Cumulative Effects Situations

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Additive:

Impact (A + B) = Impact A + Impact B

- Elk Habitat in an East Slopes Valley

  – Pristine 1000 ha
  – A. Railroad, 1890 (50 ha) 950 ha
  – B. Townsite, 1900 (100 ha) 850 ha
  – C. Open-pit Mine, 1930 (50 ha) 800 ha
  – D. Ski Hill, 1965 (150 ha) 650 ha
  – etc. etc.

Compensatory:

Impact (A + B) = Impact A - Impact B

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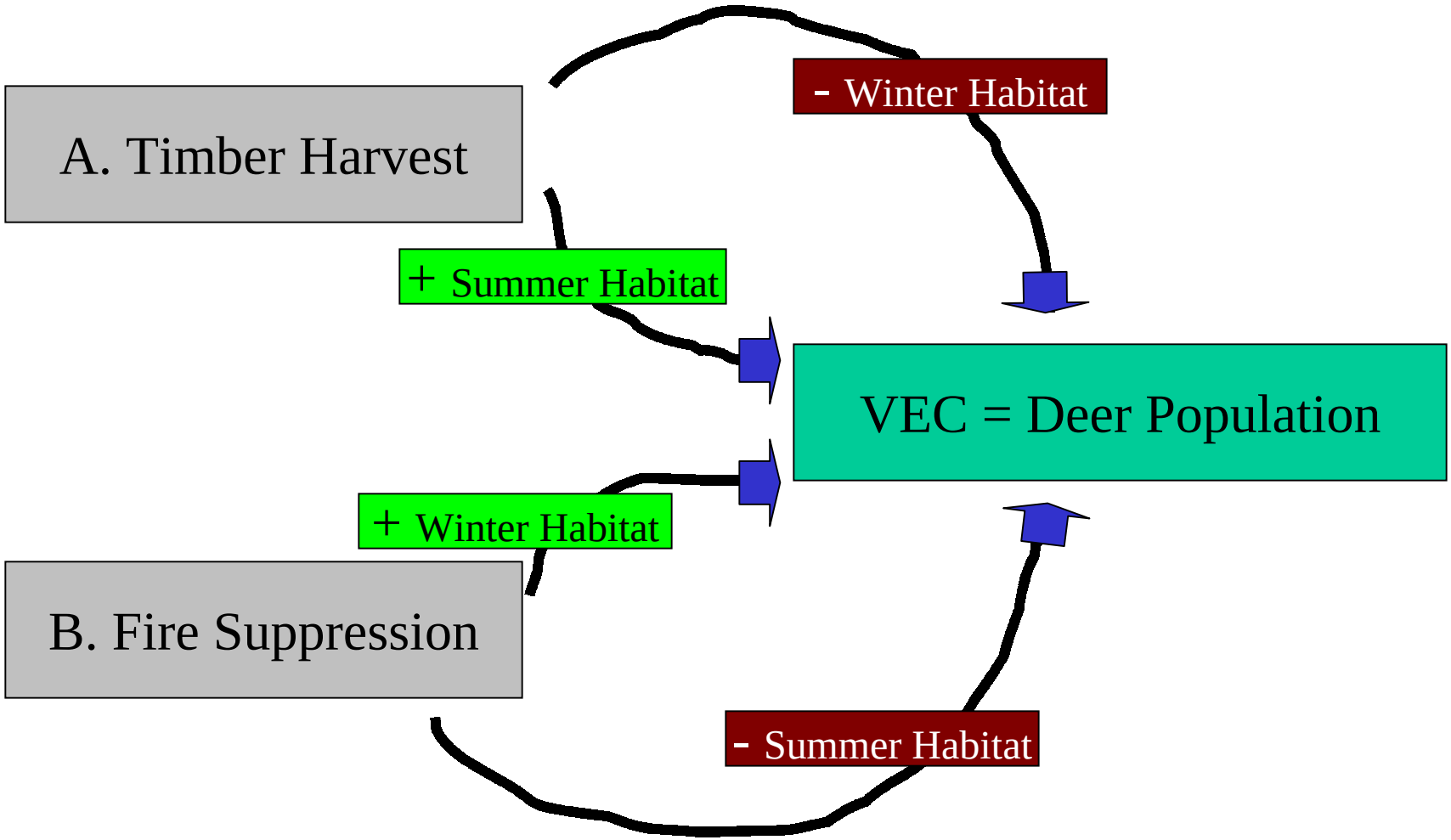

