

Douglas-fir Beetle, *Dendroctonus pseudotsugae*

- Interior Douglas-fir important for:
- High value mid-term timber supply (post-mountain pine beetle)
- Watershed & Viewsheds
- Wildlife Habitat
- Old Growth Management Areas (OGMAs)

Host

Douglas-fir



- prefers freshly felled trees
- wind-thrown trees
- will kill healthy standing trees



Bark Beetle Codes



Bark Beetle Codes

Names

Insect
Beetle
Species

I B ?

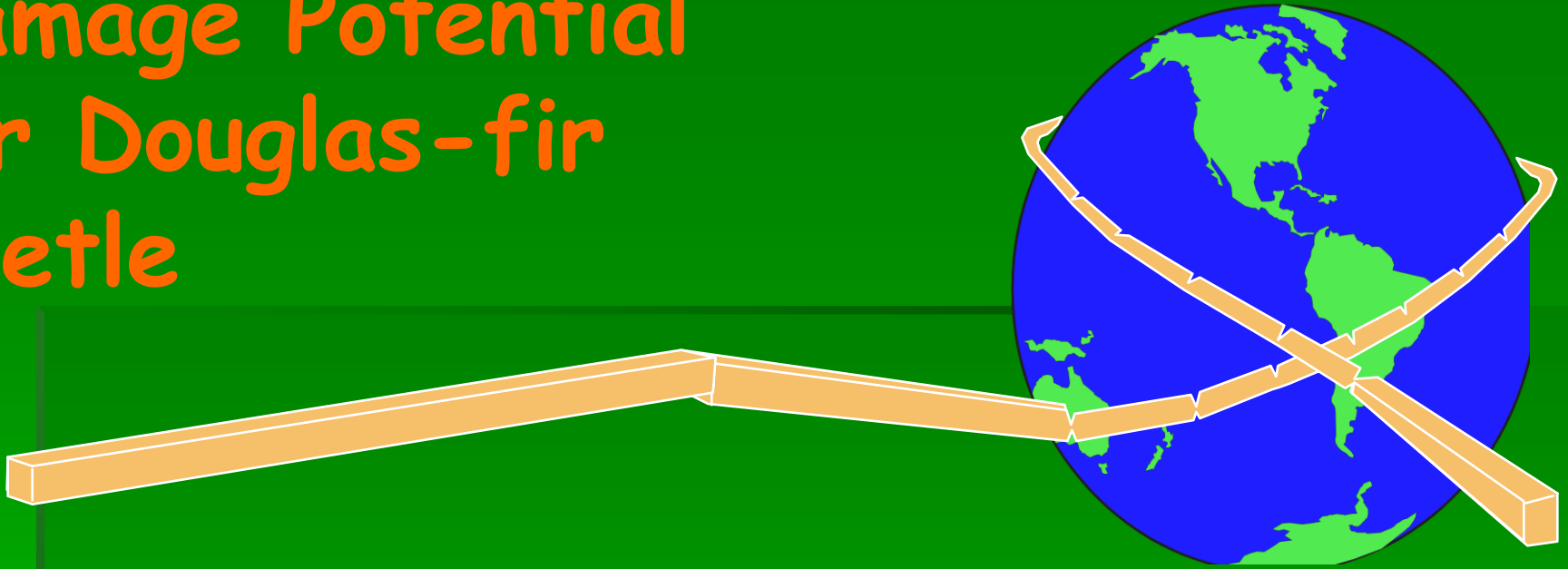


I B M = mountain pine beetle

I B D = Douglas-fir beetle

I B S = spruce beetle

Damage Potential for Douglas-fir Beetle



Epidemic example:

Enough 2 x 4" s to
encircle the Earth
almost 3 times
(561,000 cubic
metres in 1980).

