bark and cambial tissue, destroying the water and nutrient transport system. Paramount to the influence of this fungus is a severe reduction in whitebark pine recruitment due to the loss of cone production and extensive damage to seedlings and saplings (Tomback et al. 1995). Blister rust is continuing to spread throughout the GYE (Kinloch 2003), and due to its perpetual presence, is considered the most damaging agent to whitebark pine.

Currently, whitebark pine is being severely impacted by both bark beetles and white pine blister rust (*Cronartium ribicola* Fisch.). It is not known how the following variables influence this species' susceptibility to the mountain pine beetle: 1) presence of an alternate host, specifically lodgepole pine (*Pinus contorta* var. *latifolia*); 2) severity of white pine blister rust; or 3) variable whitebark pine density due to diffusion by non-alternate host species. Because the current condition of whitebark ecosystems is beyond the historic range of variability, my master's research seeks to quantify the interactions between blister rust and the mountain pine beetle to promote successful preservation strategies for this critical and charismatic high elevation conifer.

Study sites in the GYE



Research Project

During the summer of 2006, I collected data from four study sites in the GYE for my Masters research with the help of two dedicated field assistants Michael Straw and Ryan Simms. Site selection was based on biophysical characteristics: 1) the bedrock from which the current soils are derived; 2) stand overstory conifer species composition; and 3) the presence of current mountain pine beetle activity as identified through the use of Forest Health Protection aerial surveys, personal field reconnaissance, and cooperation with National Forest and Park Service personnel.

Three of the four study sites were differentiated by bedrock origin in order to account for potential geologically influenced variation in whitebark pine vigor; Breccia Peak is derived from volcanic substrate, Mount Leidy from sedimentary, and Teewinot from crystalline. At these three sites, two stand types were identified based on overstory conifer species composition to determine the roles tree density and a "diffusion-effect" by non-host species (*Abies lasiocarpa* Hook. and *Picea engelmanni* Parry.) play in the susceptibility of an individual whitebark pine to selection by the mountain pine beetle within this sites. Blister rust was present on all three sites and in both stand types. The fourth study site, Sylvan Pass, is dissimilar from the above three sites because blister rust is absent, and whitebark and lodgepole pine are growing is association as codominant canopy species. This site was examined to determine the role of host species in selection by the mountain pine beetle.

At each stand, 24 temporary angle point sampling plots, using a metric basal area factor of 2.0, were systematically established to collect both tree and plot level data. Tree data collected included species, diameter at 1.3 meters, live or dead status, cone presence or absence, average number and size of pitch tubes, crown needle color (Wulder et al. 2006), and blister rust severity (based on Six & Newcomb 2005). Plot data included UTM coordinates (NAD 83, Zone 12), elevation, slope, aspect, and topographic position.

Data analysis, which is still in progress, incorporates several statistical techniques. Non-parametric chi-square analyses were utilized to test the statistical significance of the differences in frequency of a given characteristic (such as tree diameter and blister rust severity) for bivariate tabular data (SAS Institute, 2006). Selection ratios provide a probability of use for a specified host characteristic, and are calculated by determining the frequency of occurrence of mountain pine beetle in habitat A compared to the frequency in habitat B (Manly et al. 1993). In this case, dissimilar mountain pine beetle habitats are defined by individual whitebark pine host characteristics. For example, selection by mountain pine beetle for whitebark pine with heavy blister rust was compared to the selection of trees with light blister rust. Selection ratio analyses complimented the chi-square analyses by accounting for stand density, species composition, epidemic intensity, and temporal sequence of attack. Logistic regression was used to describe a dichotomous

discrete response (selection by mountain pine beetle or not) as a function of tree and stand variables (Minitab Release 14.1, 2007).

Preliminary Findings

The overall condition of the whitebark stands sampled in this study provides a perspective on the severity of the disturbances currently impacting whitebark pine in the GYE. Roughly one half of the whitebark pine sampled in this study are dead, 70% have been attacked by mountain pine beetle, and 85% have at least one blister rust symptom.

Our data provide evidence that at Sylvan Pass, the mountain pine beetle outbreak began in the whitebark pine, which were preferentially selected over lodgepole pine throughout the progression of the epidemic. In addition, beetle activity was greater in trees with greater blister rust severity. Therefore, we conclude that host tree species and blister rust severity influence individual tree selection by mountain pine beetle.

