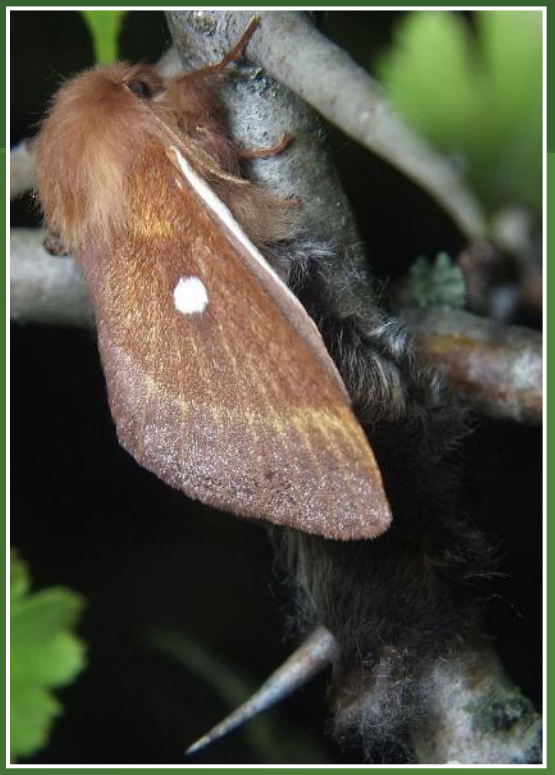
The case of Orange Eggar (Eriogaster catax) with the agri-environmental schemes in Hungary



Management of Natura 2000 sites in Central and Eastern Europe

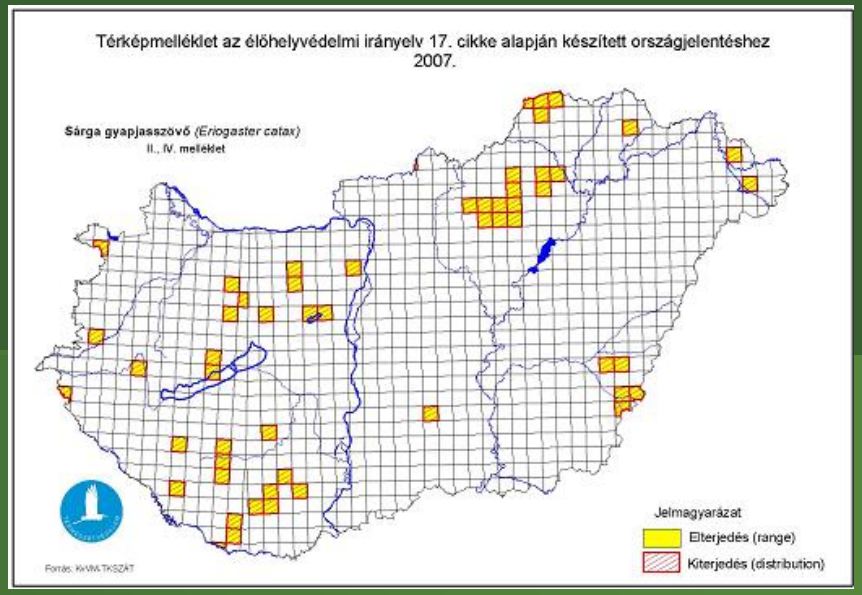
Dr. Ambrus András

Fertő-Hanság National Park Directorate

3rd May 2017, Fertőújlak

KVVM
A MAGYAR ÁLLAMI TERMÉSZETVÉDELEM
HIVATALOS HONLAPJA

Eriogaster catax in the National Report following the Art. 17 of the EU Habitats Directive in 2009



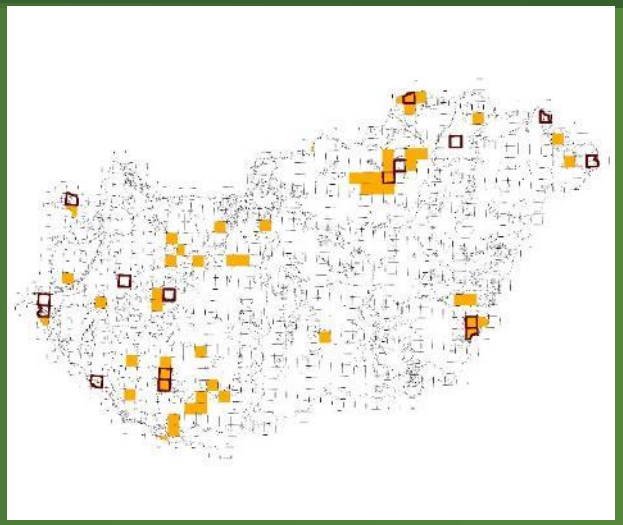
Eriogaster catax was regarded by the experts as a typical species of Oak forest margins (including Turkey oak, mixed hardwood galleries and steppe forests) especially along the natural and semi-natural Prunus and Crataegus fringe. The intensive management of forests caused a serious decrease of fringes, bushes, so the habitat loss caused the thinning out of the species over large areas and in West-Europe got close to the extinction.

Up to the 80-ies, 90ies in Hungary it was regarded as a rare species occurring only on the warm places of the Pannonian hilly country and the Southern slopes of the NE mountains. More recently it turned out to be much frequent, especially in shrubberies, abandoned pastures with old trees, which are important for the late larval instars (it was regarded that the final instars change foodplant to Oak trees).

The demographical changes can be sharp, mainly because of the parasitoids attacking the late instar caterpillars which leave the nests and continue feeding solitarily. Good years (e.g. 2005) of the Eriogaster catax are usually followed by bad years (2006).

