

Dianthus henteri Heuff. ex Gris. et
Schrenk

Do you know
which plant it
is?

Romanian
endemic



• *Linaria ricardoi* Coutinho

Do you know
which plant it
is?

Portuguese
endemic



Verbascum wiedemannianum

Do you know
which plant it
is?

Turkish
endemic



Doronicum corsicum

Do you know
which plant it
is?

French
endemic





ENDEMICS.

rare and endangered plant species

Irena Tišljar, prof. advisor

Campanula celsii ssp. *parnasia*

Do you know
which plant it
is?

Greek
endemic



BIODIVERSITY

Definition:

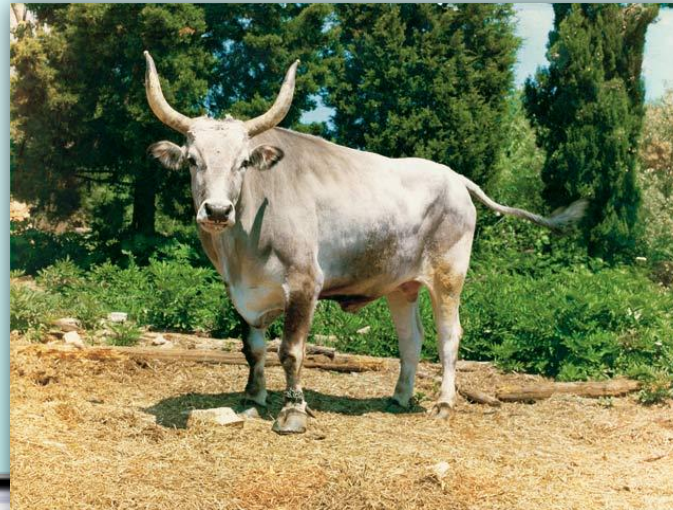
Biodiversity is a structural and functional variability of lifeforms which manifests itself on a genetical and taxonomical level, as well as on a higher organisational system level, such as communities, ecosystems and landscapes.



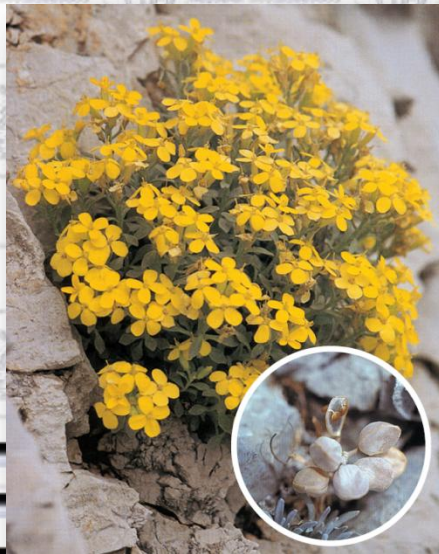
What are endemic species?

- Endemic species are plant and animal species which have spread on a small geographical area and do not appear anywhere else on Earth!
- Classification of endemic organisms:
- *Authentic endems* – they have evolved on the area which they are currently spread on.

Istrian ox
(boškarin)



- **Paleoendemic** (old endemic organism) – a species of old descent, which was formed long ago in geological history
- **Provincialism** – an occurrence (phenomena) of a limited spread of some species (endemism)
- **Relict** – a kin which has evolved long ago and survived until today, often accumulating a number of primitive characteristics (it can be an endemic organism considering a certain area, but that doesn't have to be the case)
- **Allochthonous endemics** - organisms which have evolved on an area different from the one they are spread on today



Croatian sibireja (*Sibiraea croatica*) → an endemic, relict organism which is endangered and protected by law

Stenoendemic– an endemic of a very limited area

Subendemic– a kin which is limited to spread to a certain area and does not appear elsewhere in it's spread (it has a larger area than stenoendemic and endemic organisms)

Neoendemic (a young endemic) – an endemic of a younger descent, formed in newer geological history.

Rare kin – a kin that is rarely spotted in a certain area. It doesn't have to be rare somewhere else in it's area, an endemic or endangered.