Synergistic:

Impact (A + B) > Impact A + Impact B

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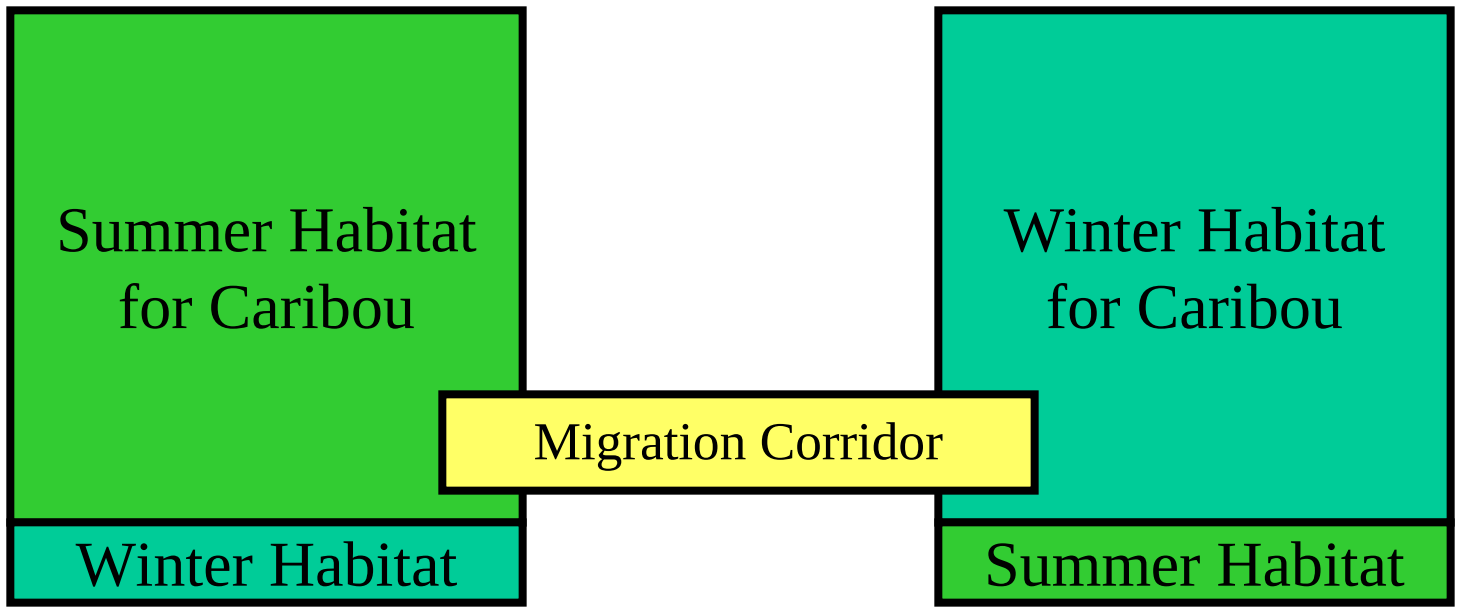

