



# BEACH PLUM

## *Prunus maritima*

### Marshall

Plant Symbol = PRMA2

**Common Names:** beach plum; seaside plum; sand plum; Graves' plum

**Scientific Names:** *Prunus maritima* Marshall; *Prunus acuminata* Hook.f.; *Prunus acuminata* Michx.; *Prunus maritima* Marshall var. *gravesii* (Small) G.J. Anderson; *Prunus maritima* Marshall var. *flava*

#### Description

**General:** Beach plum is a native, flowering, often multi-stemmed shrub which typically grows in a low spreading manner to form dense thickets 3-8 ft tall (Silberhorn, 1999). Outside of its natural dune habitat and under ideal conditions, a well-cared for beach plum shrub may reach heights of up to 18 ft (Miller, 2002). The deciduous shrub has alternately arranged, finely toothed, egg-shaped leaves with acute tips. The simple, dark green glossy leaves are velvety or hairy on the underside at maturity, measuring 0.75-2.75 in (2-7 cm) long and about half as wide (NEWFS). Glands are positioned near the base of the leaf. Like other members of the *Prunus* genus, immature beach plum bark is reddish brown and smooth with bands of lenticels arranged horizontally. As the shrub ages, the bark darkens and becomes rough. Newer growth and young twigs are also reddish brown and pubescent (Seiler et al., 2018). White flowers bloom singly, but mostly in small umbel-like clusters of two to three along the stems in April or May prior to leaf-out and persist as late as June (Duncan and Duncan, 1987; NPIN, 2007). The showy five petaled flowers measure 0.5 in (1.25 cm) across with long filaments and yellow anthers. Stalks and sepals of the flowers are hairy. The immaculate white of the flowers develops a pinkish hue upon successful pollination usually achieved through the service of wild bees, but other pollinating insects may perform the task as well (Miller, 2002; Bailey, 1944). The glaucous fruit produced usually ranges in color from a bluish purple to dark purple. Although less common it may also be brick red or on rare occasions yellow (Clark et al., n.d.). The cherry shaped edible fruit measures 0.5-1 in (1.5-2.5 cm) diameter ripening August through September (Uva, 2003). The fruit skin displays a great degree of variability; the skin may range from tough and tannic to thin and inconspicuous. The flavor of the fruit also varies greatly ranging from naturally sweet to tart or bitter (Fiola, n.d.). The fruits are drupes, containing a single egg shaped, stone type seed (Miller, 2002).

**Distribution:** The beach plum is a staple of the flora that populates the mature dune systems of the Atlantic barrier islands. It is indigenous to the Mid-Atlantic coastal region occurring as far north as the Canadian Maritime Provinces and south to northern Virginia (Silberhorn, 1999; Dirr, 1998). While beach plum is primarily a coastal species, it can occasionally occur further inland usually nearby tidewater streamsides reaching as far west as parts of Pennsylvania (Martine, 2002; Rhoads and Block, 2007). Beach plum can be grown in USDA hardiness zones 3a-8a. For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

**Habitat:** Even though it is salt tolerant, beach plum is most commonly found in the coastal dune environment preferring older dune systems where salt spray is less intense (Statler, 1992). Because it almost never occurs in saturated soils, beach plum has been assigned a wetland indicator status of upland (Tiner, 2009). Throughout the swales of the sand dunes and dune



Beach plum (*Prunus maritima*). Photo by Scott Snell, USDA-NRCS, Plant Materials Program.

woodlands it forms dense shrub thickets often with other common maritime species: American beachgrass (*Ammophila breviligulata*), beach pea (*Lathyrus maritimus*), seaside goldenrod (*Solidago sempervirens*), northern bayberry (*Morella pensylvanica*), eastern baccharis (*Baccharis halimifolia*), evening primrose (*Oenothera perennis*), Virginia rose (*Rosa virginiana*), and eastern poison ivy (*Toxicodendron radicans*) (NHDFL, 2018; Uva, 2003; Silberhorn, 1999). Although less common, it may also be found further away from the coast growing in meadows and fields in the well-drained, sandy soils of the coastal plains (NPIN, 2007). Inland, it is usually found growing in open areas receiving full sun and may grow in association with kinnikinnick (*Arctostaphylos uva-ursi*), lowbush blueberry (*Vaccinium angustifolium*), winged sumac (*Rhus copallinum*), or devil's-tongue (*Opuntia humifusa*) (Weiss and West, 1924; Silberhorn, 1999).

