

SAMBUCETUM EBULI IN THE NETHERLANDS

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SUMMARY

A brief description of the *Sambucetum ebuli* in The Netherlands, not having been described before, is presented. The emphasis is put upon the community structure, distribution and syntaxonomy of the community. The syntaxonomical position of the community remains unclear since it is found on the boundary of its distribution.

NOMENCLATURE AND TERMINOLOGY

The nomenclature of phanerogamic species follows HEUKELS & VAN OOSTSTROOM (1977), of cryptogams DIXON (1971). The understanding of the syntaxa used in the text follows WESTHOFF & DEN HELD (1975). The terminology used for the definition of sublayers of the herb layer (E1) is according to HEJNÝ et al. (1979). The symbol Eo is used for the layer of terrestrial cryptogams.

DESCRIPTION OF THE SAMBUCETUM EBULI

Stands with a striking dominance of *Sambucus ebulus* usually described as *Sambucetum ebuli* Felföldy 1942 are known from Central and Western Europe extending SW to Asturia (BRAUN-BLANQUET 1967), NW to Scotland (VAN DER MAAREL, pers. comm.), Northern France (GÉHU 1973), and the loess area of Belgium (Stieperaere, pers. comm.). Southwards it has been recorded from the submediterranean region of France and Italy, Yugoslavia (HORVATIĆ 1963), and Bulgaria. There is comparatively complete documentation available on the distribution of the community in Roumania (POP 1968, 1969; DIHORU & DONITA 1970; TODOR, GERGELY & BĂRCĂ-1971), Hungary (FELFÖLDY 1942) and Czechoslovakia (cf. HEJNÝ et al. 1979). The northernmost references of the distribution are from West Germany near Hamburg (Brandes, pers. comm.) and East Germany (KAISER 1926, GUTTE 1972). The NW boundary of the European continental distribution is supposed to be situated in The Netherlands, and until now data on this region have not been available.

Highly compact stands of *Sambucetum ebuli* are composed of several (sub)layers. The main, usually monodominant sublayer (E1-*gamma*, 150–200 cm) is dominated by *Sambucus ebulus*.

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The tight canopy of *Sambucus ebulus* in this sublayer prevents the full development of the sublayers E1-*beta* (10–50 cm) and E1-*alpha* (0–10 (15) cm). In these sublayers primarily shade-tolerant species of reduced vitality (usually in the vegetative stage) are found.

Sambucus ebulus has a competitive strategy (*sensu* GRIME 1979). It has a peculiar root system composed of several decimeters long fingerthick rhizomes. The large quantity of stored energy in these perennial organs enables rapid growth of shoots and foliage in late spring. As in the case of the taxonomically related *Sambucus nigra* L. one could also expect an allelopathic effect of the leaf-litter of *Sambucus ebulus* upon the other coenopopulations (*sensu* RABOTNOV 1969) sharing the same site (GRIME 1979, p. 137). The amount of litter itself could also be one of the immediate reasons of comparatively low species richness (see also SYDES & GRIME 1981a, b). There are only few species able to reach the canopy of *Sambucus ebulus*; among these are *Heracleum sphondylium*, *Eupatorium cannabinum* and *Dipsacus pilosus* (see table 1). *Humulus lupulus*, *Clematis vitalba* and *Calystegia sepium* climb over the coenopopulation of *Sambucus ebulus* and make the canopy more dense. In the E1-*beta* and E1-*alpha* sublayers *Urtica dioica*, *Galium aparine*, *Rubus caesius*, *Arum maculatum*, *Geum urbanum* and *Stellaria media* are always present. In one case (relevé no. 6, table 1) the E1-*alpha* was dominated by *Vinca minor* which had penetrated the stand from the adjacent oak-hornbeam wood (*Stellario-Carpinetum* Oberd. 1957). High shade and side wetness enable the development of the moss layer (Eo), which is usually composed of *Brachythecium rivulare*, *Mnium undulatum* and *Mnium punctatum*.

The phytocoenoses of the *Sambucetum ebuli* are fully developed from May to October. The flowering period is from June to August. During the dissemination period of *Sambucus ebulus* most of the plants in the lower sublayers are already dessicated. The ground is covered by litter of old leaves of *Sambucus ebulus* as well as the shoots of *Galium aparine*, *Urtica dioica* and other species. Only mosses and part of the coenopopulation of *Galium aparine* (winter-annual species) survive the winter.

