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Ozone impedes the ability of a herbivore to find its host

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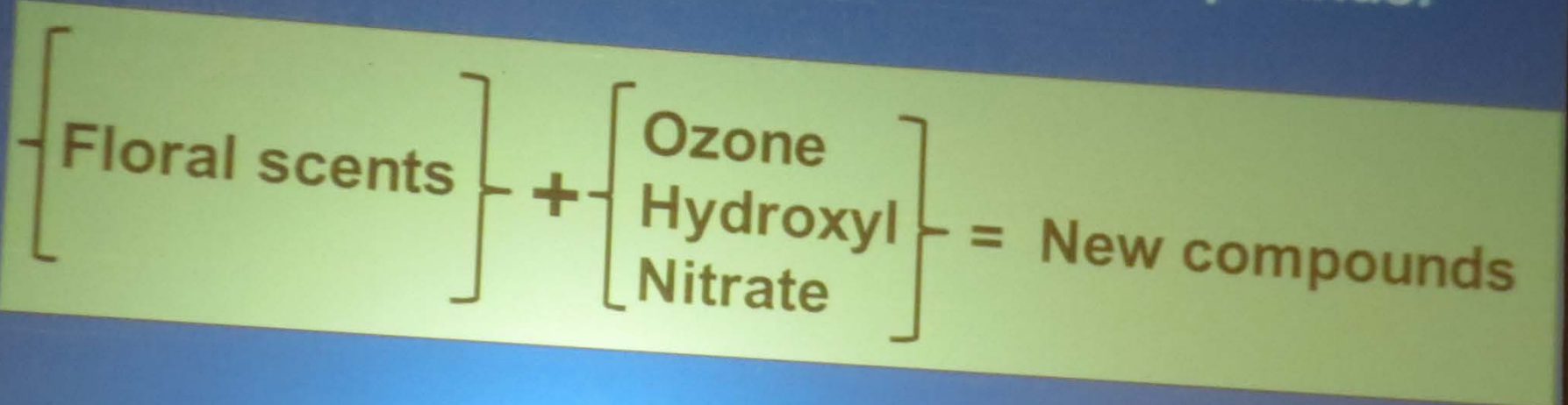
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University of Virginia and Blandy Experimental Farm,

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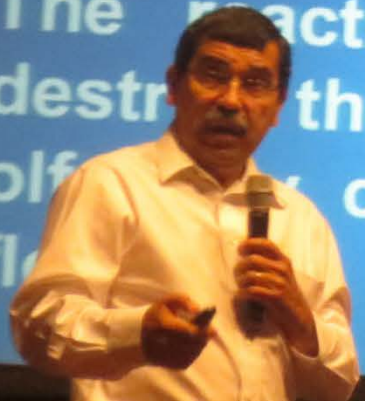
- 1) Background of our topics
 - Related to Mr. Sakikawa's study
- 2) Current topic on O₃ modifies bio-signal of flowers
 - Cucumber and pollinator (beetle)
[Environ. Res. Lett. 8 \(2013\)](#)
- 3) A view of Nice, France

Reactions of floral scents with pollutants

When the floral fragrances react with pollutants then there is the formation of new compounds.



The reactions of floral scents with pollutants destroy the integrity and strength of the original olfactory cues pollinators detect far away from