### Adaptation

Beach plum is exclusively native to the continent of North America and is well adapted to the secondary dunes in the Mid-Atlantic region (NPIN, 2007). The well drained sandy soils of mature dune systems are the ideal natural conditions for beach plum. Burial of the low sprawling branches in the moving sands of the dunes encourages the growth of adventitious roots. Through this process of growth and spread, beach plums may form dense thickets of up to 20 ft across (USDA-NRCS, 2012). Although beaches and the interdune shrub zone are the primary habitat of beach plum, it is also adapted to survive further inland being found along roadsides, in sandy fields, and throughout coastal barrens (FNAEC, 2015). Beach plums growing inland in more fertile soils still prefer well drained sites receiving full sun. When planted inland for fruit production, beach plums typically grow more rapidly and yields are increased (Clark et al., n.d.). As a result of attempts to produce beach plums as a commercial crop, beach plum orchards have been established and produced fruit as far west as the Great Plains states (Graves, 1949). Beach plums are most abundant at or slightly above sea level, but may occur up to 100 ft (30 m) above sea level (FNAEC, 2015).

### Uses

*Conservation practices:* Given that beach plum is a native, suckering shrub which naturally occurs among the dune systems of the Mid-Atlantic region, it is a natural choice for revegetation in dune restoration projects. The value of beach plum as a coastal restoration plant was realized early in the establishment of dune stabilization protocols in Cape Cod. In their article on the development of dune stabilization practices, Kucinski and Eisenmenger (1946) refer to beach plum as “being very hardy” for its ability to survive large amounts of sand accumulation without harm. In a study examining establishment methods (fertilizer/organic amendments and planting dates) of multiple native and naturalized woody species for the purpose of back dune stabilization, Sharp and Hawk (1977) reported beach plum to have the highest average survival (75%) for all treatments of all species tested. Beach plum has shown value as a successional species in urban wasteland reclamation. In trials carried out in landfills in NJ and NY researchers reported that beach plum rated among the highest direct seeding germination rates and survival rates of all 19 native woody successional species examined (Robinson et al., 2002). In a follow up study, Robinson and Handel (1993) reported that beach plum was one of four species from the 19 included in the study that had successfully reproduced a year after establishment.

### Warning: Beach plum seeds (pits) contain hydrocyanic acid (cyanide) and may be toxic if consumed.

*Commercial crop:* The first evidence of interest of beach plum as a commercial crop dates back to 1872 when an article in American Agriculturist explained its potential for hybridization and usefulness as root stock (Uva, 2003). Since that time, interest in beach plum as a commercial crop has strengthened and weakened intermittently. In recent years, interest seems to be on the rise likely due to the increased popularity of agritourism and the local food movement with consumers. A survey conducted by the Rutgers New Jersey Agricultural Experiment Station Cooperative Extension reported that 70% of those surveyed were aware of beach plums prior to the survey. Also promising for the development of commercial crop beach plums was that 94% of those surveyed responded “very likely” to trying beach plum products again (Carleo, 2017). Beach plums have long been used for the production of jellies and jams, but more recently the variety of value added products has expanded with the making of salad dressings, vinaigrettes, syrups, juices, wines, and mixed cocktails. Given the renewed interest in its native region and that it can produce an abundant crop without irrigation in nutrient poor soils, beach plum has great potential as a niche commercial crop (Uva, 2003).



An example of the degree of variation of pure white to pink flowers displayed by beach plum shrubs.

*Ornamental/landscaping:* Given the dependably profuse bloom of snowy white, conspicuous flowers and the ability to survive in low nutrient, droughty, and salt affected soils, the beach plum has

gained value as an ornamental especially for problem sites. Additionally, beach plum is a relatively low maintenance choice for landscaping applications (Graves, 1949). Several named varieties of beach plum have been developed specifically for their ornamental qualities. The growth habit of beach plum to spread laterally by means of suckering makes it an ideal choice if a dense hedgerow is desired (Fiola, n.d.). Although fruit quality varies widely and annual production is not dependable, beach plum is a welcome addition to an edible landscape design during good fruit production years (Clark et al., n.d.).

