

Bart Buyck, Summary Macrofungi Research

Bart Buyck of the National Museum of Natural History in Paris, France submitted “Root Symbiotic fungi: key players in the forest ecosystems of the Big Thicket (2014-15)” in a partnership with TWIG leader, David Lewis and Valerie Hofstetter, from the Department of Plant Protection, Agroscope Changins-Wädenswil Research Station ACW in Switzerland. The approved grant amount was \$6000.

Buyck traveled to Texas to research and encumbered additional transportation expenses due to unforeseen costs as the result of a funeral. An addendum for \$2221.52 was approved. Mona Halvorsen had to wire funds overseas. It was complicated but completed successfully.

The project received excellent media coverage.

The findings were significant as documented in the final report:

The tissue samples that had been taken in physiological buffer to extract, amplify and sequence several parts of the DNA for every collected specimen in view of obtaining precise identifications for the gathered species as well as for their future placement in a phylogenetic framework. Five gene regions were obtained: the official barcode region for fungi (ITS) as well as one additional variable marker for species characterization, and also three more conserved genes (LSU, mitSSU and RPB2) for phylogenetic purposes.

All obtained sequences were deposited in public sequence databases (GenBank) upon publication of our results. This molecular work was possible through additional funding obtained by the PI through some smaller grants from the Paris' Museum.

As the result of the molecular work, the researchers can now be affirmative about the correct identification of all samples. In addition, the molecular work confirmed the discovery of **at least five new species to science**: two *Cantharellus*, one *Hydnum* and two *Russula*. Microscopic analyses of the new species are presently being carried out by the PI in view of rapid publication of our results. One species was already published in Fungal Diversity reporting the new *Russula cortinarioides* Buyck, Adamčík, Lewis & V. Hofstetter sp. nov. A preliminary manuscript is being prepared for the publication of *Cantharellus pseudolateritius* Buyck, Lewis & V. Hofstetter sp. nov.

Submitted by Mary C. Johnston, Nov. 3, 2020