

Sanitation Tactics & Treatment Options for Douglas-fir Beetle

- sanitation harvesting
- trap trees
- single tree treatment
- MCH & funnel traps



Sanitation Harvesting

- Regular harvesting
- Helicopter Removal
 - Isolated or steep ground
 - Helicopter trap tree sites
 - Heli-loggers build heli-pads
 - Heli-loggers lay down traps
 - Fall traps in late winter
 - Remove in the fall



Single
Tree
Treatment

Fall and
Burn



Felled Trap Trees

Felled trees attract IBD
Fall in late winter
Beetles attack in spring/summer
Larger trees, >30 cms DBH



Reasons For Trap Trees

1. Concentrate & reduce beetle population
2. Limit beetle population movement & expansion
3. Reduce timber killed, quality reduction & NRLs (non-recoverable losses)
4. Protect wildlife habitat
5. Protect old growth & biodiversity values

Good Trap Tree Site

- Fall in shade
- One trap tree for every four current attack
- Pre-fell skid trails, roads or landings
- Shading maximizes trap tree effectiveness
- Minimize damage to residual trees



Poor Trap Tree Site

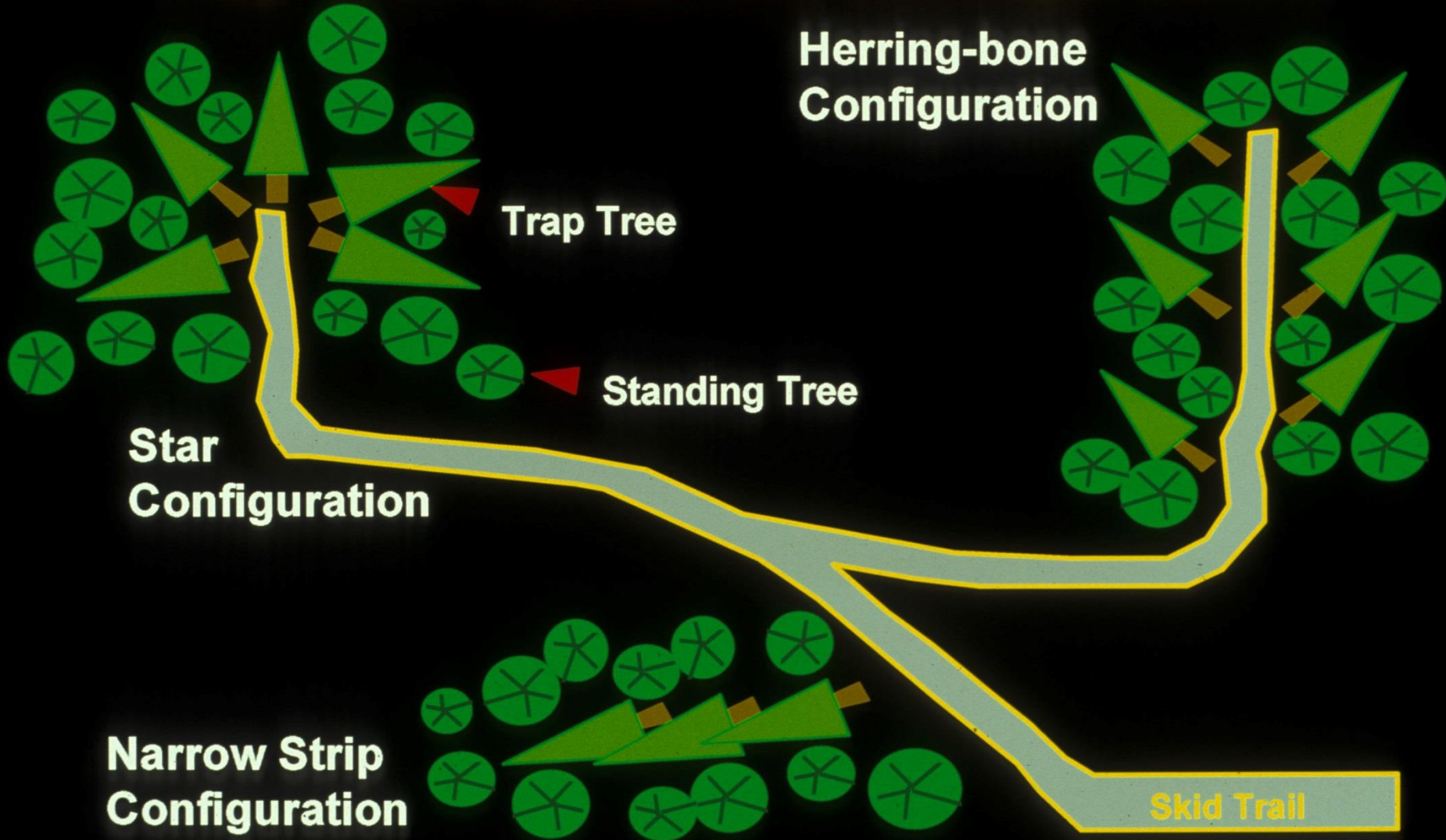


- exposed to direct sun
- too hot and dry
- site may become NSR

Trap Trees

- In the sun, no attack on top of log
- Less effective trap tree
- "Cover your butt"

Trap Tree Placement Configurations



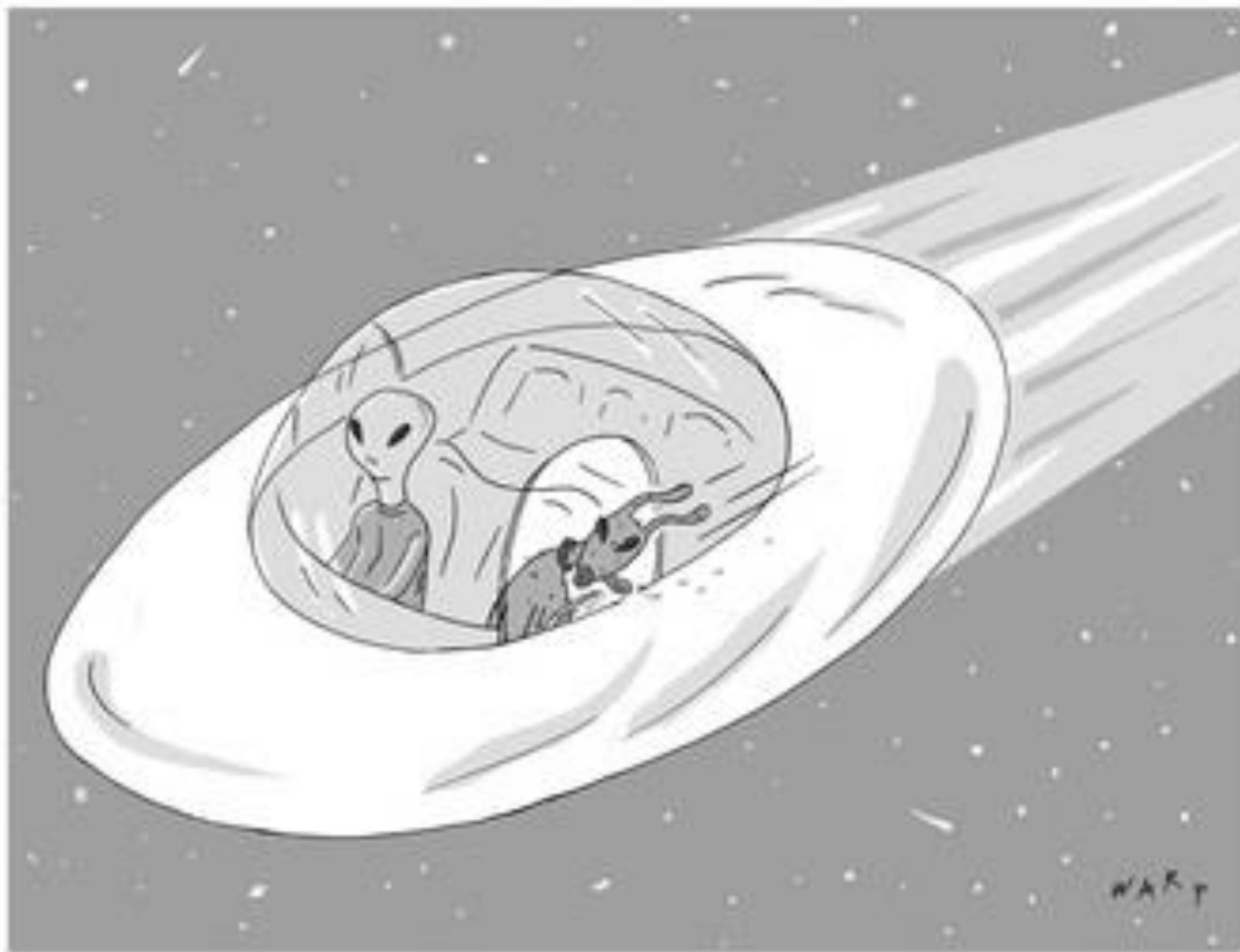
Trap Trees



- Avoid contact with standing trees
- Touching standing trees results in overflow attack