Aster tripolium ssp. Pannonicum
– panonical starflower



Festuca vaginata-vlasulja bradica

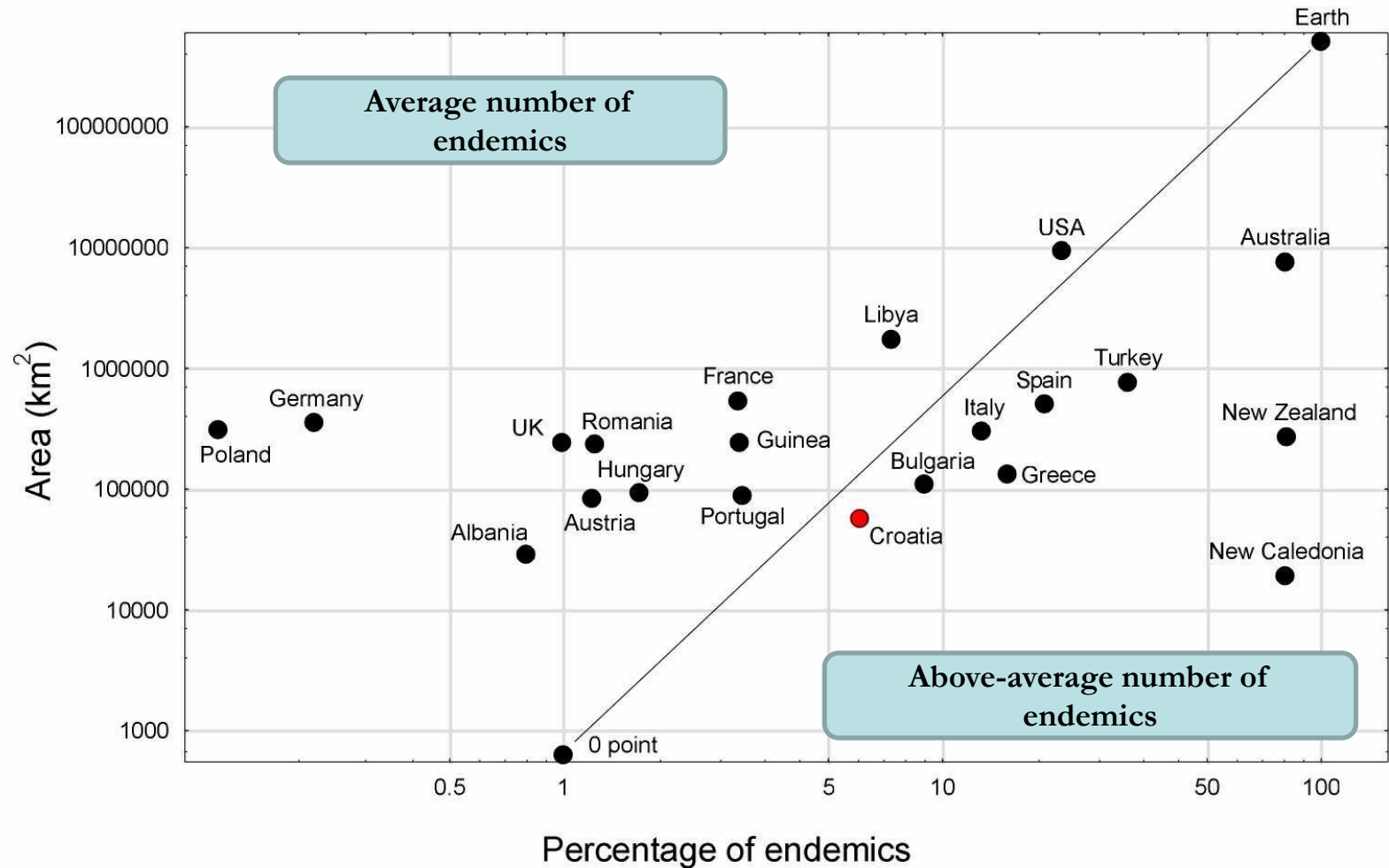


Species wealth



- A species is the primary unit of biological diversity and species wealth is the fundamental indicator of biodiversity.

