

The Newsletter of the Palouse Prairie Foundation

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<http://www.palouseprairie.org/>

March & June 2011

The regular meeting date for the Palouse Prairie Foundation is the second Thursday of each month. Check the PPF website for updates and locations.

PPF Membership:

We thank those of you who have already sent your 2011 dues.

For those of you who have not sent in your 2011 dues, we hope that you will continue to be a Palouse Prairie Foundation member to keep the PPF working on your behalf. If you have not yet renewed your membership for 2011, it is not too late to do so. Membership details can be found at

<http://www.palouseprairie.org/memberform.html>

As you know, the Palouse Prairie once covered a vast area in eastern Washington and northwestern Idaho, but now it covers less than 1% of its original area and is considered an endangered ecosystem.

Nevertheless, the remnant prairie still provides critical habitat for the Giant Palouse Earthworm, pollinators, birds and other critters, and every year it continues to rejuvenate us with its rich annual displays of flowers. The PPF is a non-profit organization that relies on membership dues to carry out its mission.

Palouse Plant Database

The Database has been a long time coming and there is still a lot of work to do. The Database now contains information on 235 of our local native species and there are plans to expand that and to incorporate data on many of the non-native species that threaten the integrity of the Palouse Prairie. We also plan to add some features such as searching by family, habitat, growth type, flower color, or bloom time. We recently posted a beta version of the Palouse Plant Database on the PPF website at <http://dev.palouseprairie.org/plants/plantdb/PPFplants.php> This is a temporary page and it will change in the future. You can always access the database from the main page of the Palouse Prairie Foundation website <http://www.palouseprairie.org/>

If you have suggestions or corrections for the database, please notify us using the contact information on the database pages..

Palouse Wind Farm:

The Boston-based company First Wind submitted the Palouse Wind draft environmental impact statement (DEIS) to the Whitman County Planning Division on November 18, 2010. First Wind intended to build a wind farm with up to 50 turbines along Naff Ridge outside Oakesdale, Washington.

On November 18, 2010, Whitman County issued the DEIS for public and agency review and comment. Much of the land in the proposed project is farmland or non-native grasses and weeds. There is some Palouse Prairie within the project area. PPF and several members submitted comments to the DEIS asking that the remnants of Palouse Prairie be avoided. In early December, several members of PPF met with First Wind and talked about the project, including our concerns that Palouse Prairie remnants on the site need to be protected and preserved.

On February 24, 2011, Palouse Wind submitted an amendment to the Conditional Use Permit (CUP) application to include additional properties on Steam Shovel Hill and the periphery of Naff Ridge. Altogether, the property additions increase the Proposed Action area to approximately 9,000 acres and a maximum of 65 turbines.

On March 3, 2011, Whitman County issued the DEIS Addendum covering the proposed expansion for public and agency review and comment. PPF again pointed out the need to avoid impacting prairie remnants on the site.

On March 31, 2011, the final EIS was released. First Wind agreed to consult with PPF and other groups such as the Washington Department of Fish and Wildlife concerning siting of the wind towers and facilities. The Palouse Wind EIS is available at <http://www.whitmancounty.org/page.aspx?pn=Planning+Division> Scroll down to the bottom of the page for the links to the document, which is presented in 4 parts.

On May 9, 2011, an open meeting was held by the hearing examiner to gather testimony related to the application for a CUP. The Palouse Prairie Foundation again provided testimony regarding the need to protect Palouse Prairie remnants on and near the site.

On May 23, 2011, the hearing examiner issued his decision granting the CUP for the wind farm, subject to a number of provisions. The provisions include protection of Palouse Prairie remnants and require First Wind to consult with the Palouse Prairie Foundation regarding protection and preservation.

Pulled from the vials: Bumble bees of Palouse Prairie

Submitted by Timothy D. Hatten, Ph.D.¹

¹Board of Directors, PPF and CEO of Invertebrate Ecology Inc.

In my dissertation work looking at the effects of habitat fragmentation on ground-dwelling beetles of Palouse Prairie, my colleagues and I inadvertently captured a large number of native bees. Having retrieved these bees from pitfall traps used to collect the beetles, bee specimens were subsequently preserved in alcohol and stored away in vials for seven years. During this time pollinator issues rose to the forefront of the ecological journals and the public's imagination, and we realized that these forgotten vials contained the largest repository of native bee specimens from Palouse Prairie and perhaps the region, and as such they needed to be identified for the sake of knowledge and also to honor these hapless victims of science. Since then, we have washed, blow-dried and pinned approximately 4000 alcohol-saturated specimens and identified over 60 species of bee! In this small article I provide a list of the bumble bees captured in this study and background information on the biology of bumble bees.