Trap Trees

- Coordinate IBD management with harvesting operations
- Pre-fell skid trails, roads and landings
- Leave green decks over beetle flight to act as trap trees
- Remove traps before beetle flight



MCH (Methylcyclohexenone)



- MCH is an anti-aggregation Pheromone
- MCH tells beetles that trees are full - go away
- repels and disperses Douglas-fir beetle
- Protects standing healthy Douglas-fir adjacent to infestations
- Prevent beetle attack of inaccessible un-attacked windthrow (avoid beetle outbreak)
- direct beetles towards trap trees from inaccessible infestation (push-pull)

Benefits of MCH Use

- avoid numerous re-entries
- Stop trap tree cycle
- prevent population expansion in sites with:
 - Windthrow
 - wildlife values (MDWR)
 - riparian zones
 - steep slopes & inaccessible sites
 - Constrained sites (Parks, OGMA's, etc)



MCH

- Works best with small infestations
- Treat sites after sanitation harvesting to:
 - disperse residual beetles in stumps, large infested debris, tops etc
 - protect damaged or stressed residual trees.



MCH



Avoid use in large sites where it may be ineffective or risky

The larger the site, the more difficult to manipulate beetle populations

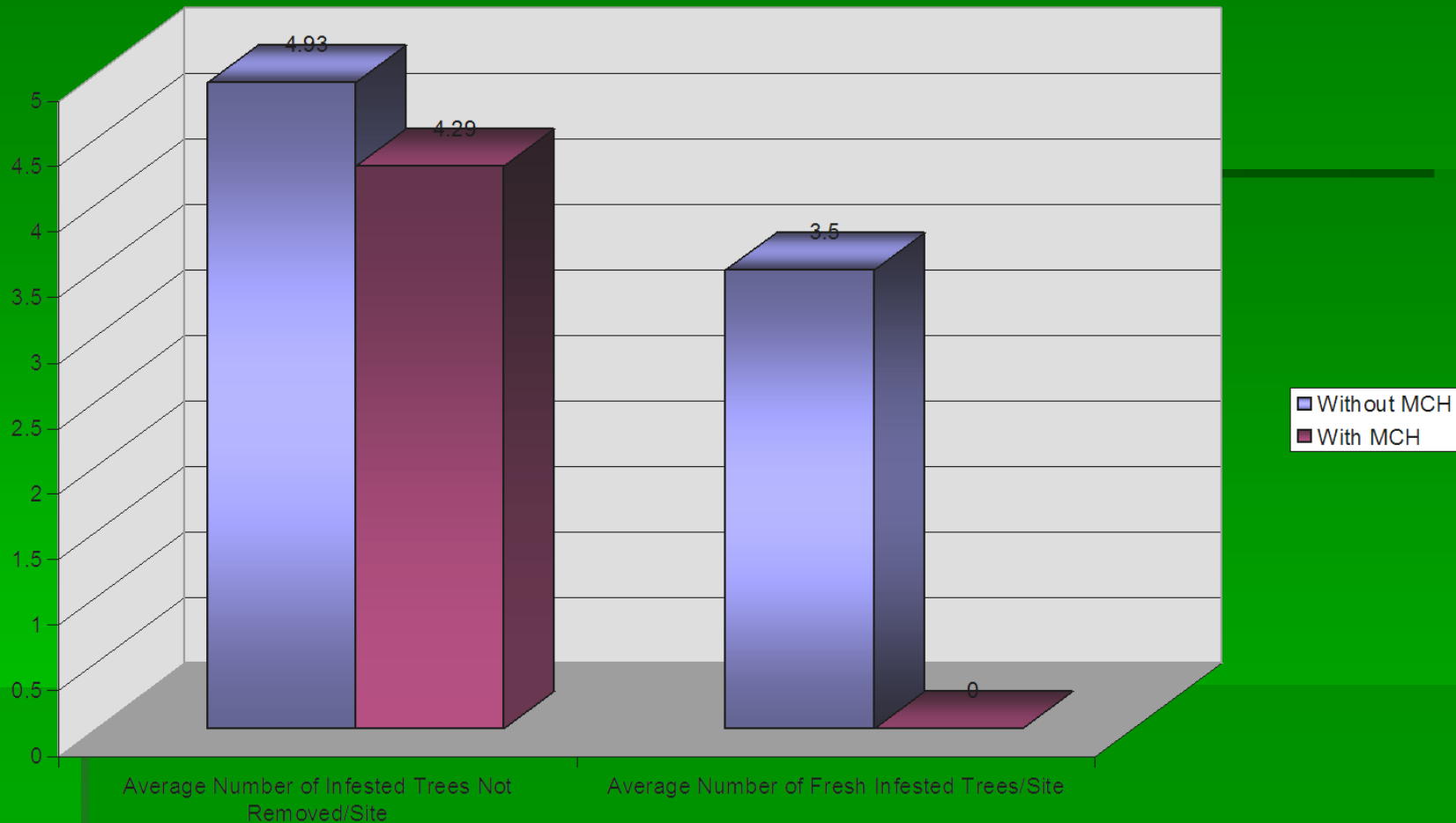
Track all MCH use and avoid placement adjacent to trap trees

