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Fine scale plant community assessment in coastal meadows using UAV based multispectral data

编号	030023102
推送时间	20200323
研究领域	森林经理
年份	2020
类型	期刊
语种	英语
标题	Fine scale plant community assessment in coastal meadows using UAV based multispectral data
来源期刊	ECOLOGICAL INDICATORS
期	第231期
发表时间	20191129
关键词	Coastal plant communities ; UAV ; Vegetation indices ; Random forests ; Unsupervised classification ;
摘要	Coastal meadows worldwide are subjected to habitat degradation due to abandonment, intensification and the impacts of global change. In order to protect and restore these habitats and ensure the supply of valuable ecosystem services, it is necessary to know the extent and location of plant communities in coastal meadows. In this study, five plant communities were mapped at very high resolution in three different study sites in West Estonia. A fixed wing UAV was used to obtain multispectral images and derive a set of vegetation indices. Two different image classification techniques were used to cluster the vegetation indices maps and produce plant community distribution maps. The highest classification accuracy was obtained using a Random Forest classifier and 13 vegetation indices. Additionally, the spectral characteristics of the training samples were correlated with aboveground biomass and species diversity. Both biomass and species diversity were positively correlated with the spectral diversity of training samples and are thus likely to have an effect on the classification accuracy. The results of this study highlight the need to utilize a wide array of vegetation indices and assess the spectral characteristics of training samples in order to obtain high classification accuracies and understand the nature of misclassification errors. The resulting maps provide a solid foundation for global change impact assessment and habitat management and restoration in coastal meadows.
服务人员	付贺龙
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