Well-Being of Large Forest Ecosystems: Ask Aphyllophoroid macromycetes

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The estimation of bioindication (BI) of large ecosystems is a subject of great interest for various organizations managing such systems after destructive events - fires, floods, eruptions, tornado etc. I suppose the application of strictly statistical approach will be able to minimize the intuitional arbitrariness of the researcher and make BI really objective. I chose xylotrophic aphyllophoroid macromycetes (XAM) being the edificators of all types of forest ecosystems as an object for the development of the algorithm. I collected XAM by the route method (8 sq. km of forests separated into 8 areas) and obtained the independent XAM set for each area. The number of findings in areas varied from 13 to 51. The allowable interval of the findings number was estimated by the standard deviation of the number of found XAM in areas. The areas with findings number outside this interval were excluded from analysis. Indicator complex (IC) included only XAM found at all sites. The quantitative BI criterion for the studied forest is defined as a set of the upper limits of the confidence intervals for IC species. To increase the stability of the technique, an additional criterion calculated by similar way has been used: the presence of XAM species for a certain stage of decomposition of wood trunks. To test my algorithm I estimated the BI of the ecosystem of fire-affected forest area. Comparison of the obtained results with the real environmental situation shows the efficiency of my method. It can be used for the initial assessment of ecosystems BI assisting government and NGOs to make the associated ecological forecasts quickly, objectively and rather inexpensively.

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