



Index of Species Information

SPECIES: *Viburnum edule*



- [Introductory](#)
- [Distribution and Occurrence](#)
- [Management Considerations](#)
- [Botanical and Ecological Characteristics](#)
- [Fire Ecology](#)
- [Fire Effects](#)
- [References](#)



Squashberry foliage (left) and fruit (right). Images by Dave Powell, USDA Forest Service Bugwood.org.

Introductory

SPECIES: *Viburnum edule*

AUTHORSHIP AND CITATION:

Matthews, Robin F. 1992. *Viburnum edule*. In: Fire Effects Information System, [Online].

U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station,

Fire Sciences Laboratory (Producer). Available:

<https://www.fs.fed.us/database/feis/plants/shrub/vibedu/all.html> [2021, October 9].

Revisions:

On 30 August 2018, the common name of this species was changed in FEIS from: highbush cranberry

to: squashberry. Images were also added.

ABBREVIATION:

VIBEDU

SYNONYMS:

Viburnum pauciflorum LaPylaie
Viburnum opulus var. edule Michx.
Viburnum acerifolium Bong.

NRCS PLANT CODE:

VIED

COMMON NAMES:

squashberry
few-flowered highbush cranberry
highbush cranberry
lowbush cranberry
mooseberry

TAXONOMY:

The scientific name of squashberry is *Viburnum edule* (Michx.) Raf., in the family Caprifoliaceae [[1](#),[18](#),[32](#),[35](#),[47](#)]. There are no recognized infrataxa.

LIFE FORM:

Shrub

FEDERAL LEGAL STATUS:

See OTHER STATUS

OTHER STATUS:

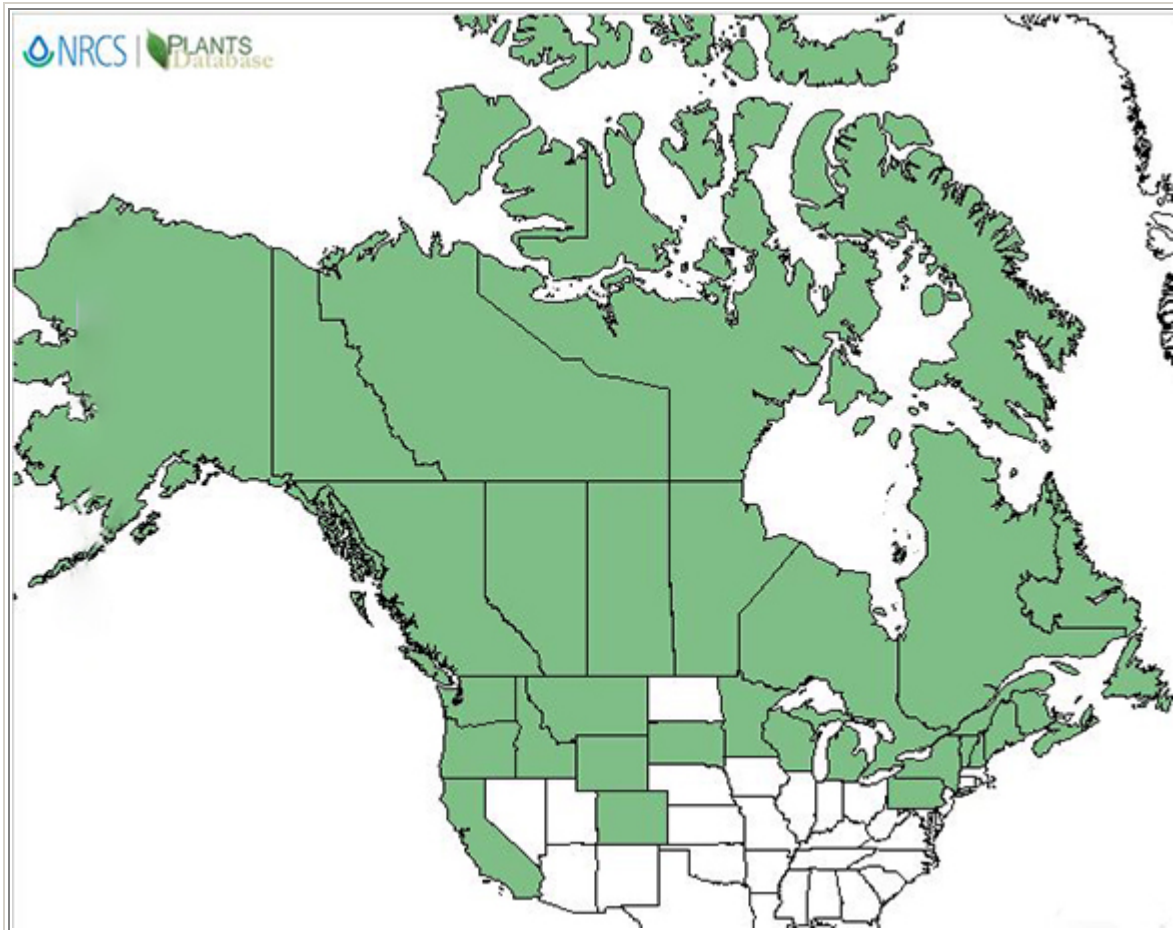
Squashberry is considered rare (species or habitat vulnerable or declining) in South Dakota [[31](#)]. It has also been placed on Maine's official Watch List [[8](#)].