MCH dispersal experiment

small infestations

- Surveyed infestations of 4 to 5 CA trees
- Half the sites were treated with MCH, half the sites left untreated
- untreated infestations resulted in 72% increase in CA trees the following year
- infestations treated with MCH had zero increase in CA the following year
- CA = current attack

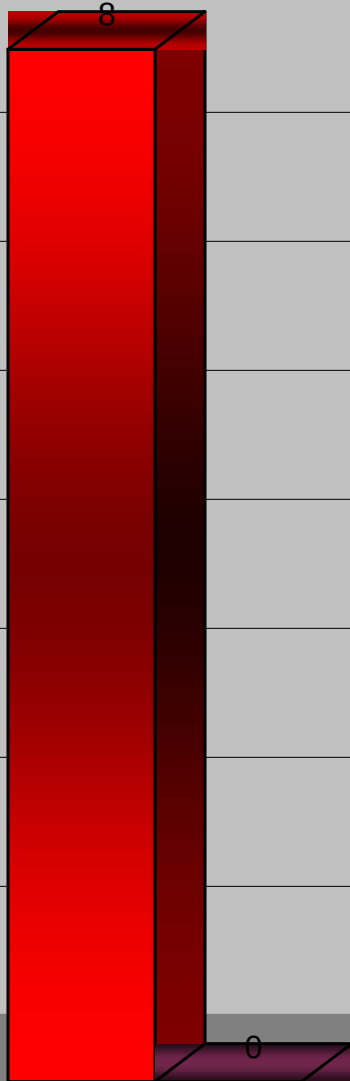
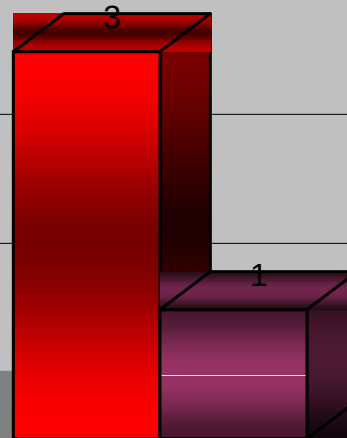
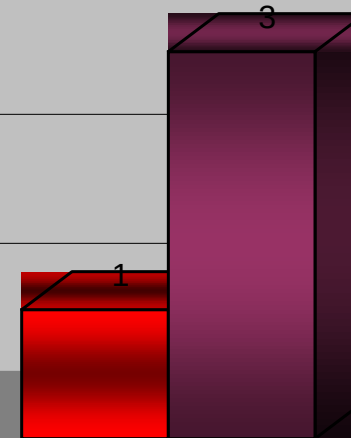
Comparison of sites with no sanitation harvesting for Douglas-fir beetle, treated with or without MCH, for the average number of infested trees left on site and new infested trees on site.



- MCH Dispersal Experiment
- Blue columns - no MCH
- Purple Columns - MCH

Sanitation Harvesting Sites Treated with and without MCH to Prevent Douglas-fir Beetle Re-infestation

A. Comparison of Douglas-fir Beetle Infestations on sites which were sanitation harvested to remove infested beetle and then treated with or without MCH



Without MCH
With MCH

Current Attack

Partial Attack

Windthrow

WEEKLY WORLD

NEWS

July 21, 1983

80¢ IN CANADA

FARMER SHOOTS 6-FT. BUTTERFLY!

