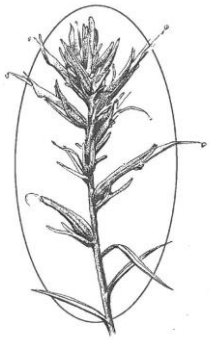


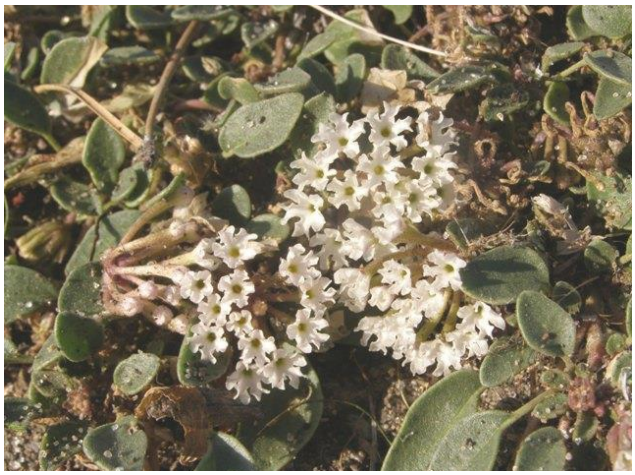
Castilleja linariifolia

Castilleja

Publication of the Wyoming Native Plant Society

December 2016, Volume 35(4)

Now posted at www.wynps.org



Above: *Abronia ammophila* (Yellowstone sand verbena). By B. Heidel

ONLY in National Parks

Wyoming is a land of many firsts, foremost when it comes to National Parks. Yellowstone National Park was the first national park to be established in the nation in 1872, and Devils Tower National Monument was the first national monument in the country, 34 years later, in 1906. In fact, creation of Yellowstone NP pre-dated statehood, so that technically, Yellowstone NP never was nor will be in Wyoming! If Wyoming events sometimes happen precociously, it should come as no surprise that both these designations happened before the establishment of the National Park Service (NPS) a century ago in 1916.

Before 2016 and the 100th National Park Service anniversary get away from us, we have time to celebrate NPS lands and their riches in native plants. NPS is anything BUT a monolithic land manager in our state, and Wyoming is also home to national historic sites and national recreation areas administered by NPS (Table 1). What all NPS units and all regions all have in common is a central natural resources mandate stressing preservation and public enjoyment.

This bodes well for a special league of native Wyoming plants that are found only on NPS lands in the state, including at least 41 such vascular plant species that are only in National Park Service-administered land (Table 2). A few of the green NPS denizens are found nowhere else in the world – see Jennifer Whipple's *Yellowstone Science* article about the plant species endemic to Yellowstone NP (https://www.nps.gov/yell/learn/upload/ys20_1.pdf). Many more of the species are concentrated on NPS lands though also found elsewhere in Wyoming.

A high proportion of the 41 NPS plant species of concern are wetland species as found on the lakes, ponds, rivers, springs and thermal features of NPS units in Wyoming where researchers continue to discover native species that are new to NPS units if not the state – see the newsletter article "Plunging into Yellowstone aquatics" (http://www.wynps.org/wp-content/uploads/Oct14_Castilleja.pdf). Unfortunately, NPS lands are also sometimes at the forefront of some new state plant records for noxious weeds, making them the vanguards in both native and noxious realms.

...National Park Service lands in Wyoming also harbor some of the highest numbers of populations for certain other rare plant species, or else their largest populations. National Parks, as the Nation's best idea, are the best or only bastion for some of Wyoming's rare plant riches. BH (Cont. p. 3 for Tables 1 and 2).

In this issue:

WYNPS News

Tis the Time: Please renew your membership for 2017 and cast your vote for new 2017 officers – *thanks!*

Mark Your Calendar: June 9-12, Wyoming Native Plant Society 2017 Annual Meeting will be in the Black Hills. The Great Plains Native Plant Society is co-host. Watch for hike and registration announcements on our homepage and in the next newsletter. Activities will be centered in Sundance, and camping is available at Sundance trail head, Reuter Campground, Mountain View KOA, or hotels in town. See you in Sundance!

Treasurer's Report: Treasurer's report: Balance as of 29 Nov 2016: Scholarship = $1485; general fund = $6848; total = $8333.

