Project Update: January 2017

We started working on our project in summer 2016. This report summarises intermediate results obtained since that time.

1) Molecular studies of *Pleurotus calyptratus*.

We established a new collaboration with the Institute of Experimental and Clinical Veterinary Medicine (Kharkiv) and performed our research in the Laboratory of Molecular Diagnostics, which was chosen for its better equipment.

We isolated pure cultures of *Pleurotus calyptratus* (PC) and two other species of oyster mushrooms: *P. ostreatus* and *P. pulmonarius*. The last two species are rather common in the forests of the studied region and we had to find a way to separate them from our target species in further research of dead wood. Therefore we designed and tested specific primers for PC (**Fig. 1, A**). Our primers demonstrated the excellent result, being workable and specific to target species (**Fig. 1, B**). So, now we are ready to a spring season, when we will start detecting DNA of PC in dead aspen wood by simple PCR method. This result is scientifically new and will be included in publication, planned for 2017.

A B

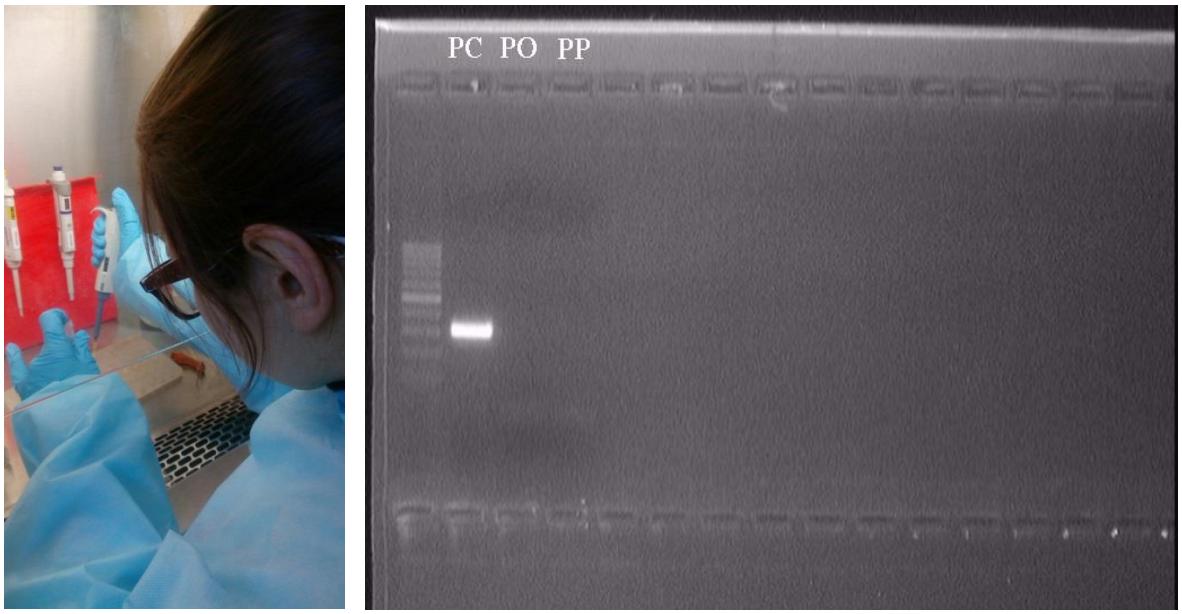

Figure 1. A – Our team member Maryna Kit extracts DNA of PC. **B** - Designed primers work selectively for *Pleurotus calyptratus* (PC) and do not work for *Pleurotus ostreatus* (PO) and *Pleurotus pulmonarius* (PP).

This means, we have good chances to catch DNA of PC in dead wood.

2) Expeditions

During the autumn 2016, we made two expeditions, to the National Park 'Gomilshansky lisy' (**Fig. 2A, 2B**) and 'Kharkiv Forest-Park' (**Fig. 3A, 3B**). Our primary goal was to create precise maps of aspen stands in these areas. We mapped even those stands which consisted of only one or two trees. Also we collected data about aspen trees: height, diameter, stage of decomposition, etc. Our expedition team included Iryna Yatsiuk, Oleh Prylutskyi, Yehor Yatsiuk and four to five volunteers (mainly undergraduate students and schoolchildren).