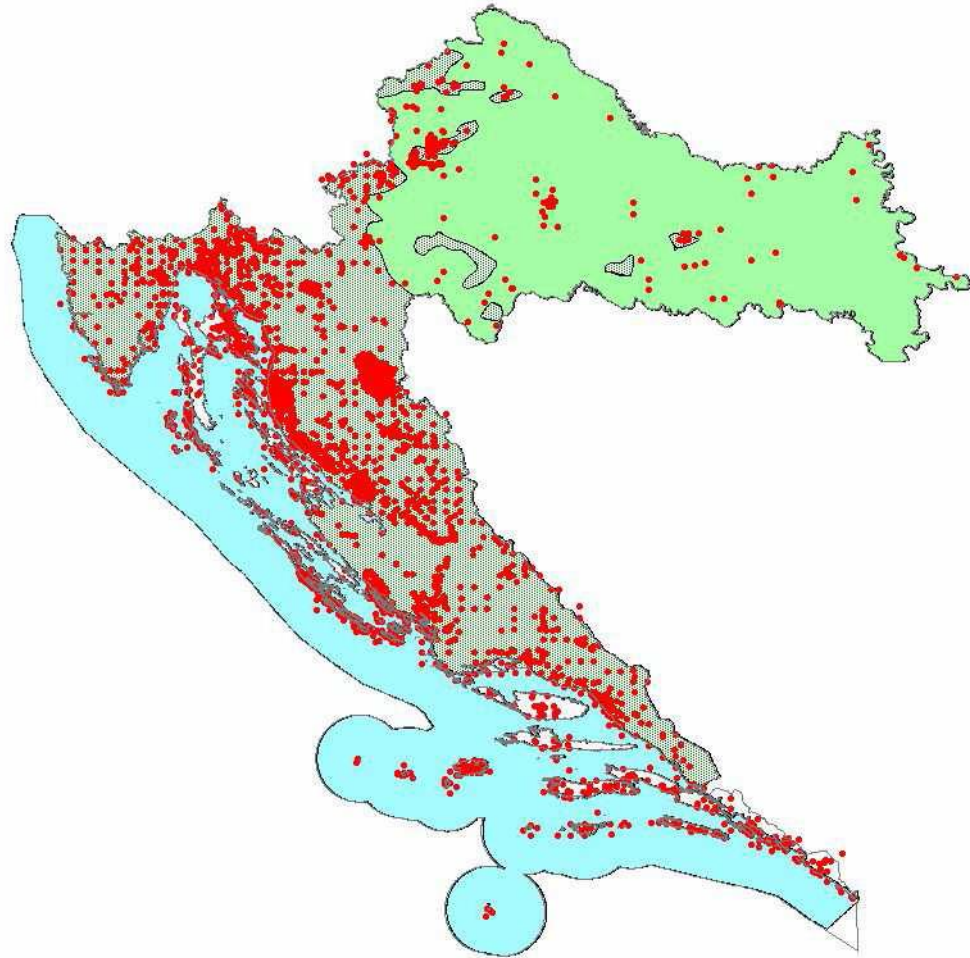
Regarding the surface of Croatia, endemism is very significant!



Spacial distribution of endemic locations in Croatia(based on 18 000 locations)
Diversity per spacial unit

**Endemism
centers:**

1. Istria with Učka and Čičarija
2. Kvarner and Liburnija
3. Velebit
4. Biokovo
5. Pučin islands





FLORA

➤ Gathering of vegetation kins in some area

- The Croatian flora contains 4275 species and 1072 subspecies of plants altogether
- According to the number of species Croatia is the third country in Europe and this says a lot about the floristical wealth of our country.
- **Around 6,5% of Croatian flora is endemical (326 kins)**
- **84 endemic kins** ➡ **endangered and highly protected!**

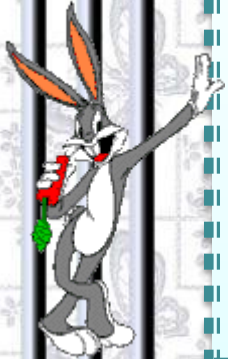
VEGETATION

- Floral community (phytocenosis, association) – a collection of species of complementary composition and structure on a certain surface – they live together because of their needs for similar or identical ecological conditions



Festuca vaginata-
Đurđevački
pijesci

Pješčarska
vegetacija



The Velebit degenija



- (**Degenia velebitica**), an endemic plant from the Brassicaceae family
- A highly protected species, the symbol of Velebit and Croatia, it is depicted on the 50 lipa coin
- It was named after the Hungarian botanist Arpad Degen, who noticed and described the plant in 1907
- **The rarest plant in Croatia!**





