

FACTORS AFFECTING HOST AND PHEROMONE ATTRACTION AND A
COMPARISON OF GENETIC DIVERSITY IN CONSECUTIVE GENERATIONS
OF *IPS PINI* (SAY) (COLEOPTERA: SCOLYTIDAE) IN IDAHO

A thesis

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By

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ABSTRACT

Two consecutive generations of the pine engraver, *Ips pini* (say) from Idaho were studied to determine factors affecting their attraction to ponderosa pine host odors and natural male pheromone. Most beetles attracted to host pine volatiles in an arena olfactometer were desiccated males with air in their ventriculus, both of these conditions resulting from post-emergence activity, particularly flying. Most beetles attracted to male pheromone in the presence of host volatiles were desiccated, sexually mature females with air in their ventriculus and visibly fewer fat bodies than beetles that were not attracted. Factors not significantly related to host or pheromone were beetle size, abundance of phoretic mites and parasitic nematodes, and ambient barometric pressure. First-generation beetles reared in slash were more genetically heterozygous than second generation beetles reared in standing trees. Second generation beetles were more heterozygous after overwintering, presumably a result of selective mortality of poorly adapted, homozygous individuals. This study indicates that stressful conditions favor biologically fit, heterozygous individuals, and that a range of response to host and pheromone, controlled by physiological factors, enables beetles to exploit nearby and distant susceptible hosts, enhancing both survival and outcrossing among other populations.

STUDY AREA

Moscow Mountain, Viola, Latah County, and a large walk in screen-enclosed outdoor cage.

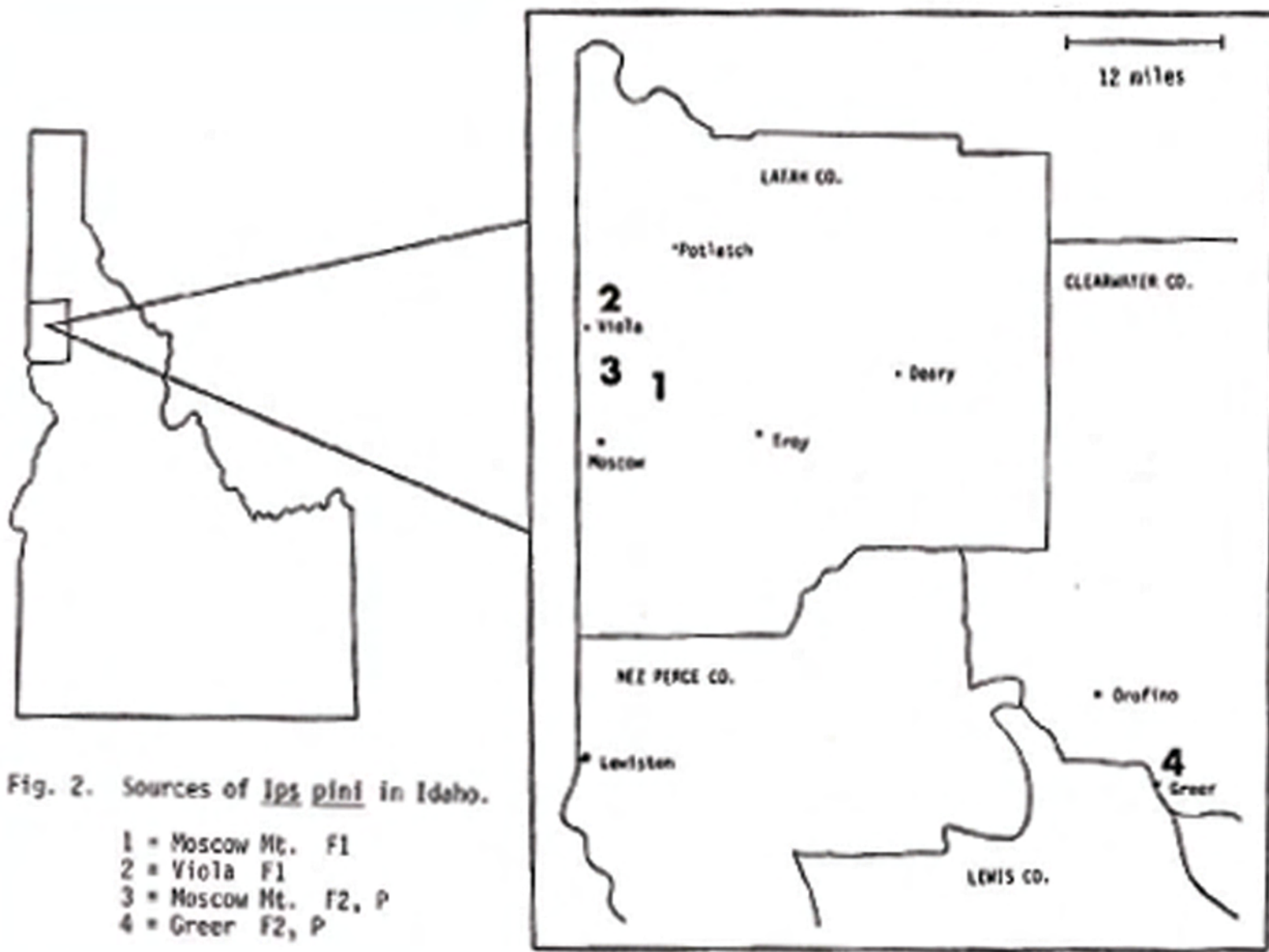


Fig. 2. Sources of *Ips pini* in Idaho.

- 1 = Moscow Mt. F1
- 2 = Viola F1
- 3 = Moscow Mt. F2, P
- 4 = Greer F2, P



Location of Complete Research:

Author & Title: Gast, Sandra J.

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