Wildlife Values

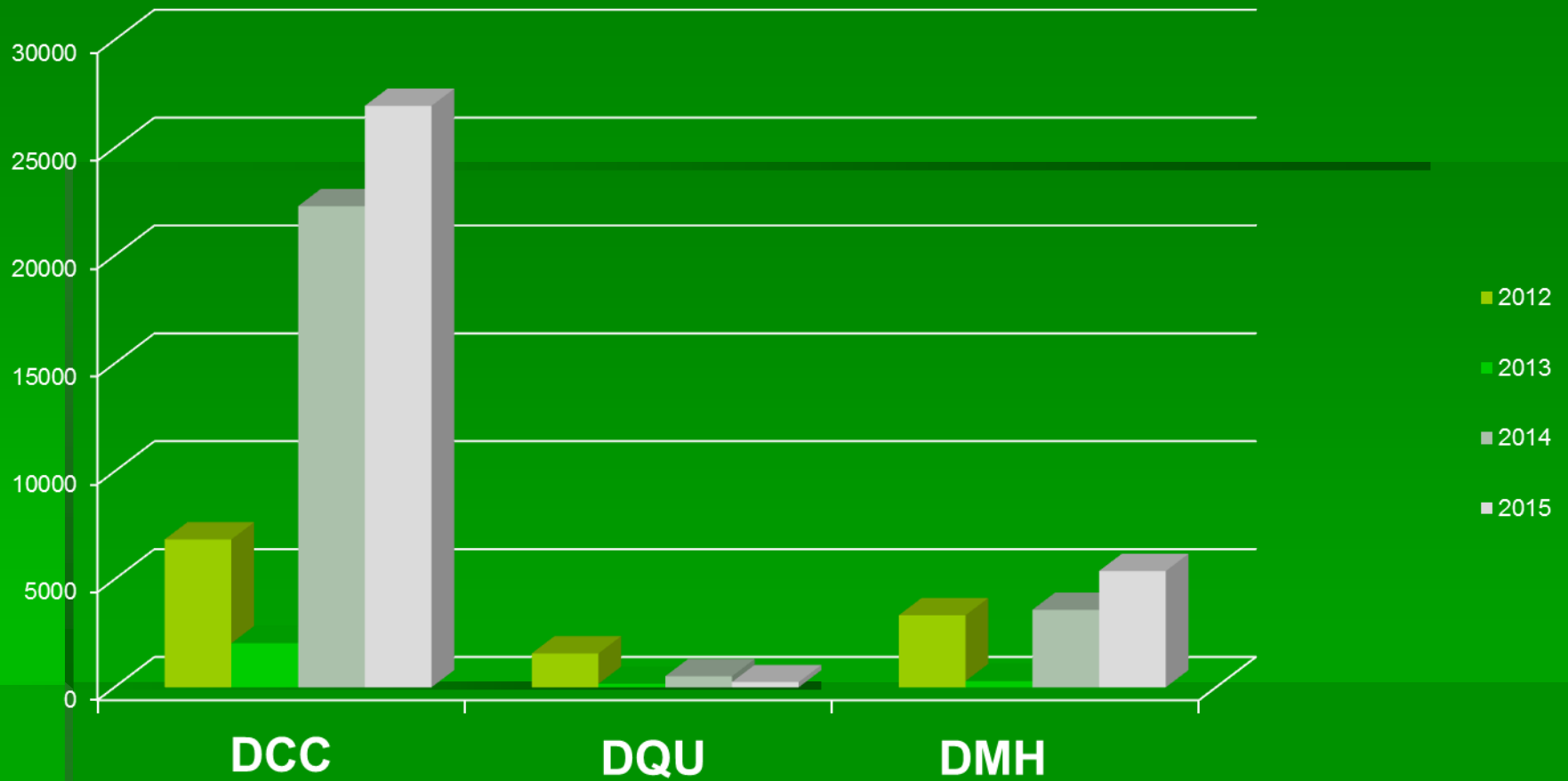
- Mule Deer Winter Range & OGMAs

Mature Douglas-fir provide:

- 1 - Thermal cover and shelter
- 2 - Reduced snow depth
- 3 - Forage : deer feed on fallen foliage