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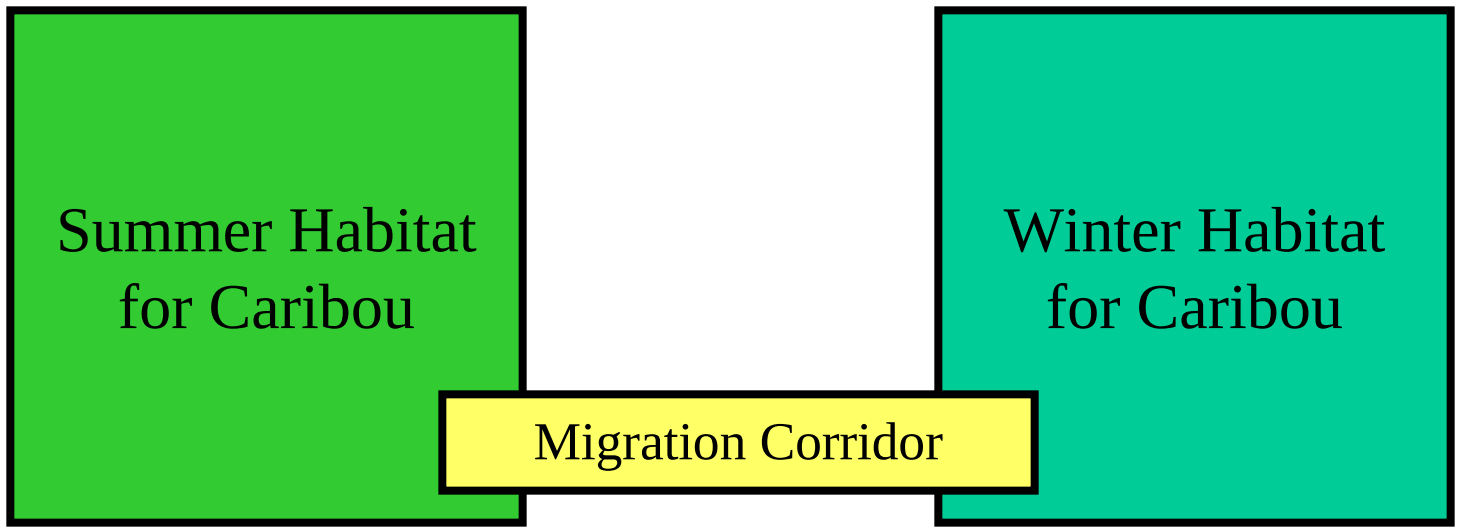
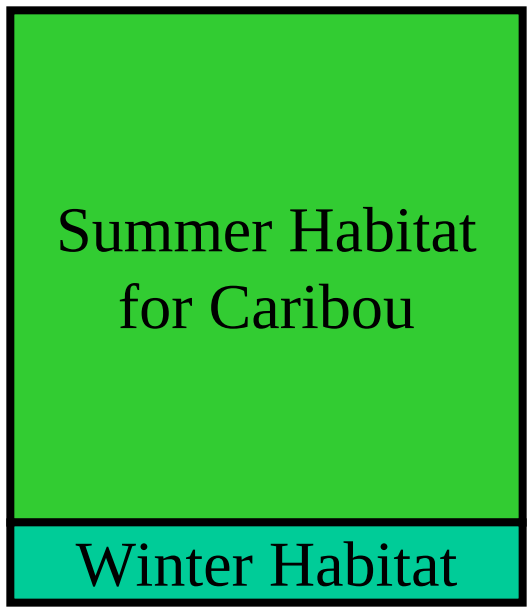
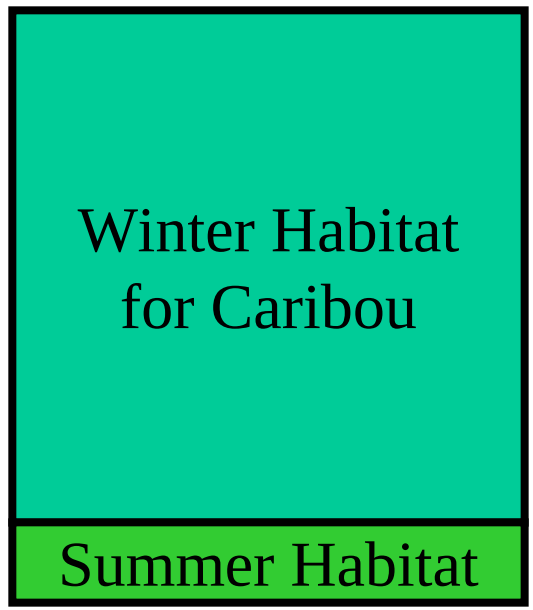