Preparing the National Monitoring Programme of the species listed in Birds Directive (79/409/EGK) and Habitats Directive (92/43/EGK) 2006/018-176-02-01
(Sáfián – Ronkay, 2008)

- Evaluation of the known dataset
- Surveying new sites
- Preparing quantitative methodes (caterpillar nest counting insteadof the lightrapping of adults)
- Setup a sampling spot network (38 sites of the whole of the 53 known localities)
- Important recognition: most preferred sites are the abandoned pastures with shrubberies
- Standard data sheet (sampling unit is 100 m transect) :
  - **Data deliverer:**
  - **Date, time:**
  - **Investigator(s):**
  - **Sampling site (locality, geographical name):**
  - **Height:**
  - **Habitat characteristics, description:**
  - **Food plant density, phenology:**
  - **GPS (EOV) koordinates of the standard sampling transect:**



Szalkay József Hungarian Lepidopterological Society (website)

Eriogaster catax (Linnaeus, 1758) [Sárga gyapjasszövő]

Eriogaster catax is a European fauna element, related to fringes (Crataegus, Prunus). Distribution is restricted to W,Central and S Europe, but at the West it has declined seriously by now. It is widespread in Hungary. A Habitat preference: forest margins, shrubberies at the Southern slopes of hills and mountains, fringes, pastures, boundaries. The main foodplants of the caterpillars are *Prunus spinosa* and *Crataegus*, but *Salix*, *Populus* and *Quercus* can be accepted as well. The young caterpillars are hatching usually in late March accoding to the mass flowering of *Prunus spinosa.* The developement takes about one month. In early stages (L1, L2, L3) they live in a nest and later continue feeding alone, change the foodplant. The species is protected in Hungary („value in cash" is 50 000 HUF), listed in the EU Habitats Directive II. an IV. Annex and in Bern Convention II. Annex. Actually threatened in the national red list.

Other remarks:

As the adults seem to be less sensitive to the lighttrap, it was known from only a few localities so far. Surveying caterpillar nests is a much more efficient way. The Hungarian population seems to be essential in the aspect of longterm conservation, but the knowledge about the species is insufficient. It is included in the „optimal" programme of the National Biodiversity Monitoring System

The annual life cycle of the Eriogaster catax

Diapause (puppa on the ground level)

SUMMER

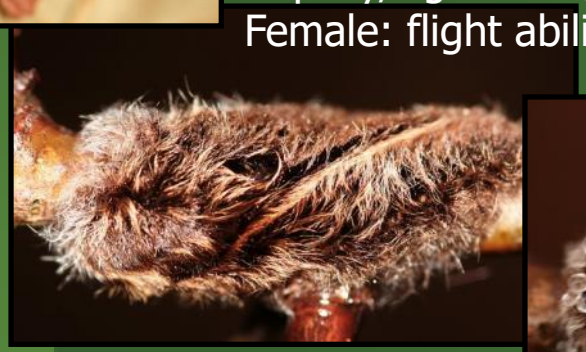
L4-L5: dispersing, Individual feeding foodplant change

SPRING (Apr-May)

AUTUMN (late Sept – mid Oct)

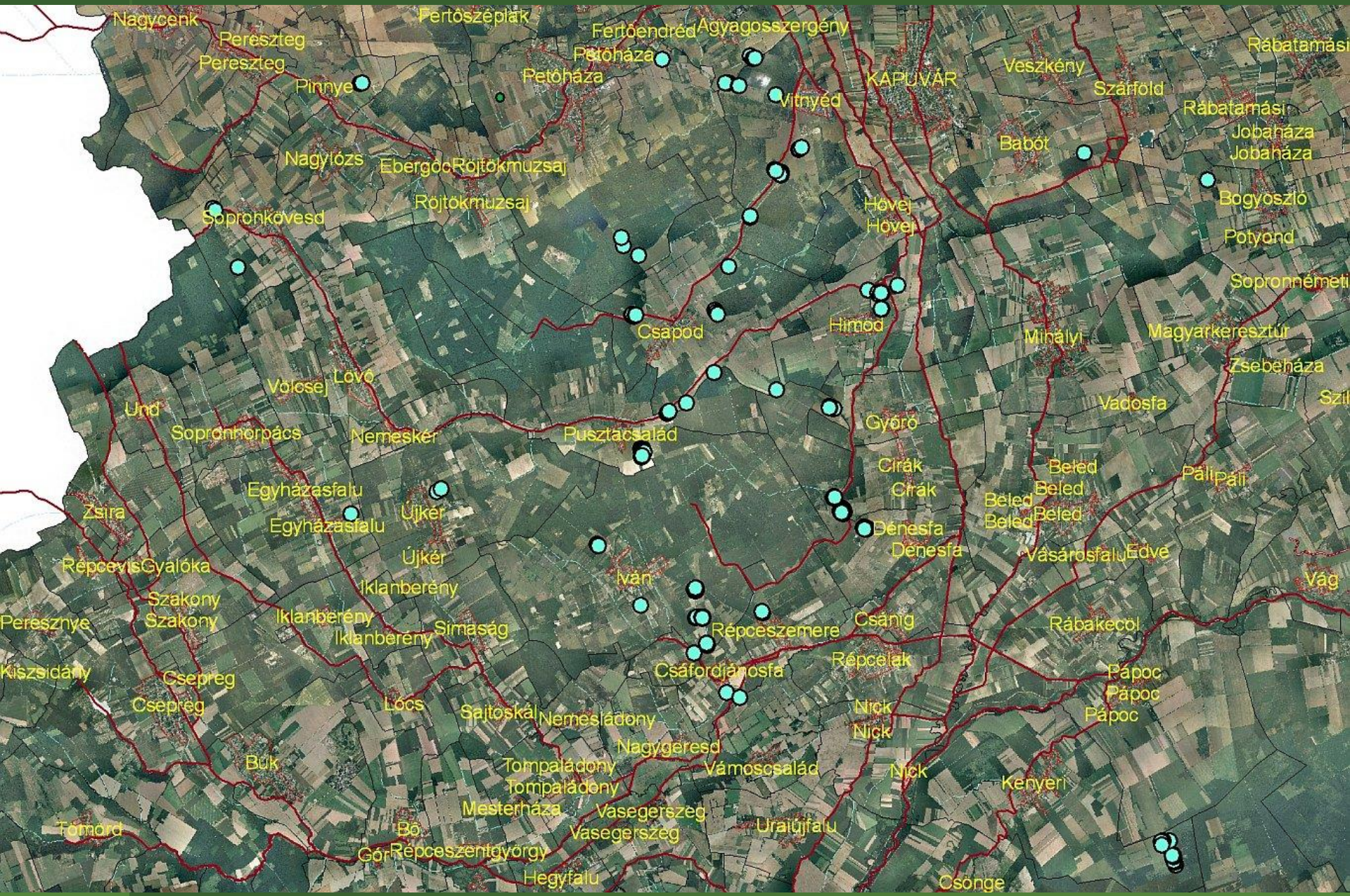
Male: flies only on the dusk Rapidly, light is less attractive
Female: flight ability is reduced ?

