



Spatial accuracy of forest inventory database of the Chernobyl Exclusion Zone for the purpose of valuation of ecosystem services

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Specific state of the Chernobyl Exclusion Zone (CEZ) as a territory with low disturbance level and area of 260 000 ha defines originality of ecosystem functions provided by terrestrial ecosystems. This work is at the implementation stage within GEF / UNEP project “Conserving, Enhancing and Managing Carbon Stocks and Biodiversity in the Chernobyl Exclusion Zone” The precise valuation of forest ecosystems that occupy about 65% of the CEZ territory depends on spatial accuracy of forest attribute database. To assess the accuracy of forest attribute database for 2016 we created stratified random sample ($n \approx 1000$) distributed with equal probability between 6 major land cover classes: unproductive lands, forested areas, abandoned agricultural lands, wetlands, shrub-lands, grasslands. The sample size chosen to achieve 0.01 standard error for the overall accuracy. The reference classification of each sampling unit was obtained in Google Earth-based software using visual misinterpretation. We considered each point as sample plot of 0.5 ha which corresponds to minimal mapping unit in Ukrainian forest inventory. It was found that forest inventory database of CEZ was rather precise. The overall accuracy of spatial database was estimated to be 79% while user’s accuracy for thematic class of forests exceeded 93%. The greatest misclassification occurred for barrens and naturally regrown forests that has covered abandoned agricultural fields. Nevertheless, we considered such kind of errors insufficient for valuation functions of terrestrial ecosystems since attribute information on each land cover included detailed description of parameters for all types of vegetation. As a result, we acknowledge that spatial accuracy of forest inventory database quite good to provide reliable estimates of ecosystem services in the Chernobyl Exclusion Zone.