Project A - cut timber in small southern habitats - 5% loss carrying capacity

Synergistic:

Impact (A + B) > Impact A + Impact B





Project B - cut timber in migration corridor - 50% loss in carrying capacity

Synergistic:

Impact (A + B) > Impact A + Impact B

Summer Habitat for Caribou

Winter Habitat for Caribou

Project A and Project B simultaneously - 95% loss in carrying capacity

Masking:

Impact (A + B) = Impact A (or Impact B)

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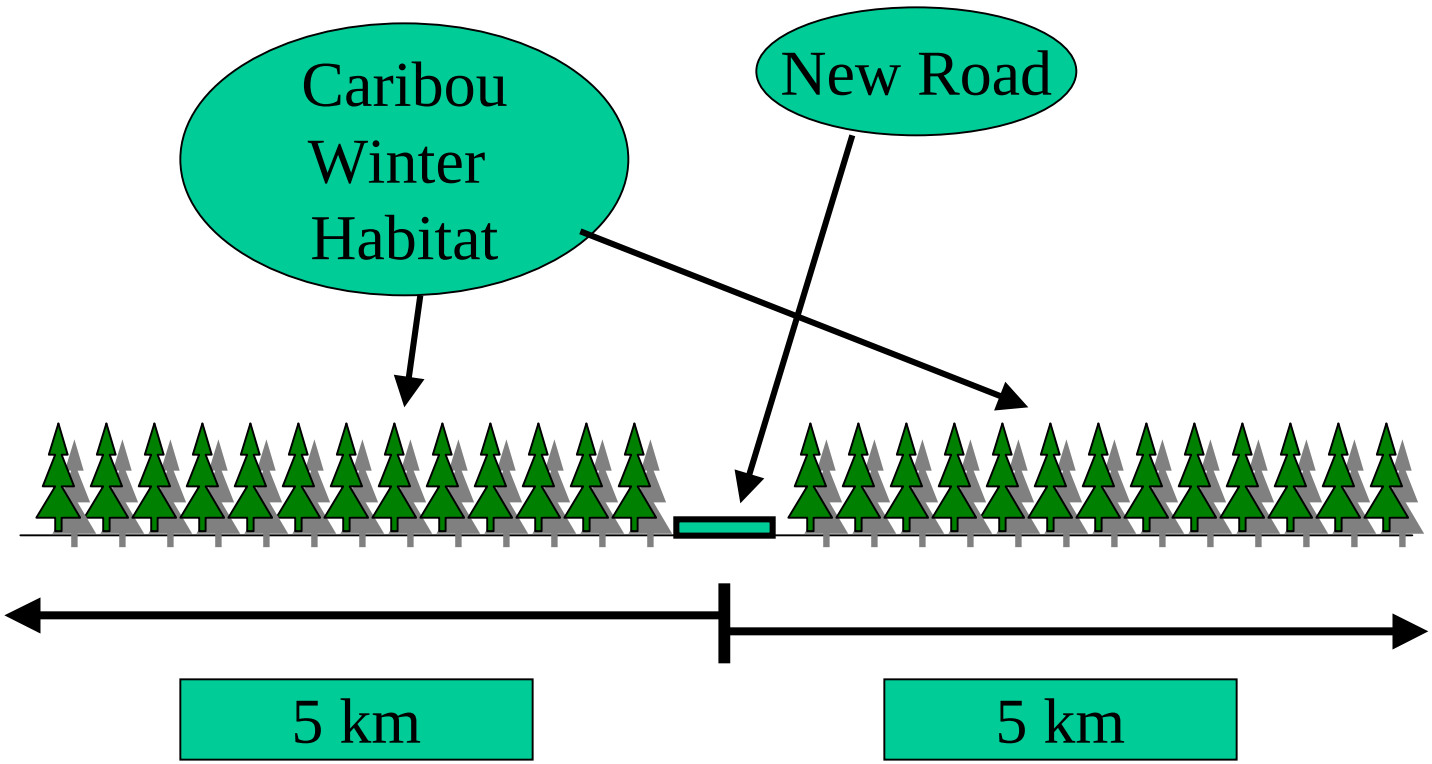