WINTER

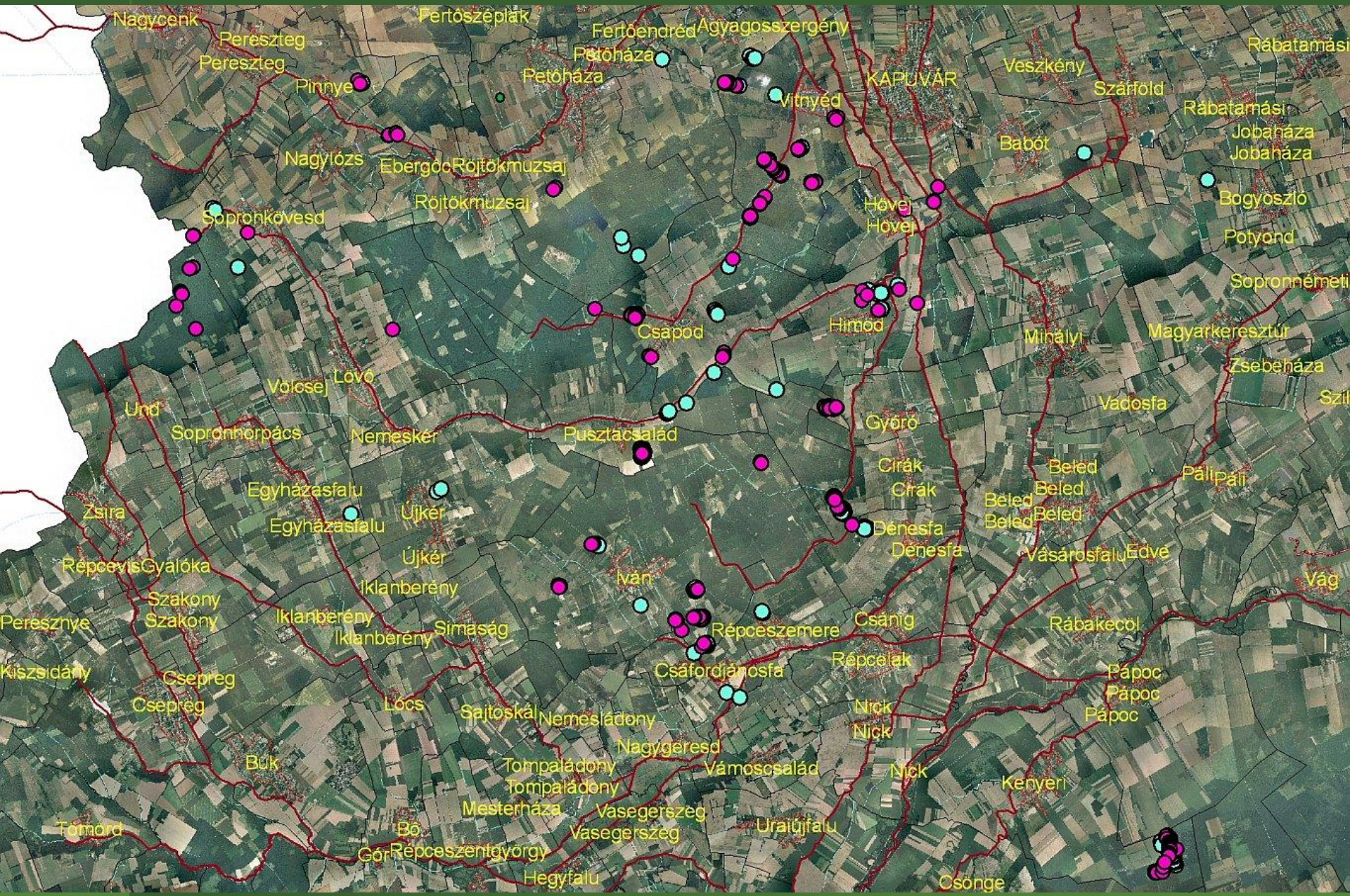


L1-L3 instars: Social feeding moulting, resting in nest

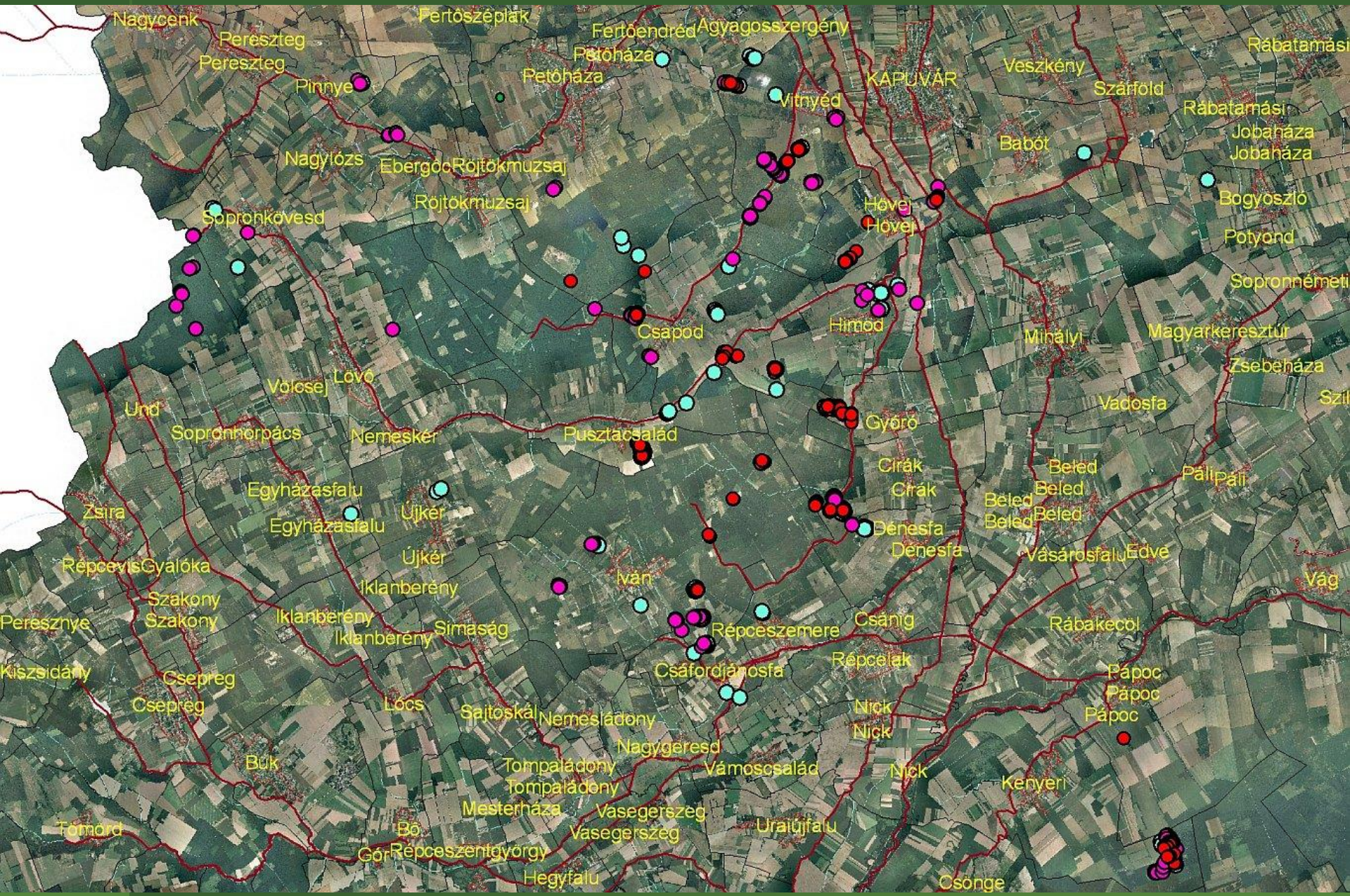
Intensive local surveyes: larval records of Eriogaster catax in 2008