*Wildlife:* The late summer ripening of beach plum fruit provides a food source for a variety of many birds and other wildlife (Stalter, 1992; NPIN, 2007). The dense thickets formed by beach plum provide protective habitat for birds and small mammals (USDA-NRCS, 2012). Beach plum was reported by Post (1962) to be a constituent of the plant communities used by glossy ibises for nesting sites. The early bloom set of beach plum is a beneficial food source for native bees and beach plum is a recommended species for the establishment of native pollinator habitat (Vaughan et al., 2012). A wide variety of other insects are closely associated with the shrub thickets that beach plum is a major component of on the back dunes. Parasitoid wasps, antlions, hoverflies, greenhead flies, and mosquitos are all commonly found nectar feeders. Tree hoppers, leaf hoppers, plant bugs and leaf beetles are common herbivore visitors of the maritime thickets (Raleigh, 1998).

### **Ethnobotany**

The earliest known account of beach plums is from the Italian explorer Giovanni da Verrazano who referred to the native fruit bearing shrubs as “damson trees” in 1524 (Uva, 2003). Native Americans and early European colonists collected beach plums as a late summer food source (Small, 1897). The fruit became integrated with early American culture as it was used to make preserves and included as an ingredient for the preparation of new recipes. A foamy alcoholic beverage, syllabub, was one such recipe (Garrick, 2012). More recently, growers and the producers of beach plum value added products promote beach plums for the potential antioxidant benefits they offer (Uva, 2003). Beach plums have been shown to contain high levels of proanthocyanidins, chemical compounds which have antibacterial properties and have been proven valuable in maintaining urinary tract health and preventing urinary tract infections (Howell, 2007; Garrick, 2012).

### **Status**

*Threatened or Endangered:* Beach plum is considered endangered in Maine, Maryland, and Pennsylvania (USDA-NRCS, 2018).

*Wetland Indicator:* UPL (Tiner, 2009).

*Weedy or Invasive:* Seed bank and native revegetation studies have suggested that there are no known problems with beach plum becoming weedy or invasive (Robinson and Handel, 1993; Baptista and Shumway, 1998). However, due to the strong suckering nature of beach plum, if used for landscaping purposes it may spread undesirably if not controlled (Fiola, n.d.).

Please consult with your local NRCS Field Office, Cooperative Extension Service office, state natural resource, or state agriculture department regarding its status and use.

Please consult the PLANTS Web site (<http://plants.usda.gov/>) and your state’s Department of Natural Resources for this plant’s current status (e.g., threatened or endangered species, state noxious status, and wetland indicator values).

### **Planting Guidelines**

Direct seeding of beach plum is not a recommended establishment method for conservation plantings (Robinson, 2002). Bare root or containerized stock of one year old seedlings are recommended for greatest transplanting success due to their vigorous root systems (USDA-NRCS, 2012). Plantings should be installed in early spring prior to the beach plums breaking dormancy (Wootton et al., 2016; Fiola, n.d.). Conservation plantings will benefit if inoculated with both an arbuscular mycorrhizal fungus and a phosphate solubilizing fungus at the time of planting. The inoculation with both types of fungi has been shown to enhance the salt tolerance of beach plum and improve soil health at the root zone of the plant (Zai et al., 2015). Fertilizer applications are not recommended during the establishment year for conservation plantings because excessive levels of nitrogen may encourage above ground development without the necessary complementary root growth leading to overall poor plant health or mortality (Salon and Miller, 2012). Furthermore, Sharp and Hawk (1977) reported no measurable benefits in the survival or growth of beach plum seedlings with fertilizer applications over the course of a five year dune planting study.

For establishment of a fruit production orchard, the site selected should be well drained and receive full sun. Site selection should also avoid frost pockets as low spring temperatures may contribute to poor pollination (Carleo et al., 2018). Prior to planting the site should be cleared and treated chemically if necessary to minimize any weed competition. Incorporate soil amendments to achieve a pH of 6-7. Orchard designs may vary, but are typically either individually pruned larger shrubs spaced about 10 ft apart or smaller shrubs planted 3-5 ft apart and allowed to fill in as a hedge row production system. Select an appropriate row spacing that will accommodate intended equipment use; standard spacing is usually 12-16 ft. A grass or other suitable ground cover should be established as an inter-row cover to prevent erosion and minimize weed pressure