Douglas-fir beetle damage (hectares)

2012 to 2015



Increasing in Central Cariboo (DCC) & 100 Mile House (DMH)

Douglas-fir beetle damage (spots, trees, hectares)

2014 to 2015

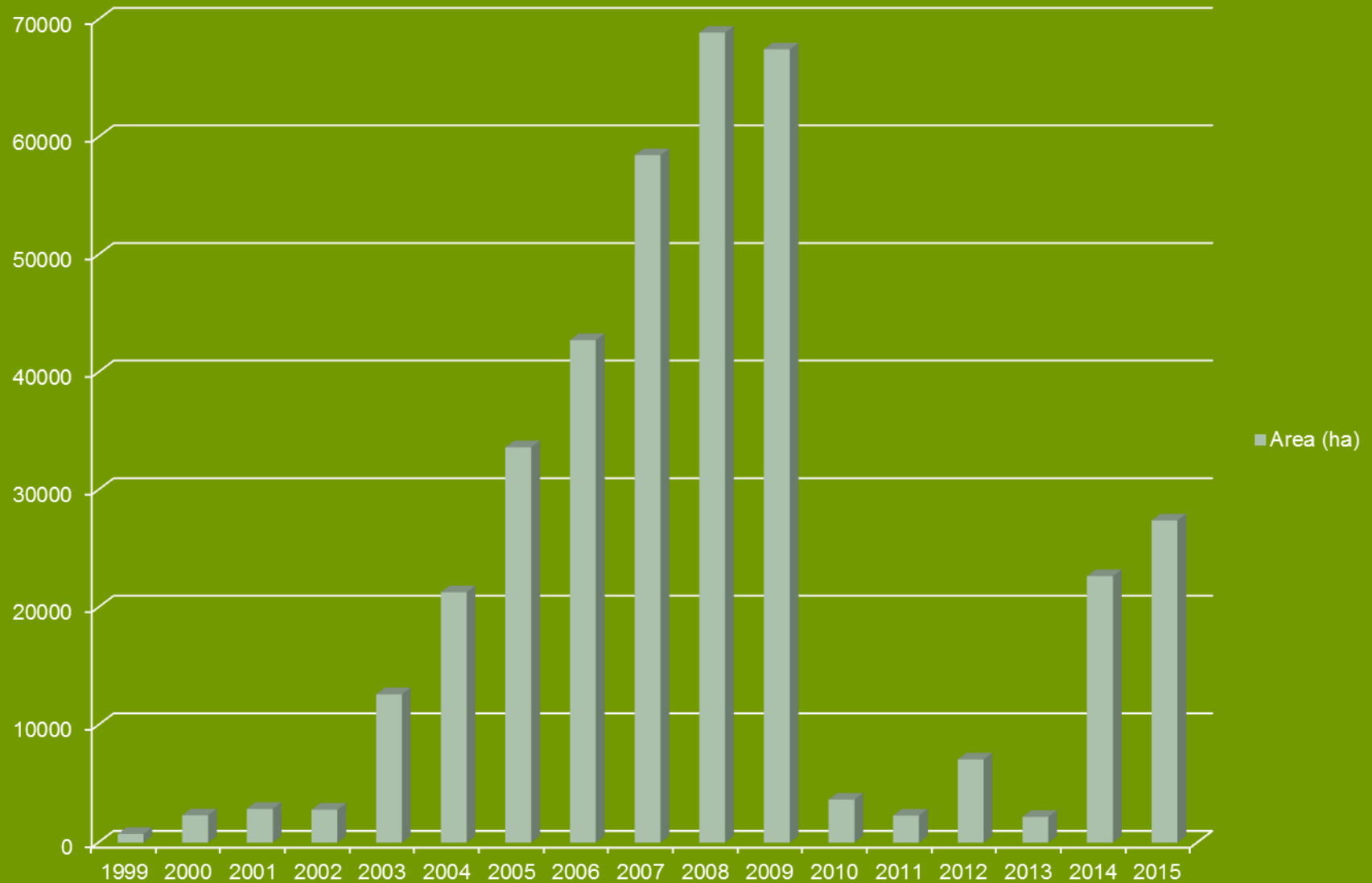
Table 4. Douglas-fir beetle infestations in the Southern Interior, 2014 - 2015.

