

Oemleria cerasiformis
(Torr. & Gray ex Hook. & Arn.) Landon

osoberry

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Other common name. Indian plum, squaw plum, Indian peach.

Growth habit, occurrence, and uses. The genus *Oemleria* contains a single species—osoberry, *Oemleria cerasiformis* (Torr. & Gray ex Hook. & Arn.) Landon. Osoberry was described originally as *Nuttalia cerasiformis*, then identified for decades as *Osmaronia cerasiformis* (Hunt 1970) until an earlier legitimate name was rediscovered about 30 years ago (Landon 1975).

Osoberry is a deciduous, generally multiple-stemmed shrub that is 1.5 to 5 m or taller and sometimes develops into a small tree (Abrams 1944; Hitchcock and others 1961). A plant may have 10 or more stems and can produce new stems throughout its lifetime. Individual stems 7 m tall and 50 years of age have been observed (Allen and Antos 1993). Osoberry's native range is from the Pacific Coast eastward into the Cascade Mountains and the Sierra Nevada from southwest British Columbia southward to California, extending to Tulare County in the Sierras and northern Santa Barbara County in the coast ranges (Hitchcock and others 1961; McMinn 1970). It is most widely distributed from the Willamette Valley northward to Vancouver Island on stream terraces, alluvial soils, and other moist to moderately dry locations, especially in Oregon white oak (*Quercus garryana* Dougl. ex Hook.) woodlands and open Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco) forests. Based on a sampling of osoberry stands at 56 locations, Antos and Allen (1990b) concluded that its geographical distribution is related to (1) a fairly mild maritime climate, (2) moist areas over much of its range, (3) an inability to tolerate low light levels or wet soils, and (4) a need for disturbance to allow seedling establishment. It is most common at elevations below 250 m but occurs up to 1,700 m in the southern part of its range (Antos and Allen 1990b; Munz and Keck 1959). Two varieties were described in 1905—*lancifolia* in British Columbia and *nigra* in Washington (Hitchcock and others 1961)—but their recognition is now uncertain.

Ripening osoberry fruits are highly attractive to birds such as cedar waxwings (*Bombycilla cedrorum*), and ripe fruits are readily eaten by both birds and mammals (Dayton 1931; Dimock and Stein 1974). The fruit was eaten in small quantities fresh, cooked, or dried by Native American peoples in the Pacific Northwest; twigs and bark were used for several medicinal purposes (Gunther 1945; Mitchem 1993; Pojar and Mackinnon 1994). Flavor of the fruit apparently varies by locality, from sweet to bitter (Dayton 1931). Its attractiveness as an ornamental includes flushing of light green leaves and white flowers much earlier than other

plant associates, handsome variegated appearance as scattered leaves throughout the crown turn yellow in early summer, and colorful clusters of fruit (figure 1) that soon disperse or are eaten by wildlife.

Flowering and Fruiting. Anatomical and natural population studies have confirmed strongly that osoberry is dioecious, with male and female plants similar in size, growth form, morphology of vegetative structures, and microhabitats occupied (Allen and Antos 1988, 1993, 1999; Antos and Allen 1990a; Sterling 1964). Flowering period in osoberry is relatively short and varies with latitude and elevation from January to May concurrent with leaf development (Allen 1986; Haskin 1967; Hitchcock and others 1961; McMinn 1970). Both male and female plants flower frequently except in low light; male plants are generally more abundant and may have up to 3 times as many flowers as female plants (Allen 1986; Allen and Antos 1988, 1993). Male plants start flowering earlier than female plants but reach peak abundance and finish flowering later (Allen 1986). First flowering has occurred 2 years after germination on male plants raised from seed (Allen and Antos 1993). The 5-petaled flowers are white, fragrant, and borne on drooping racemes (figure 2). Osoberry pollen is sculptured and distinctive among Rosaceae pollens studied in western Canada (Hebda and others 1991).