Masking:

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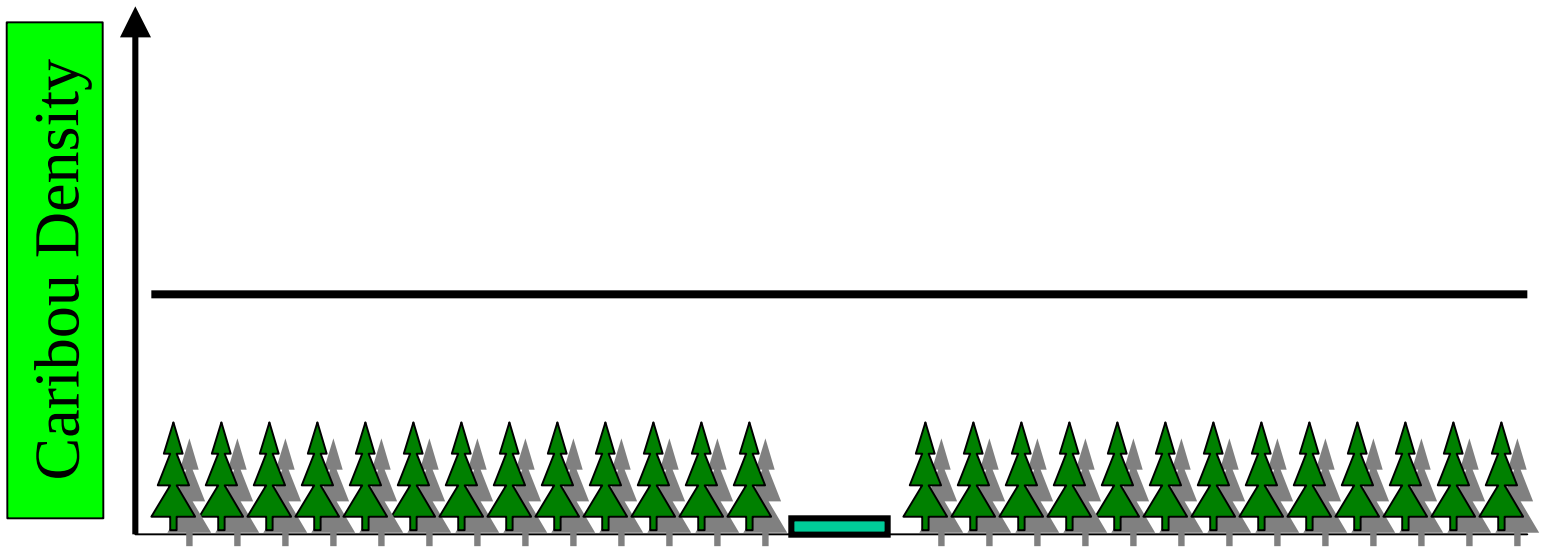
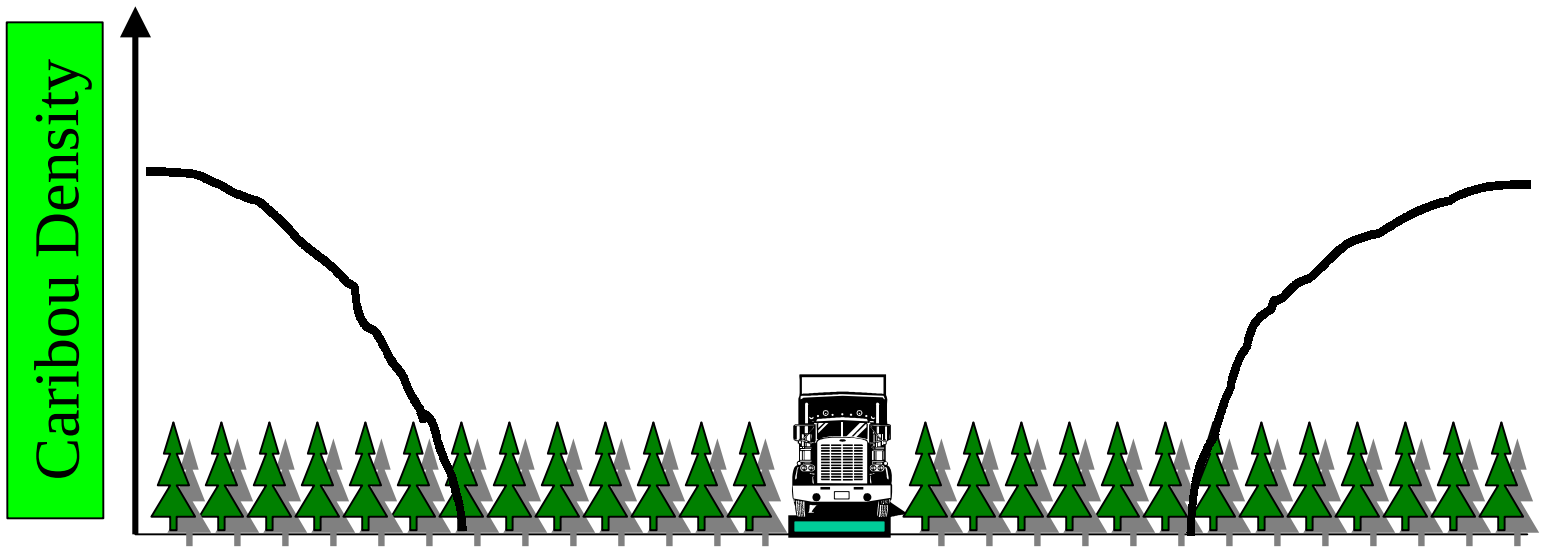