(Carleo et al., 2018; Clark et al., n.d.; Fiola, n.d.; USDA-NRCS, 2012). Plant stock selection should be the same as for conservation plantings, however timing of installation may vary based on site conditions. Some recommend a fall planting date to allow the plants to develop roots prior to any spring heat while others recommend planting in early spring while the plants are still dormant (J. Carleo, personal communication, 2018; Clark et al., n.d.; Fiola, n.d.). Plants should be watered at the time of planting and may benefit from the addition of a water soluble or slow release fertilizer applied at the rhizosphere (Uva and Whitlow, 2007). Concentrating early fertilizer applications at the root zones of the plants avoids encouraging the widespread growth of weeds that will compete with the beach plum seedlings for resources. Base fertilizer application rates on the results of soil nutrient analysis tests and consult with your local agricultural extension service for guidance (Clark et al., n.d.).

### **Management**

Beach plum needs no maintenance for conservation applications once established. Maintenance for quality and consistent fruit production purposes is critical. Annual pruning and training should be done when the plant is dormant in late winter or early spring. Maintaining tree size and shape to a central leader or open-center form eases the labor associated with harvesting and keeps fruit out of contact with the ground (Clark et al., n.d.). Pruning also maximizes treatment application coverage, light penetration, and air flow throughout the canopy improving plant health and minimizing the stagnant humid air conditions that are ideal for the proliferation of fungal diseases (Carleo and Stiles, 2012). Remove all weak, dead, and diseased wood when pruning. Cut any signs of the fungal disease black knot a minimum of six inches below signs of the disease and disinfect the cutting tool between cuts with a 10 percent denatured alcohol solution (J. Carleo, personal communication, 2018; Clark et al., n.d.). In multiple areas producers have reported inconsistencies in fruit production with a poor production year following the year of a heavy fruit crop (Stalter, 1992). Biennial fruit production is not unique to beach plum and can be partially managed by thinning the crop load through pruning. Removal of 25-30 percent of the fruiting wood decreases the crop load and stimulates new shoot growth that will produce fruit the following year achieving a more steady production cycle (Carleo and Stiles, 2012).

Uva and Whitlow (2007) reported that irrigation had no positive effects on plant growth or fruit production. However, they did find increased fruit production from plants that received fertilizer treatments. Appropriate fertilizer application rates can be obtained from soil nutrient analysis tests and recommended rates for fruit trees from your local agricultural extension service. Beach plum orchards should be fertilized in the spring prior to flowering. For soils with high sand content, making multiple applications 2-3 weeks apart to obtain the desired rate is best to avoid loss of nitrogen due to leaching (Clark et al., n.d.).

### **Pests and Potential Problems**

Beach plum is reportedly prone to many of the same insects and diseases as other members of the *Prunus* genus. Without control, pests and diseases may cause substantial yield losses or complete crop failure. The most common insect pests that cause direct damage to the fruit are the plum gouger and plum curculio. Common insect pests that damage beach plum shrubs by feeding on plant tissue and indirectly affect crop yield and quality are the European red mite, Japanese beetle, and red humped caterpillar. Less common insects that have been reported as damaging include the spittle bug, eriophyid mite, ambrosia beetle, and plum aphid. Other insects that pose potential problems for beach plum production are the eastern tent caterpillar, fall webworm, leaf pouch gall mite, European fruit lecanium, Oriental fruit moth, apple leaf skeletonizer, lacebug, hemispherical scale, thrips, pear slug larvae, leaf tier, tarnished plant bug, gypsy moth, treehopper, forest tent caterpillar, and mealybug (Fiola, n.d.; Clark et al., n.d.; J. Carleo, personal communication, 2018).

Stone fruit production in the Mid-Atlantic region is more frequently threatened by brown rot than any other disease. This fungal infection of *Monilinia fructicola* is particularly damaging to flowers, but can also cause fruit rot. Infectious spores overwinter on mummified fruit and cankers (Clark et al., n.d.). Black knot is another common fungal disease of beach plum caused by infections of *Apiosporina morbosa*. If left untreated, black knot will cause girdling and limb death (Clark et al., n.d.). Plum pocket is due to a fungal infection of *Taphrina communis*. This disease damages leaves and fruit causing the fruit to become misshapen and drop (Fiola, n.d.). Beach plums are also susceptible to fungal infections of *Wilsonomyces carpophilus*, causing shot hole disease which may result in premature leaf drop and brown, scabby lesions on the fruit (Fiola, n.d.).