Pistillate flowers may yield up to 5 thin-fleshed, single-seeded drupes per flower, but generally fewer than 60% of pistils on a plant bear fruit; production from 10 to 20 of pistils has been reported (Antos and Allen 1994, 1999). Higher light levels favorably influence fruit set; exposure to light is gained by early flowering before deciduous associates leaf out (Allen and Antos 1988). Fruits develop and ripen in 10 to 12 weeks near Victoria, British Columbia (Antos and Allen 1994). Developing fruits become peach colored, then reddish, and finally deep blue-black under a whitish bloom when ripe (figure 1). In the Pacific Northwest, dispersal by gravity, birds, and mammals may begin in May and be nearly finished in July (Dimock and Stein 1974), substantially earlier than the August 1 to September 15 collection period listed for California by Mirov and Kraebel (1939).

Collection, extraction, and storage. Clusters of the ripe 1-seeded drupes can be stripped readily from the shrubs by hand. Fruits in small collections are de-pulped easily by rubbing them against a submerged screen or by running them through a macerator followed by repeated washings to float off the loosened pulp. Fruit biomass is about half pulp and half seed (ovendry weight); the seeds have a much higher nitrogen concentration (Antos and Allen 1990a, 1994). Osoberry seeds have a bony endocarp (Abrams 1944) and lack endosperm (figures 3 and 4). Air-drying is needed to minimize molding in cool dry storage.

About 11 kg (25 lb) of seeds (cleaned and air-dried for 24 hours) can be obtained from 45 kg (100 lb) of fresh drupes, based on 7 samples (Dimock and Stein 1974). Cleaned seeds air-dried for 4 weeks averaged 10.2/g (4,630/lb) for 12 samples from western Washington. Heavier seed weights have been reported from other parts of the osoberry's range—4.0/g (1,800/lb) in California (Mirov and Kraebel 1939) and 9.2/g (4,175/lb) in British Columbia (Antos and Allen 1994). Seeds generally are full, 98 to 100% in 4 samples (Dimock and Stein 1974).

Pregermination treatments and germination tests. Lengthy cold moist stratification is needed to overcome dormancy in fresh osoberry seeds (Dimock and Stein 1974; Mirov and Kraebel 1939). In a comparison of stratification periods at 3.3EC in peat moss followed by 21 days at alternating 30E to 20EC day/night temperatures, Dimock and Stein (1974) found that 60 days of stratification barely triggered germination, whereas 120 days were required for nearly

complete germination. Osoberry seeds are capable of germinating at 3.3EC during lengthy stratification—84% of total germination in 120 days, full germination in 180 days (table 1). Over 90% germination is obtainable from good seeds. Germination is epigeal (figure 5).

Nursery practice. Osoberry was introduced to cultivation by Theodor Hartweg in 1848 (Hunt 1970). It has been propagated primarily from seeds but also from suckers and cuttings. It lacks rhizomes or stolons, but some layering occurs naturally when woody debris presses stems to the ground (Antos and Allen 1990b). Tips of branches have been propagated vegetatively in a frame with bottom heat (Mirov and Kraebel 1939).

Though fruits ripen and are disseminated naturally by early summer, the seeds rarely, if ever, germinate within the year of dispersal (Dimock and Stein 1974). However, in the following year, they may germinate as early as mid-February. Seeds collected in July, cleaned, and stored at room temperature until sown outdoors in flats in late December began germinating in March in Victoria, British Columbia; second-year germination started in early February and varied from 0 to 70% of total germination for individual seedlots (Allen and Antos 1995). Total germination ranged from 1 to 96% among the 25 lots of 100 seeds each representing 5 plants at each of 5 collection areas in British Columbia and Washington.

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Figure 1—*Oemleria cerasiformis*, osoberry: ripe and near-ripe fruits; their color changes from reddish to purple when fully ripe, H 1.

Figure 2—*Oemleria cerasiformis*, osoberry: white flowers are borne on drooping racemes, H 1.

Figure 3—*Oemleria cerasiformis*, osoberry: seeds have a bony endocarp, H 2.

Figure 4—*Oemleria cerasiformis*, osoberry: longitudinal section through a seed shows folded cotyledons, H 8.

Figure 5—*Oemleria cerasiformis*, osoberry: seedlings at 40 and 120 days after germination.

Table 1—*Oemleria cerasiformis*, osoberry: effect of stratification on germination

Stratification at 3.3 EC (days)	Germination during stratification (%)	Additional germination during 21 days at 30/20 EC (%)	Total germination (%)
60	0	1	1
90	21	37	58
120	80	14	94
160	94	0	94
180	95	0	95