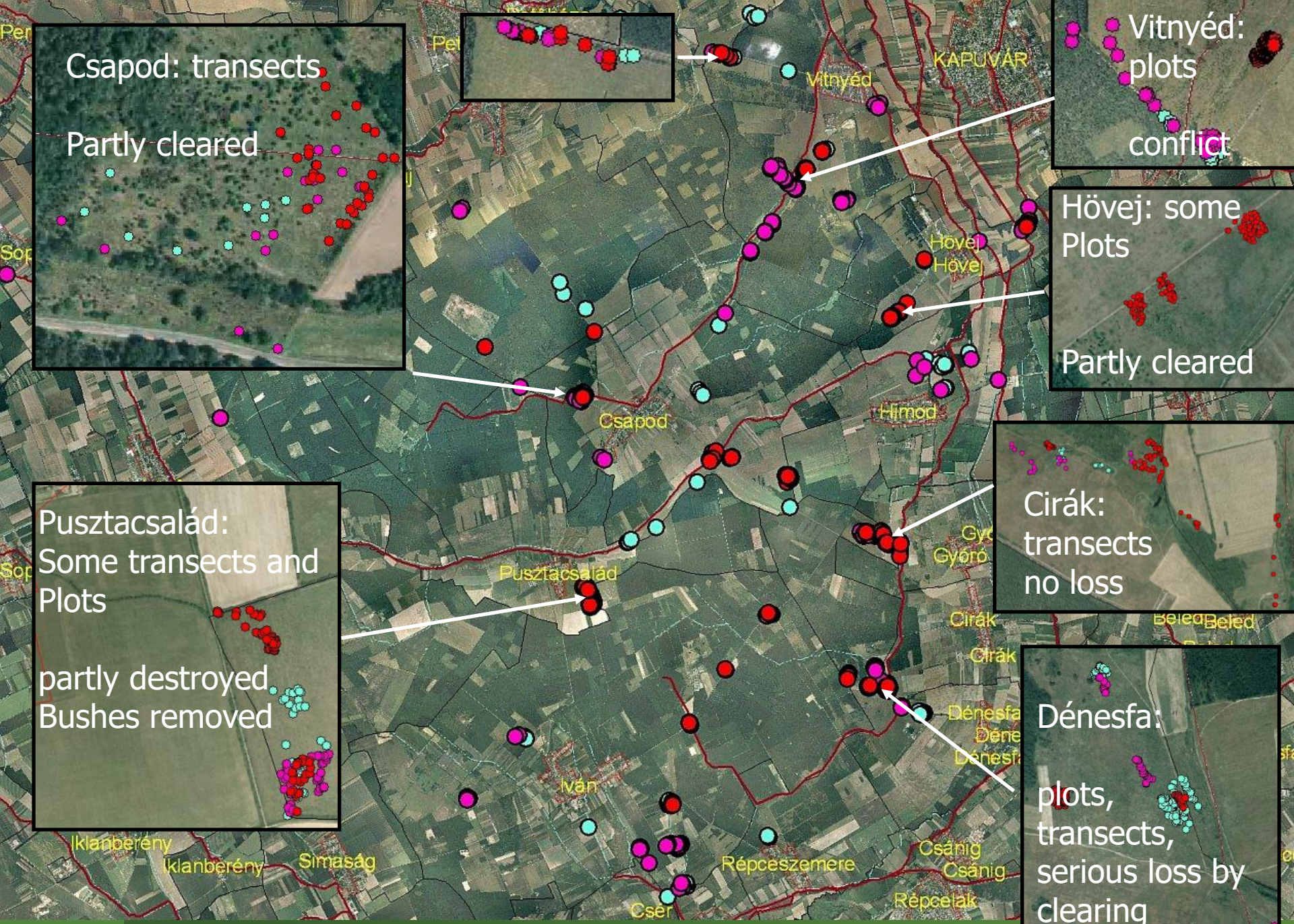


Larval records of Eriogaster catax in 2008-2009



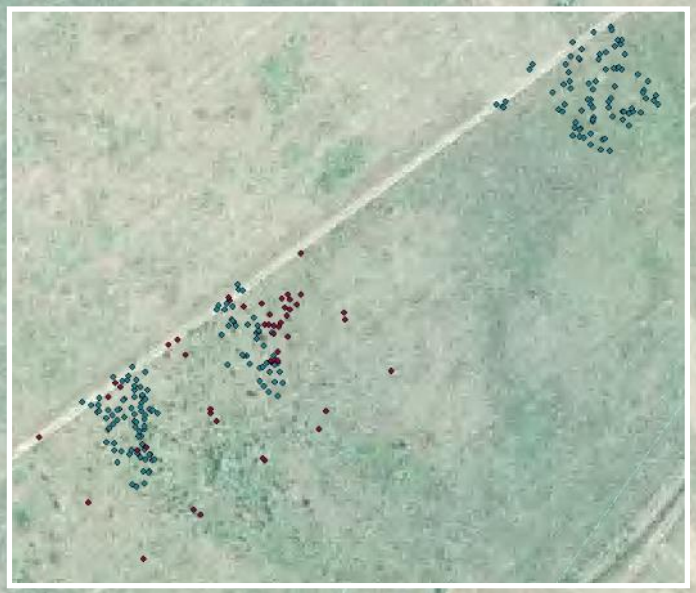
Larval records of Eriogaster catax in 2008-2009-2010 *the „golden age" of catax*



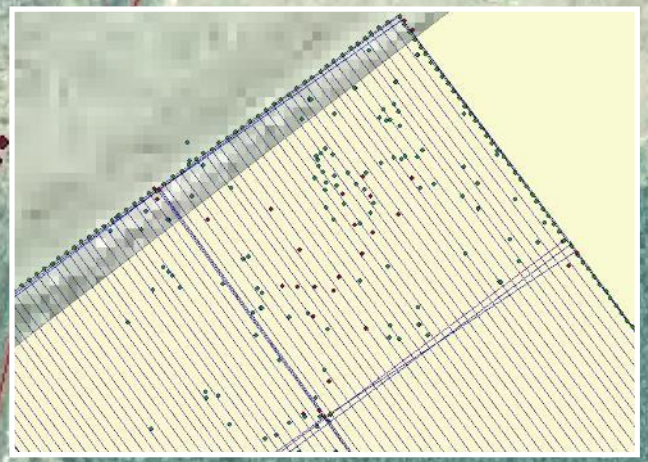


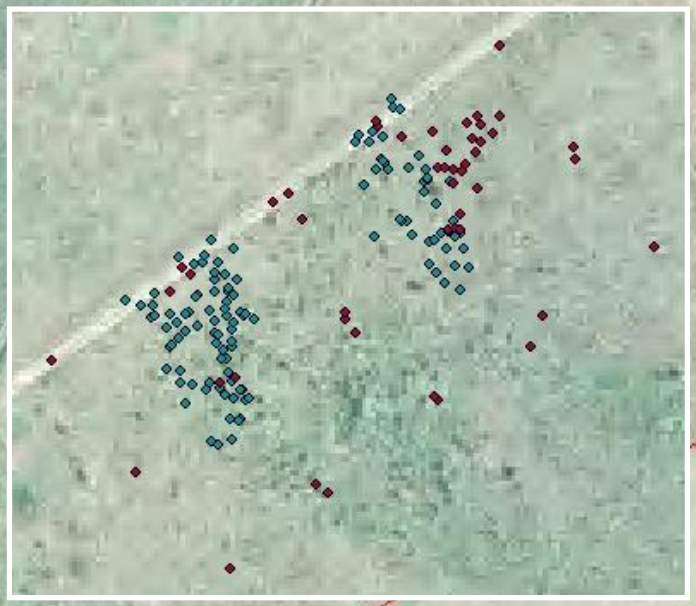
Intensive, quantitative surveyes in sampling plots, qudrates nearby Csapod

Quantitative surveyes:
Sampling units 30 m x 30 m quadrates (9pcs)
Measured/estimated relevant parameters of all Bushes taller than 50 cm.
Caterpillar nests – if there were – measured and registered too. (under process)