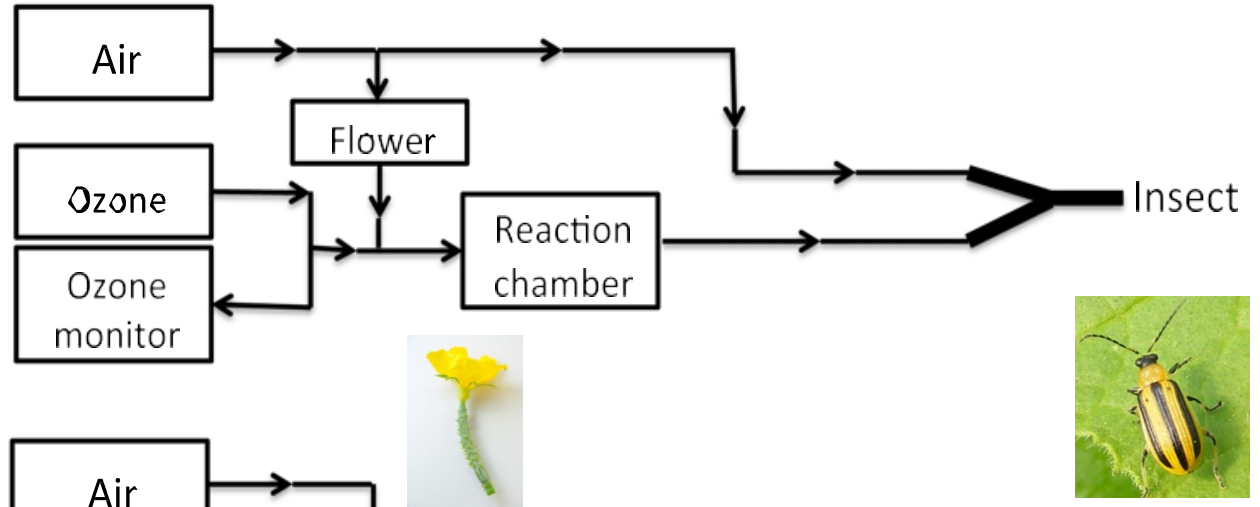
Questions

Insect: striped cucumber beetle (SCB)

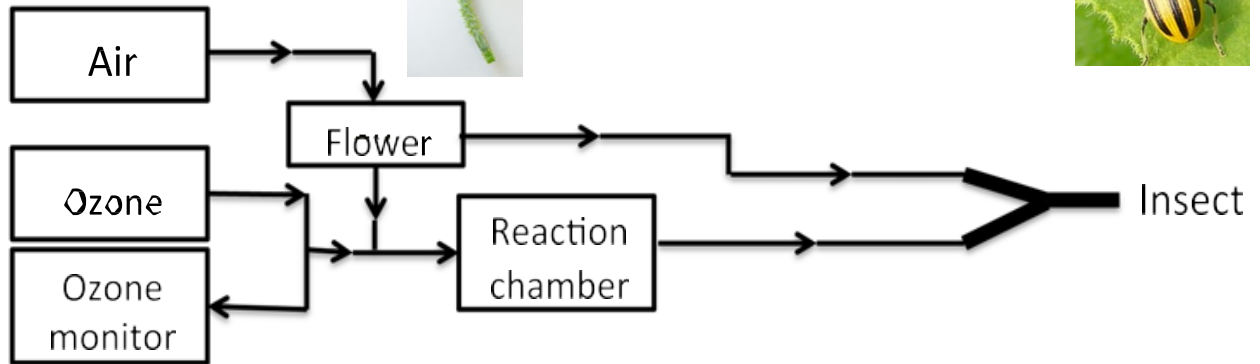
- (1) Do host flower volatiles, relative to clean air, remain attractive to SCBs under an increasing ozone concentration gradient?
- (2) Do SCBs distinguish between two host flower volatile streams when one volatile stream is reacted with an increasing ozone gradient?
- (3) Do SCBs respond to ozone itself, independent of host flower volatiles?