A **B**

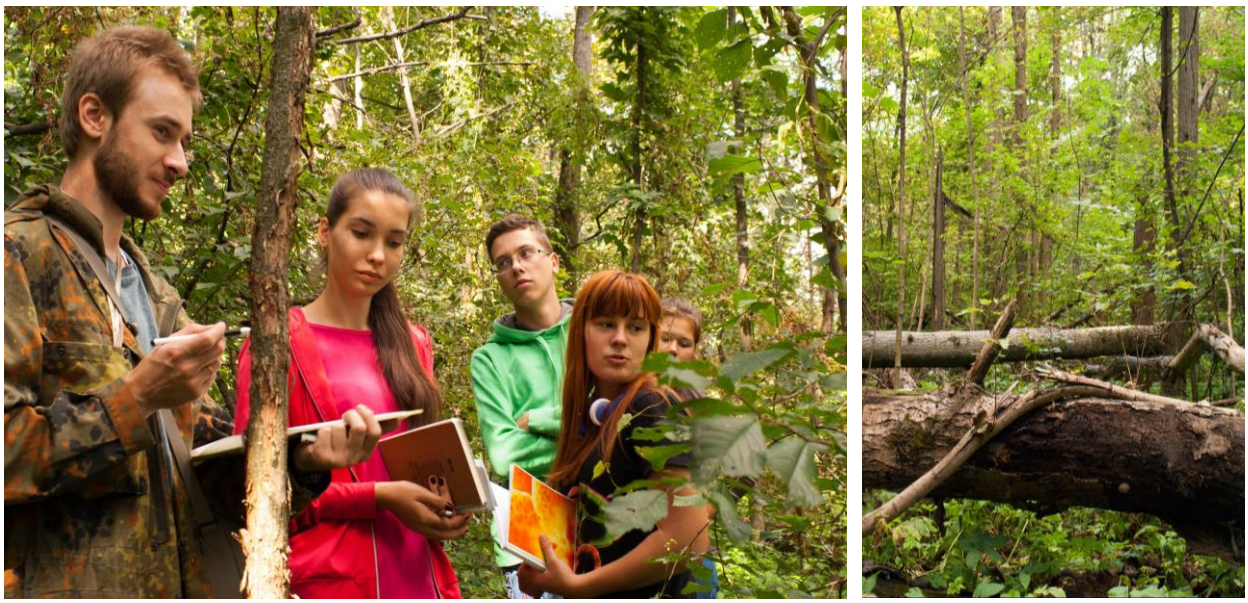

Figure 2. A – 3rd-4th September, 2016. Expedition to NNP 'Gomilshansky lisy'. Oleh Prylutskyi (first from the left) explaining the main points. Volunteers: Liza, Vlad, Ivana, Lera. Photo: Iryna Yatsiuk. **B** - Old-growth (70-80 years) aspen stands in NNP 'Gomilshansky lisy'

A B

Figure 3. Survey in Kharkiv Forest-Park. Aspen stands here are represented by small, scattered patches, so it can be rather difficult to find them. **A** - Yehor Yatsiuk, ornithologist, who knows the territory very well, is explaining the route. **B** - Iryna Yatsiuk (second from the left side) and volunteers: Liza, Lera, Kate. Photo: Yehor Yatsiuk.
Photo: Iryna Yatsiuk

3) Data on the ecology and distribution of *Pleurotus calyptratus*.

To study a population dynamics of PC, we set up two study plots in eastern Ukraine, where PC was registered before. The first one is situated in the National Park 'Gomilshansky lisy' **(Fig. 4, GL).** The second one is in oak forest massif to the north of the city of Kharkiv, so-called 'Kharkiv Forest Park' **(Fig. 4, F-P).** Aspen stands in both plots were thoroughly surveyed and mapped. Maps given below are made by Oleh Prilutsky using QGIS software.