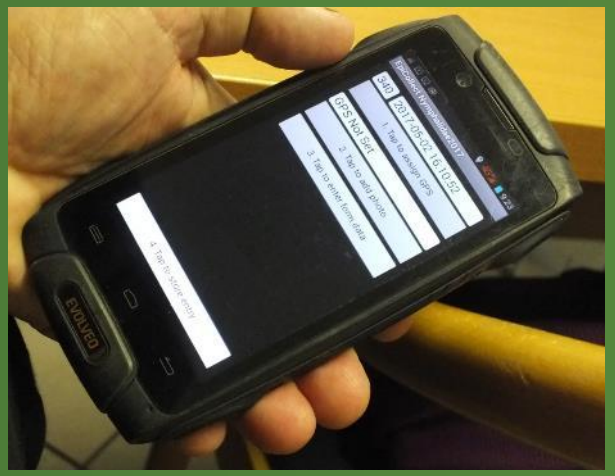


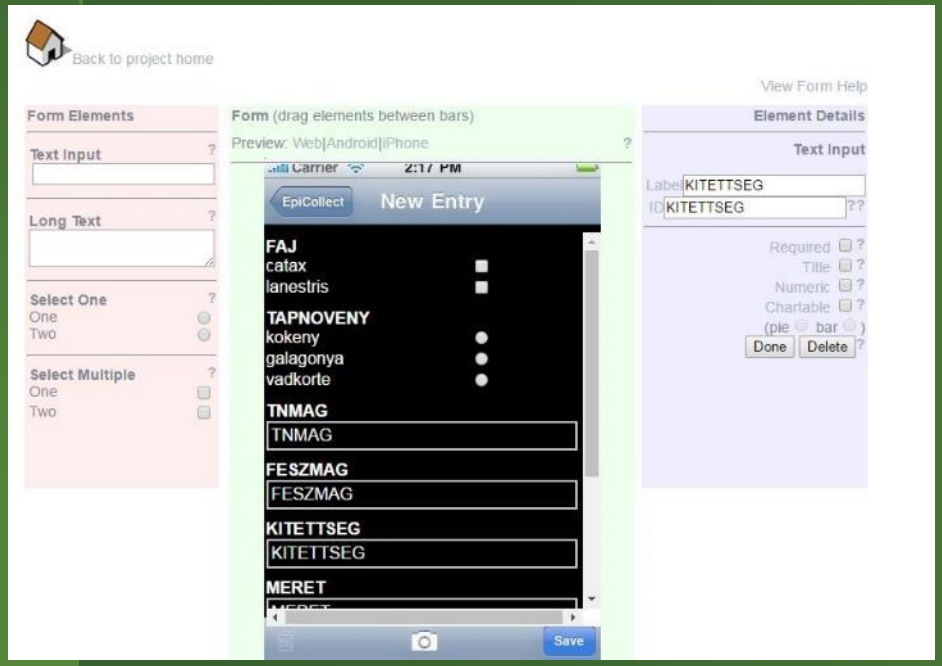
Arrangement of the „experiment”..
(now the habitat doe not exist at all!)
No chance to repeat the survey…





Enhancing the surveying methode – toward social data collecting proc.
New standard data sheet using Android mobile application Epicollect
Default: coordinates, date, time
Species (catax or lanestris)
Foodplant (Prunus spinosa, Crataegus monogyna, Pyrus pyraster)
Height of foodplant
Height of the nest
Facing (S, SW, SE, W, E, etc. & central
Estimated size
Larval stadium
Remarks (*picture optional*)

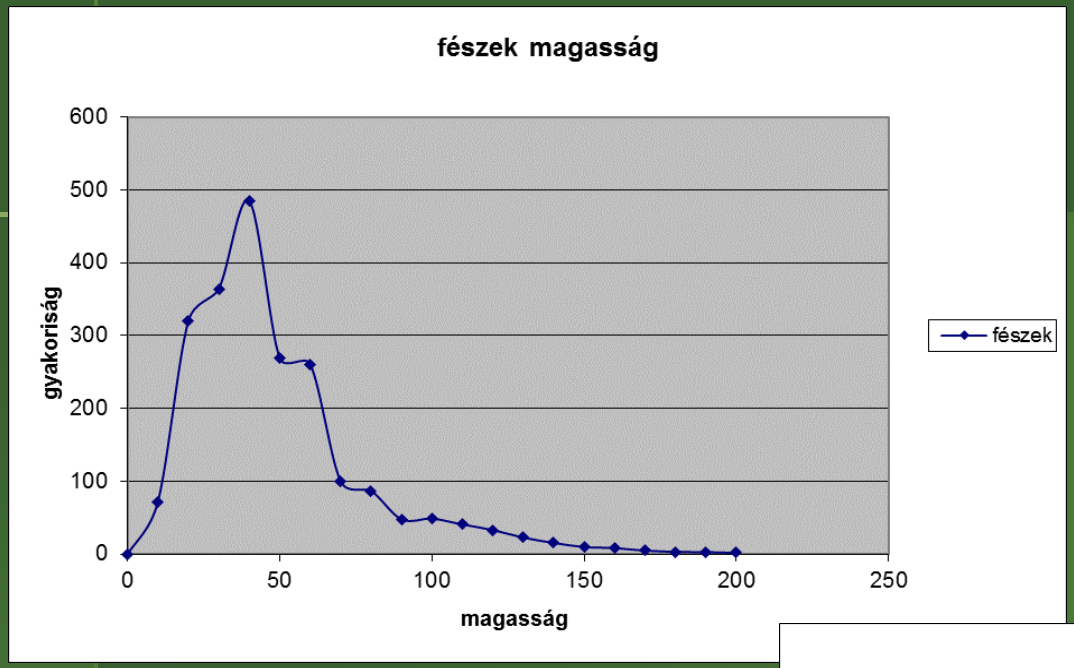




Collecting
Offline;
Synchronizing
When wifi
Accessible
Results export
To Csv, convert
To ESRI shp