Materials & Methods

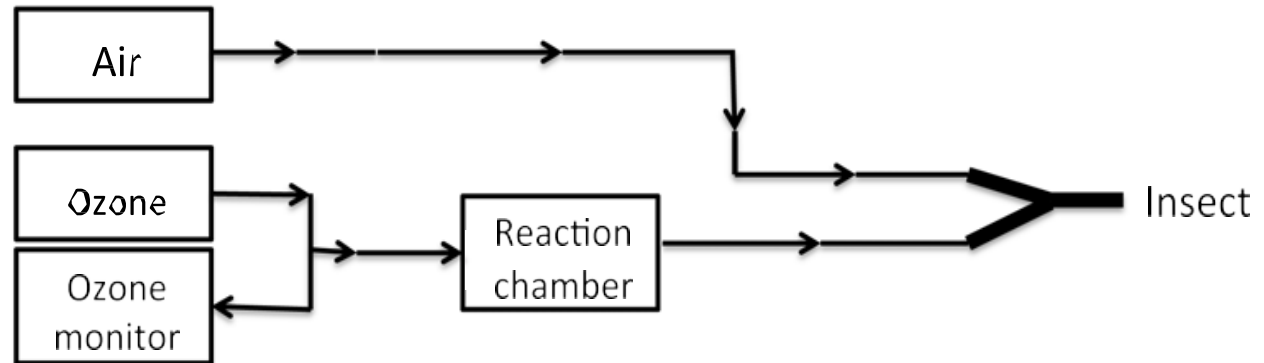
Air vs.
flower+O₃



Flower vs.