WYNPS Board – 2016
President: Karen Clause, Pinedale (kdclause@centurytel.net)
Vice-President: Brian Sebade, Laramie (bsebade@uwyo.edu)
Sec.-Treasurer: Dorothy Tuthill (dtuthill@uwyo.edu)
Board-at-large:
Walt Fertig, Phoenix, AZ ('16-'17) (waltola64@gmail.com)
Bob Giurgevich, Sheridan ('15-'16) (bobgiurgevich@live.com)

Other contacts:
WYNPS homepage: www.wynps.org; also on Facebook
Teton Plants Chapter: Amy Taylor, Treasurer (tetonplants@gmail.com) and homepage http://www.tetonplants.org/
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Mailing address:

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

Message from the President

As I enter the hot-chocolate-drinking phase of my term, I find myself thinking of the new plants learned and friends made along the trail. It has been a busy and rewarding time for me, and I thank all of you for entrusting me to lead the organization. I have no doubt that there are things I could have done better, but I am proud of what has been accomplished by the Board of Directors during my tenure as your President.

It takes many committed and active members to make a successful organization. I encourage all to consider volunteering to serve on the Board of Directors or on a committee. Trust me, you will be glad that you did ☺.

I have many to thank for supporting me: Ann Boelter, Hollis Marriott, Dorothy Tuthill, Walt Fertig, Brian Sebade, Bob Giurgevich, Amy Taylor, Bonnie Heidel, just to name a few! I won't be a stranger, and I look forward to continuing to support the Society on our Facebook page.

Happy Trails to You,

~Karen Clause

Markow Scholarship/Grant: Please distribute the enclosed scholarship/grant announcement for the 2017 Scholarship/Grant – due 15 Feb. Submittal can be on-line or by mail, for receipt by the deadline.

Deadline for next Issue: Announcements and ideas are welcome at any time. The next deadline is 15 Feb.

ONLY in National Parks, cont. from p. 1

Table 1. National Park Service Lands in Wyoming

NPS Units Name	Area (ac)
Bighorn Canyon Natl. Recreation Area	21,156[1]
Devils Tower Natl. Monument	1347
Fort Laramie Natl. Historic Site	833+340[2]
Fossil Butte Natl. Monument	8334
Grand Teton Natl. Park	224,053[3]
Yellowstone Natl. Park	1,900,032[4]

Table 2. Wyoming plant species of concern found only on National Park Service lands

Scientific Name[5,6]	Common Name	GRANK[7]	SRANK[8]
Abronia ammophila[1]	Yellowstone sand verbena	G1	S1
Agrostis rossiae[1]	Ross' bentgrass	G1	S1
Aspidotis densa	Indian's dream	G5	S1
Carex flava	Yellow sedge	G5	S1
Carex laeviculmis	Smooth-stemmed sedge	G5	S1
Carex proposita	Smoky Mountain sedge	G4	S1
Cirsium canovirens	Gray-green thistle	G4G5	S1
Cyperus acuminatus[6]	Short-point flatsedge	G5	S1
Cyperus bipartitus[6]	Shining flatsedge	G5	S1
Dodecatheon jeffreyi ssp. *jeffreyi*	Jeffrey's shootingstar	G5T3T5	S1
Dulichium arundinaceum	Three-way sedge	G5	S1
Eleocharis bella	Delicate spikerush	G5	S1
Eriogonum umbellatum var. *cladophorum*[1]	Yellowstone sulphur buckwheat	G5T1	S1
Glandularia bipinnatifida	Dakota vervain	G5	S1
Huperzia haleakalae	Fir clubmoss	G5	S1
Ionactis alpine	Lava aster	G5	S1
Isoetes echinospora	Spiny-spore quillwort	G5	S1
Isoetes occidentalis	Western quillwort	G4G5	S1
Lemna gibba	Inflated Duckweed	G4G5	S1
Lemna valdiviana	Pale duckweed	G5	S1
Lipocarpha drummondii[6]	Dwarf rush	G4G5	S1
Lobelia siphilitica[6]	Great blue lobelia	G5	S1
Lysimachia thyrsiflora	Swamp loosestrife	G5	S1
Mimulus nanus ssp. nanus	Dwarf purple monkey flower	G5T4	S1
Montiastrum lineare	Linearleaf miner's-lettuce	G5	S1
Myriophyllum quitense[9]	Andean watermilfoil	G4?	S3
Najas flexilis	Slender naiad	G5	S1
Ophioglossum pusillum	Adderstongue	G5	S1
Orobanche corymbosa var. corymbosa	Flat-top broomrape	G4T4	S1S2
Physaria pachyphylla	Pryors twinpod		S1
Polemonium micranthum	Annual polemonium	G5	SH
Potamogeton obtusifolius	Blunt-leaf pondweed	G5	S1
Potamogeton zosteriformis	Flatstem pondweed	G5	S1
Pseudognaphalium microcephalum var. thermale	White cudweed	G5T4Q	S1
Ranunculus aquatilis var. aquatilis	White water-crowfoot	G5	S1
Senecio hydrophiloides	Sweet marsh butterweed	G4G5	S1
Sisyrinchium idahoense var. idahoense	Idaho blue-eyed grass	G5T4	S1
Torreyochloa pallida var. fernaldii	Fernald alkali-grass	G5T4Q	S1
Trautvetteria caroliniensis	Carolina tassel-rue	G5	S1
Trisetum canescens	Tall trisetum	G5	S1