Ten species of bumble bees (Hymenoptera: Apoidea: *Bombus*) have been pulled from the vials and are listed here in decreasing order of commonality or abundance: *Bombus rufocinctus*, *B. appositus*, *B. centralis*, *B. insularis*, *B. nevadensis*, *B. bifarius*, *B. fervidus*, *B. griseocollis*, *B. huntii* and *B. californicus* (Fig. 1). There is a good deal of information available on the biology, ecology, distribution and taxonomy of these species, and I provide a short list of references at the end of this article to help those wishing to learn more about them.

Here are a few interesting points about bumble bees. As most of you know, bumble bees are generally easy to distinguish from other bees by their relatively large and beautifully pile-covered bodies, as well as their striking color patterns that are a mix of yellow, black, white and/or orange, but they are never green or blue in color like some other families of bees or wasps. Because of their large, pile-covered bodies they can fly at relatively low temperatures, a feat that is aided by their ability to warm themselves through muscular movement (i.e. thermogenesis) classifying them as endotherms rather than as ectotherms like most insects. Their ability to fly at low temperatures gives these bees a great advantage over other bees for collecting pollen during cool temperatures or in northern latitudes, making them one of the most important groups of pollinators.

Like honey bees, bumble bees are social in nature, forming colonies of up to 350 members and having a distinct cast systems with a queen, workers (all females) and drones (the males). Unlike honey bees, bumble bees must restart their colonies from scratch every year from a founding, gravid queen that has overwintered from the previous year. Upon emergence from hibernation, usually in late April or May in our region, this founding queen must quickly establish a nest, lay her eggs, and then provide for her brood by feeding them pollen and nectar that she collects from nearby flowering plants. Once this brood

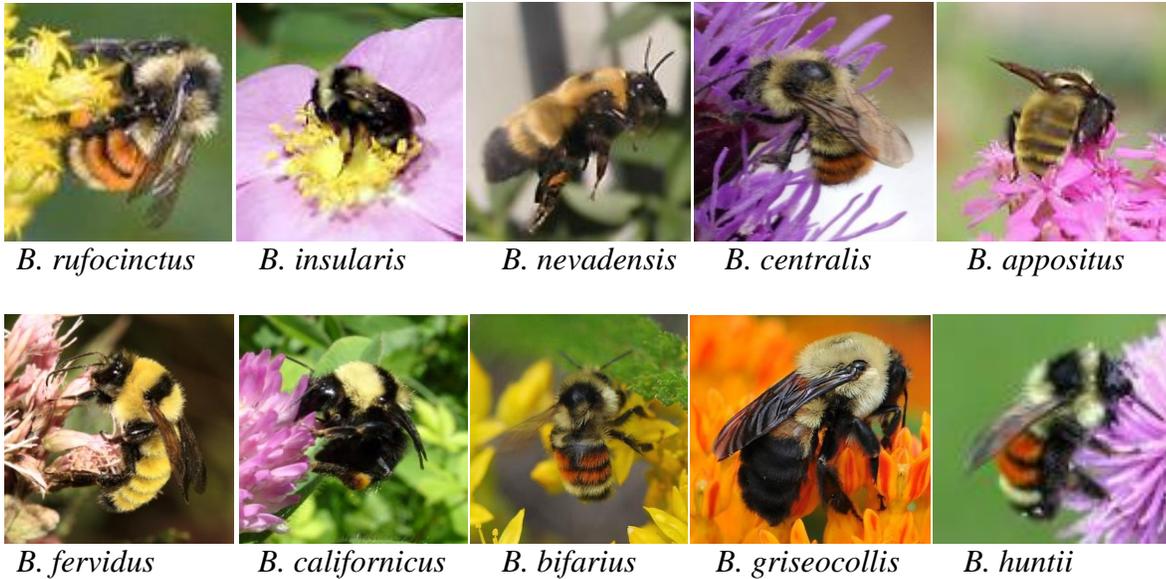
matures into adult workers, they help the queen rear out the next generation of workers, new queens, and drones to mate with these queens, and thus start the cycle over again. Generally, bumble bees nest in cavities in the ground such as abandoned rodent burrows, but they can also nest in dried surface foliage, and forage for pollen and nectar on plants up to 750 m from their nest site. Because bumble bees forage throughout the season and nest in the ground, it is critical for their survival to have stable habitat to nest in and abundant floral resources within 1/3 mile of the nest.