flower+O₃

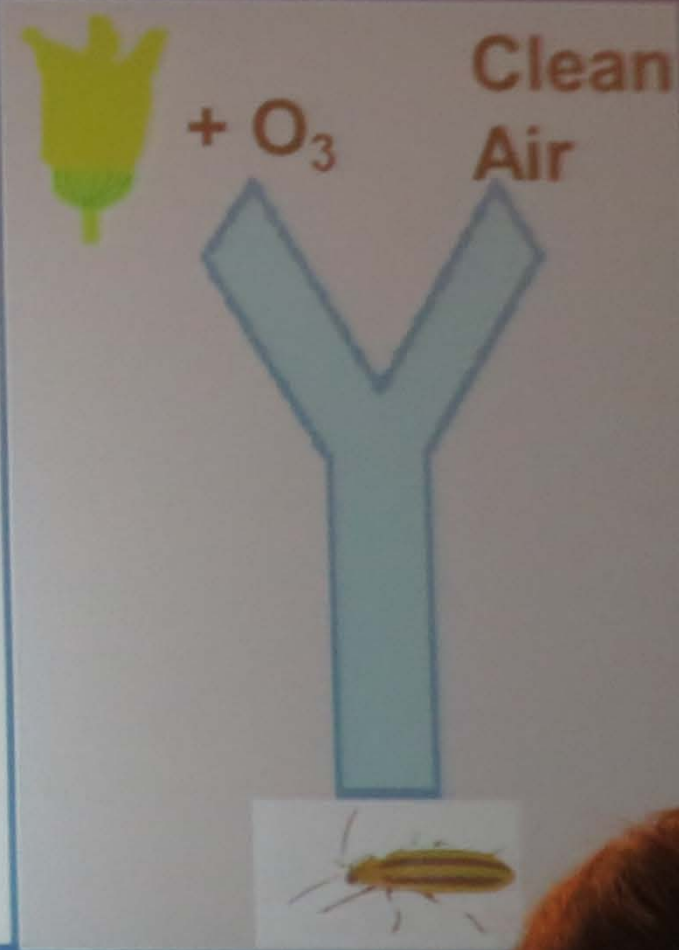
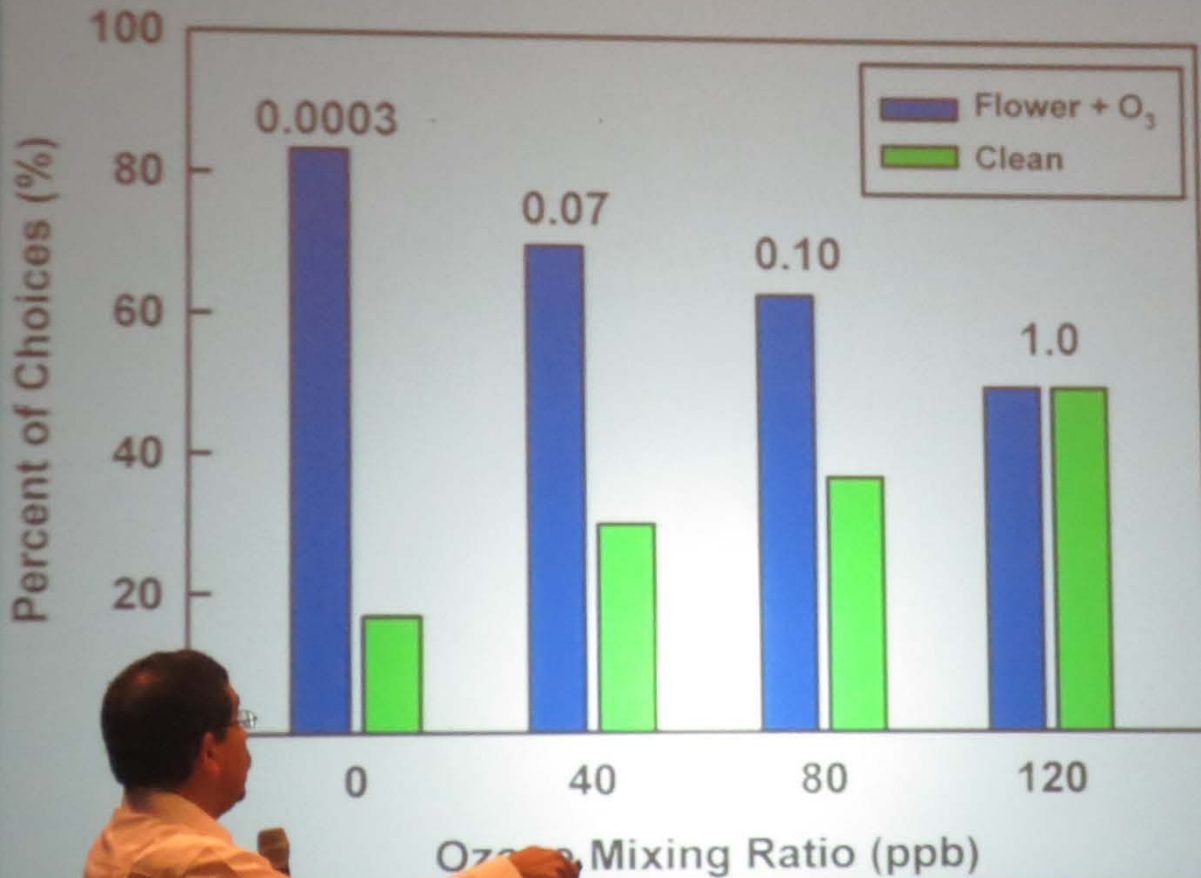