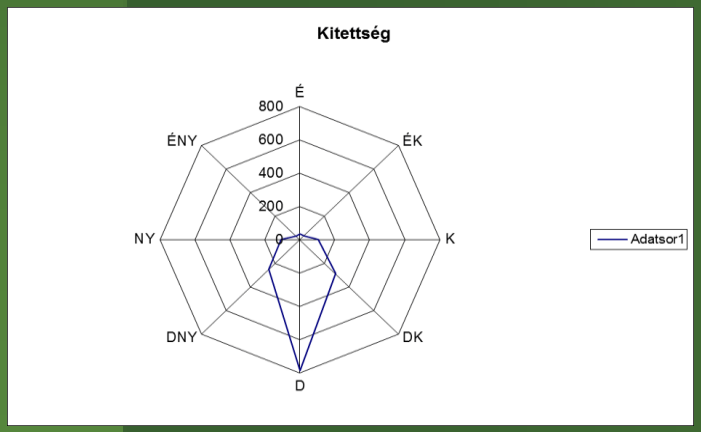
Basic statistics

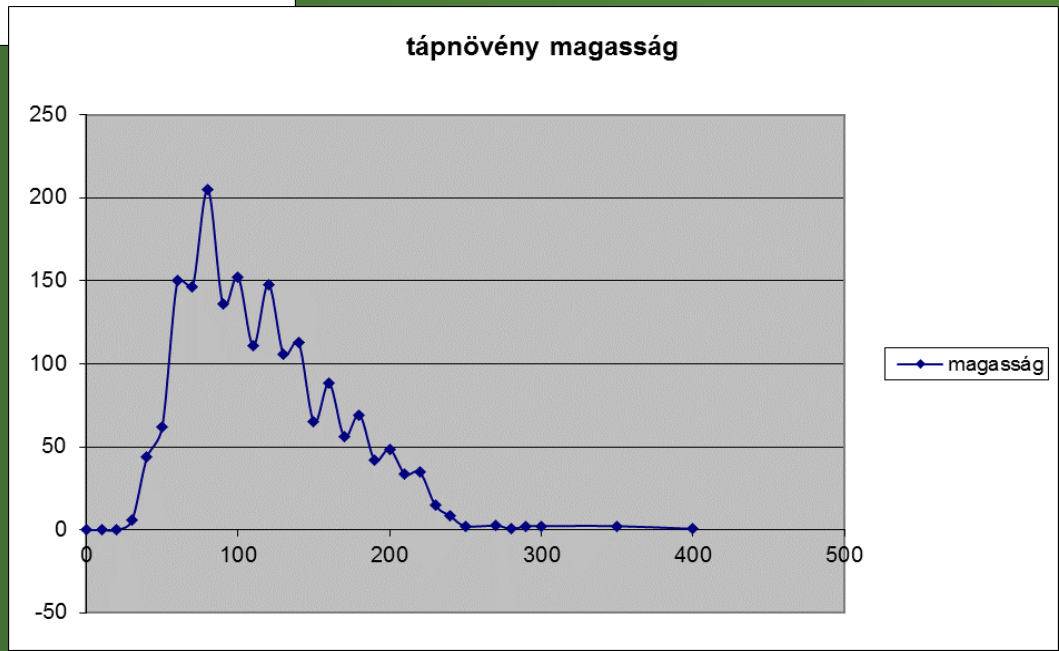
Average height of nests: 49, 43 cm (SD: 29,86)



Average height of foodplants: 116,21 cm (SD: 49,56)

Distribution of nest facing (without central/axe situation)





Recent view of the life strategy of Eriogaster catax

previously: steady state marginal fringe element of the Oak forest and steppe forest zone showing extremely fluctuating population dynamics

Recent Concept: opportunistic species of a transitional phase, quickly changing shrubberies, forest clearings and leaks, abandoned grasslands with bushes, especially picked fringe by (wild) animal, well adapted to the changing food supply. Evidences:

- typical steady state, stable, closed, healthy fringes are hardly or less strongly colonised
- it is thinned out from the closing, strong shrubberies, since the sun can not shining around
- most prefers the stresses of the foodplants: picking/grazing by house or wild animals
- prefers other stressors on foodplants too, e.g. flooding, other defoliators, pests, etc.

Outlining a possible way of population dynamics on a spot

- a satellite/drifting female settles down or reach a suitable site
- mating is sure as the males fly well. In favourable conditions strong offspring generation can take place
- until the food supply is available and parasites, parasitoids and predators are low level, the density increases
- the abundant population produces satellites dispersing arund the overpopulated site to setup new colonies, should they be the very agile, starving l4-l5 caterpillars, or females with better flying ability
- after the peak the overgrown colony collapses partly by internal causes (starvation stress, weakening,parasites, parasitoids or externals (changing habitat to less favourable: closing bushes, defoliation of foodplants, high rate of production of allelochemicals by the foodplants) similarly to the gradation of species which have females unable to fly (Lymantria dispar, Opheroptera bumata, etc.)
- The colonies established by satellites start the new demographical cycle like metapopulation structure

Consequences: the disturbaces are essential element of the conservation of this species, regular thinning of the shrubberies and fringes, grazing, clearing, cutting of bigger ones, but in low scale mosaic-like management of different age cohorts with understanding their ecological importance and natural values.

Netwotk of suitable habitats is essential!

BAD NEWS (since 2010)
Csapod, NW, out of the Natura 2000 site;
clearing of the area from bushes in winter and early Spring (with egg clutches…), the hatching caterpillars have died.
One part of the site where the bushes overgrew and shaded each other (so: no more suitable) has left. The clearing should have taken place there…but it has not happened.

By now the shrubs have eliminated nearly completelly.
There is hunting activity, with regularly mowed shooting stripes.

asctual state in 2010

Dénesfa (smaller part is within N2k site):
Serious thinning of the shrubs on large areas. The strong population of E. catax has collapsed but the remnants on the untouched areas are still abundant.
The forest margins do not support dense population.

Nowadays:
The shrub removal action finished and practically succeeded on most parts of the area.
In one section where the removal was not so perfect, the shrubs started reshoting and a small colony of E. catax seems to survive (E. lanestris started to be abundant!).