[1] Includes land in Montana
[2] The second figure represents non-NPS federal lands administered by NPS as part of Fort Laramie NHS
[3] Does not include the Dec 2016 acquisition of State Land expanding GTNP
[4] Includes land in Idaho and Montana
[5] Global distribution is restricted to Yellowstone National Park
[6] Not restricted to NPS lands, but the only places they occur on public lands in WY are on NPS
[7] Global rank assignment in system by NatureServe, with G1=Globally Imperiled and G5=Demonstrably Secure throughout its distribution
[8] State rank assignment in system by NatureServe, with S1=Globally Imperiled and S5=Demonstrably Secure in its Wyoming distribution
[9] No longer considered rare based on Hellquist et al. (2014) records

Growing Native Plants

Part 22. Tall Shrubs

By Robert Dorn

Artemisia tridentata var. *tridentata*, Basin Big Sagebrush, grows to 10 feet or more high and can be trained like a single-trunked small tree. This is the tallest of our three varieties. The leaves are gray-green, to 2 inches long, and usually tipped with three teeth or lobes. They are aromatic, especially when wet after a rain. They persist over winter and are replaced by new leaves in the spring. The flowers are yellow, rather inconspicuous, and borne in small heads in elongate panicles. They appear mostly in August and September. The plants occur naturally mostly in our western basins especially along washes and in other moist depressions. They prefer moist to dry, open areas in deep loamy soil. They are very cold and drought tolerant but do not tolerate wet conditions nor highly alkaline soils. It can be grown from seed or winter stem cuttings treated with rooting hormone. Seed may not ripen until January so it is best to collect it after that time when it will have been cold stratified as well. Surface sow to allow light exposure. Seed is also commercially available. Cold stratification for 10 days may help germination of commercial seed. Small plants are easily transplanted.

Artemisia tridentata var. *tridentata*, Carbon County

Salix lasiandra var. *caudata*, Whiplash Willow, is generally 15 feet high or less and about half as wide. The leaves are lance shaped, dark green, somewhat shiny, to 5 inches long, and turn yellow in fall. The flowers are borne in catkins which appear with the leaves from May to July depending on elevation. The plants occur naturally along streams and in swamps and wet meadows in the mountains and foothills and rarely lower down. They prefer moist to wet areas in full sun. It is easiest to grow from stem cuttings taken in late winter, dipped in rooting hormone, and placed in water or a continuously moist growing medium. If in water, transplant to soil once a good cluster of roots develops and keep wet until well established. It is also in the nursery trade.

Salix lasiandra, cultivated in Cheyenne

Salix scouleriana, Scouler Willow, can reach 30 feet high and half as wide. The leaves are dark green on the upper side and lighter on the underside, obovate to oblanceolate, to 3 inches long, and turn yellow in fall. The flowers are borne in catkins which usually appear before the leaves similar to the "pussy willow." They appear from April to June depending on elevation. The plants occur naturally on moist, well drained slopes or in open woods in the mountains. This willow is unlike most others in that it does not tolerate wet conditions but still needs a moist soil for most of the growing season. It will also tolerate light to moderate shade once established. Propagation is the same as for *Salix lasiandra* above. Fresh seed will germinate readily on a wet soil surface where there is direct light. Stored seed may not germinate. It is also in the nursery trade. [The photo of *S. scouleriana* is on the next page.]

