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Effect of experimental forest treatments on gray treefrog (Hyla versicolor) habitat use

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Amphibian use of modified habitats has recently received more attention due to anthropogenic land-use patterns and the continued decline of species. We examined habitat use and abundance of gray treefrogs (Hyla versicolor) in response to different forestry practices. Our study site consisted of three natural breeding ponds each surrounded by four experimental plots (~2.11 ha each): partial harvest, clearcut with high coarse woody debris (CWD), clearcut with low CWD, and uncut control. We distributed 288 PVC pipe traps equally among treatments and monitored traps from mid-June continuing until the first hard frost. Treefrogs used all forest treatments but sex and age composition differed significantly between forested and clearcut treatments. Fewer adult females were captured within clearcuts than in forested plots whereas adult males were captured at similar frequencies in both forested and clearcut plots. Metamorphs were first captured in mid-July with increasing frequency in the following weeks and were captured more frequently in clearcuts than in forested plots. Greater frequencies of captures were recorded for each of the sex and age classes in clearcuts with high CWD compared to clearcuts with low CWD. Equal or greater frequencies of captures were recorded for adult and metamorph treefrogs in partial harvest treatments compared to control plots. Our results indicate that timber harvest may alter habitat use associated with reproduction. Males benefit by using clearcut habitat and having access to breeding pools preferred by females for oviposition. Females benefit by having access to forest habitat shown to be essential for feeding and energy intake. Gray treefrogs thrived in small clearcuts because the small plot size provided accessibility to uncut forests. The effect of extensive clearcutting on amphibians however would likely be detrimental and effects would depend upon a species' life history needs.