The goal?
Sites in the close vicinity

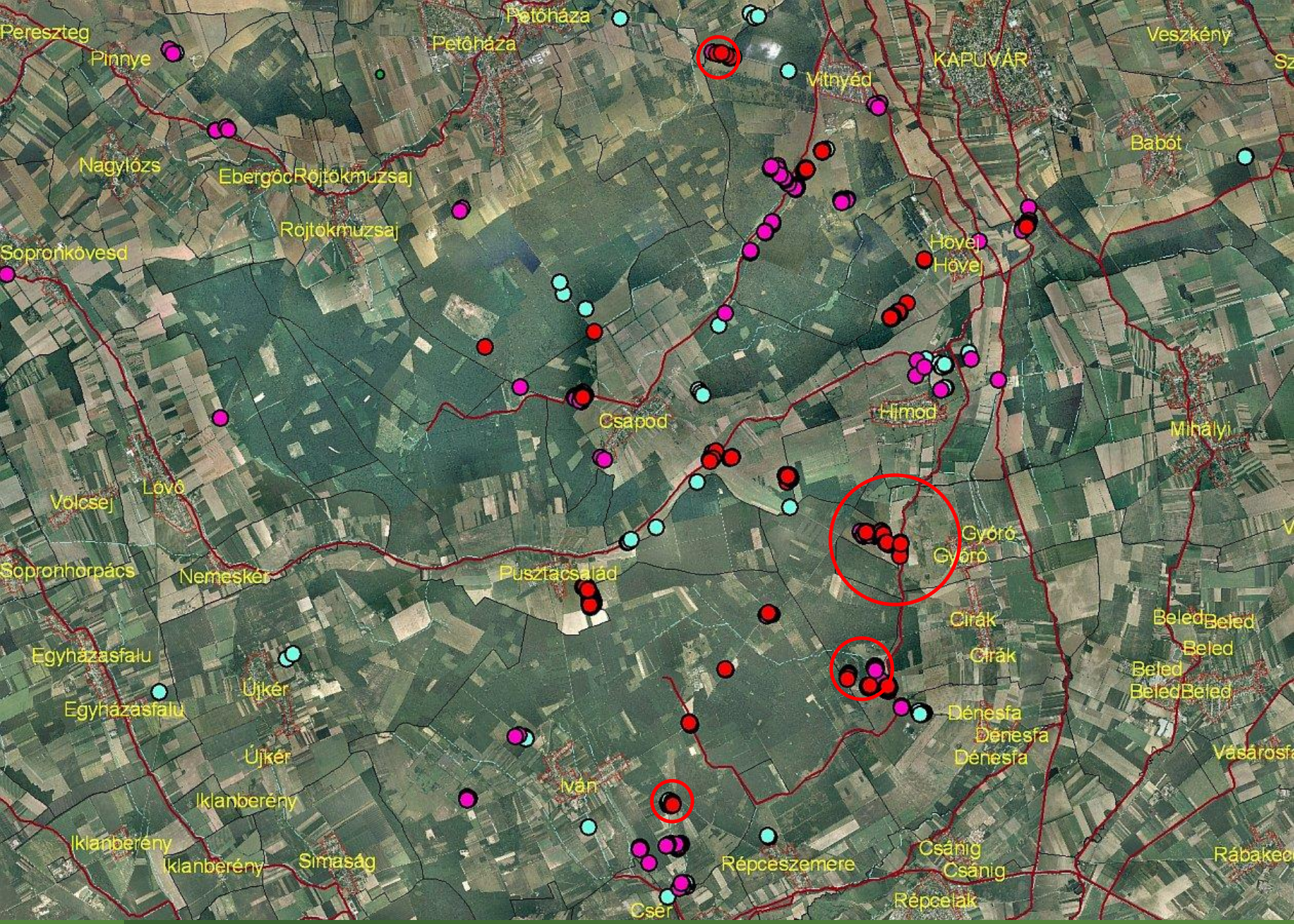
Pusztacsalád (out of N2K):
Clearing and thinning the bushes dramatically. The colony of E. catax has eliminated, but the remnants are still in good status, as the site is grazed parthly.

The grazing activity lasted only a short while, by now the site is arable land.

By 2016 the remained hedgerows have even thinned out, recent year E. Catax can not be detected nearby the area.

Hövej, out of N2K
Good news:
abandoned pasture, with abundant catax colony.
It was cleared up in large part, but other sites in the vicinity have been untouched and the colony became strong there.
Bad news: within 2-3 years the colony dramatically broken down despite of the suitable habitat (by 2013).

Even worse news:
The rest of the shrubs were cleared up in 2015,
Now it is arable land…



Recently known remained populations

The cause: jurisdictio (GAEC; 50/2008 (IV.24.) FVM order 1. annex ordering clearing of bushes from the pastures

MVH
Mezőgazdasági és Vidékfejlesztési Hivatal

Közvetlen Támogatások Igazgatósága

Kölcsönös megfeleltetés terület	Előírás/Követelmény	Jogszabályi hivatkozás	Meg nem felelés	Meg nem felelés értékelése a 81/2009. (VII. 10.) FVM rendelet 1. számú melléklete, illetve az 50/2008. (IV. 24.) FVM rendelet 3. számú melléklete szerint			Ismétlődés
				Súlyosság	*Mérték*	*Tartósság*	
HMKA	Fás szárúak megtelepedésének megakadályozása	Az egységes területalapú támogatások és egyes vidékfejlesztési támogatások igénylésèhez teljesitendő -Helyes Mezőgazdasági és Környezeti Állapot- fenntartásához szükséges feltételrendszer, valamint az állatok állategységre való átváltási arányának meghatározásáról szóló 50/2008 (IV. 24.) FVM rendelet 1. sz. melléklete	A gazdálkodó mezőgazdasági területein nem akadályozta meg a hasznosítás szempontjából nemkívánatos fás szárú növények megtelepedését és terjedését.	Enyhe	Kismértékű	Rövidtávon helyrehozható	Nem

Előírás/Követelmény	Érintett tábla	Vis Maior elbírálás	Vis maior indoklás
Gyommentes állapot megőrzése	KK4FDF08-186		
Gyommentes állapot megőrzése	K4RN3K08-66		
Gyommentes állapot megőrzése	KF4FA908-168		
Gyommentes állapot megőrzése	K6YND508-95		
Gyommentes állapot megőrzése	KFQ9P408-175		
Fás szárúak megtelepedésének megakadályozása	KFQ9P408-175		
Fás szárúak megtelepedésének megakadályozása	K6YND508-95		
Fás szárúak megtelepedésének megakadályozása	KK4FDF08-186		

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Suggestions

- Start talks with the responsible body of the agri-environmental schmes about the ecological values of the habitat type, find out the legal framework of sustaining the ecological values with optimal land use.
- Setup the standard of minimal requirements of the good agricultural and ecological conditions of the initial, transitional phase of extensively grazed pastures with abundant and wide fringe zone at the edges.
- The shadow of bushes keeps – on the other hand – green the grass even in the continental meadows of the Pannonian ecoregion. In addition the bushes make shelter for the animals as well as are important element of the landscape
- *Ask the conservational expert before* orderint clear cutting the shrubberies!
- Sustain the natural and semi-natural mosaic-like patches of the meadows, with their dynamics of changes incorporated in the agri-environmental supporting shemes not to destroy the habitats of Hab.Dir. Annex II. species but support them.


Thanx for your attention