Pholistoma auritum

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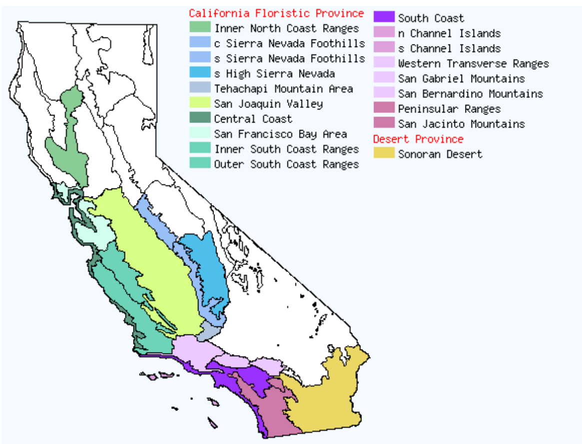
April 30, 2013

Taxonomy

Pholistoma auritum is a fleshy, flowering plant with the common name blue fiesta flower. It is an annual herb and a dicot, belonging to the Boraginaceae or Waterleaf family. The genus *Pholistoma* was once included in Hydrophyllaceae family, which is now its subfamily name. The genus was also once classified as *Nemophila*. (Jepson 2013)

Geographic Distribution

Pholistoma auritum is native to California, but is also found in Nevada and Arizona. It is confined to western North America with a habitat of ocean bluffs, talus slopes, woodlands, stream banks, canyons and desert scrub. The plant has been found in elevations between 0 and 6233 feet. Latitude is around 32-36N and 116-121W.



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Pholistoma auritum has demonstrated dominance in areas of annual grasslands. Stands of this annual are almost distinctively pure. Studies have shown that few seedlings of any other species of grasses were present under *Pholistoma* litter from the previous year. (Parker, Muller 1979)

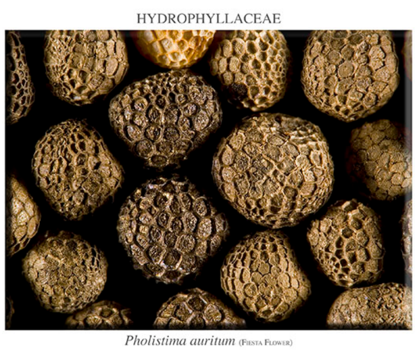
Native Communities

The preferred climate for *Pholistoma* is moist shady places in the foothills of the Sierra Nevada Mountains or in boulder pockets of desert ranges. It is a groundcover that prefers shady conditions. It is often seen completely covering large slopes in shady areas with northern exposure, as long as there is moisture. The plant looks like a vine, but is weak stemmed. It climbs over and through shrubs and hangs on to other plants for support with reverse barbed prickles. (Bailey, MacMillan 1910)

The plant communities associated to this plant are Coastal Sage Scrub, Chaparral, Southern Oak Woodland, Northern Oak Woodland and Foothill Woodland.

Taxonomic Description

The stems of this plant are weak, straggling, many branched and brittle; 2 to 6 feet long. They are angled and winged, the midribs of the leaves beneath are armed with hooked prickles, which enable the plant to climb over other plants. The foliage leaves climb horizontally. The leaf petiole is wide winged and clasping. Leave blade is oblong to lance-ovate, base cordate, tip acuminate with 5-13 lobes that are downwardly curved with sharp bristles on both surfaces. (see photo below on right) Inflorescence racemes 2-5 flowered and peduncled, born in the leaf axils at the base of the terminal 1 flowered peduncles. (Jepson eflora, 2013) Corolla is violet, paler on the outside and basin shaped, 3-15mm long, 5-30 mm wide. The throat is constricted just below the top. The corolla can vary in color from very pale to dark blue, and from light to dark violet. (Jepson 1909) Calex lobes are hairy, bristly cistate, equal and equally attached, 3-9mm; stamens included. The entire plant can be prickly, sometimes even to the calyx. Ovary bristle hairy, capsule is globose, seeds 4 per capsule. Seeds are globose spheric brown and honeycombed. (see photo on left)The blooming period for *Pholistoma* is March through May.



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When California was a province of Spain, young women of the Spanish people in Santa Barbara would decorate themselves for festivals with this flower. The hooked spines of the species would readily attach to their dresses, thus presenting the common name of the fiesta flower. (Jepson 1909)

Propagation Method

Pholistoma is propagated by seed. There was no previous research done on seed dormancy or duration of *Pholistoma auritum* or *Nemophila aurita*.

Market Niche

Pholistoma auritum is a beloved crop to visitors of national and state parks in California. Its striking blue color covers beds of north slopes that are cooler and have partial shade. It has also been spotted along highways in California and Arizona. As it has the tendency to cover and take over other annuals or shrubs that are smaller than itself; the plant would need to be the prominent plant in a naturalized landscape. *Pholistoma auritum* is not readily available for purchase as a nursery plant. Previous manual propagation has suggested that seeds may not germinate in the first year, but most likely will in the second year.

This plant would be ideal for a consumer that has a native and naturalized southwest style, as it would make a great bedding plant, as well as a border plant if kept compact and tame. It may also make for a nice cut flower in a natural arrangement, however the prickly nature of the plant may prove difficult to handle. It may also do well as a trailing element in a window box. Flowers are most abundant in March through May. If sowing directly outside, seeds may be sown in March for later summer flowering. It can seed freely, but should not be trusted to readily reseed the next year (Bailey, Miller 1910).