DISTRIBUTION AND OCCURRENCE

SPECIES: *Viburnum edule*

GENERAL DISTRIBUTION:

Squashberry is distributed throughout Alaska and across Canada to Newfoundland. It occurs south through the New England and Great Lakes States, and the Pacific Northwest [[1](#),[18](#),[45](#),[49](#),[58](#)]. Populations are also found in Idaho, Montana, North and South Dakota, Wyoming, and Colorado [[10](#),[11](#),[26](#),[43](#),[53](#)].



Distribution of squashberry. Map courtesy of USDA, NRCS. 2018. The [PLANTS Database](#). National Plant Data Team, Greensboro, NC. [2018, August 30] [[54](#)].

ECOSYSTEMS:

- FRES10 White - red - jack pine
- FRES11 Spruce - fir
- FRES19 Aspen - birch
- FRES23 Fir - spruce
- FRES24 Hemlock - Sitka spruce
- FRES26 Lodgepole pine
- FRES28 Western hardwoods

STATES:

- AK CO CT ID IA ME MD MA MI MN
- MT NH NY ND OR PA RI SD VT WA
- WI WY AB BC LB MB NB NF NT NS
- ON PE PQ SK YT

BLM PHYSIOGRAPHIC REGIONS:

- 1 Northern Pacific Border
- 2 Cascade Mountains

- 8 Northern Rocky Mountains
- 9 Middle Rocky Mountains
- 11 Southern Rocky Mountains
- 15 Black Hills Uplift

KUCHLER PLANT ASSOCIATIONS:

- K001 Spruce - cedar - hemlock forest
- K004 Fir - hemlock forest
- K008 Lodgepole pine - subalpine forest
- K015 Western spruce - fir forest
- K025 Alder - ash forest
- K093 Great Lakes spruce - fir forest
- K094 Conifer bog
- K095 Great Lakes pine forest
- K096 Northeastern spruce - fir forest
- K107 Northern hardwoods - fir forest
- K108 Northern hardwoods - spruce forest

SAF COVER TYPES:

- 1 Jack pine
- 5 Balsam fir
- 12 Black spruce
- 13 Black spruce - tamarack
- 16 Aspen
- 17 Pin cherry
- 18 Paper birch
- 38 Tamarack
- 107 White spruce
- 201 White spruce
- 202 White spruce - paper birch
- 203 Balsam poplar
- 204 Black spruce
- 205 Mountain hemlock
- 206 Engelmann spruce - subalpine fir
- 217 Aspen
- 218 Lodgepole pine
- 222 Black cottonwood - willow
- 224 Western hemlock
- 227 Western redcedar - western hemlock
- 228 Western redcedar
- 251 White spruce - aspen
- 252 Paper birch
- 253 Black spruce - white spruce
- 254 Black spruce - paper birch

HABITAT TYPES AND PLANT COMMUNITIES:

Squashberry may occur as a dominant or codominant understory species in open or closed coniferous forests, primarily in white spruce (*Picea glauca*) [[12](#),[19](#),[50](#),[57](#)], but also in lodgepole pine (*Pinus contorta*) [[7](#)] or western redcedar (*Thuja plicata*) habitats [[25](#)]. It may also occur as an understory dominant in open or closed deciduous forests with quaking aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), or balsam poplar (*P. balsamifera*) [[7](#),[19](#),[57](#)].

