Alternatives to Anticoagulants – Applications in the Field

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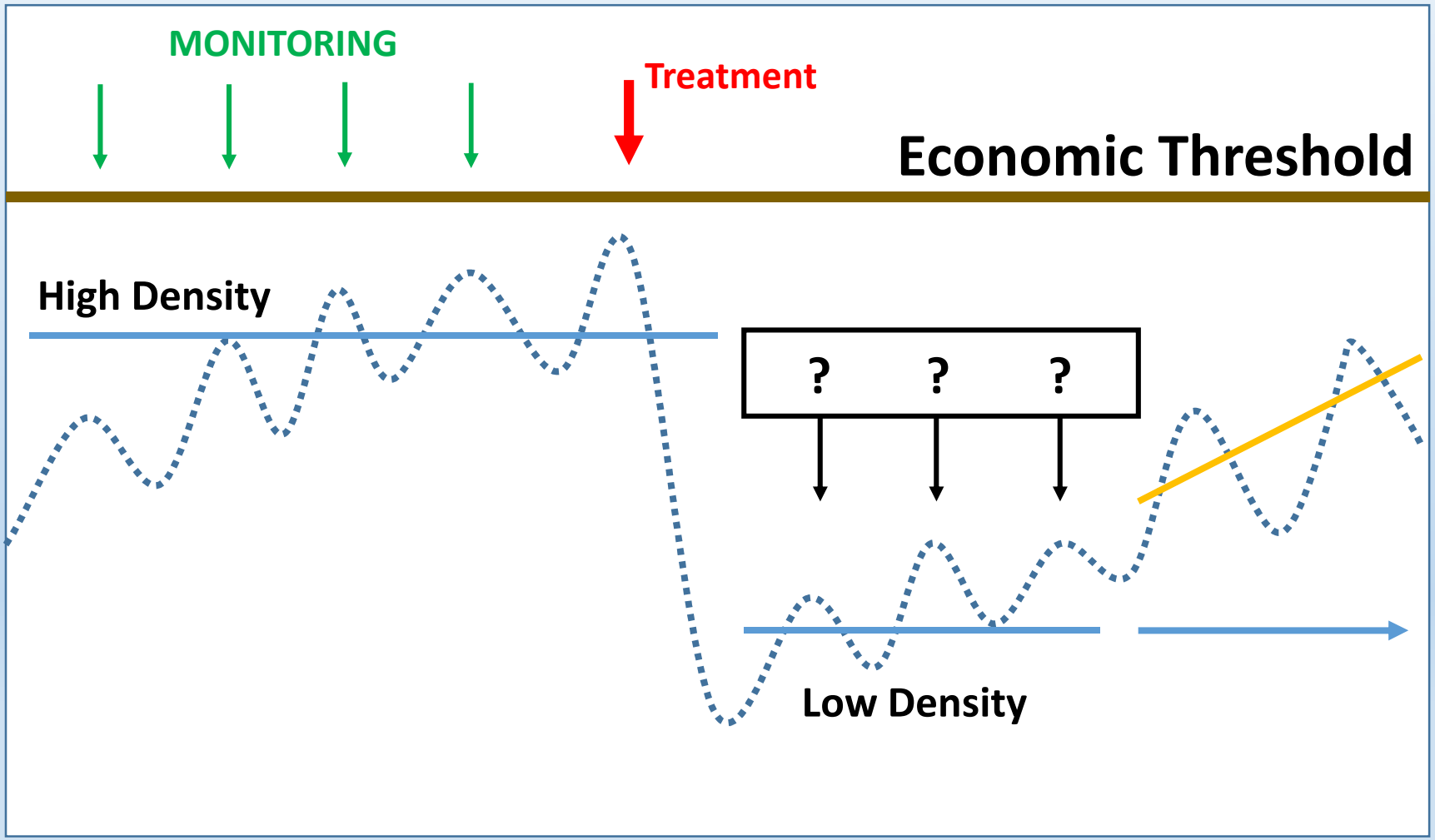
Context for Vertebrate Management

- Population fluctuations
- High and low pest density management tactics
- Need for integrated approach with vertebrates
- Cal Poly examples

Population Fluctuations



High Density Tactics

- Work well to reduce large numbers of pests in a short period of time – easy to see results
- Examples: **baits and fumigants**
- Comes at a cost – environmental, resistance issues, and ***pest resurgence*** – the same problem next year