Salix scouleriana, Rio Blanco County, Colorado

Sambucus racemosa, Mountain Elderberry, grows to 12 feet high and 8 feet wide. The multiple stems often die back nearly to the ground in winter. The stems are pithy and tend to be weak. The leaves are opposite and pinnately compound with mostly 5 or 7 leaflets to 5 inches long. The flowers are cream colored to white, about 1/4 inch across, and borne in a pyramid-like cluster to 4 inches long at tips of stems. They appear from May to July. The fruits are red to black berries, about 1/4 inch wide, and attractive to birds. The plants occur naturally in moist, open or partly shaded areas of the mountains. It is easily transplanted. Seed needs 30 to 60 days dry, warm stratification followed by 90 to 150 days cold stratification. It is also in the nursery trade.

Sambucus racemosa, Garfield County, Colorado

Viburnum lentago, Nannyberry, grows to 15 feet high and 10 feet wide. The leaves are opposite, ovate to elliptic with long pointed tips, to 3.5 inches long, and turn orange or reddish in fall. The flowers are creamy white, to 1/4 inch across, and in clusters to 5 inches across at the branch tips. They appear in May and June. The fruits are berry-like, to 1/2 inch long, changing from green to red to blue-black, and in drooping clusters. They are attractive to birds. The plants occur naturally in moist to dry woods or along streams on the plains or in the foothills. They prefer moist, loamy, open or partly shaded conditions. It can be grown from hardwood cuttings or seed. The seed needs 150 to 270 days warm stratification (root develops), 60 to 120 days cold stratification (breaks epicotyl dormancy), then sow in place in spring. Barely cover with soil to allow some light exposure. Seed growing can be a challenge. It is also in the nursery trade.

Viburnum lentago, Crook County

The Sequel: Alive and Well

It's time to take stock! Floras contain cumulative roll calls, and hidden in the ranks of current floras are native plant species that have not been documented in recent decades. The last time Wyoming's historical species were flagged (Heidel 2003), there were 41 historical species. Since then, eight species have been re-discovered and ten more were flagged as having taxonomic change or questions whether or not they were in Wyoming, changing whether or not they are considered.

Historical species recognized in the Wyoming flora (Dorn 2001) defy ranking in the state species of concern lists (Heidel 2012, and updates). In general, they have not been documented since 1970 when systematic surveys and precise location information came into common practice in the state. Some were last collected by Aven Nelson, or much earlier by Thomas Nuttall.

Eight species re-joined the ranks of the alive-and-well (Table 1). Four were re-discovered as a result of floristic inventories through the Rocky Mountain Herbarium, and two were re-discovered as part of recent aquatic plant research in Yellowstone National Park. Six of the eight species are aquatic or wetland plants, reflecting botanical work in these habitats.

Table 1. Wyoming plants rediscovered since 2003

Scientific name	Common name	Source
Astragalus diversifolius	Meadow milkvetch	Heidel 2009
Astragalus leptaleus	Park milkvetch	Lukas 2012
Carex proposita	Smoky Mountain sedge	Kesonie 2009
Cirsium canovirens	Gray-green thistle	YELLO
Huperzia haleakalae	Fir clubmoss	Kesonie 2009
Potamogeton obtusifolius	Blunt-leaf pondweed	Hellquist et al. 2014
Potamogeton zosteriformis	Flatstem pondweed	Hellquist et al. 2014
Spirodela polyrrhiza	Common water-flaxseed	Kesonie 2009

As of 2016, twenty-five species are still regarded as historical (Table 2), i.e., it is not known whether or not they persist in Wyoming until there are concerted surveys or other forms of investigation. A state rank of "historical" flags the need for botanical work.

Table 2. Wyoming plants known only from historical records

Scientific Name	Common Name
Arceuthobium douglasii	Douglas-fir dwarf mistletoe
Asclepias hallii	Hall's milkweed
Asclepias subverticillata	Horsetail milkweed
Bromus pubescens	Hairy wood brome
Callirhoe involucrata	Purple poppy-mallow
Collomia grandiflora	Large-flower mountain-trumpet
Cuscuta megalocarpa	Big-fruited dodder
Draba spectabilis var. oxyloba	Showy draba
Elymus triticoides	Beardless wildrye
Euphorbia exstipulata var. exstipulata	Square-seeded spurge
Froelichia gracilis	Slender snake-cotton
Heterocodon rariflorus	Western pearl-flower
Hymenopappus tenuifolius	Chalkhill woollywhite
Lithospermum multiflorum	Purple gromwell
Melica smithii	Smith's melic-grass
Oxytheca dendroidea	Treeline puncturebract
Penstemon watsonii	Watson's beardtongue
Polemonium micranthum	Annual Jacob's-ladder
Polystichum scopulinum	Mountain holly-fern
Potentilla ambigens	Silky-leaf cinquefoil
Ranunculus flabellaris	Greater yellow water buttercup
Spirodela polyrrhiza	Common water-flaxseed
Stephanomeria exigua	White-plume wire-lettuce
Townsendia florifera	Showy Townsend-daisy

