

# Augu funkcionālās grupas

Dzīvības formas - C. Raunkiaer

*Fanerofiti, hamefīfīti, kriptofīti, terofīti*

Augu stratēģijas - P. Grime

*Konkurences, stresa tolerances un  
ruderālā stratēģija*

Augu funkcionālo grupu klasifikācija ir veģetācijas klasifikācija, izmantojot funkcionālās īpašības, neatkarīgi no augu filoģenētiskās sistemātikas.

Vides un traucējumu faktori nosaka augu fizioloģiskās un demogrāfiskās īpašības, neatkarīgi no kontinenta.

### Traucējumi

- Augu īpašības ir specifiskas traucējumu veidam, intensitātei un frekvencei (r-K, C-S-R)
- Ir dažādas stratēģijas, lai izdzīvotu pie konkrēta traucējuma veida

Nepieciešami dati par daudzām augu īpašībām, kuri iegūti, izmantojot standarta metodes.

Nepieciešama informācija par to, kā traucējumu un vides gradienti ietekmē augu sabiedrības.

Nepieciešams atrast attiecīgās analītiskās metodes.

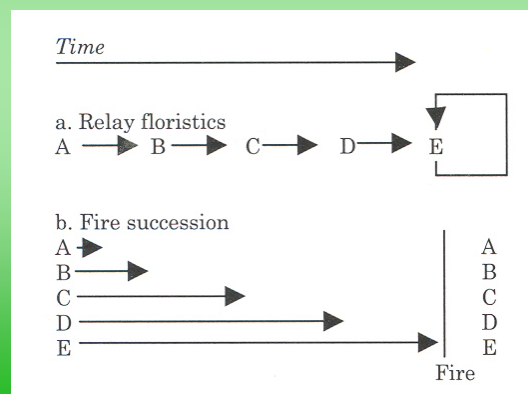


## Augu funkcionālās īpašības

- Kopējā lapu virsma / vainagu segums
- Lapu virsma / lapu masa
- RGR - relatīvais augšanas ātrums
- Augu lielums
- Lapu garums
- Sēklu daudzums
- N daudzums
- N/C
- Un daudz citi

## Sukcesijas

1. Augu sabiedrības nomaina viena otru, piem., aizaugošās lauksaimniecības zemes
2. Visas sugas, kuras piedalās sukcesijā, ierodas tūlīt pēc traucējuma



J.S. Rowe, 1983

Klasificē augus pēc tā kā pārcieš ugunsgrēku

**Invader** - *iebrucēji*, neizdzīvo, bet kolonizē

**Endurer** - *pacietēji*, saknes izdzīvo un dzen atvases

**Evader** - *apgājēji*, diasporas drošā vietā

**Resister** - *izturētāji*, specifiskas adaptācijas kā pārciest ugunsgrēku

**Avoider** - *nogaidītāji*, sukcesijas beigas, nav stratēģijas kā izdzīvot

Noble & Slatyer, 1980

Atkarībā no spējas pārdzīvot traucējumu,  
kokus klasificē pēc

1. Establishment requirements (iesakņošanai nepieciešamas īpašības)
2. Mode of persistence (pastāvēšanas spēja)
3. Laiks, lai sasniegtu konkrētu dzīves stadiju

## Iesakņošanai nepieciešamas īpašības

Toleranti - ienāk jebkurā laikā pēc traucējuma, ēnmīļi koki

Netoleranti - ienāk tikai tūliņ pēc ugunsgrēka

Sugas, kurām nepieciešami īpaši faktori - nespēj ienākt tūliņ pēc ugunsgrēka, bet tikai tad, kad indivīdi sasniedz zināmu dzīves stadiju

## Pastāvēšanas spēja

- Labas izplatīšanās spējas
- Sēklas augsnē ilgmūžīgas
- Sēklas ilgmūžīgas, bet visas dīgst pēc traucējuma
- Sēklas izdzīvo koku vainagā
- Atjaunojas ar atvasēm
- Daži indivīdi iztur traucējumu

Laiks, lai sasniegtu konkrētu dzīves stadiju

- Laiks līdz pirmajai sēklu ražai
- Individū dzīves ilgums
- Laiks, lai diasporu izzustu no biocenozes, ja nebūtu traucējumu

### Francisco Lloret & Montserrat Vila, 2003

*Diversity patterns of plant functional types in relation to fire regime and previous land use in Mediterranean woodlands*

A

Resprouters - atvasotāji

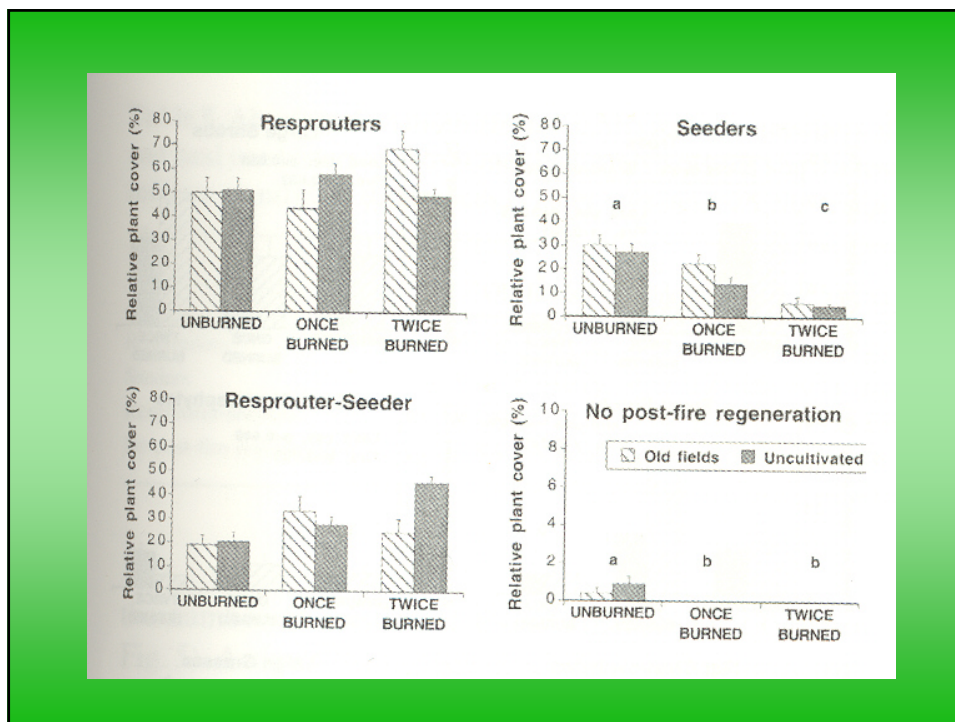
Seeders - sēklotāji

Resprouter/reseeder - atvasotāji-sēklotāji

Non-regenerators - nespēj ienākt pēc ugunsgrēka

B

Koki, lieli krūmi, sīkkrūmi, palmas, vīteņi, hamefīti, augstas graudzāles, zemas graudzāles, ģeofīti



