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SPECIES RICHNESS AND IMPACT OF GALL-FORMING INSECTS ON TURKEY OAK (*QUERCUS CERRIS*) IN HERNEACOVA FOREST

Diana ARSINE, Laura VORNICU, Emil POPESCU, Ana – Maria VÎRTEIU, Ioana GROZEA
Department of Biology and Plant Protection, University of Life Science "King Mihai I" from
Timisoara



Introduction

Turkey oak is one of the tree genera with the highest species richness of phytophagous insects.

In the case of quercivorous Lepidoptera, only about one third are strictly specialized on *Quercus*. The mean host specificity index of 4.7 indicates a more oligophagous behavior. In total, 46.7% of the quercivorous insects (307 species) are specialized in the *Quercus cerris*. This figure clearly shows the irreplaceable role of *Quercus cerris* in maintaining phytophagous biodiversity. Among the gall insect species present in *Q. cerris*, highly sophisticated interactions are very common.

The aim of the present paper is to highlight the diversity of the quercivorous gall-forming fauna present in the Herneacova Forest (Timis County), under the climatic conditions of the year 2023, with the main study species being the *Quercus cerris*, due to the highest occurrence of this tree species in the Herneacova Forest.

Material and method

For the establishment of the quercivorous gall-forming fauna, the experimental field was located in 2023 in the northern part of Timiș County - Herneacova Forest (45°51'26"N 21°30'57"E). The turkey oak (*Quercus cerris*) is the most widespread species of the forest species studied. It occupies 49% of the forest area of the forestry and is found throughout the territory.

Between September and December 2023, samples representing the galls of *Cynipidae* (Hymenoptera) and *Cecyidiomidae* (Diptera) were collected from the trees of turkey oak (*Quercus cerris*) in Herneacova Forest (Timis County). We used the same collection method at each observation point during our surveys. We made 2 observations in each cardinal direction, 8 points/observation in total. The procedure was to make a visual inspection at each observation point using a slow walking pace for at least 30 minutes to 1 hour, at 10 to 14 day intervals.

At each observation point, galls on leaves, shoots and/or fruiting bodies of *Quercus cerris* were inspected from the base of the tree to a height of 2 m. Brief characteristics of the habitat were noted. All galls collected were recorded. Local abundance was also noted.

Conclusions:

A wide variety of galls on *Quercus cerris*, many with attractive colors and fine textures and relatively little known, inspire us to continue researching. These investigations are needed to better understand the species composition and the impact of gall-forming pests on *Q. cerris*, in the context of recent and future climate change.

658 phytophagous insect species were identified feeding on *Quercus* sp. Of these, the orthopteran, thysanopteran and heteropteran species are generally polyphagous, and these can be considered more as secondary insect pests of *Quercus*. In contrast, quercivorous (oak-feeding) *Diptera* species are strictly specialized on their primary hosts, with average host specificity indices up to 1.5 (extremely high). The situation is identical for the quercivorous *Hymenoptera*, where we find the same high level of host specificity and host fidelity.

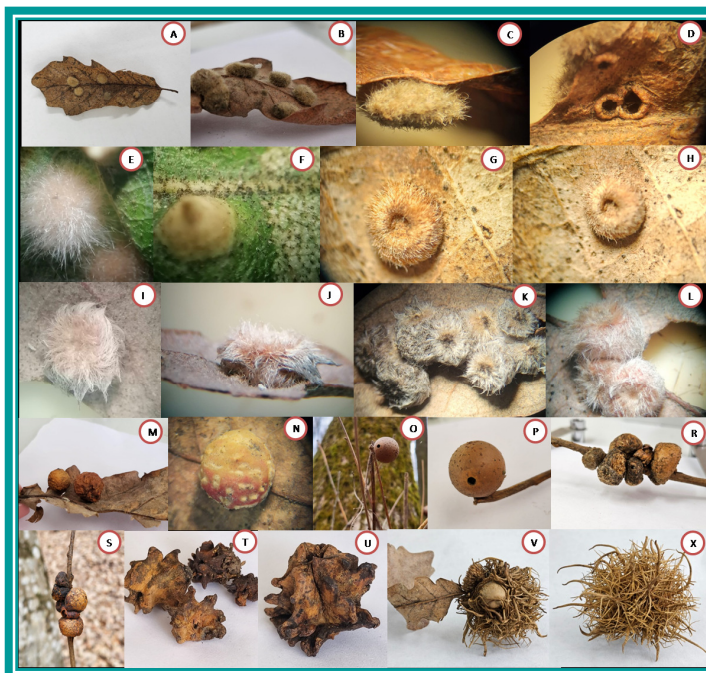
Results and discussions

In order to highlight the diversity of the quercivorous gall-forming fauna present in the Herneacova Forest (Timis County), 9 species of insects were collected and identified in the 8 observation points present on *Quercus cerris*.

These species belonged to the orders *Diptera* and *Hymenoptera*, respectively to the families *Cecyidiomidae* and *Cynipidae*.

The taxonomic structure according to the genus shows the presence of 5 genera: *Dryomyia* (with 1 species), *Janetia* (1 species), *Neuroterus* (2 species), *Cynips* (1 species), *Andricus* (4 species) (table 1). The highest richness was found in the genus *Andricus*.

A – D - *Dryomyia circinans* - the galls produced by this pest are 5-7mm in diameter, beige with light greyish inlays. Abundant pubescence covers the entire surface. It is common to find several galls on a single leaf.



E - F - *Janetia cerris* - attack is visible on both sides of the leafblade. Each gall is covered with very dense pubescence, which is initially whitish and then reddish-grey. The galls are often deformed, with the lower edges wavy.

G – H - *Neuroterus numismalis* - the galls are yellowish-brown or light brown in colour and have a silky texture with radial, concentric stripes and a larval chamber in the interior.

I – L - *Neuroterus lanuginosus* - the galls appear on the underside of the leaves and are usually in clusters. They are 5 - 7 mm in diameter, round, flat (discoid) and completely covered with long hairs. The central hairs are orange-brown and the lateral ones are greyish white.

M – N - *Cynips quercusfolii* - galls are spherical in shape with a glabrous, smooth, shiny surface, 10-15 mm in size. The wall of the gall is soft, juicy, spongy and reddish in colour, later becoming reddish brown.

O – P - *Andricus kollari* - the galls are spherical in shape and 10-25 mm in diameter. They have a woody consistency and a smooth, sometimes knotless, shiny surface, yellow in colour, turning brown as they mature.

R – S - *Andricus lignicola* - galls are ovoid rather than spherical, with a scaly surface, initially slightly greyish, later brownish at maturity, 8-12 mm in diameter, with a larval chamber inside.

T - U - *Andricus quercus-salicis* - the galls are 15 - 20 mm in height, they develop between the acorn and the cup and then cover the acorn partially or completely. It has between 5 - 9 prominent, wavy, interrupted carinae, forming sharp, sharp-edged projections from place to place.

V - X - *Andricus caputmedusae* - the galls are simple, walnut-sized, disc-shaped, attached to the cup of the young acorn (which contains a larval chamber/internal gall with thin inner walls), from the edge of which thick, 3-4 cm long, filiform, radiating, interlaced in all directions, greenish, becoming yellowish-brown when mature.