Common understory associates include: willows (*Salix* spp.), alders (*Alnus* spp.), raspberries (*Rubus* spp.), currants (*Ribes* spp.), prickly rose (*Rosa acicularis*), lignonberry (*Vaccinium vitis-idaea*), rusty menziesia (*Menziesia ferruginea*), hazelnut (*Corylus cornuta*), bog Labrador tea (*Ledum groenlandicum*), one sided wintergreen (*Pyrola secunda*), dogwoods (*Cornus canadensis* and *C. stolonifera*), buffaloberry (*Shepherdia canadensis*), devil's club (*Oplopanax horridus*), queencup beadlily (*Clintonia uniflora*), oak fern (*Gymnocarpium dryopteris*), twinflower (*Linnaea borealis*), twinberry honeysuckle (*Lonicera involucrata*), fireweed (*Epilobium angustifolium*), bearberry (*Arctostaphylos uva-ursi*), horsetails (*Equisetum pratense*, *E. arvense*, and *E. sylvanicum*), bluejoint reedgrass (*Calamagrostis canadensis*), and various feather mosses (*Hylocomium* and *Pleurozium* spp.), sedges (*Carex* spp.), lichens (*Cladonia* and *Cladina* spp.) and sphagnum mosses.

Published classifications listing squashberry as a dominant understory species in plant associations (pas), community types (cts), or vegetation types (vts) are as follows:

AREA	CLASSIFICATION	AUTHORITY
wc AB	forest cts	Corns 1983
int AK	gen. veg. cts	Dyrness and others 1989
int AK	postfire forest cts	Foote 1983
YT	vts	Stanek 1980
BC: Salmon River Valley	vts	Harcombe and others 1983
AK	gen. veg. pas	Viereck & Dyrness 1980

MANAGEMENT CONSIDERATIONS

SPECIES: *Viburnum edule*

IMPORTANCE TO LIVESTOCK AND WILDLIFE:

Highbush cranberries are consumed by many small mammals and songbirds [22,58]. Game birds including spruce grouse and ruffed grouse also eat the berries [15,34]. Foliage is browsed by beaver, rabbit, and snowshoe hare [22].

Squashberry is of low to moderate importance as browse to Roosevelt elk, Rocky Mountain elk, mountain goat, bighorn sheep, black-tail deer, mule deer, white-tailed deer, and caribou [2,5]. The foliage is also browsed by moose throughout the year [37,48].

Squashberry fruits are a major food of grizzly bears [3,23,40]. Black bears consume the fruits in late fall [27].

PALATABILITY:

Viburnum foliage is low in palatability to livestock [55].

Pease [42] states that *Viburnum* foliage is highly unpalatable to snowshoe hare, but others report it to be a preferred hare food in some areas [60].

NUTRITIONAL VALUE:

Squashberry's current annual stem and leaf growth collected in July from Kenai Peninsula, Alaska, were analyzed for browse quality to moose. In-vitro dry matter digestibility was 52.8 percent and protein content was 10.3 percent. Concentrations of the following elements were found [41]:

Macroelements (ppm)			
Ca	K	Mg	Na
3,284	10,798	2,112	106
Microelements (ppm)			
Cu	Fe	Mn	Zn
21.0	5.0	24.4	23.5

COVER VALUE:

Viburnum species are important components of forest-edge and hedgerow habitats that provide cover for small mammals and birds [21].

VALUE FOR REHABILITATION OF DISTURBED SITES:

The value of squashberry for rehabilitative purposes has not been well documented. It was studied for its use in oil sands reclamation, but no results were detailed [17].

OTHER USES AND VALUES:

Highbush cranberries are edible and make excellent jams, jellies, and sauces if picked before fully mature [29,32,58]. The berries were an important food of Native Americans of the Bella Coola region of British Columbia, where a single shrub may yield up to 100 berries [38]. The plant is cultivated for its brilliant red autumnal foliage [58].

OTHER MANAGEMENT CONSIDERATIONS:

Squashberry is not considered to be a primary competitor to conifers but is a component of major brush complexes that occur on moist, productive sites on floodplains or under deciduous canopies. It can compete significantly with natural or planted white spruce seedlings in the Sub-Boreal Spruce and Boreal White and Black Spruce (*Picea mariana*) Zones, where it is most abundant [22].

Squashberry has shown varying responses to overstory removal. Near Prince George, British Columbia, squashberry in white spruce-subalpine fir (*Abies lasiocarpa*) forests had not become a significant component of the vegetation 6 years after clearcutting, although it was present on all sites prior to the harvest [14]. In Alberta, squashberry had significantly lower cover in 6- to 12-year-old clearcut areas than in adjacent mature lodgepole pine stands. In contrast, logging of a balsam poplar stand in Alaska caused a dramatic increase in squashberry density. It was one of the dominant shrubs and reached 3.3 feet (1 m) in height within 4 years [22]. In general, frequency and cover are expected to remain constant or decrease slightly in the first few years after overstory removal.