Herault B. & Honnay O. 2007. Using life traits to achieve a functional classification. *Applied vegetation science* 10:73-80

- Mērķis – Izveidot augu klasifikācijas sistēmu, kas varētu kalpot dabas aizsardzībai

### **Anemochorous phanerophytes**

Vidēja lieluma sēklas  
Viegli dīgst  
Gari  
Anemogamous

*Acer, Alnus, Fraxinus, Carpinus*

### **Zoochorous phanerophytes**

Smagas sēklas  
Ne tik laba dīgtspēja  
Vidēja lieluma augi  
Entomogamous

*Corylus avellana* (lazda), *Viburnum opulus* (parastā irbene)

## Lakstaugi

### Anemochorous perennials

Daudz sēklas - mazas, vieglas  
Viegli dīgst  
Pastāvīga sēkla banka  
Hemicryptophyte  
Gari

*Cirsium oleraceum* (lēdzerkste)  
*Athyrium filix-femina* (sievpaparde)  
*Dryopteris filix-mas* (melnā ozolpaparde)

## Lakstaugi

### Anemogamous perennials

Sēklas gareniskas  
Hemicryptophyte  
Anemogamous

*Geum urbanum* (pilsētas bitene)  
*Urtica dioica* (lielā nātre)  
*Poa nemoralis* (birstalu skarene)

## Lakstaugi

### Annuals

Kompaktas sēklas  
Pastāvīga sēklu banka  
Therophyte  
Autogamous (pašapputeksnēšana)  
Agra pirmā ziedēšana

*Impatiens noli-tangere* (meža sprigane)  
*Galium aparine* (ķerainu madara)  
*Galeopsis tetrahit* (parastais aklis)

## Lakstaugi

### Barochorous perennials

Dažas un lielas sēklas  
nepastāvīga sēklu banka  
Smagas sēklas  
Hemikriptofīti  
Entomogamous  
Vēla pirmā ziedēšana  
Vernal phenology (nakts = diena)

*Aegopodium podagraria* (gārša)  
*Glechoma hederacea* (Efeju sētložņa)  
*Stellaria nemorum* (birstalu virza)

## Lakstaugi

### Hydrochorous perennials

Anemochorous/hydrochorous

Nav mikorizas

Entomogamous

*Angelica sylvestris* (meža zirdzene)

*Filipendula ulmaria* (parastā vīgrieze)

*Heracleum sibiricum* (pļavas latvānis)

## Lakstaugi

### Small geophytes

Lielas sēklas

Geofīti (vegetatīvā vairošana - rizomi, sīpoli)

Nepastāvīga sēklu banka

Slikta dīgļspēja

Entomogamous

Vēla pirmā ziedēšana

Mazi

Vernal phenology

*Anemone nemorosa* (baltā vizbulīte)

*Gagea lutea* (meža zeltstarīte)

*Ranunculus ficaria* = *Ficaria verna* (pavasara mazpurenīte)

Lakstaugi

**Zoochorous perennials**

Dažas sēklas

Lielas sēklas

*Deschampsia cespitosa* (parastā ciņusmilga)

*Stachys sylvatica* (meža sārmene)

*Ranunculus repens* (ložņu gundega)

Kur meklēt informāciju par sugu īpašībā?

<http://www.ecoflora.co.uk/>

## Ecological Flora of the British Isles

- Search the Database
- Species with Ecochars
- Alien Species
- All Species
- Synonyms
- Species/Characteristics
- Ecological Characteristics
- Associated Fungi
- Phytophagous Insects
- Vernacular Name
- Glossary
- Contacts
- Links
- Help
- News
- Citing the Database

The **Ecological Database of the British Isles** has been constructed from a wide variety of sources by Dr Helen Peal and Professor Alastair Fitter at the **University of York**, with financial support from the **British Ecological Society** and the **Natural Environment Research Council**. It consists of data on 3342 species of higher plants that occur in the British Isles, together with the bibliography of sources. This version has been produced by Dr Henry Ford.

The data comprises information on taxonomy (family, genus, specific name, authority, and vernacular name, together with a synonymy), a suite of over 130 ecological and morphological characteristics, vice-county distribution in Britain, European distribution by country, mycorrhizal associations, associated phytophagous insects and fungi. The data are obtained from the literature and therefore coverage varies greatly between species. The data set is therefore incomplete.

Navigate by means of the menu on the left. Please report factual errors or missing data to [ecoflora@york.ac.uk](mailto:ecoflora@york.ac.uk) and web errors to Dr Henry Ford [hen3yford@googlemail.com](mailto:hen3yford@googlemail.com).

The current version is being continually updated and users are encouraged to submit data. The species list now has over 1800 aliens for which we have data from the English Nature Audit of Alien Species. Some 200 of these taxa have data in the ecological characteristics table and we will be adding to this table as resources permit. The ecological characteristics table now includes 33,000 records from the PLANTATT dataset, kindly provided by M O Hill, covering 1637 of the species (including all the native taxa). Over 100 species have had their datasets updated from the Biological Flora papers in the Journal of Ecology. The UK distribution for all species has been enhanced by providing direct links to the NBN Gateway Distribution Maps. The associated fungi have been updated with some 3200 fungi and over 20,000 records, and the associated insect data includes 2,500 insects and 8,500 records. The Millennium Seed Bank, Kew, have kindly allowed us to incorporate their germination data for British native plants which is appended to the ecological characteristics results for each species. Descriptions have been added for all the native and established alien plants in the database and descriptions of the less common aliens are being added. Photographs are being added regularly.