From the Dutch point of view the distribution of the *Sambucetum ebuli* is "central-european". or 'continental'. It is classified the same as several other plant communities occurring mostly in the S and/or E parts of the Netherlands, following the phytogeographic division of the Netherlands mainly in Krijt, Loess and Subcentreuroop districts (VAN SOEST 1929, see also VAN SOEST in HEUKELS & VAN OOSTSTROOM 1977). Examples are: *Asplenietum rutae-murariae-trichomanis* Kuhn 1937, *Caucalidion lappulae* R. Tx. 1950, *Digitali-Epilobietum angustifolii* (Chouard 1925) Schwick. 1944 em. R. Tx. 1950, *Mesobrometum erecti* Br.-Bl ex Scherrer 1925, *Trifolio medii-Agrimonieta* Th. Muller (1961) 1962, *Carpinion betuli* (Issler 1931) Oberd. 1953 and *Berteroetum incanae* Sissingh 1950. The centre of the Dutch distribution of the *Sambucetum ebuli* in The Netherlands is in Southern Limbourg (surroundings of Valkenburg and Maastricht). It also occurs in the Fluviatiet district viz. in Ooijpolder near the villages of Ooij and Erlecom, E of Nijmegen. The *Sambucetum ebuli* here is found along road verges, which are mown twice a year (H. van de Steeg, pers.

comm.). As a result the stands of the *Sambucetum ebuli* are gradually vanishing here. *Sambucus ebulus* can probably stand mowing once a year and regenerate, but then it never finishes its reproductive cycle completely.

Even in the center of its Dutch distribution area (Southern Limbourg) the *Sambucetum ebuli* is rather rare in comparison to other plant communities of the class *Artemisietea vulgaris* Lohm., Preising et R. Tx. in R. Tx. 1950 found in this area. It occurs mainly on slopes along railway tracks. Here it forms fringe-like stands on sunny to half-shaded sites. It is rare in close proximity to arable fields or to villages. Soils are rich in nitrogen, loamy, moist and friable. In Southern Limbourg the *Sambucetum ebuli* grows on loess.

Sambucus ebulus, like other species of the *Sambucetum ebuli* (e.g. *Heracleum sphondylium*, *Urtica dioica*, *Galium aparine* and *Calystegia sepium*), is an apophytic species (sensu KORNAŠ 1978) originally distributed in forest clearings and/or forest fringes. WESTHOFF & DEN HELD (1975) consider *Sambucus ebulus* to be a differentiating species of the *Fragarion vescae* R. Tx. 1950 within the class *Epilobietea angustifoliae* R. Tx. et Preising in R. Tx. 1950 em. Passarge 1956. Later *Sambucus ebulus* has spread to typical ruderal sites such as slopes along railway tracks, rubbish heaps, etc.

When comparing the *Sambucetum ebuli* in The Netherlands to that of Central Europe a clear floristical shift in favour of the species of *Artemisietea vulgaris* occurs on somewhat wetter sites (communities of the orders *Galio-Alliarietalia* Oberd. et Görs 1969 and *Convolvuletalia sepium* R. Tx. 1950). Therefore authors in Western Europe tend to classify the *Sambucetum ebuli* within the *Galio-Alliarietalia* (GÉHU, RICHARD & TÜXEN 1972, GREMAUD 1978, OBERDORFER & MÜLLER 1979), whereas in the relevés from Central Europe it is classified within *Artemisietalia vulgaris* Lohm. in R. Tx. 1947, since the importance of the species of *Arction lappae* R. Tx. 1937 and *Dauco-Melilotion* Görs 1966 has apparently increased in this region. In the Balkans the species of *Onopordion acanthii* Br.-Bl. 1926 and *Festucetalia valesiacae* Br.-Bl. et R. Tx. 1943 become a component of the floristic composition of *Sambucetum ebuli* (cf. DIHORU & DONIȚA 1970). The variation in the species composition suggests the presence of a geographical floristical cline within *Sambucetum ebuli*. Given that observation the syntaxonomy of *Sambucetum ebuli* should be reconsidered.

ACKNOWLEDGEMENTS

The authors would like to thank Prof. Dr. V. Westhoff and Prof. Dr. E. van de Maarel for their valuable comments on the manuscript, as well as Ing. H. van der Steeg (Nijmegen), Dr. H. Stieperaere (Gent) and Dr. D. Brandes (Braunschweig) for their contributions. The help of Mr. Henry Moreton for correction of the English text is also appreciated.