Vigor may increase slowly on favorable sites [6].

Squashberry is a seed-banking species, and soil disturbance resulting from mechanical site preparation favors germination of stored seed. The disturbance may also provide favorable seedbeds for freshly deposited seed. Plants damaged in site preparation sprout from root stocks and stem bases [6].

Squashberry increased less in a winter-logged balsam poplar stand than in one that had been summer-logged. Higher soil disturbance on the summer-logged site may have stimulated sprouting. However, scarification did not enhance cover of squashberry in clearcut areas near Edson, Alberta [22]. Squashberry was also less abundant on mechanically prepared sites than on unscalped sites in interior Alaska. Frequency and cover of squashberry 3 years after clearcutting and shelterwood cutting of white spruce stands were as follows [63]:

	Clearcut		Shelterwood	
	scalped	unscalped	scalped	unscalped
Frequency (%)	13.3	38.3	13.3	20.0
Cover (%)	1.8	5.2	1.7	3.2

Squashberry can be propagated vegetatively by hardwood or softwood cuttings, although softwood cuttings are far more successful at producing roots. Softwood cuttings root sooner and more prolifically in sand than in perlite. Rooting success greatly increases by treating cuttings with IBA (Indole-3-butyric acid). Rhizome cuttings also successfully produce roots when planted immediately after fall collection [30].

Seeding may also be used for propagation of Viburnums. Seeds may be broadcast sown on prepared seedbeds and mulched with sawdust or sown with drills and mulched with straw. Seedlings may require shading, depending on location. Fertile, moist soils which are neutral to slightly acidic result in best germination [21].

Herbicides can be used to control squashberry. Glyphosate exhibits good control and causes moderately severe damage to the plant [2,22]. Aerially spraying a young aspen-balsam poplar stand in June resulted in 95 percent defoliation and heavy mortality of squashberry [22]. Roundup also causes defoliation and moderate mortality rates [6]. Hexazinone does not appear to control squashberry effectively [2,6].

Squashberry is utilized heavily in tent caterpillar outbreaks [52]. Aphids, thrips, spider mites, and scale are also likely to occur on Viburnums. A leaf spot (*Ascochyta viburni*) has been found on plants along coastal British Columbia, and a rust (*Puccinia linkii*) has been found on plants in northern British Columbia. Neither of these diseases is considered serious [22].

BOTANICAL AND ECOLOGICAL CHARACTERISTICS

SPECIES: *Viburnum edule*

GENERAL BOTANICAL CHARACTERISTICS:

Squashberry is a straggling to erect deciduous shrub that reaches heights ranging from 2 to 12 feet (0.6-3.5 m) [22,32,58]. It has several to many stems that may grow to 1.5 inches (4 cm) in diameter [58]. The plant has smooth gray bark and sharply toothed leaves that are shallowly lobed. Milky-white flowers are borne in few-flowered terminal cymes. The fruit is an orange to red drupe that contains one seed [1,32,58]. The berries often overwinter on twigs. Highbush cranberry roots in the organic layer [51] and is rhizomatous [22].

RAUNKIAER LIFE FORM:

Phanerophyte

REGENERATION PROCESSES:

Sexual reproduction: Squashberry begins to produce fruits at approximately 5 years of age, and then produces large quantities nearly every year thereafter. The one-seeded fruits are dispersed by the birds and mammals that consume them [6,22]. Germination is normally delayed until the second growing season after ripening. The seeds exhibit seed coat and embryo dormancy that requires a two-stage stratification to be broken. Most successful germination takes place when a warm period is followed by cold stratification [21,22,59]. The radicle emerges and begins growth during the warm period, and the cold period breaks the dormancy of the plumule, which then grows when temperatures become warmer. The time period of these stages is critical but has not been worked out in detail. Clean, air-dried seeds can be stored up to 10 years without losing viability. Squashberry is a seed-banking species [21,22].

Vegetative reproduction: Squashberry can reproduce vegetatively by natural layering and sprouting from damaged root stocks, stembases, and stumps. The plant is rhizomatous, but there is no evidence of lateral spread from the parent by rhizome or root suckers [22].