### Species

MAIANTHEMUM BIFOLIUM  
Maianthemum kamtschaticum  
MALAXIS PALUDOSA  
Malcolmia maritima

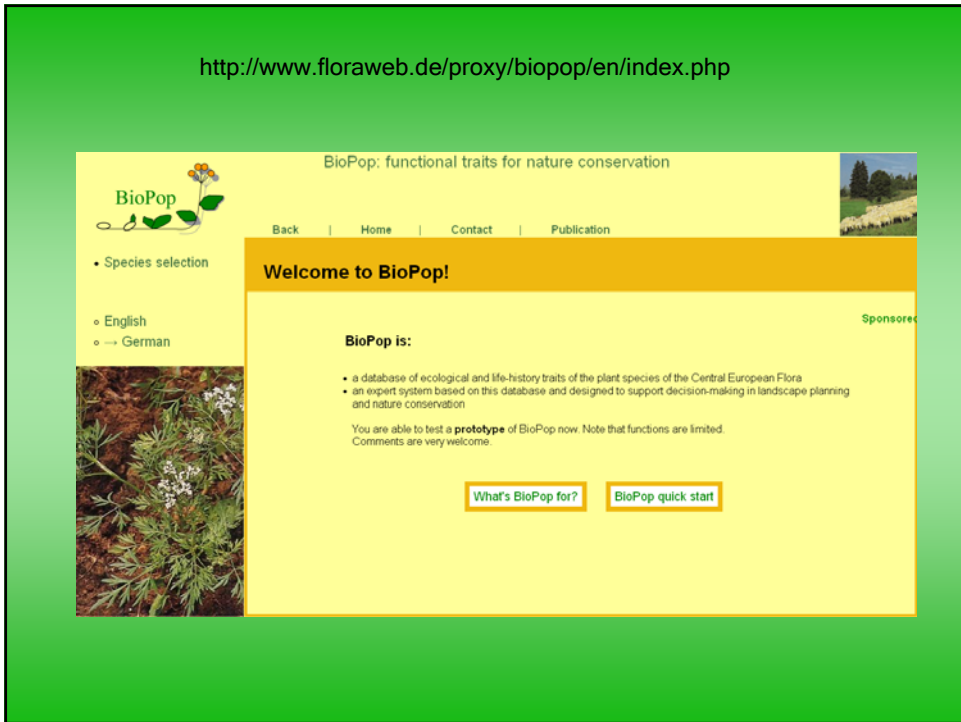
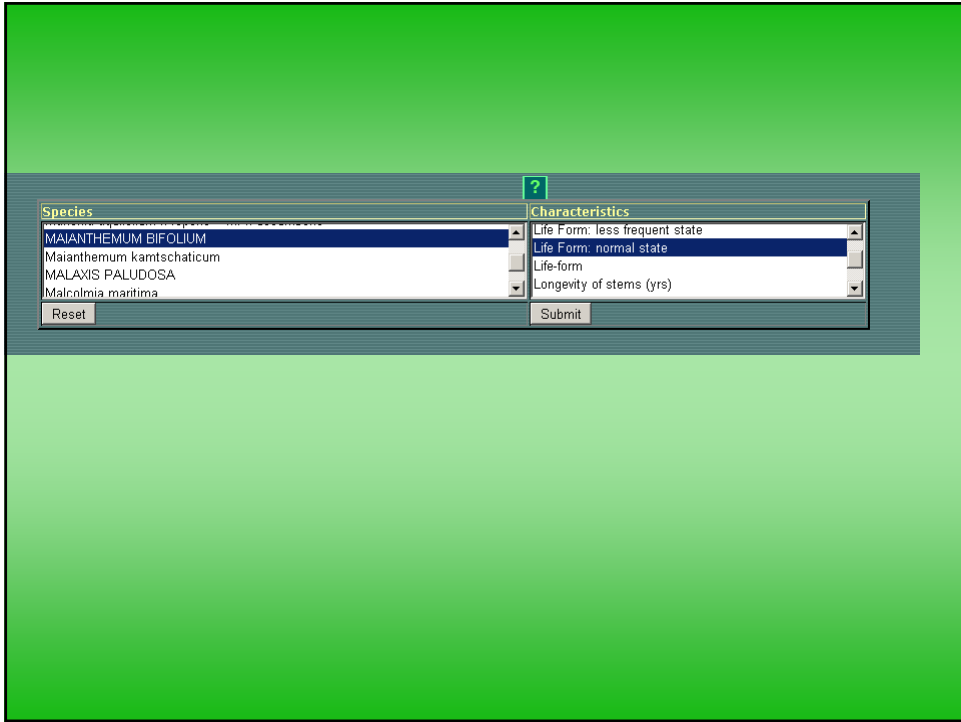
Reset

?


### Characteristics

Life Form: less frequent state  
Life Form: normal state  
Life-form  
Longevity of stems (yrs)

Submit




BioPop: functional traits for nature conservation




BioPop

Back | Home | Contact | Publication



- Species selection
- English
- → German



### Species selection

**Please select the species you are interested in.**


**There are two alternatives:**

- You can type individual species names into the blank space.

- You can mark the species in the [species list](#)

Please note that species (taxon) names often are only unambiguous together with the respective authority. In the species list BioPop offers more than 18.000 synonyms, each of which is linked to the currently valid taxon name according to the standard list of ferns and flowering plants of Germany (Wisskirchen & Haeupler 1990).

It often is advisable to select a species and the respective aggregate to view the information stored in BioPop for both taxa.



Anemone alpina L.  
Anemone apennina L.  
Anemone apifolia Scop.  
Anemone baldensis L.  
Anemone hepatica L.  
Anemone narcissiflora L.  
Anemone narcissiflora auct.  
Anemone nemorosa L.  
Anemone nigricans (Störck) Kern

**Selected species**


Anemone nemorosa L.

