The Role of Transportation Corridors in Plant Migration In and Around an Arid Urban Area: Phoenix, Arizona

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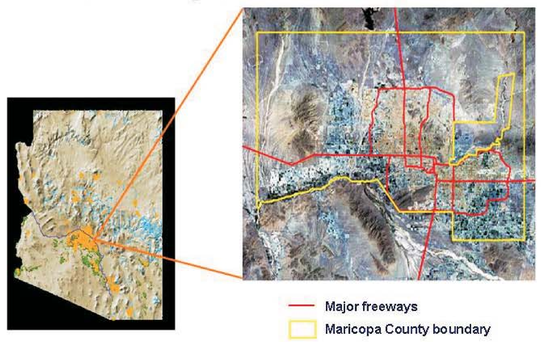
CAP LTER
Central Arizona-Phoenix Long-Term Ecological Research

ASU's IGERT Urban Ecology

Phoenix, Freeways, and the Sonoran Desert



Freeways and other transportation corridors connect urban and undeveloped areas.

The conditions along these corridors promote the movement of animals and plants, which may then move out from the corridors into new areas.

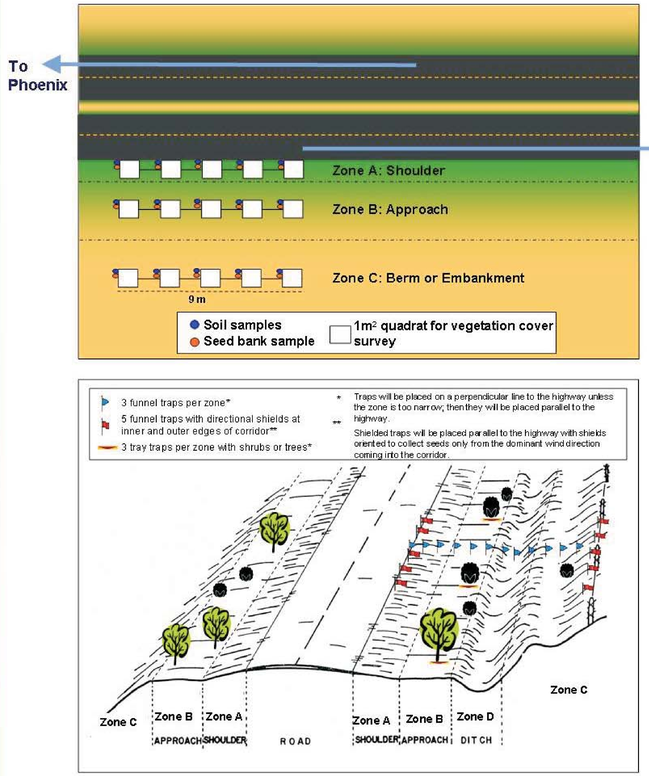
How do plants migrate along highways?

a) How does nitrogen fertilization affect roadside plant community composition?

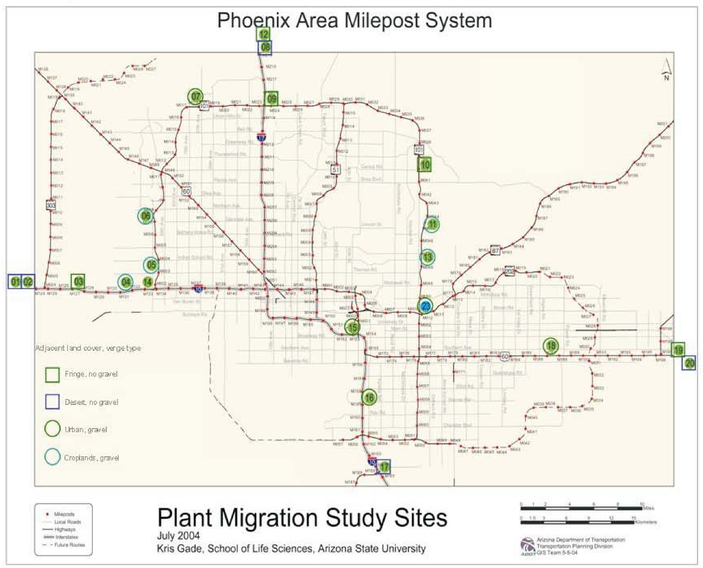
b) Do plants enter the highway corridor from adjacent land?

c) How do highway landscaping and maintenance affect plant migration?

Sampling Design - Soil, seed bank, and seed trapping



Study Sites



"Desert" sites: No gravel on verges, adjacent to desert

"Cropland" sites: Gravel verges adjacent to croplands

"Fringe" sites: No gravel on verges, adjacent to landscaped land

"Urban" sites: Gravel verges adjacent to landscaped land

Land adjacent to "urban" sites generally has higher density development than land adjacent to "fringe" sites.

Soil Analyses - Results

1. Plant-available N highest closest to the asphalt

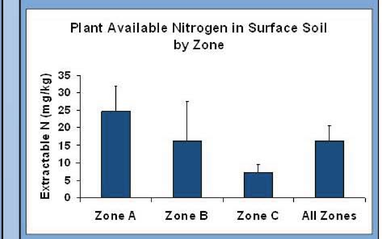
Zone A > Zone B and C

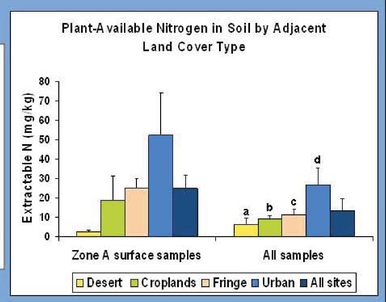
(ANOVA using log [surface soil]; F=5.556, P=0.005; Fisher's multiple comparison P=0.003)

2. Plant-available N varied with adjacent landcover

Urban > Crop > Fringe > Desert

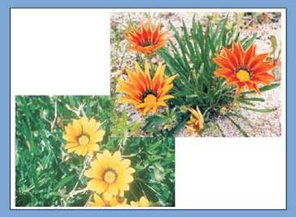
(ANOVA using log [surface soil]; F=123.67, P<0.001; Fisher's multiple comparison all combos P<0.001)





Landscape Plants on the Move

Fountain Grass (*Pennisetum setaceum*)



African Daisy (*Gazania linearis*)

African Sumac (*Rhus lancea*)

Iceplant (*Mesembryanthemum crystallinum*)

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