**18-pound insect lands
in Arkansas meadow!**



**\$10,000
REWARD FOR
A BIGGER
BUG!**

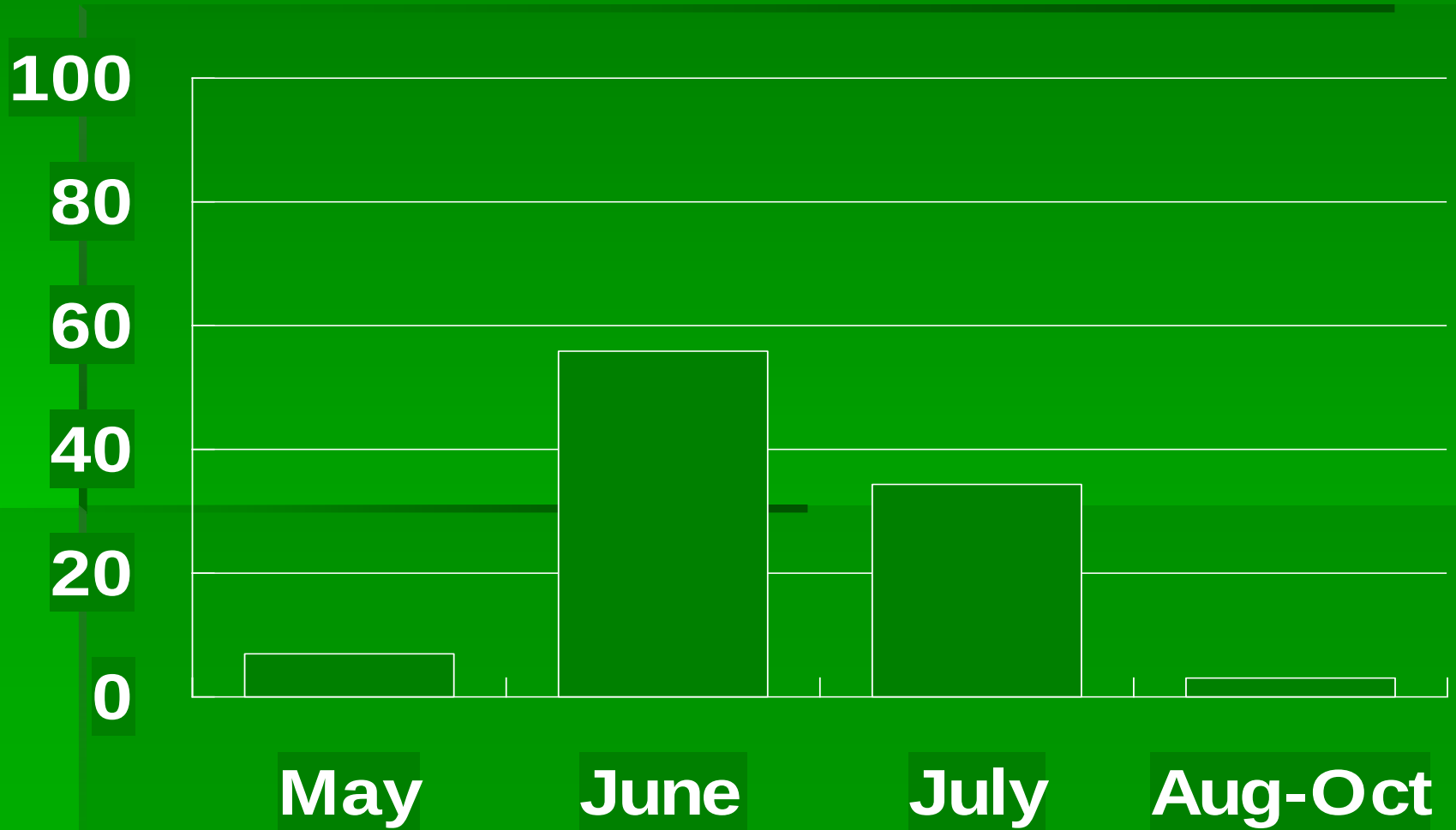
Funnel Traps for monitoring and control

- Monitor time & magnitude of beetle flights
- Population control > capture beetles leaving infestations