BioPop

Back | Home | Contact | Publication

- Species selection
- Level of analysis
- Trait list

◦ English  
◦ → German



## Level of analysis

Please select one of the following three levels:

<p>Questions regarding consequences of processes at the species / population level</p> <ol style="list-style-type: none"> <li>1. biological traits and risk factors</li> </ol>	<p>Questions regarding consequences of processes at the habitat level:</p> <ol style="list-style-type: none"> <li>1. management of existing populations</li> <li>2. establishment or reestablishment of populations</li> </ol>	<p>Questions regarding consequences of processes at the landscape level:</p> <ol style="list-style-type: none"> <li>1. migration</li> <li>2. fragmentation / isolation</li> </ol>
--	--	---

**Warning!**  
Results of the counselling system of BioPop describe the potential of plant species. The response of a real population depends on many biotic as well as abiotic factors and on the land use history of the site in question. Users are asked to critically evaluate the answers of the counselling system for their individual situation.

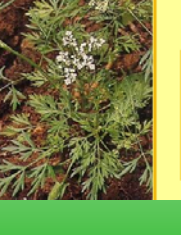
BioPop: functional traits for nature conservation

BioPop

Back | Home | Contact | Publication

- Species selection
- Level of analysis
- Trait list

◦ English  
◦ → German



## Biological traits and risk factors

Which traits or risk factors of a species / species list are you interested in?

- seed production
- dispersal potential in space
- dispersal potential in time (longevity of seeds in the soil)
- establishment capacity
- competitive capacity

You can also

- view [all informations on a species](#) contained in BIOPOP
- choose the traits you are interested in from the [trait list](#)

	defence									known (e.g. most floras)				
	Chemical defence	others								measured in the field or in the laboratory				
	Dispersal type	ethelochor								method not known (e.g. most floras)				
	Dispersal type	autochor								method not known (e.g. most floras)				
	Dispersal type	dysochor	ants						Myrmica laevinoidea, Formica exsecta, Formica rufa	method not known (e.g. most floras)				
	Dispersal type	dysochor								method not known (e.g. most floras)				
	Dispersal unit	fruit								method not known (e.g. most floras)				
	Dormancy	morphophysiological								method not known (e.g. most floras)				
	Dormancy	no								method not known (e.g. most floras)				
	Floating	<1	spec. weight							method not known (e.g. most floras)				

Web www2.ufz.de/bioflor/index.jsp

**BioFlor** search and information system on vascular plants in Germany

a cooperation of **UFZ** & **BfN**

OVERVIEW SEARCH SPECIES CART INFO REGISTER

**Welcome to the Information System BioFlor.**

Das System steht auch in einer der folgenden Sprachen zur Verfügung:

The database BioFlor contains almost 3660 species and more than 60 traits. This data results from several projects conducted in the Department of Community Ecology (UFZ - Centre for Environmental Research) over the last 10 years. It was thus possible to rework and enlarge a previously existing database. However, the work on BioFlor will not be finished, yet. We will continuously try to improve the database, correct errors and expand the coverage of traits and their states. Registered users will be able to download updates in the future. A full documentation of BioFlor (in German with English summaries and data tables, table captions and figure legends) including CD-ROM and registration key can be purchased from the [Landwirtschaftsverlag](#).

© UFZ-Umweltforschungszentrum Leipzig-Halle GmbH

www2.ufz.de/biolflor/taxonomie/taxonomie.jsp

**BioFlor** search and information system on vascular plants in Germany

a cooperation of **UFZ** & **BfN**

OVERVIEW SEARCH SPECIES CART INFO

**Overview of all traits of a species**

**species information (Systematics, BioFlor-Names, Status)**

BioFlor-Name	family	german name(s)
Hepatica nobilis Schreb.	<a href="#">Ranunculaceae</a>	Gewöhnliches Leberblümchen

**reference**  
Kühn, I., Klotz, S. 2002: Systematik, Taxonomie und Nomenklatur. In: Klotz, S., Kühn, I., Durka, W. (Hrsg.): BIOLFLORE - Eine Datenbank mit biologisch-ökologischen Merkmalen zur Flora von Deutschland. Schriftenreihe für Vegetationskunde, Bonn

**Synonymy (taxonomy after Wisskirchen & Haeupler, 1998)**

Hepatica nobilis Schreb.	accepted
Hepatica triloba Chaix	Synonym
Anemone hepatica L.	Nomen Substitutum

**group of traits: Status**

**Floristic status**

Floristic status	I (indigenous)
Evolutionary origin	n (naturally)

**Evolutionary origin**

Evolutionary origin	n (naturally)
Region of origin	0 (not specified)

**Region of origin**

Region of origin	0 (not specified)
Endemism	0 (not specified)

**Endemism**

Endemism	0 (not specified)
Reference	unbekannt

**group of traits: Chromosome number**

Chromosome number	7
Basic chromosome number	7
Chromosome number 2n	14
Chromosome number (Germany)	True
Most common chromosome race	False

**groups of traits for this species**

- Status
- Chromosome number
- Phylogeny
- Morphology
- Leaf traits
- Flowering phenology
- Floral and reproductive biology
- Seed traits
- Ecological strategy
- Range
- Hemibioy
- Urbanity
- Habitats
- Sociology

Display of complete information for the selected species. Only traits available for the selected species are displayed.

**The LEDA Traitbase**

leda impressum help

**LEDA Home**

News

LEDA Traitbase

Organisation

Usage

Applications

Data contribution

LEDA Project

Descriptions

Publications

Team

Contact

Links

**Welcome to the LEDA Traitbase**

A database on the life history traits of the Northwest European flora

The LEDA Traitbase provides information on plant traits that describe three key features of plant dynamics: persistence, regeneration and dispersal.

**Please Note (April 21st, 2010): Due to quality assurance under progress, only the following traits are currently accessible via the query application:**

Age of first flowering, Branching, Bud bank seasonality and vertical distribution, Canopy height, Leaf distribution, Leaf dry matter content, Leaf mass, Leaf size, Plant growth form, Plant life span, Releasing height, Seed mass, Seed number per shoot, Shoot growth form, Specific leaf area, Terminal velocity, Woodiness

You need to register in order to use the LEDA Traitbase. Should you experience problems please contact us at support\_at\_leda-traitbase.org (replace \_at\_ by @). Minor problems can often be solved by logging out and logging in again.