Consult with your local agricultural extension service to develop an integrated pest management (IPM) plan for the production of beach plum fruit. If a threshold is surpassed and chemical control is deemed necessary, always read and follow all labeling associated with the products used. Treatment options for beach plum pests and diseases are similar to peach, plum, and other commercially grown stone fruits (Fiola, n.d.; Uva and Whitlow, 2005 b).

## Environmental Concerns

Beach plum has been reported as a preferred host of the invasive browntail moth (Schaefer, 1974). Beach plum foliage contains hydrocyanic acid and may be lethal for livestock consumption (NPIN, 2007). Although beach plums have not been reported to be affected by fire blight, they are a known alternative host (Vaughan et al., 2012).

## Seeds and Plant Production

Beach plum can be propagated vegetatively or by seed. If grown out from seed, it should be noted that the plants produced may display a great variety in traits. Fruit color, size, quality, and yield may differ significantly. Flowering time, time of ripening, growth habit, and disease resistance may also vary widely between individuals (Graves, 1949). Beach plum flowers have both male and female organs, however individual plants have been thought to be self-sterile and depend on insects for pollination for fruit and seed production (Clark et al., n.d.). A recent study performed by Carleo et al. (personal communication, 2018) found evidence to confirm this long held suspicion. Seed for beach plum production should be harvested when the fruit is fully ripe. The skin and pulp of the drupe should be removed to avoid rotting. For large lots, this is efficiently achieved mechanically using a commercial seed cleaning macerator and rinsing with water. Similar results using the same cleaning principles can be had for smaller lots using a modified standard kitchen blender or food processor. Simply cover the blades with tape or a rubber tool handle coating product to avoid damaging the seed when agitating with water. Seed viability may be determined using a float test; any seeds that float in water are not viable and should be discarded (Uva and Whitlow, 2005 b). After being allowed to air dry, seed should be stored in an air tight container in a refrigerator ( $\approx 4^{\circ}\text{C}$ ) until ready to be sown. There are approximately 2,500 seeds/lb (USDA-NRCS, 2018).

Beach plum seeds require cold moist stratification, sometimes double stratification, in order to break dormancy. The recommendations for the required stratification period range from 30 days to 5 months (J. Carleo, personal communication, 2018; Clark et al., n.d.; USDA-NRCS, 2012). Depending upon the local climate, this may be achieved naturally over winter by fall sowing outdoors. However, controlled stratification may be favorable as mild winter temperatures may impede the stratification process and delay germination by an entire growing season (Fiola, n.d.). During a controlled stratification period seed should be thoroughly mixed with dampened sphagnum moss, peat moss, or sand and stored in a temperature controlled environment at approximately  $4^{\circ}\text{C}$ . Seeds should be monitored for root development during this time. Root development indicates that seed dormancy has been broken and the seeds are ready to be planted (Uva and Whitlow, 2005 b). Young shrubs should begin to produce fruit after 3-4 growing seasons and will reach maturity in 7-8 years (USDA-NRCS, 2012).

While vegetative propagation may be achieved using both semi-hardwood stem cuttings and root cuttings, the latter is the more dependable of the two methods (Fiola, n.d.). To propagate using stem cuttings take terminal stem cuttings 4-6 in (10-15 cm) long of non-fruit bearing branches late June to July after fruit has formed. Cuttings should be treated with a rooting hormone to improve the success rate. Naphthaleneacetic acid (NAA) and indole-3-butyric acid (IBA) have both shown success in inducing rooting of beach plum cuttings (Doran and Bailey, 1957; Doran and Bailey, 1944). Treated cuttings should be held in sand or perlite and misted until rooted at which time they can be transplanted to containers. The newly rooted cuttings should be allowed to acclimate by gradually reducing the misting cycle (Uva and Whitlow, 2005 b). To propagate vegetatively via root cuttings take 3-4 in (7.5-10 cm) long cuttings with a diameter of approximately 0.25 in (0.6 cm) in the fall from plants three years or younger for best results. Root cuttings should be buried horizontally 2-3 in (5-7.5 cm) deep outdoors in a weed free propagation bed preferably with sandy soil (Fiola, n.d.). Cover the bed with a straw mulch prior to the ground freezing. Adventitious roots should grow from the cuttings to produce cloned beach plums that can be dug and replanted after 1-2 growing seasons. Beach plum has been successfully grafted to root stock of other *Prunus* species: Nanking cherry (*P. tomentosa*), American plum (*P. Americana*), chokecherry (*P. hortulana*), and Chickasaw plum (*P. angustifolia*) (Graves, 1949). Although propagation via grafting is possible, both Graves (1949) and Fiola (n.d) questioned the benefits of grafting over other propagation methods.