Low Density Tactics

- Need to be effective at low population levels
- Examples: well-adapted predators, gas cartridges, trapping
- Compelling need for an ***integrated approach*** – any method on its own will be limited in efficacy
- Key: must have a balance of high and low density tactics – and *maintain* the low density tactics

Management tactics: toxins

Anti-coagulant Baits and Fumigants

- PCQ – diphacinone (**high** density)
  - broadcast vs stations
  - Relatively easy
- Phosphides - zinc and aluminum (highly toxic) (**high** density)
- Giant destroyer (OMRI approved) (**low** density)
  - Can work well at high densities – but labor intensive

Management tactics: non-toxic

Anti-coagulant Alternatives

- Owls, raptors & others (**high** & **low** density)
- Burrow busters (**high** & **low** density)
- Shooting (**high** density) (expensive, legal issues)
- Trapping (**low** density) (labor intensive)
- Burrow simulators (with baits) (**high** density)

Management tactics: non-toxic

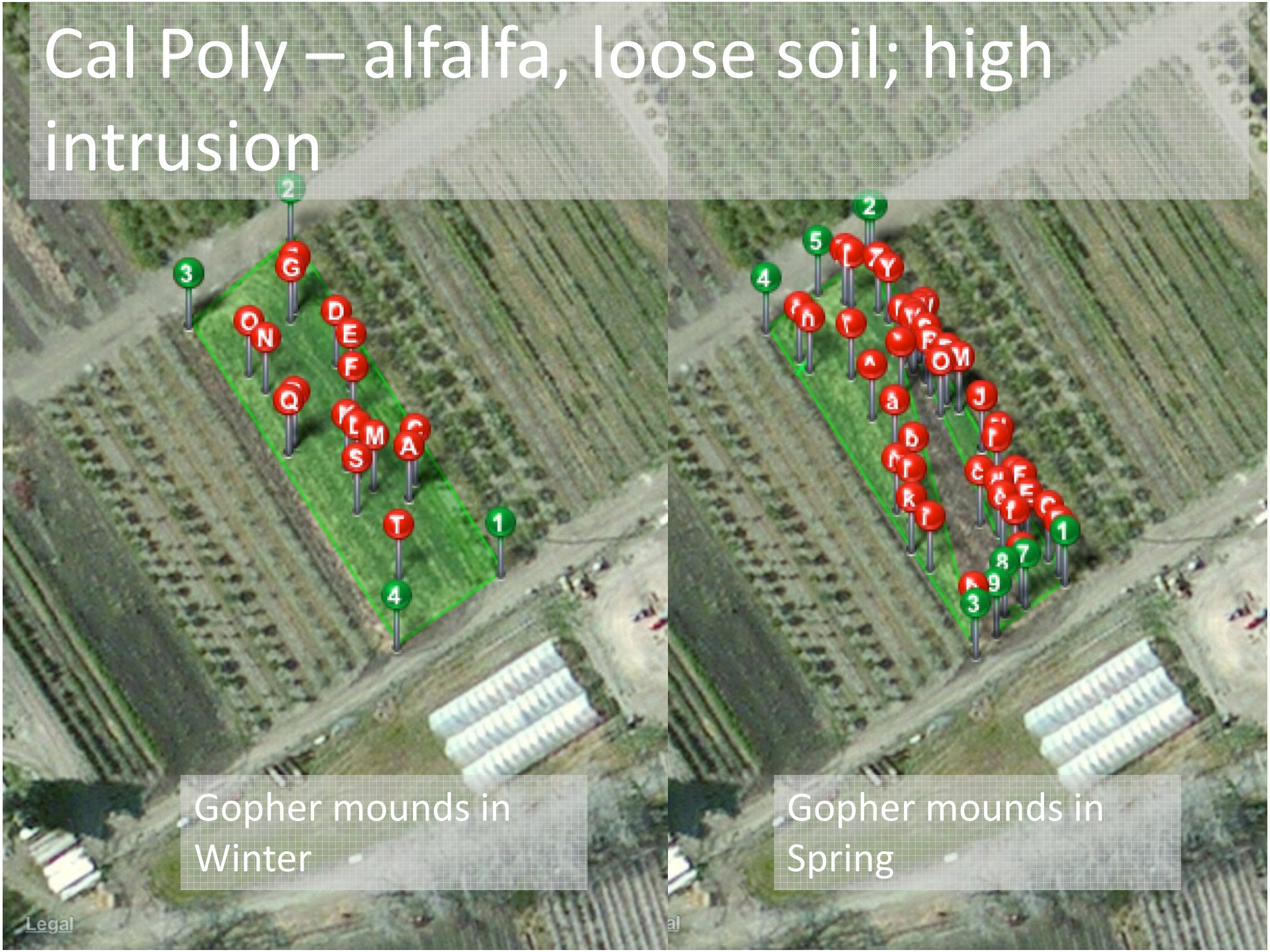
Cultural Controls

- Heavy brush vs clean
- Exclusion (gravel pits & mesh) for gophers

Does cropping system and acreage make a difference?