To learn more about the development and the potential usage of the LEDA Traitbase, please refer to the [LEDA project](#).

To get detailed information about the LEDA traits and methods of data collection, please refer to [the data standards](#).

Before using the Traitbase, please note:

[How to cite the LEDA Traitbase](#)

[How to use the LEDA Traitbase](#)

**Login**

Username:

Password:

[Register now!](#)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
PHRNO	GENE_NAME_C	SPEC_NAME_C_28	NAME_C_55	SWDS_C_B	DISWSD_C_B	DISWSS3_C_B	DISWSS3_C_B	DISWSS3_C_B	LIT_C	NUM_C_5	NUM_C_6	NUM_C_7	NUM_C_8	NUM_C_9	NUM_C_10	NUM_C_11
3	00404	Acer	negundo	Acer negundo	3DIS_WING	100		0	0	90	NUM10000	100				
3	00408	Acer	platanoides	Acer platanoides	3DIS_WING	90DIS_NUT	10		0	9, 10, 143	NUM10000	100				0 143
4	00409	Acer	pseudoplatanus	Acer pseudoplatanus	3DIS_WING	90DIS_NUT	10		0	9, 10, 143	NUM10000	100				0 143, 200
5	03813	Achillea	millefolium millefolium	Achillea millefolium millefolium	3DIS_SHED	90DIS_MAN	10		0	10	NUM10000	100				0 8, 74, 90
6	16701	Acacia	acutist	Acacia acutist	3DIS_SHED	90DIS_MUCI	10		0	9	NUM_N0	100				0
7	01401	Adonis	septrialis	Adonis septrialis	3DIS_ELAI	90DIS_MAN	5		0	2, 9	NUM_1000	75NUM_1000				25 74, 170
8	01701	Aegopodium	podagraria	Aegopodium podagraria	3DIS_SHED	75DIS_MAN	25		0	8, 74	NUM10000	100				0 74, 95
9	030_3	Aethusa	cyamopus ssp. cyamopus	Aethusa cyamopus ssp. cyamopus	3DIS_MAN	75DIS_SHED	25		0	8	NUM_1000	75NUM10000				25 74
10	02001	Agaricaria	rugulata	Agaricaria rugulata	3DIS_BURR	100		0	0	9	NUM_1000	75NUM_1000				25
11	02001	Agaricaria	canonum	Agaricaria canonum	3DIS_FALL	75DIS_WING	25		0	9	NUM_1000	100				0 90
12	02007	Agriphton	repens	Agriphton repens	3DIS_BURR	25DIS_SHED	50DISBERRY			25 9, 74	NUM_1000	100				0 74, 223
13	02013	Agrostis	stolonifera stolonifera	Agrostis stolonifera stolonifera	3DIS_WING	25DIS_SHED	75		0	9	NUM_1000	50NUM_1000				50
14	02002	Ajaca	gemmaeata	Ajaca gemmaeata	3DIS_ELAI	100		0	0	9, 138	NUM_N0	100				0
15	02004	Ajaca	repens	Ajaca repens	3DIS_ELAI	100		0	0	9	NUM_N0	100				0
16	03401	Ajaria	patulata	Ajaria patulata	3DIS_SHED	75DIS_MAN	25		0	10, 9, 199	NUM_1000	75NUM10000				25 199
17	03704	Alpiscopus	trapiunodes	Alpiscopus trapiunodes	3DIS_SHED	75DIS_BURR	25		0	10	NUM_1000	50NUM_1000				50 5, 140, 7
18	03707	Alpiscopus	retroscus	Alpiscopus retroscus	3DIS_SHED	50DIS_MAN	50		0	9, 8	NUM_1000	100				0
19	04113	Amaranthus	tridax (tridax, bitum)	Amaranthus tridax (tridax, bitum)	3DIS_MAN	50DIS_ND	50		0	9	NUM10000	50NUM_ND				50
20	04114	Amaranthus	retroflexus	Amaranthus retroflexus	3DIS_BURR	50DIS_MAN	50		0	9	NUM_MAX	100				0 140, 34
21	05201	Anagallis	arvensis	Anagallis arvensis	3DIS_SHED	50DIS_MAN	25DISBERRY			25 8	NUM_1000	100				0 8, 34
22	05601	Anchusa	arvensis (lycopasta)	Anchusa arvensis (lycopasta)	3DIS_ELAI	50DIS_MAN	25DIS_SHED			25 8, 9, 74	NUM_1000	100				0 74
23	05606	Anchusa	officinalis	Anchusa officinalis	3DIS_ELAI	100		0	0	9, 132	NUM_1000	100				0 74, 34
24	05608	Anemone	ranunculosa	Anemone ranunculosa	3DIS_ELAI	100		0	0	2, 8	NUM_1000	100				0 8 40, 102
25	05608	Anemone	subvestra	Anemone subvestra	3DIS_PLUM	100		0	0	2	NUM_N0	100				0
26	06103	Anagallis	subvestra	Anagallis subvestra	3DIS_WING	75DISFLOAT	25		0	8, 9	NUM_1000	50NUM10000				50 90
27	06601	Anthoxanthum	sideratum	Anthoxanthum sideratum	3DIS_SHED	75DIS_BURR	25		0	8	NUM_1000	100				0 90
28	06702	Anthiscus	ceratophyllum	Anthiscus ceratophyllum	3DIS_BURR	100		0	0	3	NUM_1000	100				0
29	06706	Anthiscus	subvestra	Anthiscus subvestra	3DIS_BURR	100		0	0	6, 3	NUM_1000	50NUM10000				50 3, 90, 74
30	07002	Alea	spica-vestri	Alea spica-vestri	3DIS_BURR	50DIS_SHED	50		0		NUM_MAX	100				0 140
31	07101	Aphanes	arvensis	Aphanes arvensis	3DIS_MAN	33DIS_WING	33DIS_BURR			33 9, 361	NUM_N0	100				0
32	07708	Aquilegia	vulgaris	Aquilegia vulgaris	3DIS_MAN	50DIS_SHED	25DIS_BURR			25 9, 361	NUM_N0	100				0
33	07802	Aquilegia	thaliana	Aquilegia thaliana	3DIS_SHED	100		0	0	9	NUM_1000	100				0 90, 331
34	08201	Arctium	lappa	Arctium lappa	3DIS_BURR	75DIS_SHED	25		0	8, 5	NUM10000	100				0 74, 195
35	08206	Arctium	monta	Arctium monta	3DIS_BURR	75DIS_SHED	25		0	8, 9	NUM10000	100				0 195
36	09601	Arenaria	serpyllifolia ssp.	Arenaria serpyllifolia ssp.	3DIS_SHED	100		0	0	9	NUM10000	75NUM_10000				25 5
37	09201	Artematherum	elatius	Artematherum elatius	3DIS_WING	33DIS_BURR	33DIS_MAN			33 9	NUM10000	100				0 157
38	09309	Artemisia	campestris	Artemisia campestris	3DIS_SHED	75DIS_MUCI	25		0	9	NUM_N0	100				0

Tikai 492 sugas!!!

