

## Formation of an Electronic Municipal Register of Trees Using GIS

**Mykyta Shkarin**, Master student, **Yurii Buchavyy**, Associate professor, Department of Ecology and Environmental Technologies

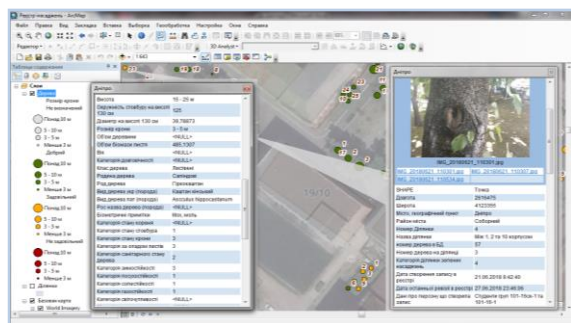
### Common Characteristics of the Work:

**Object of study** – taxonomic, biometric and sanitary-pathological indicators of trees growing at the territory of Dnipro city

**The purpose** – to develop an electronic register of Dnipro trees health using the real-time GIS and publish it on the Internet via ArcGIS-Online service

### Practical Application and Prospects:

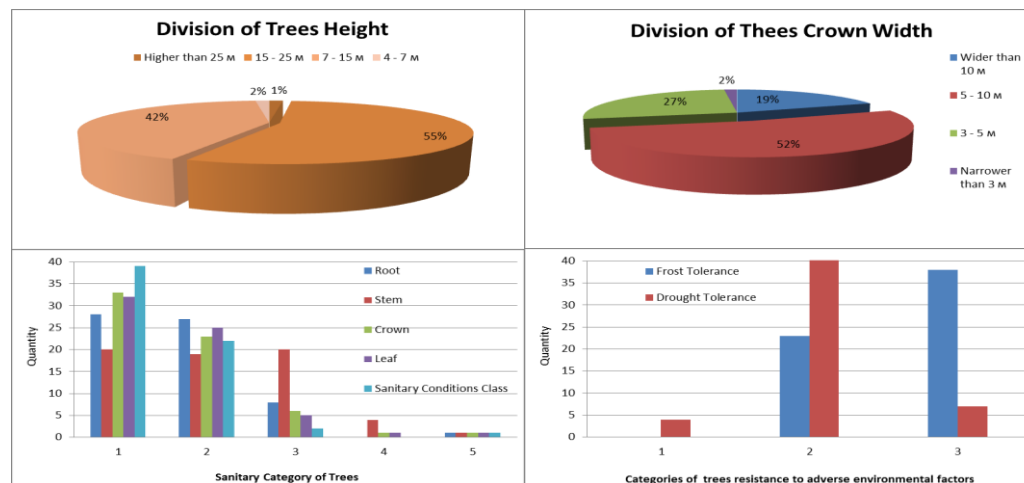
- ✓ Possibility to compare trees health values with other GIS layers of environmental data (like soil or air contamination);
- ✓ Any indicator can be used by GIS tools to classify or visualize plants in the map, such as the type of trees, biomass, or dryness;
- ✓ Such approach of the municipal green plant register creation support in work to carry out operatively the account of plants with simultaneous input and check of the information from many users and researchers.



Implementation of the electronic register of green plantations using ArcGIS 10 software

### Method of Estimation the Sanitary Condition and Life-state Category of Trees

Sanitary condition of the tree	Life State Category	MAIN SIGNS OF DAMAGE
Good (1)	without signs of weakening(1)	Leaves or needles of green, normal size, dense crown, normal shape and development, current year growth is normal for this species, age, tree growth conditions and seasonal period, pest damage and disease are isolated or absent
Satisfactory (2)	weakened(2)	Leaves or needles are often lighter than usual, the crown is slightly openwork, the growth is weakened compared to normal, the crown is less than 25% of dry branches. Possible signs of local damage to the trunk and root legs, crown.
Satisfactory (2)	severely weakened(3)	The leaves are smaller or lighter than usual, the needles are light green or matte gray, the crown of the cut, dry branches from 25 to 50%, the growth is reduced by more than half compared to normal. there are often signs of damage by diseases and pests of the trunk, root paws, branches, needles and leaves, including attempts or local settlements of trunk pests; deciduous trees often have watery shoots on the trunk.
Unsatisfactory (3)	Drying up (4)	The leaves are smaller, lighter or yellower than usual, the needles are grayish yellowish or yellow-green, often prematurely fall off or dry out, the crown is very liquefied, the crown has more than 50% of dry branches, current growth is greatly reduced or absent. On the trunk and branches there are often signs of settlement by stem pests; deciduous trees have abundant water shoots, sometimes withered or withering
Unsatisfactory (3)	Dryness of the current year(5)	The leaves have withered, withered or fallen prematurely, the needles are gray, yellow or brown, the crown has withered, but small twigs and bark are preserved. On the trunk, branches and root legs are often signs of settlement by stem pests or their through holes
Unsatisfactory (3)	Dryness of past years(6)	Leaves and needles fell off or survived only partially, small twigs and part of the branches fell off, the bark was destroyed or fell on most of the trunk. On the trunk and branches there are through holes of insects, under the bark - abundant drilling flour and a mycelium of destructive fungi



The Results of Trees Biometric and Sanitary Evaluation on the Territory of Dnipro University of Technology

**Contacts:** Department of Ecology and Environmental Technologies, DUT,  
D. Yavornytskogo 19, Dnipro  
E-mail: <sup>1</sup> [nikitashkarinnik@gmail.com](mailto:nikitashkarinnik@gmail.com)  
<sup>2</sup> [buchavyy@gmail.com](mailto:buchavyy@gmail.com)

“EcoMining: Development of Integrated PhD Program for Sustainable Mining & Environmental Activities”

Registry Online URL:

