

研究报告

应用NOAA/AVHRR资料监测松毛虫危害研究初探

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摘要

探讨了利用气象卫星定量监测松毛虫危害程度的可能性.以针叶被害率代表松毛虫的危害程度,轻度、中度、重度危害分别定义为针叶被害率<30%、30%~60%和>60%.根据地面光谱观测资料,建立了归一化植被指数与针叶被害率的相关方程,无松毛虫危害时NDVI为0.8823;为了消除大气等因子影响,利用松毛虫危害与未被危害的植被指数相对值表示松毛虫轻、中、重危害程度的遥感监测指标,无危害为1, 0.78~1为轻度危害,0.57~0.78为中度危害,<0.57为重度危害.监测危害面积时,利用线性可加垂直植被指数进行混合象元分解.并分别对严重、中度、轻度3种类型发生年进行了定量监测分析,结果表明,AVHRR资料对中等以上松毛虫危害可进行定量监测分析,监测受灾面积比用同期的陆地卫星TM资料监测的受灾面积小12.1%~14.3%;对于轻度危害区域,采用气象卫星不易分辨,主要是由于不同下垫面和大气影响的差异,以及气象卫星空间分辨率较低.

关键词 [松毛虫](#); [危害面积](#); [NOAA/AVHRR资料](#); [混合象元](#)

分类号

Dendrolimus spp.damage monitoring by using NOAA/AVHRR data

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Abstract

This paper approached the feasibility of quantitatively monitoring *Dendrolimus* spp. damage by using NOAA/AVHRR data. The damaged rate of needle leaf was used to represent *Dendrolimus* spp. harming degree, and <30%, 30%~60% and >60% of damaged rate was defined as low, medium and severe harming degree, respectively. The correlation equation of damaged rate and normalized vegetation index (NDVI) was established, based on the ground spectrum observation. The NDVI was 0.8823 when no damage occurred. A relative NDVI value of damaged to undamaged area was used to express the remote sensing index of low, medium and severe harming degree. The index was 1 for undamaged forest, and 0.78~1, 0.57~0.78 and <0.57 for low, medium and severe harming degrees, respectively. The mixed pixels were separated by linear addable vertical vegetation index in the monitoring, and the quantitative monitoring and analysis was accomplished for years when the three damage

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degrees happened. It was shown that AVHRR data could be more available in quantitatively monitoring and analyzing serious damage, while low degree damage was difficult to distinguish by AVHRR data, due to the differences of surface properties and atmospheric influences, as well as the lower space resolution of NOAA/AVHRR. The damaged area estimated by AVHRR was 12.1% ~14.3% lower than that by TM.

Key words [Dendrolimus spp.](#) [Damaged area](#) [NOAA/AVHRR data](#)
[Mixed pixel](#)

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