Acknowledgments

This project was funded through a University of Wyoming-National Park Service Research Grant, a Joint Fire Science Program Grant # H1200040001, and the Stewart Markow Scholarship from the Wyoming Native Plant Society. I am especially grateful for my devoted and hard-working field assistants – Michael Straw, Ryan Sims, & Alida Bockino. Support from Dan Tinker, Ken Gerow & David Legg – University of Wyoming, Cory Bolen & Bill Romme – Colorado State, Kelly McCloskey – Grand Teton National Park, Liz Davey & Andy Norman-Bridger-Teton National Forest, Steve Munson & Dick Halsey – Forest Health Protection & Roy Rankin – Yellowstone National Park was invaluable.

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University of Wyoming, Department of Botany

2007 Wyoming Plant Species of Concern

Look for the updated 2007 Wyoming Plant Species of Concern List on the Wyoming Natural Diversity Database (WYNDD) homepage (www.uwyo.edu/WYNDD). Printed copies are also available on request and will be distributed at the Wyoming Plant Conference (March 20). The 469 species of special concern represent over 16% of the state flora, including species that are local and regional endemics, disjuncts, or species at the margins of their distribution. In addition, there are 32 species of *potential* concern, plant species of limited distribution that are vulnerable to landscape changes and which represent a moderate degree of conservation concern. Data representing the work of many botanists are compiled for each species on distribution, status ranking, and bibliographic references, and are available to agencies, consultants, researchers, educators, and the public at large.

For data requests, questions, and comments; or new distribution information from collections or surveys, please contact WYNDD staff thru the WYNDD homepage, by email [Bonnie Heidel, Botanist (bheidel@uwyo.edu); Joy Handley, Assistant Botanist (thuja@uwyo.edu); Melanie Arnett, Data Specialist (arnett@uwyo.edu)], or else by mail (WYNDD, Dept. 3381, 1000 E. University Ave., Laramie, WY 82071). BH

USFS Species Conservation Assessments Completed

The US Forest Service's Rocky Mountain Region is finishing its Species Conservation Project, a milestone in botany and wildlife work. This effort began in earnest in 2001, producing information to better manage for ecosystem integrity and species viability. One type of product produced is a series of over 200 Species Conservation Assessments, including 72 that address Wyoming plant species (below). These assessments compile and synthesize knowledge of the biology, ecology, risks, conservation needs and management of these species. Each manuscript was submitted for external peer review by one of three independent scientific organizations: the Society for Conservation Biology, the American Fisheries Society, and the Center for Plant Conservation. The assessments have been well received, and are being used by many different agencies and organizations. The good news for botanists is that all the plant assessments (over 120) have been completed! They are available as PDF files on the internet at http://www.fs.fed.us/r2/projects/scp/assessments/index.shtml. AK

Wyoming plants addressed in USFS Species Conservation Assessments

Aletes humilis
Amerorchis rotundifolia
Aquilegia brevistyla
Aquilegia laramiensis
Arabis crandallii (Boechera crandallii)
Asclepias uncialis
Aster alpinus var. vierhapperi
Astragalus barrii
Astragalus gilviflorus var purpureus
Astragalus leptaleus
Botrychium ascendens, B. crenulatum, B. lineare
Botrychium campestre
Botrychium multifidum
Botrychium simplex
Braya glabella var glabella
Carex alopecoidea
Carex diandra
Carex leptalea
Carex limosa
Carex livida
Cymopteris evertii
Cypripedium montanum
Cypripedium parviflorum
Descurainia torulosa
Draba globosa
Draba porsildii var brevicula
Draba ventosa
Drosera anglica
Eleocharis elliptica
Epipactis gigantea
Eriogonum exilifolium
Eriophorum chammisonis
Eriophorum gracile
Eriophorum scheuzeri
Eritrichum howardii
Festuca hallii
Ipomopsis aggregata var weberi
Ipomopsis spicata ssp robruthiorum
Kobresia simpliciuscula
Leptodactylon watsonii
Lesquerella arenosa var argillosa
Lesquerella fremontii
Lesquerella parvula
Machaeranthera coloradensis
Parnassia kotzbuei
Parthenium alpinum
Penstemon absarokensis
Penstemon caryi
Penstemon laricifolius ssp exilifolius
Physaria saximontana var saximontana
Physaria didymocarpa var lanata
Potentilla ambigens
Primula egaliksensis
Pyrrocoma carthamoides var subsquarrosus
Pyrrocoma clementis var villosa
Pyrrocoma integrifolia
Ranunculus karelinii
Rubus arcticus ssp acaulis
Salix barratiana
Salix candida
Salix myrtillifolia
Salix serissima
Saussurea weberi
Selaginella selaginoides
Shoshonea pulvinata
Silene kingii
Sisyrinchium pallidum
Sullivantia hapemanii var hapemanii
Townsendia condensata var anomala
Triteleia grandiflora
Utricularia minor
Viburnum opulus var americanum