- Tillage frequency, soil type, annual vs perennial
- Helps determine where to set up your line to defend
- And the size of the area plays a significant role in determining what can be done ($$$)

Cal Poly – alfalfa, loose soil; high intrusion



Gopher mounds in Winter

Gopher mounds in Spring

Cal Poly Vineyard – compact soil; low intrusion

Gopher mounds in Winter

Gopher mounds in Spring

Gopher movement thru soil

Recently tilled soil:
17.6 inch average for new mound distance

8 wk sampling in fall 2015

No till soil:
11 inch average for new mound distance

Protecting a vegetable field

Protecting a vineyard

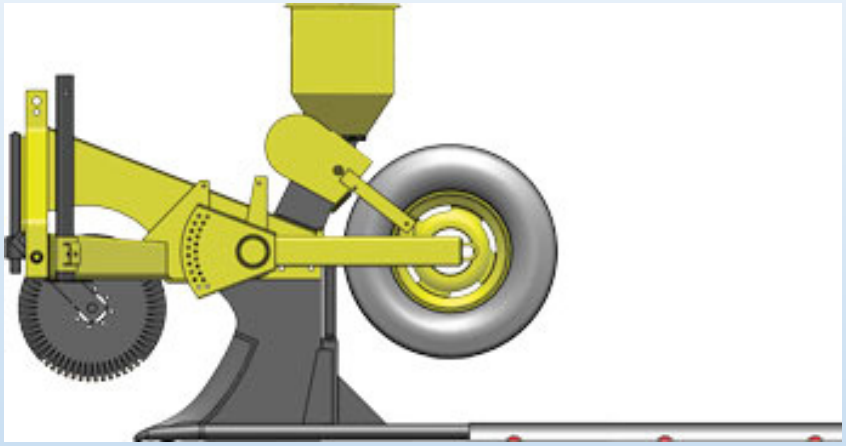
Things to keep in mind for owl / kestrel boxes and perches

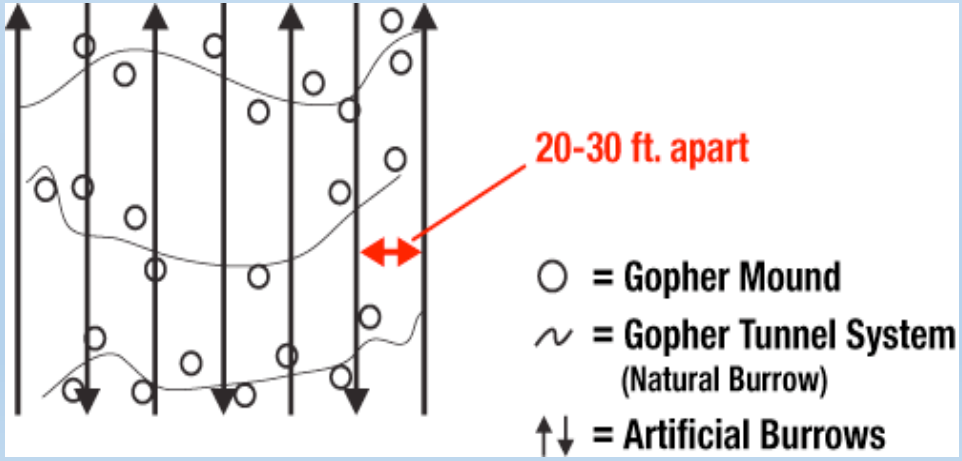
- Location – based on biological needs of the predator, you may get 90% of what they require correct, but that other 10% will make the difference in whether they occupy or not

- Occupancy is crucial, based on available resources:

  As prey goes down, occupancy goes down

Large scale





http://www.burrowblocker.com/

- Sand slurry fills squirrel burrows
- Water seeps away
- Blocks access for awhile