The common oak, the most widespread European species of oaks, by many is considered a typical forest tree, alongside with beech, fir or spruce. Indeed, its high economic value made it the most frequently broad–leaf tree species planted in Central European forests. However, the history of European landscapes quite clearly indicates that about 20 generations of oak – counting from the beginning of the expansion of deciduous forests about 8,000 years ago and taking 400 years as the average lifespan of a generation – performed in conditions incomparable to modern forests. Demanding a lot of light and providing their seedlings with rich resources of nutrients accumulated in acorns, oaks are ideal colonizers of sparsely wooded or entirely open landscapes. Thanks to the symbiosis with the Eurasian Jay, with which they share part of their acorn crop, they have secured both the transport of acorns and their precise planting in a species–conducive, usually non-forest, environment.

Only during the present generation of oaks, the implementation of solutions on which modern forest management is based, has led to a radical change in the oaks' life ecological conditions. Due to the intensification and specialization of agriculture and forestry, taking place in Europe since the 18th century, the vast majority of oaks are now found in dense stands - an environment that was, until recently, alien and avoided by the species. At the same time, more and more scientific evidence indicates the failure of natural oak regeneration in contemporary deciduous forests, including ancient protected woodlands, such as the Białowieża Forest or Fontainebleau.

While the vast majority of the topical literature focuses on the "failure" of natural oak regeneration in forests, little attention is paid to the non-forest environment, much better corresponding with the life strategy and adaptation of the species. And yet each of us, almost every day, observes oak seedlings appearing – just like in the whole 8,000 years – from acorns spread by Jays, almost everywhere: in wastelands, roadsides, lawns or yards. Especially in rural landscapes, as a result of abandonment of cultivation, there are irregularly distributed clusters of young oaks.

In view of the emerging ecological, conservation, and economic challenges, the future non-forest natural oak tree stands may become an invaluable stabilizing factor of landscapes' (and their particular habitats') adaptation to the effects of climate change. Therefore, it is extremely important to learn about the ecological mechanisms responsible for the oak regeneration in post-agricultural landscapes.

Thanks to the use of various methods of botany and plant ecology, bird ecology, phytochemistry, soil science, genetic analysis of fungi accompanying oak seedlings and influencing their health and development, as well as spatial modelling, the project will widen our knowledge of oak ecology, still remaining – due to the dominating focus on the forest environment – substantially incomplete. In particular, we would like to address the following questions:

➢ What kind of landscapes' features favour the extra-forest natural oak regeneration?

➢ What factors influence the Jay's decision on the location of seeding acorns?

➢ How do soil, light, plant competition, and fungi affect oak seedlings' survival and growth?

➢ Do the extra-forest young oaks have a physiological advantage in their defence against pathogens over their forest counterparts?

➢ What is the natural potential of rural landscapes in CE Europe for developing its future extra-forest *oakscape*?

With a very wide, multidimensional common oak's live strategy, the proper understanding of its ecology and the place it occupies in our landscapes, requires a holistic approach, embracing seed dispersal, interactions with other organisms, habitat and soil preferences, and its physiological response to environmental hazards. This is probably the first research project providing such a broad perspective on that the most revered tree species of Europe.