The Myxomycetes of Thunder Basin National Grassland

By Adam W. Rollins

The myxomycetes (plasmodial slime molds) are a group of phagotrophic eukaryotes possessing a unique life cycle. They have been documented from the Polar Regions to the Tropics, where members of this group occur in association with dead and decaying plant material. Traditionally, the slime molds have been studied in forested ecosystems. By contrast, grasslands have gone virtually unexplored for myxomycetes with the exception of a few papers citing records from gallery forests and dung when the latter was examined as a substrate for fungi. A review of the literature failed to produce a single paper specifically addressing the myxomycetes associated with grasslands. My PhD research addresses the "Biogeography, microhabitat associations and community structure of the myxomycete and dictyostelid communities associated with North American grasslands".

Conventionally, slime molds have been studied by mycologists since their fungal-like fruiting bodies seemed to align them with the fungi. Myxomycetes germinate from spores, emerging as microscopic amoebae (myxamoebae) that feed primarily on bacteria. Eventually, the myxamoebae convert (sexually or asexually) into a plasmodium, which is essentially a giant multinucleated cell that may look "slimy". The plasmodium creeps along in its environment, feeding and eventually giving rise to fruiting bodies that resemble those of fungi. It is this duality between the slimy animal-like stage and the fungal-like stage that has caused these organisms to be referred to as slime molds. In light of molecular and life cycle studies, we now understand that these organisms are protists belonging to the group Amoebozoa.

Small amounts (1 cm^3) of soil may contain as many as 20,000 myxamoebae which may account for 1/3 of the total amoebal activity. This suggests that myxomycetes play an important role in nutrient cycling as components of the detritus food chain. Additional studies have concluded that some myxomycetes are highly rhizophilic. The ecology of these organisms is rather poorly understood and more research is warranted to understand their ecological roles.

Thanks to assistance from the Wyoming Native Plant Society, two collecting trips have been made to the Thunder Basin National Grassland. The study areas were dominated by cool season (C3) grasses with scattered sagebrush shrubs and forbs. Substrate materials were collected from four microhabitats suspected to support myxomycetes within the Thunder Basin study area. The microhabitats sampled were (1) aerial litter of grasses, (2) ground litter of grasses, (3) aerial litter of forbs [broadleaf plants] and (4) ground litter of forbs. These materials were used to prepare moist chamber cultures.

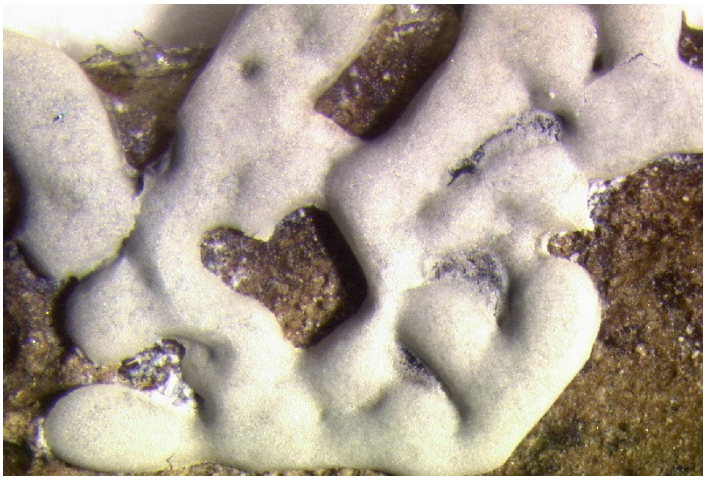
The moist chamber method involves placing dead pieces of plant material into plastic Petri dishes lined with filter paper. Then water is added to cover the material and the latter is allowed to soak for approximately 24 hours. At the end of this time, the pH of the moist chamber is measured and the excess water decanted. The moist chambers are then monitored for the appearance of myxomycete fruiting bodies, which are collected and preserved when they develop. This method, in addition to field collections, is commonly used to evaluate myxomycete diversity and is believed to reflect the active populations of an area.