Air vs. O₃



Ozone impedes the ability of herbivores to find their host

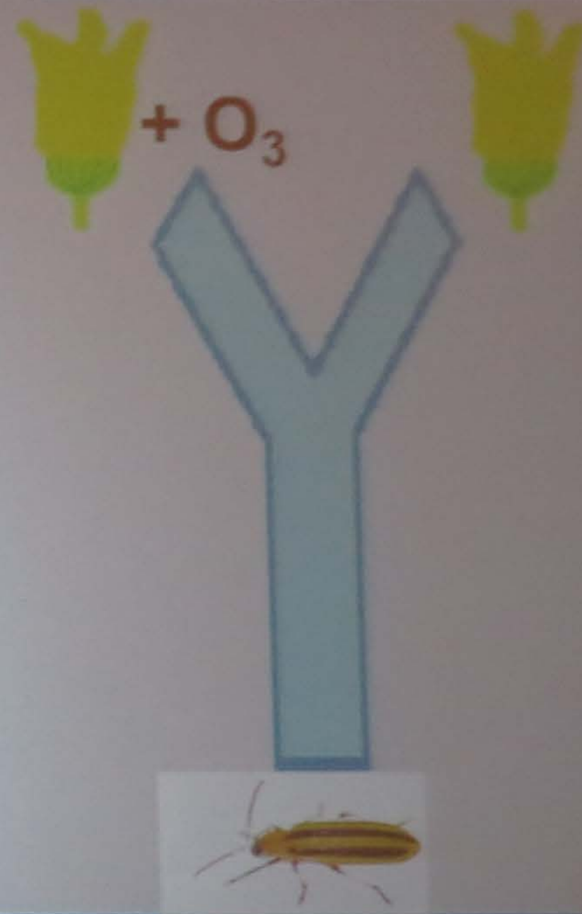
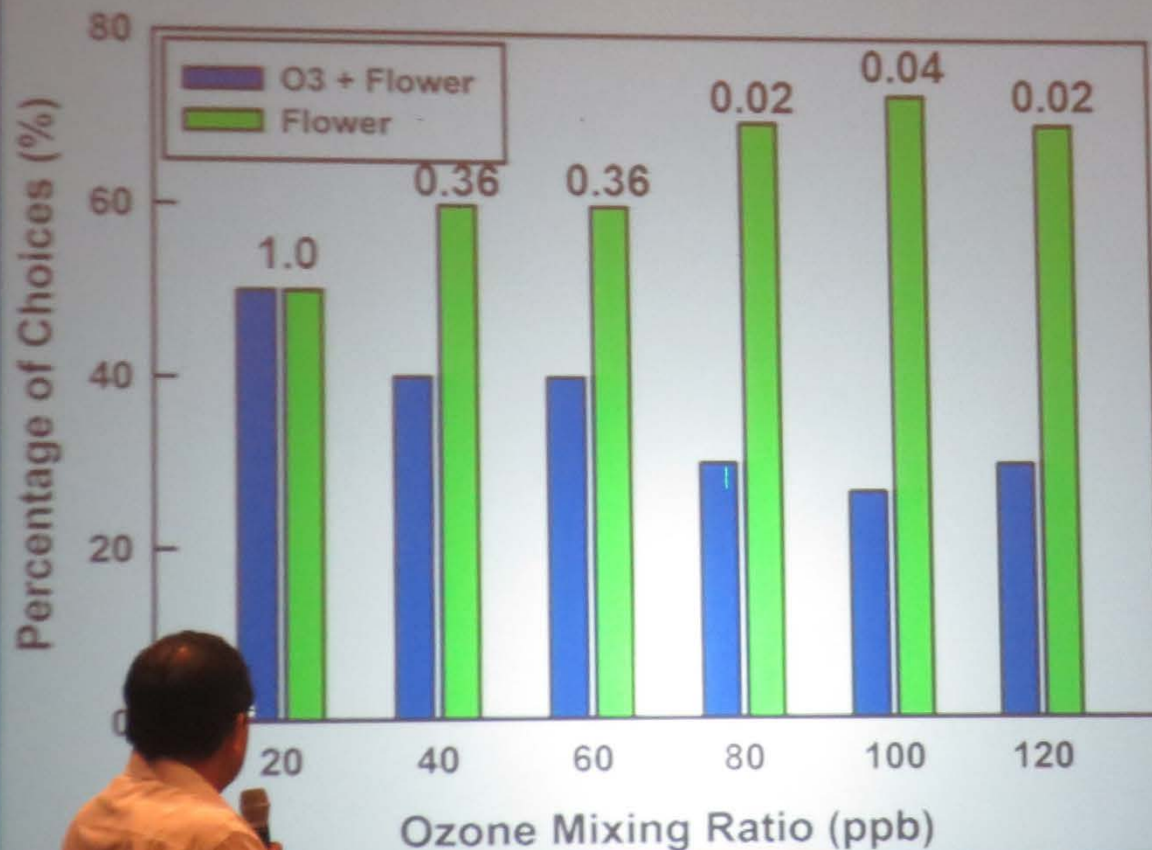
Flower and Ozone vs. Clean Air