Situation with No Traffic on the Road

Masking:

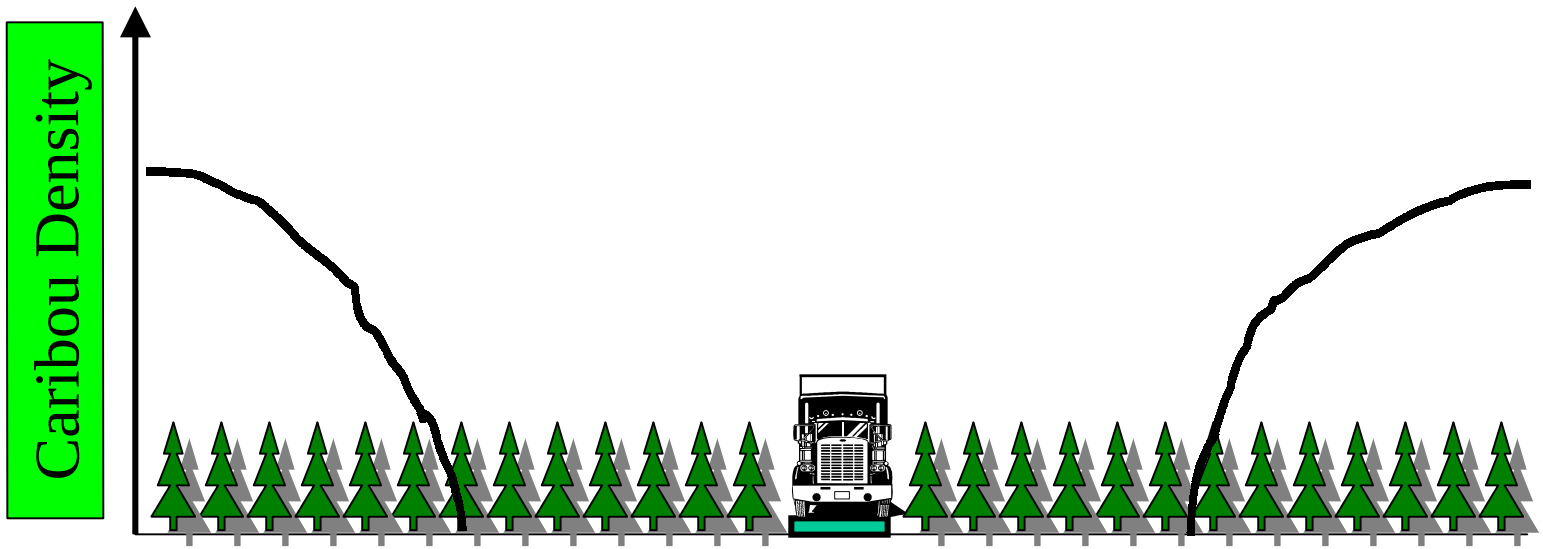
Impact (A + B) = Impact A (or Impact B)