Papildus dati zinātniskās publikācijās

Ko darīt ar tiem visiem datiem?????

Veģetācijas dati - ozolu meži (parauglaukums 20m\*10m)

Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
24 plots	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
121 species	Acerplat	Actaspic	Aegopoda	Agrostol	Alnuinca	Anemnem	Anemranu	Angesyvl	Aquivulg	Asareuro	Athyfli	Bracsylv	Camplati	Campers	Calaa			
Adazi	0	0	0	0	0	0.1	0	0.1	0	0	0	0.1	0	0	0	0	0	
Apriki	0	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	
Berzaun	0.1	0	3	0	0	10	0	0	0	0	0	10	0	0	0	0	0	
Dikli	0.1	0	0	0.1	0	0.1	0	0	0	0.1	20	0.1	0	0	0	0	0	
Dob1	0	0.1	0.1	0	0	0	0	0	0	5	0	2	0	0.1	0	0	0	
Dob2	0	0	0	0	0	10	0	0	0	0	0.1	0	0	0	0	0	0	
Dun1	0	0	0	0	0.1	1	0	0	0	0	0.1	0.1	0.1	0	0	0	0	
Dun2	0.1	0	0	0	0	0	0	0	0	0	0	1	0.1	0	0	0	0	
Kinguru	0	0	0.1	0	0	0.1	0	0	0	0	0.1	0	0	0	0	0	0	
Kinmulda	0.1	0.1	0	0	0	0.1	0	0	0.1	3	0	0.1	0	0	0	0	0	
Kuldīga	0	0	30	0	0	0.1	0	0	0	0	0.1	0.1	0.1	0	0	0	0	
Liegi	0.1	0	0.1	0	0	0.1	0	0	0	0	0.1	5	0	0	0	0	0	
Ivberze	0	0	0	0	0	0.1	0	0	0	0	0	0.1	0	0	0	0	0	
Mezotne	0.1	0	0	0	0	5	0	0	0	0.1	0	0	0	0	0	0	0	
Oste	1	0	0	0.1	0	0.1	0	0	0	0	0	0	0	0	0	0	0	
Panemu	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Rauda	0.1	0.1	1	0	0	10	0	0	0	0.1	2	0	0	0	0	0	0	
Robežu	1	0	50	0	0	1	0	0	0	1	0	0	0	0	0	0.1	0	
Sigulda	0.1	0	0	0	0	5	0	0	0	0.1	0	0	0	0	0	0	0	
Svente	10	0.1	0.1	0	0	5	0.1	0	0	0	0.1	0.1	0.1	0	0	0	0	
Valdem	35	0	0.1	0	0.1	0.1	0	0	0	0	0.1	0	0	0	0	0	0	
Zeniski	30	0	30	0	0	0.1	0	0	0	1	0	0	0	0	0	0	0	
Zentene	0	0.1	0.1	0.1	0	0	0	0	0	0	0.1	0	0	0	0	0	0	
Umruga	0.1	0	0.1	0	0	0.1	0	0	0	0	1	0.1	0	0	0	0	0	