Literature Cited

Dorn, R.D. 2001, 3rd ed. Vascular Plants of Wyoming. Mountain West Publishing, Cheyenne, WY.

Heidel, B. 2003. Alive and Well. *Castilleja* 22(4): 1, 7.

_____. 2009. Status of *Astragalus diversifolius* (meadow milkvetch) in south-central Wyoming. Unpublished report prepared for the Bureau of Land Management, Rawlins and Rock Springs Field Offices by the Wyoming Natural Diversity Database, Laramie, WY.

_____. 2012. Wyoming plant species of concern. Wyoming Natural Diversity Database, Laramie, WY.

Hellquist, C. E., C. B. Hellquist, and J. J. Whipple. 2014. New records for rare and under-collected aquatic vascular plants of Yellowstone National Park. Madroño 61(2):159-176.

Kesonie, D. T. 2009. A floristic inventory of Grand Teton National Park and the Pinyon Peak Highlands, Wyoming. Masters Thesis. Department of Botany, University of Wyoming, Laramie, WY.

Lukas, L. E. 2012. A floristic inventory of vascular plants of the Medicine Bow Mountains, southeastern Wyoming. Masters Thesis. Department of Botany, University of Wyoming, Laramie, WY.

Botanist's Bookshelf-

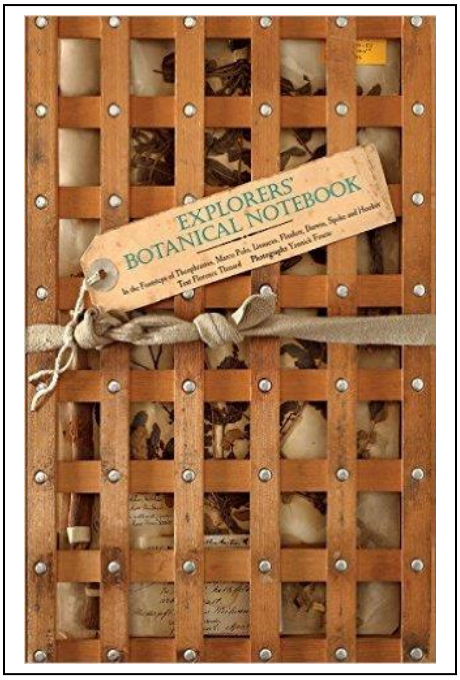
Thinnard, F. 2016. **Explorers' Botanical Notebook: In the footsteps of Theophrastus, Marco Polo, Linnaeus, Flinders, Darwin, Speke and Hooker**. Firefly Books, Ltd., Richmond, Ontario. 176 pp. Photographs by Yannick Fourie. (Hardcover, 8.70 x 13.50") (ISBN-13: 978-1770857636). $39.95 Canadian + Shipping (http://www.fireflybooks.com/index.php/catalogue)

By Dorothy Tuthill

When I struggle with the apparent plant-blindness of our contemporary society, it's nice to be reminded that it hasn't always been thus. The orchid craze of the nineteenth century led to the exploration (and desecration) of tropical areas around the world, in the search for the most sublime of species. The search for plants of potential medical value lead explorer and Harvard professor Richard Evans Schultes deep into Amazonia, adventures that have captured the imagination of many and inspired a popular movie series. Christopher Columbus was looking for plant materials—herbs and spices—when he bumped into the "new world," and much of the new world was first experienced by Europeans through the strange and colorful plants collected to become trophies in the gardens of the rich.