Project A - Logging Trucks, Years 1-5

Masking:

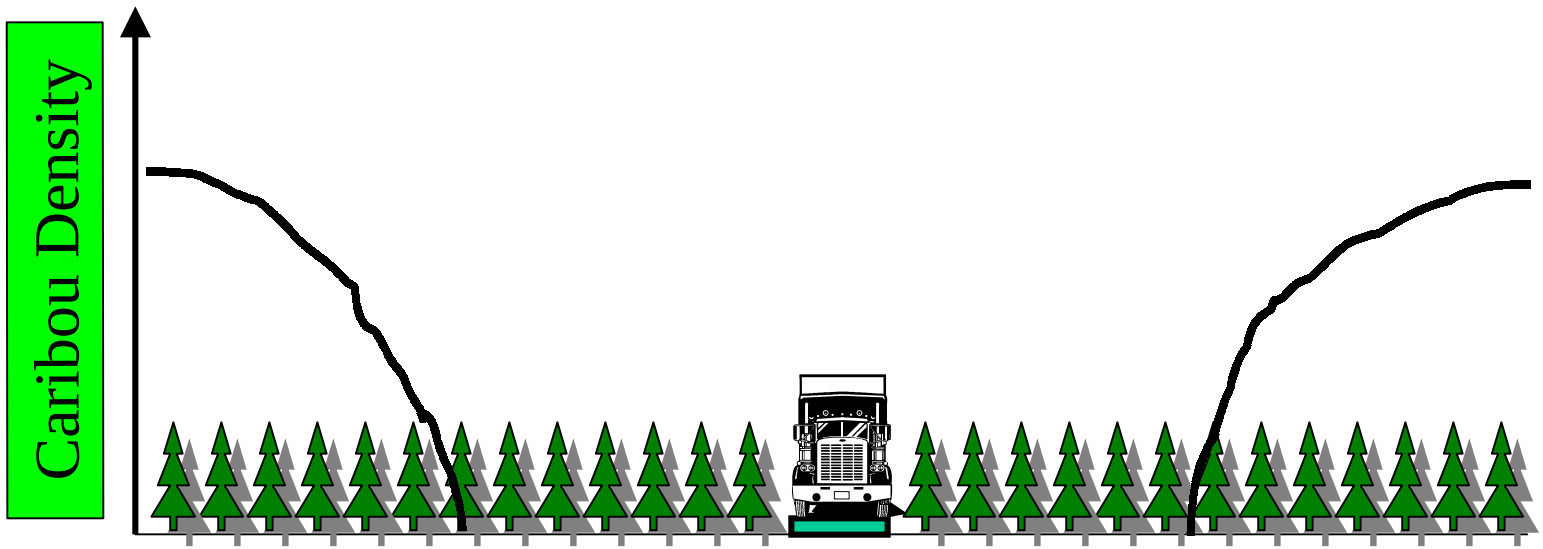
Impact (A + B) = Impact A (or Impact B)



Project A - Logging Trucks in Winter, Years 1-5
AND
Project B - Gravel Trucks in Winter, Years 2-5

Masking:

Impact (A + B) = Impact A (or Impact B)



Any number of trucks daily for the whole winter!!
(or snowmobiles, for that matter!)

Conclusions

- Cumulative effects assessment looks at how effects of one project or set of actions
  - interact
  - combine
  - cumulate

  with those of other projects/actions.
- Not all cumulative effects are bad - if they compensate or mask each other, that can be good
- The only way to find out what is really going on in a cumulative effects situation is through sharp systems analysis