CLOSE-RANGE REMOTE SENSING TOWARDS DETECTION OF BARK BEETLE'S INFESTATION

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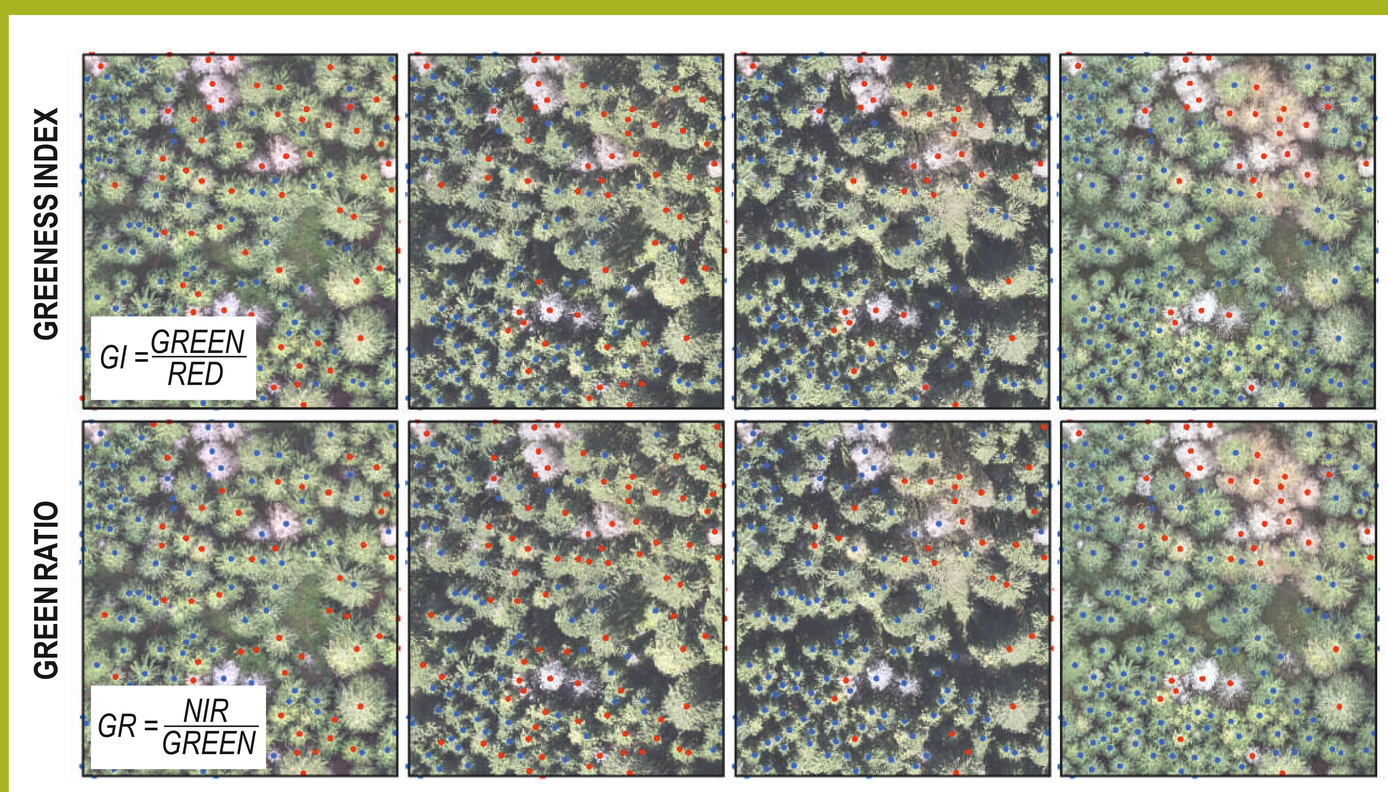
INTRODUCTION

The bark beetle disturbance represents serious environmental and economic issue and presents a major challenge for the forest management. A timely detection of bark beetle infestation is therefore necessary to reduce losses. Besides wood production, a bark beetle outbreak affects the forest ecosystem functioning in many other ways including e.g. water cycle, nutrient cycle, or carbon fixation. On that account, (not just) European temperate coniferous forests may become one of endangered ecosystems on the Earth.

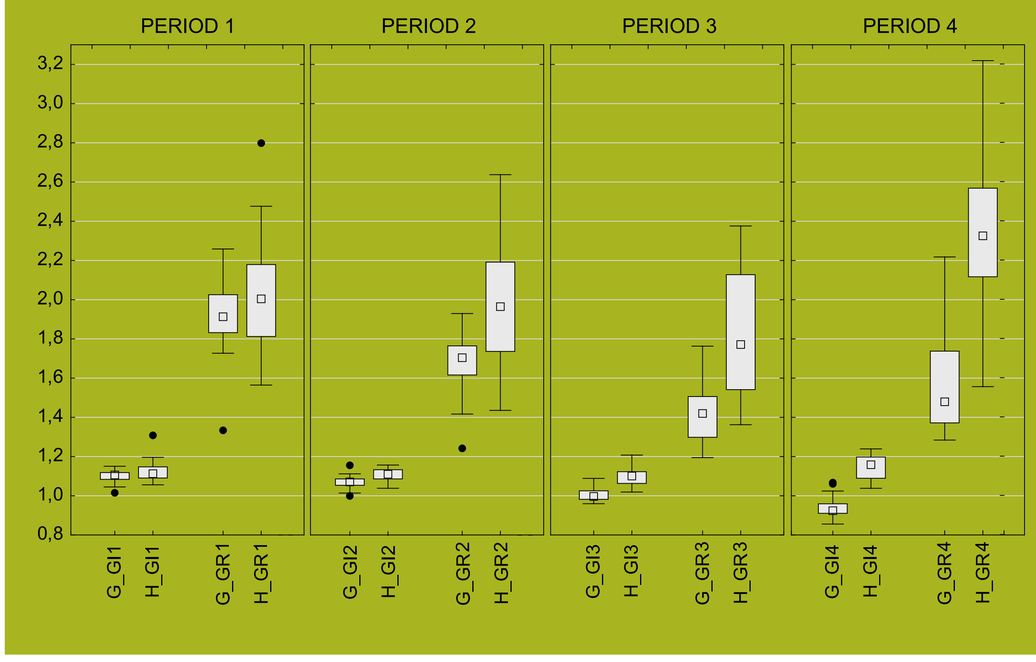
METHODS

Data was acquired during a low altitude aerial survey using a rotary-wing UAV mounted a RGB and customized NIR camera. Maximum Likelihood Classification (MLC) using samples of 40 healthy (H) and 10 infested (G) trees were randomly selected for training as well as for validation. Classification was performed in ArcGIS using the following inputs: Greenness Index (GI), Simple Ratio (SR), Green Ratio Vegetation Index (GR), Normalized Difference Vegetation Index (NDVI) and Green NDVI (GNDVI).



RESULTS AND CONCLUSION

Both statistical analysis and image classification show that for identification of infested trees, the use of a consumer grade RGB camera is sufficient. The classification accuracy increased with later time of image acquisition for all indices (GI 78 – 96 %, GR 60 – 86 %).



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Lear more about the project at **http://kurovec.czu.cz/en** and at the ResearchGate profiles of authors!