SITE CHARACTERISTICS:

Squashberry is found in moist woods or forests, along stream or lake margins on gravel or rocky banks, and on swamp or bog margins [22,49,58]. In British Columbia, the plant is found from sea level to about 4,900 feet (1,500 m) [22], but in Colorado elevational range is 7,000 to 9,000 feet (2,100-2,700 m) [26]. The southern extent of squashberry's distribution is determined by high temperatures and low humidity. Its presence at northern latitudes indicates a high tolerance to frost and the ability to grow in low soil and air temperatures. In moist climates, squashberry grows on submesic to subhydryc soils, but in drier climates it is restricted to subhygric and wetter moisture regimes. Squashberry commonly grows under a deciduous or coniferous canopy but probably develops best under full sunlight [22].

Squashberry grows best on well-drained, alluvial soils

[6,9,12,62]. Soil textures include clay, silty clay, sandy clay loam, and fine loam [9,33,62]. Soil types include Luvisols, Brunisols, Humo-Ferric Podzols, Regosols, and Gleysols [22].

SUCCESSIONAL STATUS:

Squashberry is moderately shade tolerant [6] and is important throughout all stages of forest succession [46,61]. In floodplain succession, squashberry is present from the pioneer willow through seral balsam poplar stages. It remains important in mature and climax white spruce and black spruce-white spruce types [56].

Squashberry sprouts following fire and is an important component of early, midseral, and climax postfire communities [13,61]. The following frequencies and densities were found in white spruce stands in interior Alaska:

Stage	Years after fire	Frequency(%)	Density(stems/acre)
Newly burned	0-1	78	15,201 (37,562 st/ha)
Moss-herb	1-5	21	2,795 (6,906 st/ha)
Tall shrub-sapling	3-30	30	13,445 (33,222 st/ha)
Dense tree	26-45	36	3,713 (9,175 st/ha)
Hardwood	46-150	55	15,378 (38,000 st/ha)
Spruce	150-300+	39	2,049 (5,062 st/ha)

Low successive peaks between the newly burned, tall shrub-sapling, and hardwood stages may have been caused by stand differences or successful establishment followed by opportunism [19].

SEASONAL DEVELOPMENT:

Squashberry flowers from May to August, depending on location. Fruits ripen from August to October and persist throughout the winter [18,22,58]. Leaf flush begins in April or May, and senescence and abscission take place earlier than on associated shrubs [22].

FIRE ECOLOGY

SPECIES: *Viburnum edule*

FIRE ECOLOGY OR ADAPTATIONS:

Squashberry sprouts from the stump, roots, or underground stems following fire [13,61]. Sprouting may also occur at the base of fire-killed aboveground stems [22,24]. Squashberry roots are buried approximately 8 inches (20 cm) below the soil surface, allowing them to survive light fires that do not entirely remove the organic layer [51]. Rhizomes will also survive fires of this nature. Highbush cranberry seeds are hard and have thick seed coats, making them somewhat resistant to fire [59]. Regeneration by seeds stored in the soil may actually be favored by low-severity fires [22].

FIRE REGIMES:

Find fire regime information for the plant communities in which this

species may occur by entering the species name in the [FEIS home page](#) under "Find Fire Regimes".

POSTFIRE REGENERATION STRATEGY:

survivor species; on-site surviving root crown or caudex
survivor species; on-site surviving rhizomes
ground-stored residual colonizer; fire-activated seed on-site in soil
off-site colonizer; seed carried by animals or water; postfire yr 1&2
secondary colonizer; off-site seed carried to site after year 2

FIRE EFFECTS

SPECIES: *Viburnum edule*

IMMEDIATE FIRE EFFECT ON PLANT:

Fire top-kills squashberry. Moderate- to high-severity fires which remove soil organic layers may kill roots, underground stems, and buried seeds.

PLANT RESPONSE TO FIRE:

Squashberry sprouts within weeks following fire [19,22] and often becomes one of the dominant postfire shrubs [22]. Low-severity fires stimulate germination of seeds stored in the soil [24,47]. Abundance of the plant may be initially reduced after fire, but an increase over prefire density may take place within the next 10 years [6,28].

DISCUSSION AND QUALIFICATION OF PLANT RESPONSE:

The Research Project Summary [Understory recovery after burning and reburning quaking aspen stands in central Alberta](#) provides information on prescribed fire and postfire response of plant community species including squashberry.

FIRE MANAGEMENT CONSIDERATIONS:

Prescribed fires of low-severity and short duration are recommended for the management of squashberry. Fires of this type favor the germination of buried seeds and sprouting of vegetative structures [6,22,47].

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SPECIES: *Viburnum edule*

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