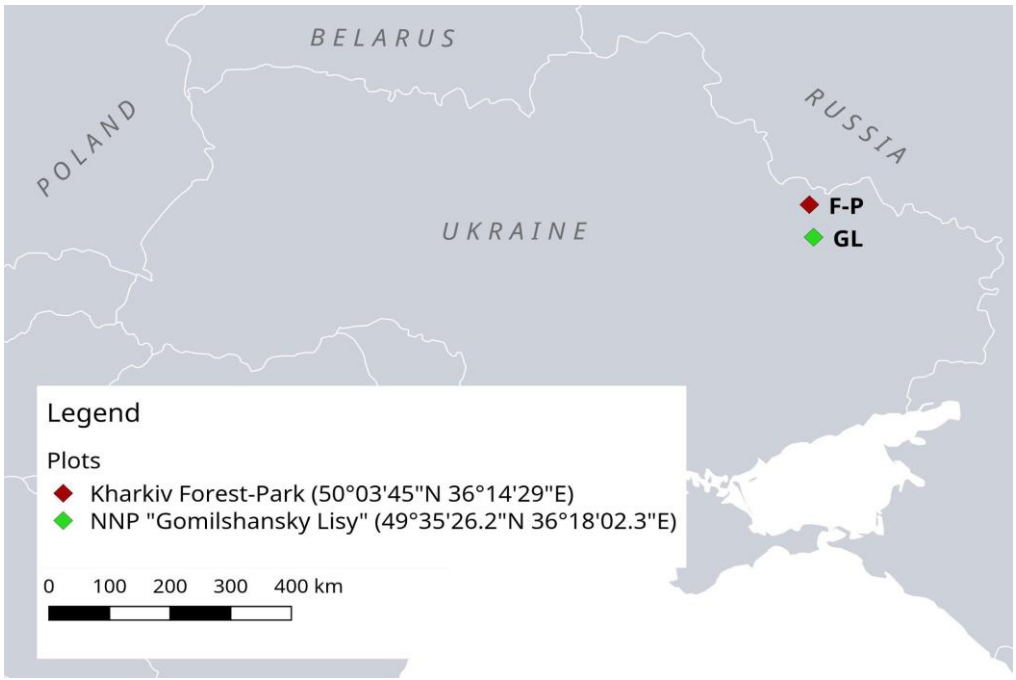

Figure 4. Study plots in the Eastern Ukraine.

The first plot is a protected area under little or no pressure of forest management. Due to the logging activities in the past, there are large patches of even-aged aspen trees. They are situated compactly on our study plot. The overall area of aspen forests here makes ca. 24.6 ha of 755 ha of the study plot area **(Fig.5, A)**.

The second plot is absolutely different. There are only slightly more than 5 ha of aspen stands in a significantly bigger territory (1871.4 ha). Aspen stands here are represented by an 'archipelago' of a small patches. There are no aspen stands exceeding 1 ha **(Fig.5, B)**.

We expect different patterns of PC distribution on these plots. In spring we will map fruitifications of PC on this plots to explore the correlation of PC populations with the aspen patches area and the distance between them. Also on these patches we will describe the substrates of PC in detail for further analysis of substrate preferences.

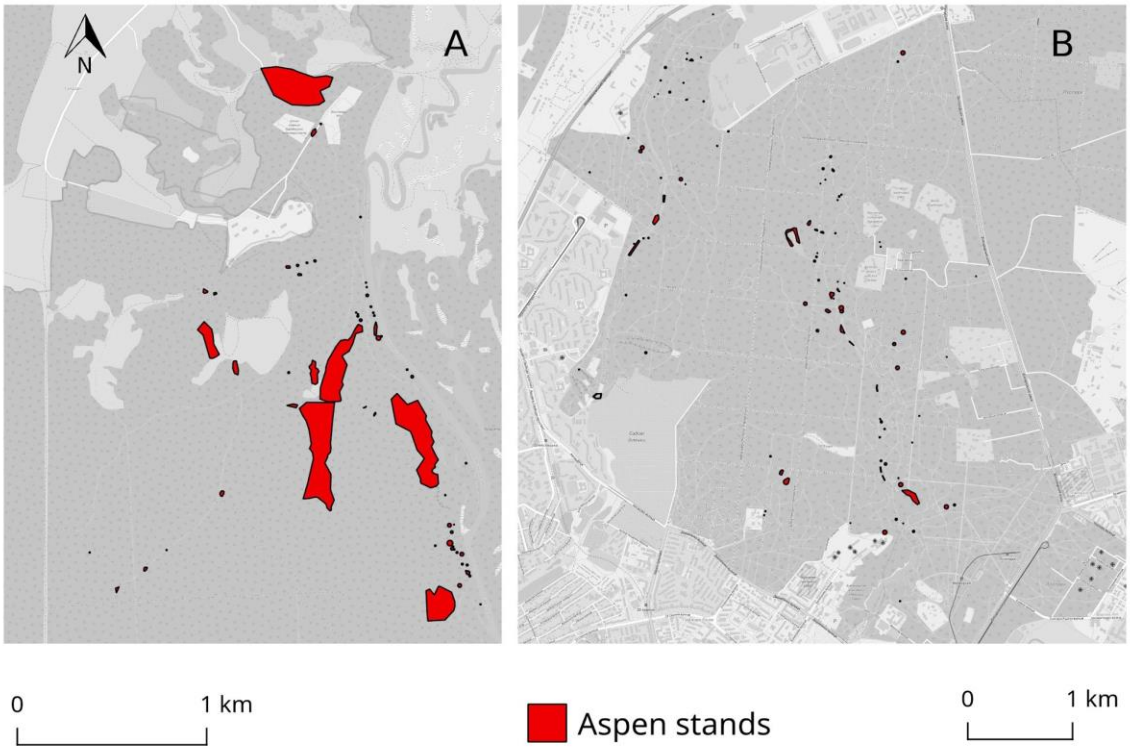

Figure 5. Aspen stands within the study plots. **A** – GL plot; **B** - F-P plot

4) Other results

Printed educational materials - being designed.
Publication of the proposals of PC conservation - in preparation.