



# Pine Engraver

*Ips pini*



## HOSTS: ALL PINE SPECIES

Ponderosa and lodgepole are the most common hosts in Montana

## DAMAGE: VARIABLE

Topkill in larger trees, mortality in saplings/pole-sized trees during outbreaks



Frass



Damage after thinning

## Ecology

Pine engraver is found throughout North America. The beetle is considered non-aggressive due to its propensity to first attack downed trees or green slash instead of live trees. Pine engravers consume and reproduce in the phloem (vascular tissue that transports water and nutrients), so downed material that is still moist is prime breeding habitat. Smaller-diameter material (2-10 inches diameter) is preferred; beetles cannot complete their life cycle in anything smaller than 2 inches. However, when the beetles exit slash, they will infest nearby live trees, resulting in top-kill or tree mortality when populations are high. Trees that are stressed due to drought, overstocking, or other damages (wind breakage, fire) are especially prone to *Ips pini* infestation. Outbreaks usually only last one to two years, but can last longer depending on available breeding material and weather conditions. Other species of bark beetles and woodborers may be present in *Ips*-infested trees.

## Identification

- Accumulations of fine red-brown boring dust (frass) on top or underneath infested slash (or logs).
- Distinct, multi-branched galleries with no boring dust
  - Often in a Y, X, H, or star-shape
- Presence of brown adult beetles approximately the size of a grain of cooked rice, or presence of small white larvae (less than ¼ inch)
  - *Ips* beetles have spines on their rear unlike *Dendroctonus* beetles, which have smooth, rounded behinds

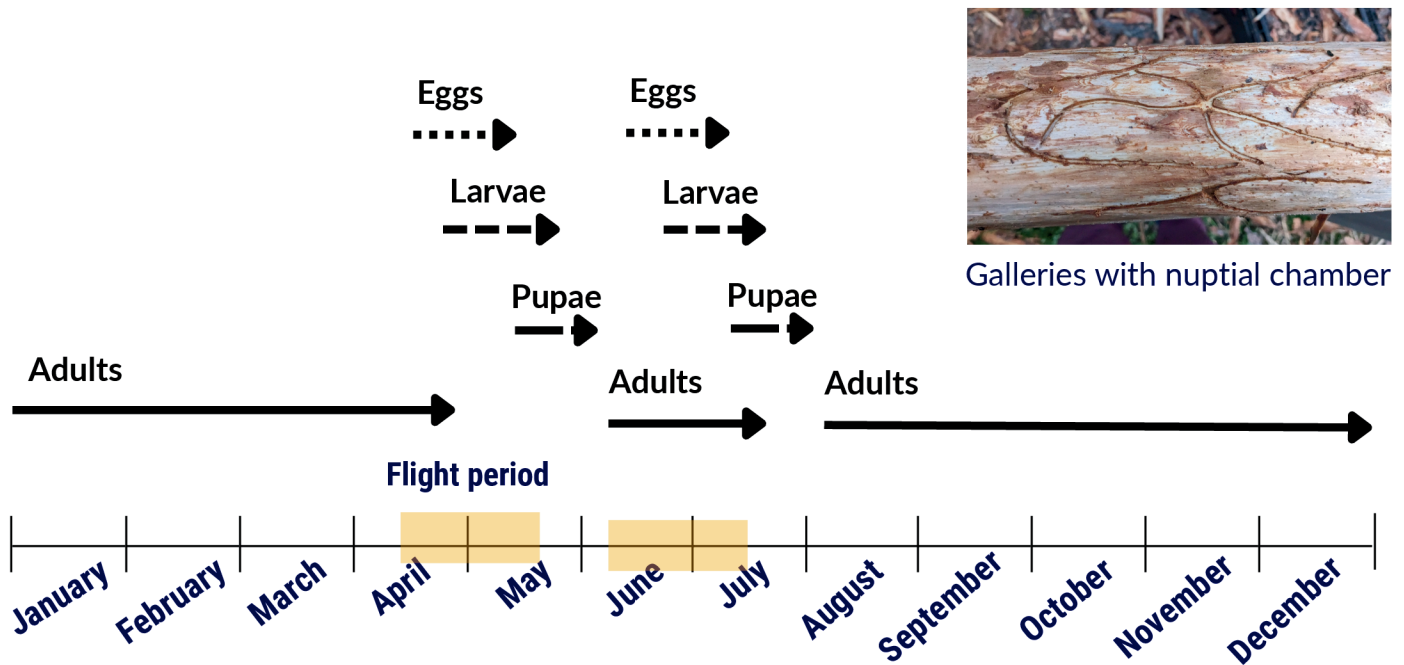


Spines are characteristic to *Ips*

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## Life Cycle

Adult beetles emerge in early spring, once temperatures exceed 63 degrees Fahrenheit. Males initiate attacks, opting for downed trees and slash. Males attract females using pheromones. The species is polygamous; each male mates with multiple females, who then create egg galleries radiating outward from a central nuptial chamber. This first generation takes about 40-55 days to develop and emerge in June. This flight period poses a greater risk to standing live trees. Reproduction occurs, with the second generation completing development in a shorter period (30-40 days) due to the warmer temperatures occurring later in the season. Occasionally a partial third generation may develop due to warmer conditions and overwinter as larvae, but two generations are the most common in Montana.



Galleries with nuptial chamber

## Management

- Thin stands to promote tree vigor; stands with basal area 80-100 square feet per acre are less susceptible to attack
- Create slash only during August-December months, if possible. Slash generated in early winter through late spring should be treated by chipping or lop and scatter, or removed before it can become a source of breeding material for beetles emerging in spring.
- Inspect slash piles, log decks, and windthrown trees for infestation
  - Chip, burn, or remove infested material.
- Large (20 feet long, 10 feet deep) slash piles will retain moisture and attract beetles from the initial spring flight period. Their offspring will go deeper into the pile instead of going out to attack nearby live trees.
- Traps and interspersed slash piles might be useful in managing beetles on site. Contact your local service forester to determine whether these options could be effective in your specific situation.