I have found that myxomycetes are surprisingly common and abundant in the grassland ecosystem. The moist chambers yielded 61 collections of myxomycetes distributed over 18 species. *Badhamia gracilis*, a myxomycete apparently associated most commonly with arid ecosystems, was the overwhelming dominant, accounting for 31% of the total collections. *Didymium difforme* was also common, accounting for 11% of the total collections. In general, myxomycetes were found to be more abundant within the two ground microhabitats when compared to the two aerial microhabitats. The microhabitats represented by forbs were found to be more productive when compared to those of grasses. Fifty-five percent of the collections were obtained from microhabitats associated with forbs.

The fruiting bodies of *Badhamia gracilis*, the most common myxomycete collected from the Thunder Basin National Grassland. Photo by Adam W. Rollins

A correspondence analysis ordination revealed that *Didymium squamulosum*, *Physarum gyrosum* and *Stemonitis fusca* were associated with grass microhabitats, whereas *Badhamia gracilis* and *Fuligo cinerea* tended to utilize microhabitats associated with forbs. The distribution of species was found to be correlated with the pH of the microhabitats. The mean pH of grass microhabitats (5.5) was lower when contrasted to the microhabitats associated with forbs (6.3). This difference was found to be statistically significant (Prob > F = 0.0002). The role that pH exerts is not fully understood. It may affect the assemblages of myxomycetes directly, due to their physiological constraints, or indirectly by affecting the food organisms (e.g. bacteria) upon which they feed.

In summary, myxomycetes are common and relatively abundant in the Thunder Basin National Grassland. It is probable that they exert an under-appreciated ecological role in grassland ecosystems, most likely by nutrient cycling in the detritus food chain. A survey of the Thunder Basin National Grassland resulted in 61 collections representing 18 species of myxomycetes. Commonly recovered species such as *Badhamia gracilis* are suspected to be associated with arid



Didymium difforme, the second most common myxomycete collected from the Thunder Basin National Grassland. Photo by Adam W. Rollins

regions. The assemblages of myxomycetes were found to vary between available microhabitats.

The Thunder Basin study area represents one of nine grassland study areas in my PhD research. Preliminary data suggests that myxomycetes are less diverse in grassland ecosystems when compared to forest ecosystems. However, the myxomycetes are quite abundant in the grasslands. Furthermore, my work suggests that the diversity and abundance of myxomycetes in grasslands increases with increasing annual precipitation. Regardless, the grassland ecosystem is vastly understudied with respect to the myxomycetes. More work is required to understand their ecological roles and overall importance in grasslands. Additional research is presently underway in association with this project, including an investigation of the population genetics of *Badhamia gracilis* through plasmodial fusion tests and the molecular structure of *Didymium squamulosum* populations.

For additional information regarding this project, I invite you to visit my website at http://comp.uark.edu/~arollin/GrassB.html and for general information about myxomycetes my lab's web site at http://slimemold.uark.edu/. I am greatly thankful to the Wyoming Native Plant Society for financial support in this project. Thank you.

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Flora of North America Note Cards

To celebrate publication of the Asteraceae volumes, the Flora of North America Association released a first-time set of 12 note cards (4 x 6") featuring FNA plant illustrations, with information about their artists and authors. The illustrations and information are taken from the three volumes that treat the Asteraceae (Vols. 19-21). Each card reproduces the botanical illustration of a taxon on front, and a distribution map, taxonomic placement, and notes about the taxon, author, and artist on back. The set of 12 cards includes three Wyoming species (*Helianthus maximiliani, Packera amplectens* var. *holmii*, and *Townsendia florifera*).

To order the card set, send your name, address and phone number (in case of questions). Please indicate the total number of sets (___ x $12/each set) and the total enclosed (checks only).

Send order form and payment to:
Nancy Morin
FNA Business Office
P.O. Box 716
Point Arena, CA 95468

Wyoming Native Plant Society
P.O. Box 2500
Laramie, WY 82073

The Wyoming Native Plant Society is a non-profit organization established in 1981, dedicated to encouraging the appreciation and conservation of the native flora and plant communities of Wyoming. The Society promotes education and research on native plants of the state through its newsletter, field trips, and annual student scholarship award. Membership is open to individuals, families, or organizations. To join or renew, return this form to:

Wyoming Native Plant Society
P.O. Box 2500, Laramie, WY 82073

Name: _____

Address: _____

_____

Email: _____

___ $7.50 Regular Membership
___ $15.00 Scholarship Supporting Member
($7.50 goes to the Markow Scholarship Fund)

Check one:

_____New member
_____Renewing member

__Renewing members, check here if this is an address change.