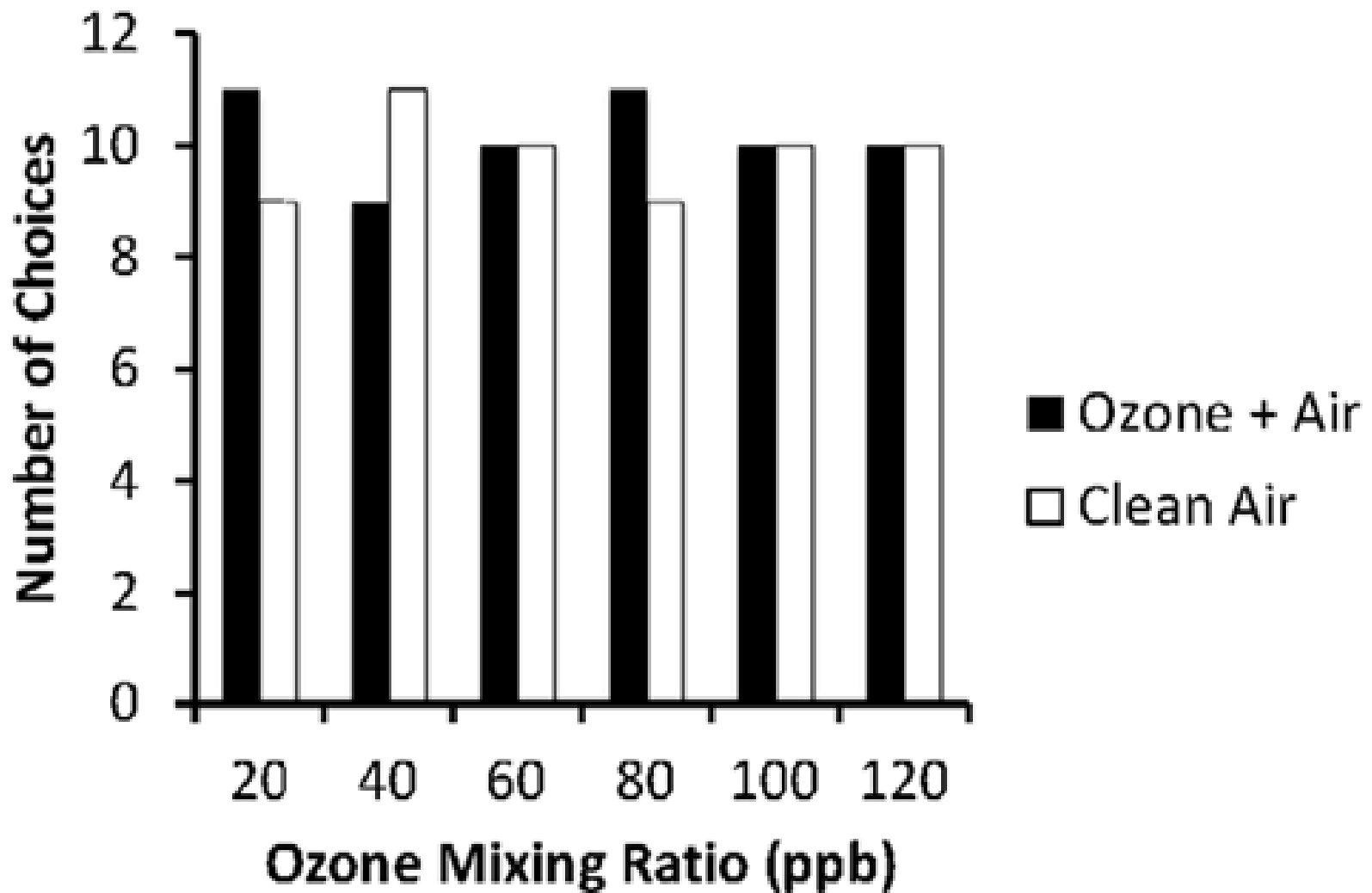
tractive to SCBs under an increasing ozone

Ozone impedes the ability of herbivores to find their host

Ozone and Flower vs. Flower



ted above bars



The SCBs showed no aversion to ozone itself
忌避
at any tested levels

Take home message

- ✓ In elevated concentrations, air pollutants modify the quantity and the quality of floral scents.
- ✓ Under the influence of polluted air masses, floral scents do not travel the necessary distance needed for insects to locate flowers.
- ✓ In polluted air masses insects increase their foraging time in response to chemically modified and reduced floral scents.
- ✓ Air pollutants perniciously alter key interactions between plants and insects.