There are always exceptions to the rule, especially when considering the natural history of insects, and bumble bees are no exception. Take *B. rufocinctus*, the most abundant species captured in our study. It has very flexible nesting behavior, capable of nesting in either subterranean burrows (such as abandoned animal dens) or in dead grass clumps on the soil surface. It is also a known nest usurper, a practice in which a young queen invades the colony of another young queen and kills her in order to usurp her brood and resources. This practice of “queen replacement” is not uncommon among bees, as among some bird species, and exemplifies just how intense the competition for suitable nesting sites and floral resources can be. Indeed, *B. rufocinctus* was the most abundant species captured in our study, perhaps due in-part to these aforementioned behaviors which may confer competitive advantages to it. This species was so abundant, in fact, that 9 out of every 10 individuals captured in the study were this species! Interestingly, *B. rufocinctus* has not been captured in large numbers in other bumble bee surveys of the western USA, suggesting that this species is ‘at home’ in our neck of the prairie! Another atypical species captured in the study was *B. insularis*. Belonging to the subgenus *Psithyrus*, or cuckoo bumble bees, this widely distributed species parasitizes the nests of other species by laying its eggs in their nests and having them rear them out at the expense of their own offspring in much the same way that cowbirds do it. If you are interested in learning more about bumble bees, the texts by Michener (2007) and Kearns and Thomson (2002) provide information on bumble bee biology, as does the Bugguide website (www.bugguide.net/) and the Xerces Society websites (www.xerces.org/bumblebees). Meanwhile, the taxonomic keys of Thorp et al. (1983) and Stephen (1957), as well as the Discover Life website (www.discoverlife.org/) provide information to help you identify bumble bees.

References:

- Michener C.D. 2007. The Bees of the World, Second Edition. The Johns Hopkins University Press, Baltimore, Maryland.
- Kearns C.A, Thomson J.D. 2002. The natural history of bumble bees: A sourcebook for investigations. University Press of Colorado, Boulder, Colorado.
- Thorp R.W, Horning D.S., Dunning L.L. 1983. Bumble bees and cuckoo bumble bees of California (Hymenoptera: Apidae). Bulletin of the California Insect Survey 23 87 p.
- Stephen, W.P. 1957. Bumble Bees of Western America. Oregon State College, Agricultural Experiment Station, Technical Bulletin 40.

Fig. 1. Ten bumble bee species of Palouse Prairie. All images from bugguide.net.



Featured Plant: Chokecherry, *Prunus virginiana*

Submitted by Dave Skinner

Prunus virginiana is a common and important shrub of the Palouse Prairie. It is especially common on north facing slopes and in riparian areas where it forms dense thickets with other shrubs such as serviceberry, *Amelanchier alnifolia*, and black hawthorn, *Crataegus douglasii*. Chokecherry is also common on drier sites of the Palouse, usually as scattered individuals rather than thickets.

The common Palouse phase is var. *melanocarpa*. *P.v.* var. *demissa* is more common west of the Cascade Mountains but is occasionally found on the east side. In fact, there is a specimen of var. *demissa* collected in Pullman in 1902 and deposited by Charles V. Piper in the University of Washington Herbarium. The two varieties differ mostly in the degree of pubescence on the lower leaf surface. A third phase, var. *virginiana* tends to be more tree-like, to 15 m, and is found in eastern North America.

Chokecherry is an erect, thicket forming shrub, usually 1 to 15 feet tall, with reddish to grayish brown, bark and inconspicuous lenticels.



The leaves are alternate, deciduous; petiolate, with 1 or 2 purplish-red glands on the petiole near the junction with the blade. The leaf blades are 1.5-4 inches long, elliptic to ovate or obovate, green and glabrous on the upper surface, paler and glabrous to pubescent on the lower surface with finely serrate margins and acute to acuminate tips.



The flowers are numerous, white, with the 5 petals about ¼ inch long, and borne in a long, terminal, pendent raceme. Flowering usually occurs in mid May and extends into mid June in cooler locations.

The fruit is a red to black, fleshy drupe with a single large stone. They are very astringent and require preparation to be palatable. They make excellent jelly or jam. The fruits were widely used, both fresh and dry, by Native Americans. Bears, birds, and coyotes eat the fruit and disperse the seed. Deer and elk browse the twigs and leaves. *Prunus* species in general are hosts for the larva of the pale swallowtail butterfly (*Papilo eurymedon*), the western tiger swallowtail (*Papilo rutulus*), and the Lorquin's admiral (*Limentis lorquini*). *P. virginiana* is a host for the larva of the coral hairstreak (*Satyrium titus*).