### Dati par sugu īpašībām

P.ND	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V		
																							Dispersal	E_MOIST
1	Biome	Clonality	r	Dispersal																				
2	Accipiter	Temperate	Little	or no birds	43	5	4	7	7	4	5	x		4	4	7	x		6	4	aestival	phaneroph		
3	Actaspis	Boreal	mo	Rhizome s eaten by b	10	5	3	7	6	4	5		5	3	3	6	7	8	6	4	aestival	geophyte		
4	Agrostis	Temperate	Rhizome	fi auto	4	6	5	8	7	3	5	6	6	5	7	8		6	7	3	aestival	hamicryptc		
5	Agrostis	Wide Temp	f ar	creepi eaten by n	15	7	8	5	7	5	6	7	7	8	6	5		7	6	5	evgreen	hamicryptc		
6	Alnusca	Boreal	mo	Rhizome fi birds	3	7	6	4	8	5		7		6		3					6	aestival	geophyte	
7	Anemone	Temperate	Rhizome	s ants	4.9	5	5	4	5	3	6	5	5			4		5	7	3	vernal	geophyte		
8	Anemone	Temperate	Rhizome	s ants	4.5	6	3	8	8	4	No Data	6	No Data	3	No Data	8	No Data	6			4	vernal	geophyte	
9	Angryly	Boreo-Tem	Little	or no water	5	8	7	4	6	4	8	8	7	7	5	4	6				4	aestival	hamicryptc	
10	Anthyly	Boreo-Tem	Little	or no unspicif	7.5	5	7	8	7	5	5	5	6	7	7	8	7				6	hibernal	hamicryptc	
11	Aquulug	Temperate	Little	or no auto	2.3	4	6	4	7	4	4	4	6	6	5	4	6	7			4	aestival	hamicryptc	
12	Alaunuro	Boreo-Tem	Rhizome	fi ants	4	5	3	6	7	5	No Data	5	No Data	3	No Data	6	No Data	7			5	evgreen	hamicryptc	
13	Athyly	Boreo-Tem	Little	or no wind	0.1	7	3	6			3	No Data	7	No Data	3	No Data	6	No Data	7		3	aestival	hamicryptc	
14	Bracysly	Temperate	Tussock	fi wind	19.7	5	3	6	6	3	5	5	6	3	5	6	6	6			3	evgreen	hamicryptc	
15	Campylu	Temperate	Little	or no auto	2.16	6	4	8	8	6	6	6	4	4	6	9	7				8	6	aestival	hamicryptc
16	Campylu	Temperate	Rhizome	fi auto	0.6	4	5	3	8	4	No Data	4	No Data	5	No Data	3	No Data	8			4	aestival	hamicryptc	
17	Calanun	Boreo-Tem	Rhizome	s auto	2.2	5	6	5	4	4		5		6	5		4				4	aestival	hamicryptc	
18	Carexna	Boreal	mo	Rhizome s auto	2.5	9	7	2	4		9	9	8	7	2	2	3	4			4	aestival	helophyte	
19	Carexig	Boreo-Tem	Tussock	fi ants	3.6	5	3	4	8	4	5	5	5	3	4	4	8				4	evgreen	hamicryptc	
20	Carexsa	Boreal	mo	Rhizome fi water	4	9	9	3	4		10	9	8	9	3	3	6	4			6	aestival	helophyte	
21	Carexmo	Temperate	Tussock	fi water	3	8	3	6	6	3	8	8	4	3	6	5	6	4			3	evgreen	hamicryptc	
22	Carexly	Temperate	Tussock	fi auto	4.5	5	2	5	6	3	5	5	4	2	5	5	6	6			3	evgreen	hamicryptc	
23	Chaeroph	Temperate	Little	or no birds	10.5	7	7	8	6	5		7		7		8					6	aestival	hamicryptc	
24	Chrytale	Wide Bore	f ar	creepi nona	6.5	8	4	5	7	5	8	8	5	4	6	5	6	7			5	evgreen	hamicryptc	
25	Cicadau	Temperate	Clones	for camed by	14.6	5	4	5	7	4	5	5	4	4	6	5	6	7			4	aestival	phaneroph	
26	Cicadale	Temperate	Rhizome	fi camed by	3	6	4	7	7	3	6	6	4	4	6	7	7				3	aestival	geophyte	
27	Cissler	Boreo-Tem	Little	or no eaten by b	4.5	7	6	5	7	3	No Data	7	No Data	6	No Data	5	No Data	7			3	aestival	hamicryptc	
28	Commaga	Boreo-Tem	Rhizome	fi eaten by b	9.5	4	5	4	6	3	5	4	5	5	5	4	6	7			3	aestival	geophyte	
29	Corynep	Temperate	Little	or no eaten by b	17	5	4	6	6		5		4		6	5					5	aestival	phaneroph	
30	Creppaf	Boreo-Tem	Little	or no camed by	8	8	7	6	8	3	7	8	6	7	4	6	6	8			3	aestival	helophyte	
31	Cramono	Boreo-Tem	Little	or no birds	9.93	4	7	4	8	5	4		7		4		8				5	aestival	phaneroph	
32	Daphneze	Boreo-Tem	Little	or no eaten by b	9.6	5	4	5	7	4	5		5	4	4	6	5	7			7	4	aestival	phaneroph
33	Dryocart	Boreo-Tem	Little	or no wind	0.1	8	5	3	4	3	8		6	5	4	3	5	4			3	aestival	hamicryptc	
34	Dryofli	Boreo-Tem	Little	or no wind	0.1	5	3	6	5	3	No Data	5	No Data	3	No Data	6	No Data	5			3	aestival	hamicryptc	
35	Elystape	Wide Temp	Rhizome	fi eaten by n	12.9	5	7	7	7		5		7		7		7				7	evgreen	hamicryptc	
36	Epiladen	Mediterran	Little	or no wind	5	5	7	8	7		6	5	7	7	6	8	6	7			7	evgreen	chamaeoph	
37	Epilmont	Temperate	Little	or no wind	6	5	4	6	6	3	6	5	6	4	6	6	6	6			6	evgreen	chamaeoph	
38	Eolityly	Boreo-Tem	Rhizome	s wind	6	9	7	2	3		8	9	7	7	3	2	5	3			3	aestival	hamicryptc	

Kā savienot augšminētās datu kopas?

Vienā exel lapā, ievietot vegetācijas datus, un tajā ievieto kolonu ar VIENU īpašību (e.g. izplatīšanas veids)

Tukšumi, ja suga nav

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
				Daukstes	Umruga	Pedzde	Audle	Barkava	Saleneki	Aluksne	Dikls	Zentene	Legu	Dun1
1														
2	1	Acerplat	animals	10.0	0.1						0.1		0.1	
3	2	Actaspic	animals									0.1		
4	3	Aegopoda	auto	0.1	0.1							0.1	0.1	
5	4	Agrostol	animals					0.1	1.0		0.1	0.1		
6	5	Alnusca	animals											0.1
7	6	Anemnemants		0.1	0.1						0.1		0.1	1.0
8	7	Anemranu	ants	0.1										
9	8	Angosylv	water			1.0		10.0	10.0					
10	9	Anthosylv	auto			0.1								
11	10	Apowolg	auto	0.1										
12	11	Asareuro	ants								0.1			
13	12	Athyfil	wind		1.0	1.0	0.1			0.1	20.0	0.1	0.1	0.1
14	13	Bracsylv	wind		0.1	0.1	0.1	0.1		0.1	0.1		5.0	0.1
15	14	Camplati	auto											0.1
16	15	Camppers	auto											2.0
17	16	Calasun	auto								0.1			
18	17	Carecana	auto											
19	18	Caredigi	ants											
20	19	Carelasi	water					0.1						
21	20	Careemo	water											0.1
22	21	Caresylv	auto		0.1		0.1	0.1	0.1		0.1	0.1	0.1	0.1
23	22	Chaeurom	animals	0.1										
24	23	Chryalte	auto											
25	24	Ceraaveu	animals											
26	25	Circlute	animals										1.0	0.1
27	26	Cirsoler	animals					0.1						
28	27	Commaja	animals	1.0		0.1		2.0	20.0	10.0				
29	28	Coryweel	animals						0.1		0.1	1.0	1.0	5.0
30	29	Creggali	animals	0.1							0.1		0.1	
31	30	Cramono	animals											
32	31	Daphmeze	animals	0.1				0.1						
33	32	Dryocart	wind	0.1	0.1	1.0			0.1	1.0				
34	33	Dryofil	wind			10.0					0.1			
35	34	Elytrepie	animals											