This lavishly illustrated book recounts more than 60 tales of plant exploration, from 1465 BCI, when Queen Hatshepsut send 1000 soldiers to Punt in search of myrrh, frankincense, and turpentine, to Francis Halle's 21st century exploration of the rainforest canopy of Madagascar. Each tale is accompanied with a full page (8.5 x 13.5") reproduction of a herbarium specimen, often one collected by the explorer himself, or rarely, herself. The tales, brief biographies, and additional materials are a pleasure to review, but the specimens are the dominant feature of the book, and the heart of it. Selected from the collections of the Royal Botanic Garden, Kew, and the Université Montpelier 2, they date back to the early 1800s. (With their many annotations, some tell post-collection tales, as well, though those are not revealed in this volume.) To give a small taste of the book:

A specimen of *Cinchona*, *C. officinalis*, its collection date unreadable, accompanies the story of Joseph de Jussieu, who prepared an extract (quinine) from the tree while in Peru in 1737. He "went native" for a while, studying the plants and insects of the Amazon forest, and returned to Quito in time to see the beheading of the last Inca. After almost 40 years in Peru, he returned to France, though most of his specimens and work were lost at sea, including his report on quinine.



The story of quinine continues via a specimen of *Gustavia pulchra* (Lecythidaceae) collected along the Rio Negro in 1852 by Richard Spruce. It illustrates another tale of exploration in Amazonia, this time in search of *Cinchona pubescens* at the request of Queen Victoria. Though half paralyzed, Spruce was able to ship seeds and plantlets to England, indirectly saving thousands of lives. Spruce (whose writings eventually inspired Richard Schultes to head to Amazonia) also gathered copious records of indigenous uses of plants, and discovered a number of rare species, before retiring back to England after 15 years.

The names of many of these plant collectors will be known to the reader, though some will probably be unfamiliar, and the same is true for the plants represented in the book. Yet, the tales are all exciting (murders, shipwrecks, unimaginable hardships!), and the specimens and their labels will keep the attention of contemporary plant collectors and enthusiasts alike. Don't expect to learn many

Explorer's Botanical Notebook, cont. from p. X

details about plant exploration, as most of the stories are less than a page in length. Rather, be prepared to immerse yourself in the adventure, take notes on which plants and adventurers to learn more about, and enjoy the beauty of this book.

As the foreword says, every herbarium specimen tells a tale, and this volume brings some of those tales to light. This book would be a beautiful gift for any plant-lover, including yourself!

Wyoming Native Plant Society is a non-profit organization established in 1981 to encourage the appreciation and conservation of the native plants and plant communities of Wyoming. The Society promotes education and research through its newsletter, field trips, annual student scholarships and small grants awards. Membership is open to individuals, families, or organizations. To join or renew, you can do it on-line (www.wynps.org) or return this form to:

Wyoming Native Plant Society
P.O. Box 2449
Laramie, WY 82073

Name: _____

Address: _____

_____

Email : _____

Check one: [ ] New member [ ] Renewing member
[ ] Check here if this is an address change.
[ ] Check here if you prefer to receive the newsletter electronically.
Payment:
[ ] WYNPS annual membership: $10; or
[ ] WYNPS annual membership with scholarship support: $20 ($10 for membership and $10 for Scholarship fund)
[ ] WYNPS Lifetime membership: $300 ($150 for membership and $150 for Scholarship fund)
In addition to the statewide organization, we have two chapters. Membership in chapters is optional; chapter members must also be members of the statewide organization.
[ ] Sublette Chapter annual membership: $5.00
[ ] Teton Plants Chapter annual membership: $5.00
Total enclosed: _____ THANK YOU!

Wyoming Native Plant Society
P.O. Box 2449
Laramie, WY 82073

Wyoming Native Plant Society – Renewal and Ballot

Return to: Wyoming Native Plant Society – P.O. Box 2449 – Laramie, WY 82073

2017 WYNPS RENEWAL

Name: _____

Address: _____

_____

Email : _____

Check one: [ ] New member [ ] Renewing member
[ ] Check here if this is an address change.
[ ] Check here if you prefer to receive the newsletter electronically.

Payment:
[ ] WYNPS annual membership: $10; or
[ ] WYNPS annual membership with scholarship support: $20 ($10 for membership and $10 for Scholarship fund)
[ ] WYNPS Lifetime membership: $300 ($150 for membership and $150 for Scholarship fund)
In addition to the statewide organization, we have two chapters. Membership in chapters is optional; chapter members must also be members of the statewide organization.
[ ] Sublette Chapter annual membership: $5.00
[ ] Teton Plants Chapter annual membership: $5.00

Total enclosed: _____ THANK YOU!