Nemophila menziesii, commonly called Baby Blue Eyes, is in the same (previous) family as *auritum* and would compete with *Pholistoma* in the market. It is also an annual herb with bright blue flowers and popular in garden centers in California. It is also a carpeting groundcover that can be found outside of its native range of California and grows in many diverse habitats. It is grown in California with the same requirements of *Pholistoma*, needing cool moist conditions and shade during hot summer days (Lady Bird Johnson 2012).

Limitations of *Pholistoma auritum* in the market would be its difficulty in germination and availability of seed in the market. Seed would need to be collected from existing plants; extensive germination and propagation trials need to be completed in order to determine if plants germinate in the first year of propagation. It germinates in its native habitat; little data has been collected in determining how many seeds are necessary for survival. Previous research doubts that germination is possible in other zones other than in the southwest California area, however they may do well in cool, moist areas. It also needs to be in shady conditions as it is impatient with direct sunlight. (Bailey, Miller 1910)

Nemophila menziesii has been developed to compete with this market and has the desirable traits that *Pholistoma* excudes. *Nemophila menziesii* does not have the sharp prickles of the *Pholistoma*, and is not as abrasively overbearing of a groundcover as *Pholistoma. Nemophila* is also native to California, and can thrive in the same conditions of *Pholistoma* of warmer days and cool, damp nights and has been found in Alaska and as far east as Oklahoma and Texas . In order to compete with *Nemophila*, a niche of native California wildflower lovers needs to be the target audience. However because *Pholistoma* is so rare consumers may not want to see this wildflower commercialized. *Nemophila menziesii* is most identifiable to growers and consumers, especially in California. *Pholistoma* may take years to be developed in to a marketable crop. One could assume that because there is already a very similar, easily available and attractive crop similar to *Pholistoma* on the market in its marketed area and this may lead

Pholistoma to never be a major crop, but a unique horticultural experience if one can obtain it for a residential setting.

Because of the history of the plant, an ideal marketable holiday would be May 1st, which is celebrated as Dia del Trabajo. This day is celebrated in every Spanish speaking country and is equivalent to Labor Day in the US. Another holiday would be Mother's Day, or Dia de los Madres. (NRCS 2012)

Cultural Requirements

No winter hardiness in northern latitudes for this plant, as its hardiness zones are Z8-Z10. It cannot tolerate drought and flowers will halt when the weather becomes too hot. It's best for cool, moist conditions with evenings dropping below 65F. There was no information on the light response for *Pholistoma*, however *Nemophila menziesii* had an irradiance indifference response. Soil should be a moist loam. No information about plant growth regulators were used on *Pholistoma*. *Nemophila menziesii* is relatively disease and insect free, however aphids may be a problem.

Production Schedule for *Pholistoma auritum*

The seed packet was purchased from seedhunt.com, and no directions were printed on the label. 96 seeds were sown directly from the seed pack in 288 plug trays on week 11 and placed in the mist house at 70 degrees F. 5 out of 96 Cotyledons emerged in week 12 with 19.2% germination rate and were placed on the capillary mat. Once true leaves emerged, they were transplanted into 4" pots in week 14. 3 out of 5 of the cotyledons made it to true leaf stage. The crop was left to grow in the greenhouse for the next 4 weeks. The crop that was thought to be *Pholistoma auritum* concluded to be an annual herb, however it resembled the edible herb Basil. This is known as a seed mixup by the packet seed company.

Conclusion of Propagation Experiment

The results of this experiment were not anticipated. Extensive research of *Pholistoma auritum* showed no recent propagation methods, all propagation and taxonomic information was found under the previous name of *Nemophila aurita*. This information was collected no later than the year 1920.

Since there was an obvious flaw in the manufacturing of the seed packet, no expected results of flower bud initiation or development can be concluded. Seedhunt.com has received positive recommendations as a wildflower seed source because of its reliability and quickness to deliver seeds, however information was inconclusive on the accuracy of actual seed.

Because *Nemophila menzeisii* has a similar nature to *Pholistoma auritum*, a more accurate experiment could have provided more conclusive results with such seed.

Literature Cited.

California Gardens. 2009.http://www.californiagardens.com/Plant_Pages/pholistoma_auritum.htm

NRCS. Major Holidays and Celebrations of Spanish Speaking Countries. July 2012. http://www.de.nrcs.usda.gov/about/spanish/majorholidays.html

University of California. Treatment from the Jepson Manual.1993.http://ucjeps.berkeley.edu/cgi-bin/get_JM_treatment.pl?4518,4710,4711

Lady Bird Johnson Wildflower Center. 2013.http://www.wildflower.org/plants/result.php?id_plant=NEPH

Oecologia. V 37 Allelopathic dominance by a tree-associated herb in a California annual grassland. Springer-Verlag. A Parker, V.Thomas. A Muller, CorneliusH. P 315-320

Cyclopedia of American Horticulture, Comprising Suggestions for Cultivation of Horticultural Plants, Descriptions of the Species of Fruits, Vegetables, Flowers and Ornamental Plants Sold in the United States and Canada, Together with Geographical and Biographical Sketches. Bailey, L.H. Miller, W. MacMillan. 1910.

University of California, Berkeley.Jepson Herbarium. 2013.http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=37885

Rancho Ana Botanical Garden. MacDonald, J. December 2004. http://www.hazmac.biz/seedphotoslistgenus.html

A Flora of California. Jepson, W.L.V2. p 236. 1909. http://bscit.berkeley.edu/cgi-bin/display_page?page=109&elib_id=3064&format=jpeg

Barry Breckling, 2009. http://calphotos.berkeley.edu/cgi/img_query?seq_num=302602&one=T