

# Impact of field border management on rodents in walnut orchards

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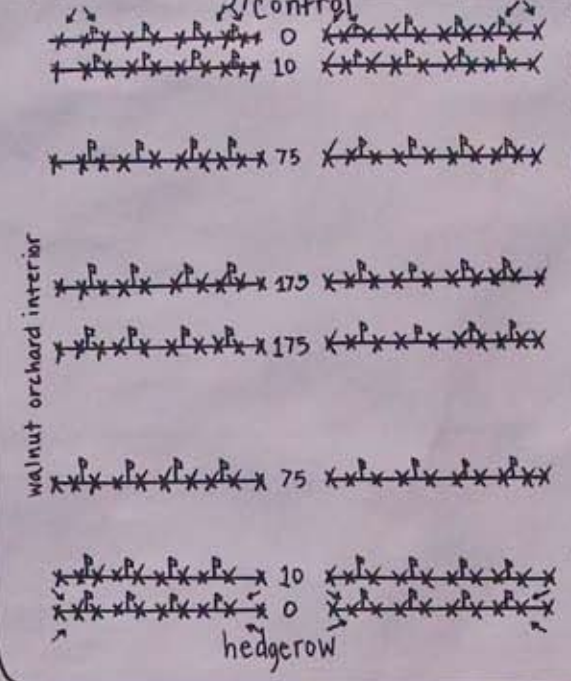
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## Introduction:

This one year study (2013-14) documented vertebrate population dynamics in relation to field border and orchard floor vegetation management in walnuts. Sherman traps, remote-triggered cameras, and gopher transects were set at 0, 10, 75, 175-meter distances from hedgerows of native California plants and conventional semi-weedy margins. Unique rodent capture data revealed two peaks in activity: 1) in the middle of the orchard regardless of field border type, and 2) in the middle of the hedgerow across all seasons with winter being the most active overall. We conclude that hedgerows alone do not increase rodent activity in adjacent fields as they are equally abundant in areas that are regularly mowed and sprayed with herbicide.

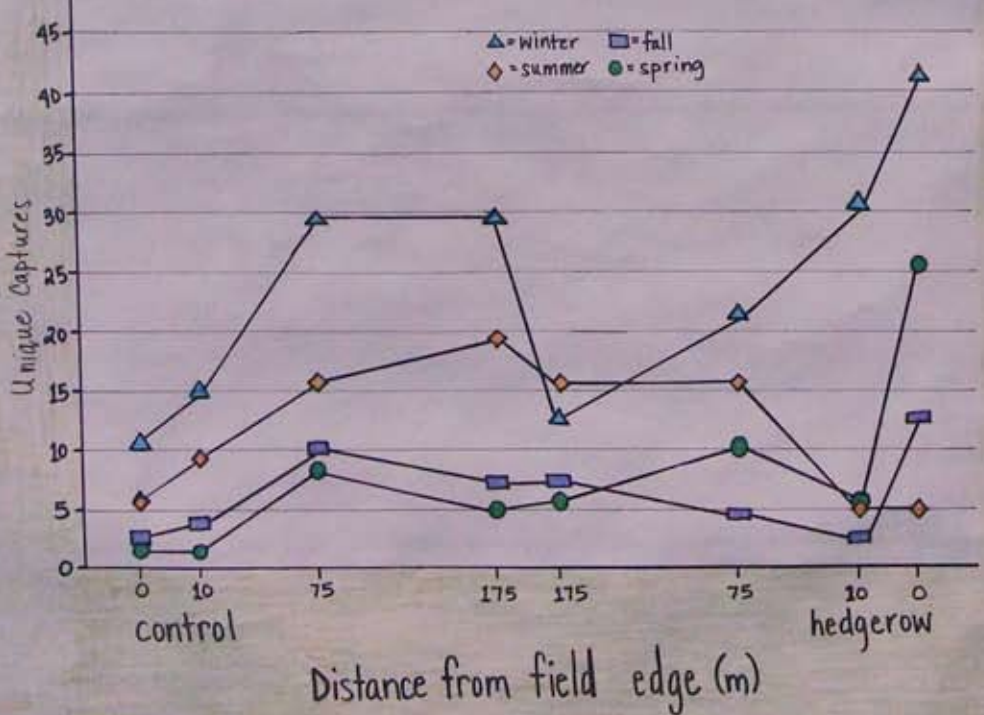
## Methodology:

Key:   
 ◊ video camera   
 P remote triggered camera   
 X Sherman trap (10m apart)



4 sites, 4 seasons  
 • Traps were set before dusk 5 consecutive days. Each morning we collected data and attached ear tags to captured rodents.  
 • Gopher transects had random starting points for each distance. Mounds were knocked down and the rebuilt mounds were counted 3 days later.  
 • All cameras ran for 5 consecutive days. Remote-triggered cameras were baited with wax blocks. The bait was weighed as an indicator of activity.

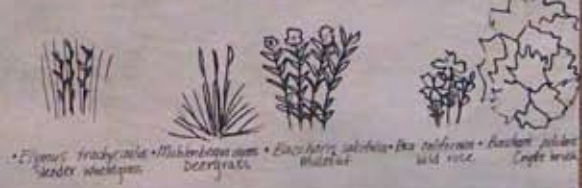
Figure 1. Unique rodent captures aggregated from four sites over one year period.



Control: field margin that is mowed and sprayed. Common spp. include:

|                               |                  |
|-------------------------------|------------------|
| <i>Malva parviflora</i>       | Cheeseweed       |
| <i>Portulaca oleracea</i>     | Common purslane  |
| <i>Convolvulus arvensis</i>   | Birdweed         |
| <i>Erodium cicutarium</i>     | Redstem filaree  |
| <i>Euphorbia maculata</i>     | Spotted spurge   |
| <i>Echinochloa crus-galli</i> | Barnyardgrass    |
| <i>Lolium multiflorum</i>     | Italian ryegrass |
| <i>Poa annua</i>              | Annual bluegrass |
| <i>Bromus tectoricus</i>      | Rescue grass     |
| <i>Setaria pumila</i>         | Yellow foxtail   |

Hedgerow: Lines or groups of trees, shrubs, and grasses that are planted along field edges or other unused areas. Common spp. include:



## Critters Captured:



- feed on a variety of seeds, leaves, berries, caterpillars, spiders, and heteropterans
- found in almost all habitat types throughout North America
- 96% of species captured were deer mice



- diet is primarily grass and forb roots, stems, and leaves
- often found in grasslands where runways connect their nests to foraging areas
- 6 out of 7 captured inside the hedgerows, 0 were caught adjacent to the hedgerows

Figure 2. Mean proportion of unique rodent captures is nearly equal across treatments. P = 0.0878

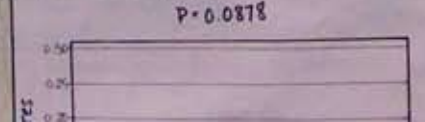


Figure 3. *Peromyscus maniculatus* unique capture means are highest in the 0 and 75, 175 and hedgerow 0 meter transects. P = 0.0349