Beach plum is typically harvested late August through September by hand as the fruit matures. Some larger production growers have begun to employ mechanized harvest methods. Vibratory limb shakers similar to olive, nut, and coffee harvesters are used to increase the efficiency of beach plum harvesting. Since commercial beach plum production is in a relatively early stage of development, statistics to determine average expected production yields are lacking (Procida, 2012). However, larger scale beach plum producers have reported production yields of over 12,000 lbs per acre (J. Carleo, personal communication, 2018; Uva, n.d.).

## Cultivars, Improved, and Selected Materials (and area of origin)

Many varieties of beach plum were developed or in the process development in the 1940's and are not readily available from commercial sources. 'Bassett's American' (NJ) is recognized as the first beach plum cultivar selected for its large fruit (Uva, 2003). Several other varieties were all developed for their fruit quality: 'Eastham' (MA), 'Squibnocket', and 'Hancock' (NJ) (Brand, 2015). 'Premier' (MA) was selected based on having the highest field ratings out of all individuals examined on

Plum Island, MA. However, Premier was found to be highly susceptible to brown rot. 'Safford' (MA) was selected for its large yields and sweet fruit. 'Wheeler selection no. 6' (MA) stood out and was selected more so for ornamental purposes for its highly attractive fruit (Graves, 1949). 'Stearns' and 'Northneck' were also selected for ornamental purposes (Fiola, n.d.). 'Autumn' and 'Snow' (MA) were selected for their consistent annual fruit production (Fiola, n.d.). 'Putnam' (MA) was selected for the larger than average fruit it produced. 'Raribank' (NJ) was selected for resistance to brown rot and Japanese beetle herbivory (Graves, 1949). The variety *flava* is also rare, but an extremely unique find as it produces yellow fruit (Brand, 2015).

Several varieties of beach plum are somewhat available from commercial sources. 'Ocean View' (NJ, DE, MA) was released as a conservation plant in 1992 by the Cape May Plant Materials Center for coastal restoration purposes and the stabilization of sand dunes. The attributes 'Ocean View' was selected for are seedling vigor, foliage abundance, disease and insect resistance, leaf retention, fruit production, and cold tolerance (Uva and Whitlow, 2005 a). 'Ecos' and 'Nana' are two varieties developed by a Michigan tree crop nursery. 'Nana' is a dwarf strain of beach plum selected for greater fruit production and a spur-bearing fruiting habit on a compact shrub not likely to exceed 5 ft (1.5 m) in height. 'Ecos' is a variety developed from parent plants that produced yellow fruit and either red or blue fruit. The 'Ecos' variety was selected for greater fruit yield, fruit quality, and disease resistance (Oikos, 2015). The 'Rutgers Jersey Jems Beach Plum' is the most recently released beach plum variety, originating from a 'Premier' material open pollinated selection. The 'Rutgers Jersey Jems Beach Plum' variety was released in 2017 and was selected for consistent annual yield, sweet and minimally bitter fruit flavor, and large fruit (Carleo et al., 2018).

Cultivars should be selected based on the local climate, resistance to local pests, and intended use. Consult with your local land grant university, local extension or local USDA NRCS office for recommendations on adapted cultivars for use in your area.