2017 WYNPS BALLOT – Please mail for arrival **by January 31** or email wynps@wynps.org

Please vote for one person for each Officer position, and ONE OF TWO candidates for the At-Large position:

President ____ Charmaine Delmatier (Laramie/Jackson) Secretary/Treas. ____ Dorothy Tuthill (Laramie)
Vice President ____ Katy Duffy (Jackson) At-Large (2-year term) ____ Brenda Schladweiler (Gillette)

Write-in candidate and office: _____

[The second At-Large position is held by Walter Fertig (Indiana), who will start his second year of second term.]

Candidate Biographies

Charmaine Delmatier is Volunteer Director at the Rocky Mountain Herbarium (University of Wyoming). She completed her graduate work conducting an extensive floristic study of southwest Wyoming and adjacent northeast Utah at the University of Wyoming under the supervision of Ron Hartman and Greg Brown. Her last position before retiring was as State Botanist of Texas for the U.S. Dept. of Interior.

Katy Duffy worked for 32 years as a resource education ranger in Yellowstone and Grand Teton national parks. Originally from New Jersey, Katy has a M.S. in Ecology from Rutgers University. At Hollis Marriott's request in 1991, she started and then coordinated the Teton Chapter of the Wyoming Native Plant Society for eight years.

Brenda Schladweiler is the president of BKS Environmental Associates, Inc., a liaison for the Reclamation and Restoration Center (University of Wyoming), and an adjunct professor. She received her PhD in Soil Science, University of Wyoming, Laramie, MS in Soil Science University of Wyoming, and Bachelor of Science degree in Range Management (Land Rehabilitation), Colorado State University.

Dorothy Tuthill is Assistant Director of the Biodiversity Institute (BI; University of Wyoming), a past president of the Wyoming Native Plant Society and currently serves as Secretary/Treasurer. She received her PhD in Botany, University of Wyoming. She regularly hosts biological adventures for teachers and students from across the state on behalf of BI, conducted in indoor and outdoor classrooms.

Wyoming Native Plant Society

2017 MARKOW SCHOLARSHIP/SMALL GRANT

Applications are due February 15, 2017. Awards will be made in April, 2017.

Electronic copies of this application are also posted on the WYNPS homepage at: www.wynps.org

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The Wyoming Native Plant Society promotes appreciation, understanding and conservation of native plants and plant communities through its annual scholarship/small grants program. For scholarships, thesis research may address any aspect of botany including floristics, taxonomy, ecology, genetics, plant geography, range science, paleontology, pollination biology, physiology, and mycology. For small grants, projects such as botany curriculum development, public native plant gardens, and other forms of outreach will be considered. **This competition is open to all grad students who conduct research in Wyoming, residents of Wyoming or members of WYNPS.** Proposals must pertain to native plants/vegetation of Wyoming. Preference will be given to proposals expected to generate research data or promote public understanding. Up to $1,000 may be covered for a scholarship proposal, and up to $500 for a small grant proposal. *Awards defray direct project costs, excluding labor or conferences*. Eligible expenses include:

1. Direct costs of travel, meals, and lodging for research or education projects.
2. Supply and service expenses used for the sole purpose of the project (e.g., consumable supplies such as laboratory chemicals, soil and nursery stock, and services such as phone and computer time).

The deadline for proposals is February 15. Awards will be announced in April. The proposal should be no longer than three pages and include the following:

- Name, mailing address, telephone number (land &/or cell as appropriate) and email address of the applicant.
- Name, mailing address, contact person's name & phone number for any organization that will be directly involved with the applicant when executing the proposal.
- Short abstract of the study or project (2-5 sentences).
- Description of the study or project: objectives, methods, description of final product, and short description of past similar work (if applicable). Garden proposals should include plant lists, an educational component, and explicitly address long-term maintenance plans.
- Description of how the study or project will benefit native plants or plant conservation in Wyoming.
- Overall budget showing amount requested from WYNPS ($1,000 or less), the intended purpose of the funding, and other funding sources.
- Timeline for completion of the major components of the study or project.
- Brief statement of applicant's qualifications or biography.
- Name, address, email address or phone number of two people as references.

Successful scholarship or grant recipients will be required to submit a final report (due no later than September 20, 2017) documenting the study or project accomplishments to WYNPS, written for a broad audience and suitable for publication in our *Castilleja* newsletter, along with an accounting of how the funds were used.

Please send completed applications to: Wyoming Native Plant Society, P.O. Box 2449, Laramie, WY 82073; or wynps@wynps.org .