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Localities of the relevés:

1. Keutenberg (community of Wijlre, province of Limburg), in the village, October 1980 (LM 2232)
- 2.-3. Oud-Valkenburg (comm. of Valkenburg-Houthem, prov. of Limburg), Schaesberg, along the railway, October 1980 (LM 2235, 2236)
4. Gronsveld (comm. of Gronsveld, prov. of Limburg), Savelsbos, near the road Moerslag-Eisden, October 1980 (LM 2237)
- 5.-6. Geulle (comm. of Bunde, prov. of Limburg), Bunderbos, along the railway, October 1980 (LM 2238, 2239)
7. Erlecom (comm. of Ooij, prov. of Gelderland), along the road near the river Waal, August 1980 (LM 2164)

Table 1. *Sambucetum ebuli* Felföldy 1942 in the Netherlands.

No. of relevé	1	2	3	4	5	6	7	C
Coverage of E ₁ (%)	100	100	100	100	100	100	100	
Coverage of E ₀ (%)	5	20	40	10	5	5	—	
Height of stand (cm)	180	200	200	175	150	100	180	
Area (m ²)	10	42	25	35	24	7	24	
No. of taxa	11	13	17	13	10	13	8	
<i>Sambucus ebulus</i> L.	4.4	5.5	5.5	5.5	4.4	3.3	4.4	V
<i>Galium aparine</i> L.	1.2°	1.1°	1.1°	2m.1	3.3	+1°	+2	V
<i>Urtica dioica</i> L.	4.3	4.4	2.3	3.3	3.3	3.3	3.2	V
<i>Calystegia sepium</i> (L.) R.Br.	3.2		+1	3.3	3.2		3.3	IV
<i>Rubus caesius</i> L.		3.2	+1	2b.2	2b.3			III
<i>Artemisia vulgaris</i> L.				+1			+1	II
<i>Eupatorium cannabinum</i> L.		1.2	1.1					II
<i>Aegopodium podagraria</i> L.							r.1°	I
<i>Allaria petiolata</i> (MB.) Cavara & Grande		+1°						I
<i>Anthriscus sylvestris</i> (L.) Hoffm.							+1°	I
<i>Chaerophyllum temulum</i> L.		+1						I
<i>Humulus lupulus</i> L.			+1					I
<i>Lamium album</i> L.	2a.2							I
<i>Linaria vulgaris</i> Mill.			+1					I
<i>Solanum dulcamara</i> L.						r.1		I
<i>Torilis japonica</i> (Houtt.) DC.						+2		I
<i>Heracleum sphondylium</i> L.	+1	+1	+1	+1	+1		1.1	V
<i>Agropyron repens</i> (L.) PB.	2a.3			+2	+2			III
<i>Glechoma hederacea</i> L.		+1			r.1		1.2	III
<i>Poa trivialis</i> L.			+1	2a.3	1.2	+2		III
<i>Arum maculatum</i> L.			r.t	+1				II
<i>Clematis vitalba</i> L.		2a.2		+1				II
<i>Dactylis glomerata</i> L.	+1				+2			II
<i>Melandrium rubrum</i> (Weig.) Garcke		+1	+1					II
<i>Acer pseudoplatanus</i> L. juv.		+1°						I
<i>Dipsacus pilosus</i> L.			+1					I
<i>Dryopteris filix-mas</i> (L.) Schott						+2		I
<i>Fraxinus excelsior</i> L. juv.		r.1°						I
<i>Geum urbanum</i> L.				+1				I
<i>Lolium perenne</i> L.	+2							I
<i>Poa annua</i> L.	+1							I
<i>Ribes uva-crispa</i> L.						+1		I
<i>Rosa canina</i> L.						+2		I
<i>Rumex crispus</i> L.	+1							I
<i>Scrophularia nodosa</i> L.			+1					I
<i>Stachys sylvatica</i> L.				+2				I
<i>Stellaria media</i> (L.) Vill.			+1°					I
<i>Vicia hirsuta</i> (L.) S. F. Gray			+1					I
<i>Vinca minor</i> L.						5.5		I
<i>Brachythecium rivulare</i> B.S.G.	1.2	2b.2	3.5	2a.2	1.2	1.2		V
Fungi				+1		r.1		II
<i>Mnium punctatum</i> Schreb.			1.3					I
<i>Mnium undulatum</i> Weiss			1.2					I