#### Literature Cited

- Bailey, J.S. 1944. The beach plum in Massachusetts. Massachusetts Agricultural Experiment Station Bulletin, Univ. of Massachusetts, Amherst, MA.
- Baptista, T.L. and S.W. Shumway. 1998. A comparison of the seed banks of sand dunes with different disturbance histories on Cape Cod National Seashore. *Rhodora* 100(93): 298-313.
- Bonner, F.T., R.P. Karrfalt, and R.G. Nisley. 2008. The woody plant seed manual. USDA-Forest Service, Northern Research Station, Hamden, CT.
- Brand, M.H. 2015. *Prunus maritima*, beach plum [Online]. Available at <http://www.hort.uconn.edu/plants/detail.php?pid=354> (accessed 12 January 2018). Univ. of Connecticut Plant Database, Dept. of Plant Science and Landscape Architecture, Storrs, CT.
- Carleo, J., H. Gohil and M.Melendez. 2018. Crop profile beach plum fact sheet. Rutgers Cooperative Extension, Rutgers New Jersey Agricultural Experiment Station, Rutgers University, New Brunswick, NJ.
- Carleo, J. 2017. New Jersey Agricultural Convention and Trade Show, 62<sup>nd</sup>, Atlantic City, NJ. 7-9 Feb. 2017. NJ Dept. of Agriculture, Trenton, NJ.
- Carleo, J.S. and W.C. Stiles. 2012. Pruning beach plums for fruit production, Fact Sheet FS1180. Rutgers Cooperative Extension, Rutgers New Jersey Agricultural Experiment Station, Rutgers University, New Brunswick, NJ.
- Clark, R., D. Simser, and R. Uva. n.d. The beach plum: A history and grower's guide. Cape Cod Cooperative Extension, Univ. of Massachusetts, Amherst, MA.
- Dirr, M.A., 1998. Manual of woody landscape plants. Stipes Publishing, Champaign, IL.
- Doran, W.L. and J.S. Bailey. 1957. Vegetative propagation of beach plums. *The National Horticulture Magazine* 36(4):349-352.
- Doran, W.L. and J.S. Bailey. 1944. A second note on the propagation of beach plum by softwood cuttings. *The American Nurseryman* 78(8).
- Duncan, W.H. and M.B. Duncan. 1987. The Smithsonian guide to seaside plants of the Gulf and Atlantic coasts. Smithsonian Institution Press. Washington, D.C.
- Fiola, J.A. n.d. The beach plum (*Prunus maritima* Marsh). Western Maryland Research and Education Center, University of Maryland Extension, Keedysville, MD.
- FNAEC (Flora of North America Editorial Committee). 2015. *Flora of North America Volume 9*. Oxford University Press, Oxford.
- Garrick, L. 2012. Banking on beach plums. *Gastronomica* 12(3): 21-30.
- Graves, G. 1949. Looking towards beach plum cultivation. *Arnoldia* 9(11-12): 53-64.
- Howell, A.B. 2007. Bioactive compounds in cranberries and their role in prevention of urinary tract infections. *Mol. Nutrition and Food Res.* 2007(51): 732-737.
- Kucinski, K.J. and W.S. Eisenmenger. 1943. Sand dune stabilization on Cape Cod. *Economic Geography* 19(2) :206-214.