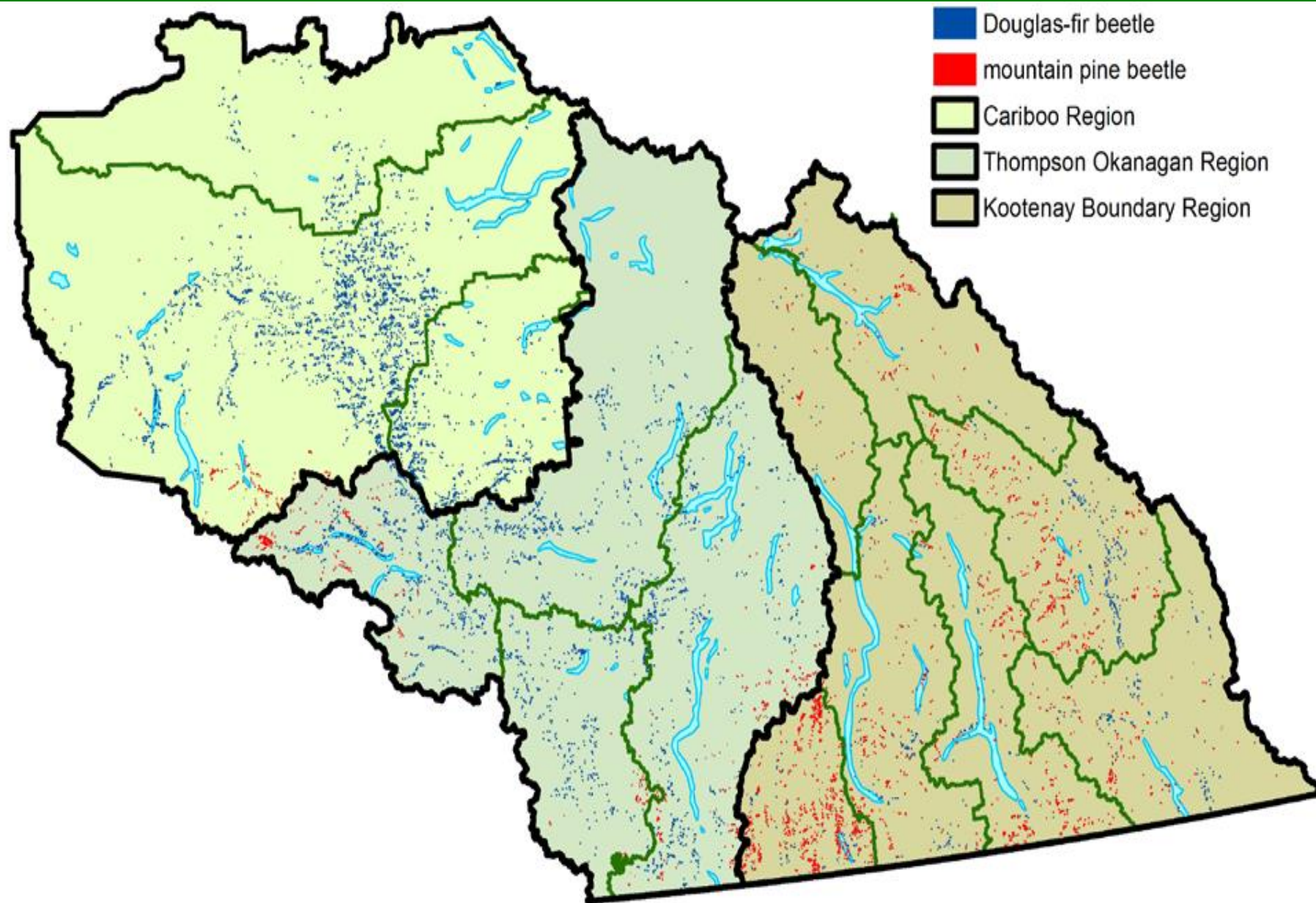
Timber Supply Area	Number of spot infestations		Number of trees killed in spot infestations		Area affected by polygon infestations (ha)	
	2014	2015	2014	2015	2014	2015
100 Mile House	394	634	1,948	2,836	3,587	5,388
Arrow	77	109	625	1,638	974	233
Boundary	28	54	320	634	50	260
Cranbrook	41	131	280	1,290	45	145
Golden	14	20	140	330	32	97
Invermere	78	189	955	2,662	702	558
Kamloops	413	669	3,115	4,961	273	843
Kootenay Lake	48	73	490	778	678	71
Lillooet	626	616	5,705	5,300	1,786	2,092
Merritt	190	422	1,241	2,815	226	394
Okanagan	397	576	3,165	4,510	797	1,305
Quesnel	158	227	1,371	1,435	508	245
Revelstoke	20	30	245	315	96	113
Williams Lake	1,384	1,790	11,982	12,442	22,298	26,948
Total	3,868	5,540	31,582	41,946	32,052	38,692