Prunus as a genus is insect pollinated and flowers of most *Prunus* spp. are self compatible and can be self pollinated if no other pollen source is available. The flowers are perfect and the fruit is a drupe with a large stone. *P. virginiana* also reproduces asexually by rhizomes. There are 3010-8400 seeds/lb depending on variety and ecotype. $2n=16$.

The suckering habit of the species makes it less desirable in a formal landscape but it is a valuable species for conservation, stabilization, and wildlife plantings.



P. virginiana is subject to black knot disease, which also infects other species of *Prunus*. The most obvious symptom is enlarged dark grey to black galls on the limbs. Black knot disease is caused by the fungus *Apiosporina morbosa* (sometimes called *A. morbosum* or *Dibotryon morbosum*). Ascospores of *A. morbosa* are shed in early spring during periods of high moisture and cool temperatures. Pruning the galls well back along the infected branch provides some control. Fungicides may also be used preventatively. It generally takes 2 years after infection for the galls to appear.

Genotypes of *A. morbosa* are highly host specific and spores formed on one species of *Prunus* often will NOT infect another species of *Prunus*.

Seeds of *Prunus* spp. have an embryo dormancy and require after-ripening with moisture and oxygen followed by 90-150 days cold moist stratification at 2-5°C. Seed can also be sown outdoors in the fall. It may be possible to root softwood cuttings with mist and bottom heat.

There are 5 propagation protocols for *P. virginiana* in the Native Plant Network
<http://nativeplants.for.uidaho.edu/network/search.aspx?SearchType=Continental>

For more information on *Prunus virginiana* see:

Specimen data and digital resources from The Consortium of Pacific Northwest Herbaria
<http://www.pnwherbaria.org/>

Plant Profile from the USDA NRCS PLANTS Database
<http://plants.usda.gov/java/profile?symbol=PRVI>

Species page from the University of Washington Herbarium (WTU)
<http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Prunus&Species=virginiana>
Species account from USDA Forest Service Fire Effects Information System (FEIS).

<http://www.fs.fed.us/database/feis/plants/tree/pruvir/all.html>

There is some information on *P. virginiana* in "Native Plants of Northern Idaho for Landscaping and Restoration" from the Idaho Native Plant Society at

<http://www.idahonativeplants.org/guides/NorthIdahoGuide.aspx>

All photos © David M. Skinner.

Upcoming Events:

The Palouse Prairie Foundation and the White Pine Chapter of the Idaho Native Plant Society will sponsor a field trip to the Palouse Prairie in Mary Minerva McCroskey State Park on **July 9th**. Meet in the Rosauer's parking lot in north Moscow at 1:00 pm to arrange car pooling.

On Sunday, **July 10**, Pam Brunsfeld will lead a White Pine chapter field trip to Elk Creek Falls. We should see many blooming natives, and hopefully, the Ghost Orchid or Indian Pipes, orchids, and ferns. Meet at the Moscow Eastside Marketplace (south end of parking lot near Hwy 8) to arrange carpooling at 11:30 a.m. We should return to Moscow about 5 p.m. For more information, contact Nancy Miller, nmiller@moscow.com. 208-882-2877.

The Palouse Audubon Society sponsors many summer field trips in and near the Palouse. For more information on these trips, see their website at <http://www.palouseaudubon.org/>

Palouse Prairie Foundation Display

If you would like to have the Palouse Prairie display at a gathering or meeting, please contact us. The display consists of a free standing 4 panel poster explaining Palouse Prairie, and a myriad of printed information regarding the prairie. A smaller version of the poster is also available for more limited spaces. You can view the poster on the PPF website at <http://www.palouseprairie.org/display/>

If you would like to give a presentation about some aspect of Palouse Prairie or know of someone whom you would like to hear talk about Palouse Prairie, or you have an idea for a field trip this spring and/or summer, please contact a board member.

Copies of past issues of the Newsletter of the Palouse Prairie Foundation are available online on the PPF website at <http://www.palouseprairie.org/pppubs.html>

If you have ideas, suggestions, or contributions for the newsletter, please send them to Dave Skinner at abbie48 at roadrunner dot com (you will need to replace "at" and "dot" with the appropriate symbols) or call him at 208-874-3205. Look for the next newsletter in Sept 2011.