- Martine, C.T. 2002. Shrubs and vines of New Jersey and the Mid-Atlantic states. NJ Dept. of Environmental Protection, Division of Parks and Forestry, Forest Resource Education Center, Jackson, NJ.
- Miller, C. 2002. Plant fact sheet for *Prunus maritima*, beach plum. USDA-Natural Resources Conservation Service, Somerset, NJ.
- NPIN (Native Plant Information Network). 2007. Lady Bird Johnson Wildflower Center. The Univ. of Texas at Austin.
- NEWFS (New England Wildflower Society). Go botany *Prunus maritima* beach plum. [Online]. Available at <https://gobotany.newenglandwild.org/species/prunus/maritima/> (accessed 17 January 2018). New England Wildflower Society, Framingham, MA.
- NHDFL (New Hampshire Division of Forests and Lands. 2018. Bayberry - beach plum maritime shrubland. [Online]. Available at <http://www.nhdf.org/about-forests-and-lands/bureaus/natural-heritage-bureau/photo-index/beach-plum-maritime-shrubland.aspx> (accessed 23 January 2018). New Hampshire Division of Forests and Lands, Concord, NH.
- Oikos. 2015. Oikos Tree Crops. [Online]. Available at <https://oikostreecrops.com/> (accessed 2 June 2018).
- Post, W.F. 1962. Glossy ibis breeding in New York. *Auk* 79:120-121. The Trustees of Reservations, Islands Regional Office, Vineyard Haven, MA.
- Procida, L. 2012. Market ripens for beach plums in Cape May County. Press of Atlantic City, Pleasantville, NJ.
- Robinson, G.R. and S.N. Handel. 1993. Forest restoration on a closed landfill: Rapid addition of new species by bird dispersal. *Conservation Biology* 7(2): 271-278.
- Robinson, G.R., S.N. Handel, and J. Mattei. 2002. Experimental techniques for evaluating the success of restoration projects. *Korean J. Ecol.* 25(1):1-7.
- Rhoads, A.F. and T.A. Block. 2007. The plants of Pennsylvania. Univ. of Pennsylvania Press, Philadelphia.
- Salon, P.R. and C.F. Miller. 2012. A guide to conservation plantings on critical areas for the northeast. USDA-Natural Resources Conservation Service, Big Flats Plant Materials Center, Corning, NY.
- Schaefer, P.W. 1974. Population ecology of the browntail moth, *Euproctis chrysorrhoea* (Lepidoptera: Lymantriidae). Dissertation. University of Maine, Orono, Maine.
- Seiler, J., E. Jensen, A. Niemiera, and J. Peterson. 2018. Virginia Tech Dendrology: beach plum. [Online]. Available at <http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=817> (accessed 17 January 2018). Virginia Tech Dept. of Forest Resources and Environmental Conservation, Blacksburg, VA.
- Sharp, W.C. and V.B. Hawk. 1977. Establishment of woody plants for secondary and tertiary dune stabilization along the Mid-Atlantic coast. *Int. J. Biometeor.* 21(3): 245-255.
- Silberhorn, G.M. 1999. Common plants of the Mid-Atlantic coast. The Johns Hopkins Univ. Press, Baltimore, MD.
- Small, J.K. 1897. An apparently undescribed species of *Prunus* from Connecticut. *Bulletin of the Torrey Botanical Club* 24: 42-45.
- Stalter, R. 1992. Barrier island botany. Wm. C. Brown Publishers, Dubuque, IA.
- Tiner, R.W. 2009. Field guide to tidal wetland plants of the Northeastern United States and neighboring Canada. University of Massachusetts Press, Amherst, MA.
- USDA-NRCS. 2012. Release brochure for 'Ocean View' beach plum (*Prunus maritima*). USDA-Natural Resources Conservation Service, Cape May Plant Materials Center. Cape May, NJ.
- USDA-NRCS. 2018. Plants Database - *Prunus maritima* Marshall, beach plum. [Online]. Available at <https://plants.usda.gov/core/profile?symbol=prma2> (accessed 29 January 2018). USDA-Natural Resources Conservation Service.
- Uva, R. Beach plum new crop development. Presentation. [Online]. Available at [https://agresearch.umd.edu/sites/agresearch.umd.edu/files/\\_docs/locations/wye/Uva%20Beach%20Plum-New%20Crop%20Development.pdf](https://agresearch.umd.edu/sites/agresearch.umd.edu/files/_docs/locations/wye/Uva%20Beach%20Plum-New%20Crop%20Development.pdf) (accessed 13 February 2018). Northeast Sustainable Agriculture Research and Education, Univ. of VT, Burlington, VT.
- Uva, R.H. 2003. Taming the wild beach plum. *Arnoldia* 62(4): 11-19.
- Uva, R.H. and T.H. Whitlow. 2005. Beach plum: A shrub for low-maintenance landscapes. *Arnoldia* 63(4): 19-20.
- Uva, R.H. and T.H. Whitlow. 2005. Production and marketing of beach plum, a heritage fruit crop SARE fact sheet. Northeast Sustainable Agriculture Research and Education, Univ. of VT, Burlington, VT.
- Uva, R.H. and T.H. Whitlow. 2007. Cultural methods for beach plum (*Prunus maritima*) fruit production. *J. Am. Pomological Soc.* 61(1): 3-13.
- Vaughan, M., E. Mader, J. guise, J. Goldenetz-Dollar, and B. Borders. 2013. New Jersey installation guide and job sheet for hedgerow planting (422) for pollinators. The Xerces Society for Invertebrate Conservation, Portland, OR.
- Weiss, H.B. and E. West. 1924. Insects and plants of dry woods in the pine barrens of New Jersey. *Ecology* 5(3):241-253.
- Wootton, L., J. Miller, C. Miller, M. Piik, A. Williams, and P. Rowe. 2016. Dune Manual. New Jersey Sea Grant consortium.
- Zai, X., Y. Zai, H. Zhang, and Z. Hao. 2015. Characterising the rhizospheric soil niches of beach plum (*Prunus maritima*) colonised by arbuscularmycorrhizal fungi and/or phosphatesolubilising fungi when grown under NaCl stress. *J. Hortic. Sci. and Biotechnology* 90(4): 469-475.

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