Increasing in 100 Mile House, Quesnel & Central Cariboo

Douglas-fir beetle damage (hectares) from 1999 to 2015

Area affected by Douglas-fir Beetle



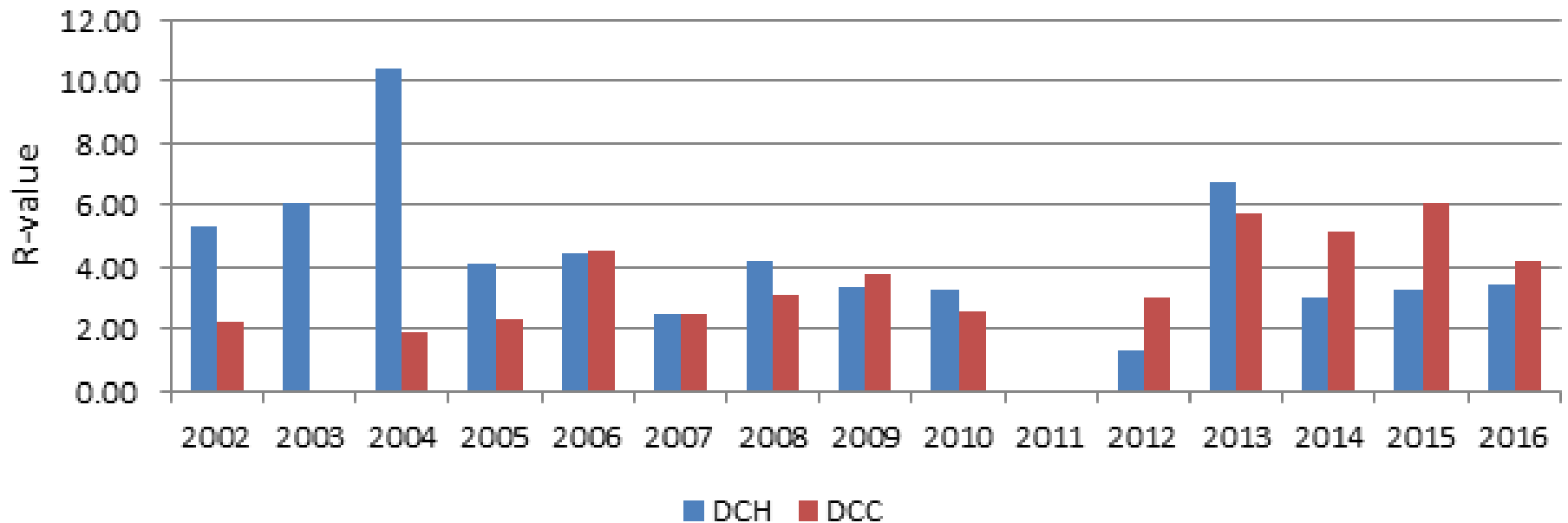


Douglas-fir Beetle 2015

R-Values:

estimate of IBD Winter Survival

Overwinter Survival R-value for IBD
Chilcotin and Central Cariboo



- 1 High Survival
- 2 Increasing populations

DOUGLAS-FIR BEETLE



LIFE CYCLE

Beetle Life Cycle

1 year life
cycle

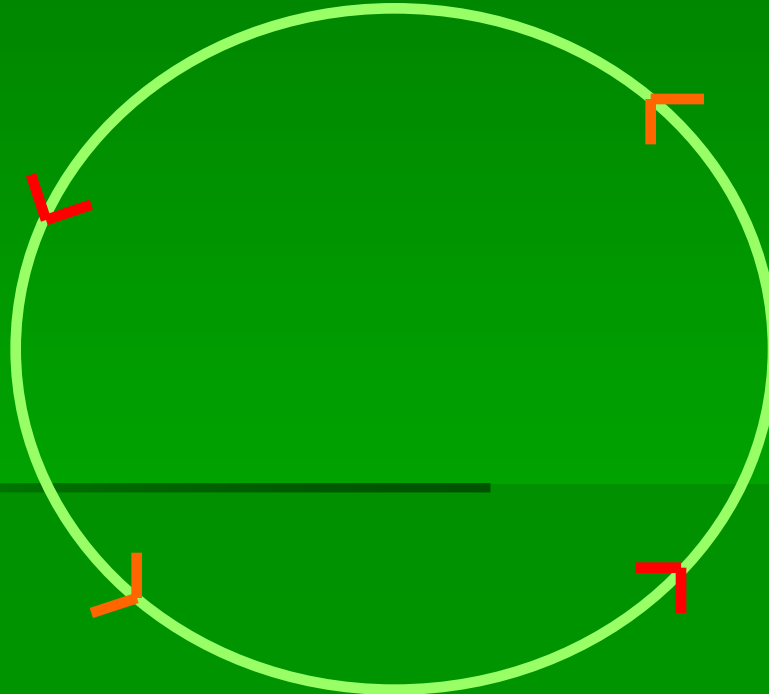
Larvae
hatch & feed
June-Aug.

Adults
attack & lay eggs
May-July

Overwinter
as adult
rarely as
larvae

Adult
Aug.-Sept.

Pupae
July-Aug.



Douglas-fir Beetle Flight Period:

1 year life
cycle

1st Flight

- overwintering adult beetles
- > 90% of beetle attack

Main Flight Period

Complete Flight Period

March April May June July Aug. Sept.

Douglas-fir Beetle Flight Period:

1 year life
cycle

2nd flight

- Adult females may emerge and attack new tree
- Overwintering larvae may complete development & attack in late summer