1. Katram parauglaukumam izrēķināt, cik % no visām sugām tajā parauglaukumā ir ar katru izplatīšanas veidu.

2. Katram parauglaukumam izrēķināt, cik % no kopējā seguma ir katrai sugai.

Sākārtu alfabētiski pēc izplatīšanas veida (Data, sort izvēlnes)

K11	A	B	C	D	E	F	G	H
				Daukstes	Umurga	Pededze	Audile	Barkava
1								
2	1	Acerplat	animals	10.0	0.1			
3	2	Actaspic	animals					
4	4	Agrostol	animals					0.1
5	5	Alnuinca	animals					
6	6	Anemnem	ants	0.1	0.1			
7	7	Anemranu	ants	0.1				
8	11	Asareuro	ants					
9	18	Caredigi	ants					
10	3	Aegopoda	auto	0.1	0.1			
11	9	Anthsyv	auto			0.1		
12	10	Aquivulg	auto	0.1				
13	14	Camplati	auto					
14	15	Campfers	auto					
15	16	Calaarun	auto					
16	17	Carecane	auto					
17	8	Angesyv	water			1.0		10.0
18	19	Carelas	water					0.1
19	20	Careemo	water					
20	12	Athyfili	wind		1.0	1.0	0.1	
21	13	Bracsylv	wind		0.1	0.1	0.1	0.1

- D100 = count(D2:D21) — kopējais sugu skaits Daukstes parauglaukumā
- D101 = count(D2:D5) — sugu skaits, kuras izplata dzīvnieki
- D102 = D101\*100/D100 — % sugas Daukstes parauglaukuma, kuras izplata dzīvnieki
- D105 = sum(D2:D21) — kopējais sugu segums Daukstes parauglaukumā
- D106 = sum(D2:D5) — kopējais segums sugām, kuras izplata dzīvnieki
- D106 = D106\*100/D105 — % sugas seguma Daukstes parauglaukuma, kuras izplata dzīvnieki

Elenberga skals

Nulles ja suga nav!

A1	A	B	C	D	E	F	G	H	I	J
			E_MOIST	E_LIGHT	E_NITR	E_pH	E_CONT	Daukstes	Umurga	Pededze
1										
2	1	Acerplat	5	4	7	7	4	10.0	0.1	0.0
3	2	Actaspic	5	3	7	6	4	10.0	0.1	0.0
4	3	Aegopoda	6	5	8	7	3	0.0	0.0	0.0
5	4	Agrostol	7	8	5	7	5	0.1	0.1	0.0
6	5	Alnuinca	7	6	4	8	5	0.0	0.0	0.0
7	6	Anemnem	5	5	4	5	3	0.0	0.0	0.0
8	7	Anemranu	6	3	8	8	4	0.1	0.1	0.0
9	8	Angesyv	8	7	4	6	4	0.1	0.0	0.0
10	9	Anthsyv	5	7	8	7	5	0.0	0.0	1.0
11	10	Aquivulg	4	6	4	7	4	0.0	0.0	0.1
12	11	Asareuro	5	3	6	7	5	0.1	0.0	0.0
13	12	Athyfili	7	3	6		3	0.0	0.0	0.0
14	13	Bracsylv	5	3	6	6	3	0.0	1.0	1.0
15	14	Camplati	6	4	8	8	5	0.0	0.1	0.1
16	15	Campfers	4	5	3	8	4	0.0	0.0	0.0
17	16	Calaarun	5	6	5	4	4	0.0	0.0	0.0
18	17	Carecane	9	7	2	4		0.0	0.0	0.0
19	18	Caredigi	5	3	4	8	4	0.0	0.0	0.0
20	19	Carelas	9	9	3	4		0.0	0.0	0.0
21	20	Careemo	8	3	6	6	3	0.0	0.0	0.0
22										
23										

=average(D2:D21) — vidēja gaismas Elenberga vērtība

Lai izrēķinātu vidējo svērto, reizini katrāi sugai Elenberga vērtību ar segumu. Svērtām vērtībām izrēķini vidējo .

=D4\*H4

K2D	A	B	C	D	E	F	G	H	I
1			E_MOIST	E_LIGHT	E_NITR	E_pH	E_CONT	Daukstes	Daukstes svērtie
2	1	Acerplat	5	4	7	7	4	10.0	40.0
3	2	Actaspic	5	3	7	6	4	10.0	30.0
4	3	Aegopoda	6	5	8	7	3	0.0	0.0
5	4	Agrostol	7	8	5	7	5	0.1	0.8
6	5	Aluinca	7	6	4	8	5	0.0	0.0
7	6	Anemnem	5	5	4	5	3	0.0	0.0
8	7	Anemranu	6	3	8	8	4	0.1	0.3
9	8	Angesylv	8	7	4	6	4	0.1	0.7
10	9	Anthsyvl	5	7	8	7	5	0.0	0.0
11	10	Aquivulg	4	6	4	7	4	0.0	0.0
12	11	Asareuro	5	3	6	7	5	0.1	0.3
13	12	Athyfili	7	3	6		3	0.0	0.0
14	13	Bracsylv	5	3	6	6	3	0.0	0.0
15	14	Camplati	6	4	8	8	5	0.0	0.0
16	15	Camppers	4	5	3	8	4	0.0	0.0
17	16	Calaarun	5	6	5	4	4	0.0	0.0
18	17	Carecana	9	7	2	4		0.0	0.0
19	18	Caredigi	5	3	4	8	4	0.0	0.0
20	19	Carelasi	9	9	3	4		0.0	0.0
21	20	Careemo	8	3	6	6	3	0.0	0.0
22									

### Uzdevums

1. Izmantojot to pašu datu matricu ar ko strādāja pirmajā nodarbībā, sameklēt vērtības 6 īpašībām, cik vien sugām tās var atrast.
2. Katrai īpašībai izrēķināt tās īpatsvaru parauglaukumiem.
3. Noskaidrot, vai meža tipi atšķiras pēc sugu procentuālā sadalījuma dažādās funkcionālās grupās vai pēc Elenberga svērtām vērtībām.