Centaurea ragusina

(dubrovačka zečina=Dubrovnik rabbit grass)

- It grows in the cracks of vertical carbonate rocks on the shore
- **Endangered and highly protected!**





Cypripedium calceolus

(gospina papučica=The ladies' slipper)



- One of Europe's rarest orchids
- Habitat: deciduous and mixed forests and bushes of the sub-mountain and mountain area
- **The ladies' slipper is one of the slowest-growing plants in the world**
- *It takes 6-11 years for the plant to create a seed*
- *The seeds can't grow by themselves because they don't possess nutritional substances and they need a certain kind of mushroom in the ground to grow*
- **The main reason for its rarity is collecting!**
- **HIGHLY PROTECTED!**





Ophrys apifera

(pčelina kokica=The bees' hen)



- It inhabits dry meadows, light forests and bushes
- It is a characteristic species for adriatic meadows
- **HIGHLY PROTECTED!**



Iris croatica

hrvatska perunika=Croatian perunika

- Habitat: dolomites and carbonate hills in continental Croatia.
- It blooms purple or white!
- **PROTECTED!**



Aquilegia kitaibelii

Kitajbelov pakujac



- It grows on Velebit and Plješevica-from the Ranunculaceae genus
- It is spread in the higher parts of the Dinara hill chain.
- **A HIGHLY PROTECTED PLANT!**

Campanula cochleariifolia

Hrvatski zvončić=The Croatian bell



- Habitats: carbonate soils in the mountain vegetation area.
- It is spread on rocks and slides.
- The number is decreasing because of atmospheric pollution.
- **HIGHLY PROTECTED!**

CALLA PALUSTRIS

vodeni kozlac

- There is only one known location in Croatia today – Sungerski lug (Gorski kotar) – open woodland depressions
- **Highly protected!**
- **Critically endangered!**



Drosera rotundifolia

(okruglolisna rosika=round-leaved dew
grass)



- **NP Plitvice lakes**
- A carnivorous plant
- It has temporary flowers, in a community with some kinds of moss
- **Critically endangered!**
- **Highly protected!**

Myricaria germanica

Kebrač



- A genus from the Tamaricaceae family (metlike in croatian)
- **Habitat:** the sandbanks of Mura and Drava
- **ENDANGERED!**
- **Glacial relict!**

Fritillaria meleagris

kockavica=snakeshead



- **The most-known Podravina endemic!**
- Habitat: moist meadows by the river Drava and its armlets and subsoil, and rarely in light, open and moist shrubs and forest
- **And endogen from the Liliaceae family (lillies)**
- **Highly protected!**

Helleborus odoratus

mirisni kukurijek



- Highly protected!
- All species of this genus are potentially poisonous and have unusual flowers in various colors






- A protected, rare species in Podravina!
- Similar to the snowdrop (*Galanthus nivalis*), which is a common, but protected species!


Leucojum vernum
Proljetni drijemavac





Pjesma stvorova

The Canticle of the Sun



Hvaljen budi, Gospodine moj,
po sestri i majci nam Zemlji.
Ona nas hrani i nosi, slatke nam
plodove,
cvijeće šareno i bilje donosi.

Hvaljen budi, Gospodine moj,
po bratu našem Vjetru,
po Zraku, Oblaku, po jasnoj Vedrini,
i po svakom vremenu tvojem,
kojim uzdržavaš stvorove svoje.

sv. Franjo Asiški

**Praised be my Lord for our sister,
mother earth,
The which sustains and keeps
us
And brings forth diverse fruits
with grass and flowers bright.**

**Praised be my Lord for brother
wind
And for the air and clouds and
fair and every kind of weather,
By the which Thou givest to Thy
creatures nourishment.**

**Read the poem and try to connect the poem
lines with the motto of the W.A.T.E.R.
project!**

(We all treasure elements and resources)



QUESTIONS

1. What is the most common cause of herbal species endangerment?
2. Which level of protection do wild orchids in Croatia have?
3. Explain the difference between relicts and endemics!

“Ask not what water can do for biodiversity;
ask what biodiversity can do for water.”