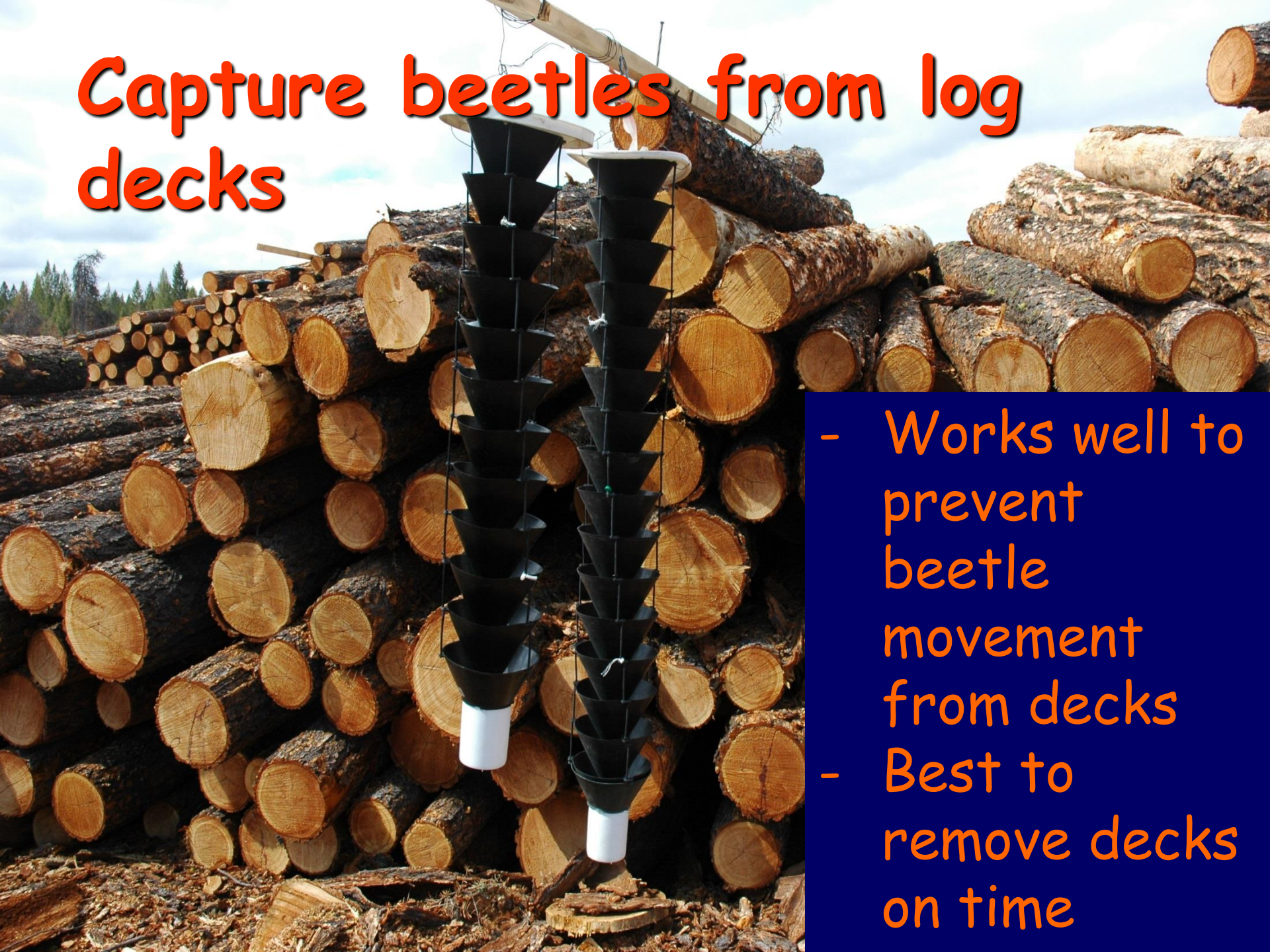


Percentage of beetles collected per month Cariboo-Chilcotin in Lindgren Funnel Traps

1990



Capture beetles from log decks



- Works well to prevent beetle movement from decks
- Best to remove decks on time

Risks & Problems with Funnel Traps

- Very high risk of spill-over into standing trees if placed too near adjacent timber
- High maintenance (bears, wind, cows, hunters)
- High labour to monitor and maintain
- Traps must be checked and emptied regularly
- Vapona





CP Burroughs

"They rubbed my tummy, chief—I told them everything."