Secondary
Flight

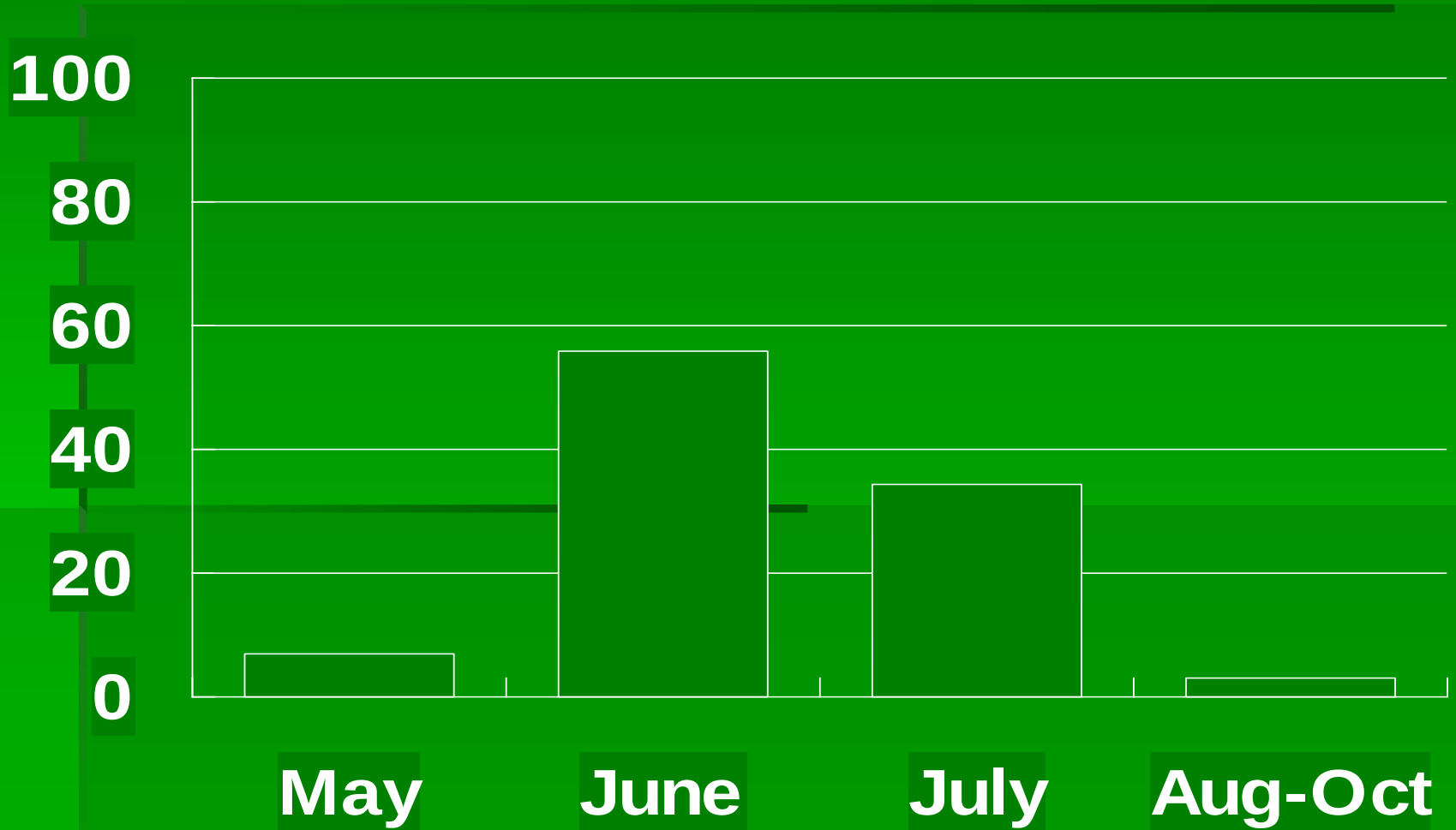
Complete Flight Period

March April May June July Aug. Sept.

Current beetle brood
have to overwinter in
the tree before
emergence

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

1990

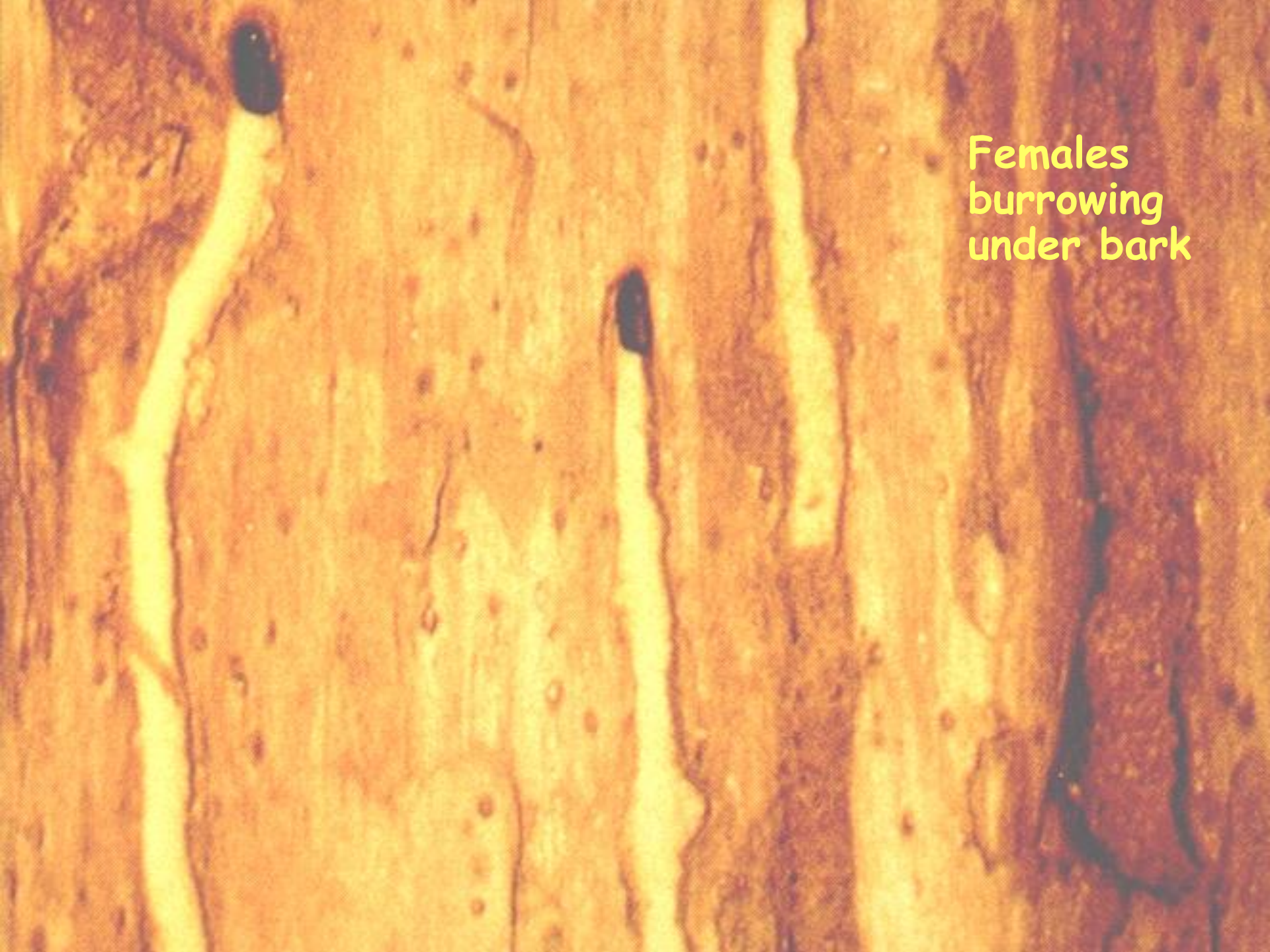


Mass Attack Standing Tree

- Aggregation pheromone induces mass attack
 - Beetle produces pheromone
 - Mass attack overwhelms tree defences
- 

Mass Attack Trap Tree

- No resistance in trap tree
- High brood production



Females
burrowing
under bark



Group of eggs along a beetle gallery

Typical fan-shaped larval gallery group



A close-up photograph of two pale, segmented beetle larvae (larvae) crawling through a dark, textured, and porous material, likely wood or bark. The larvae are positioned horizontally, one on the left and one on the right, with their heads pointing towards the left. The surrounding material is a mix of dark brown and light tan colors, showing signs of decay and being eaten through.

Beetle Larvae



Adult Beetle:
5-8 mm long

Blue Stain Fungus (*Ophiostoma* spp.)

- Helps beetle kill the tree
- Stops translocation
- The tree dies of thirst

