# Tanoak: conservation of an at risk tree

Richard Cobb, Joao Filipe, Katy Hayden, Ross Meentemeyer, Yana Valachovic, Ted Swieki, Chris Gilligan, Everett Hansen, Susan Frankel, Matteo Garbelotto, Dave Rizzo

# Perspectives and challenges

- Frederica Bowcutt : Tanoak, a persecuted species
- John Shelly : changes in resources perspectives
- Thomas Brown : traditional resource perspectives
- Whalen Dillon: Comprehensive risk assessment

# Ecological value and resources

- Richard Dodd (Jessica) : basic genetic understanding: bias of understudied species

- Jessica Wright : Insect pollinators , scratching the biodiversity iceberg

- Katy Hayden: finding resistance

# Learning from failure

- Forest decline in N. America: Sudden Oak Death is a familiar threat
- Chestnut: management increased pathogen spread
- Eastern hemlock: management (cutting) increased tree decline

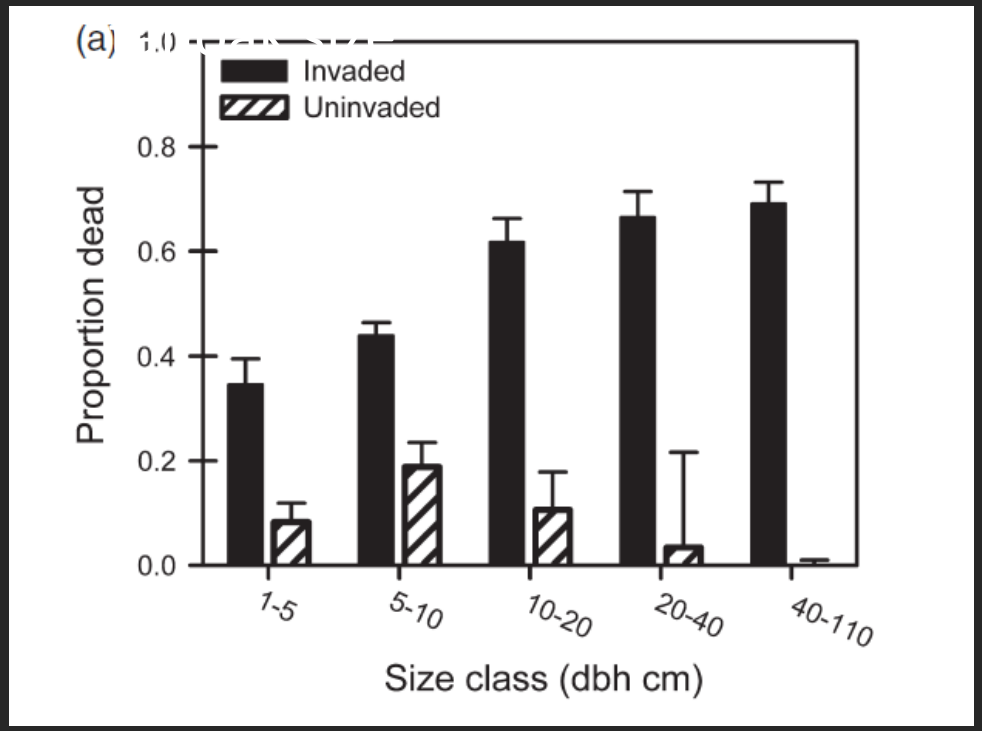
# The twin traps of overtreatment and therapeutic nihilism*

- What are the management goals?
- Invaded Vs. uninvaded lands
- Goal: maximize tanoak resiliency and biodiversity

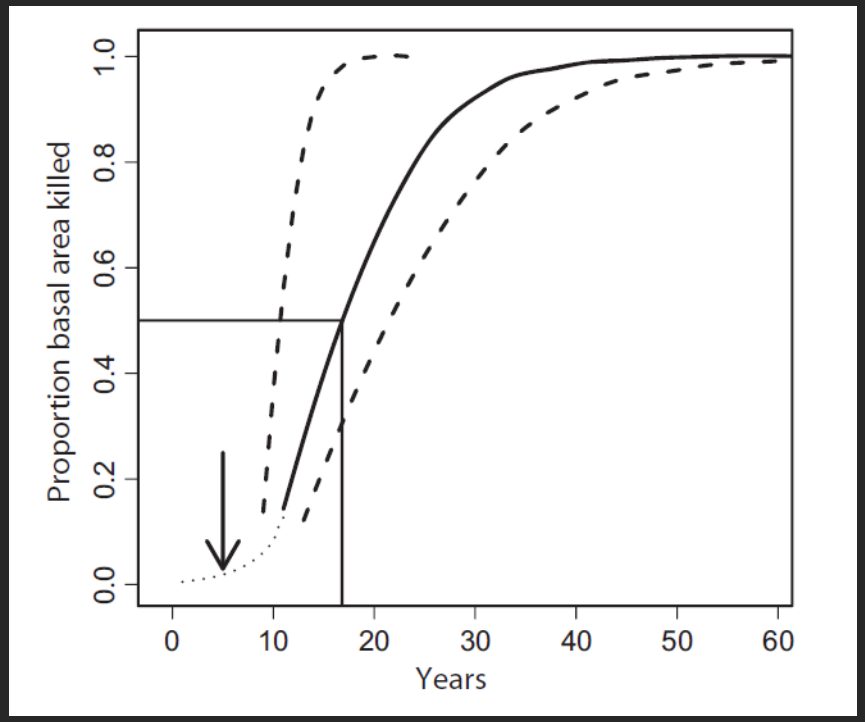
* Hippocratic oath

# Sudden oak death impacts are greater in large trees

Sudden oak death caused mortality increases with




Sudden oak death: stands quickly lose tanoak biomass

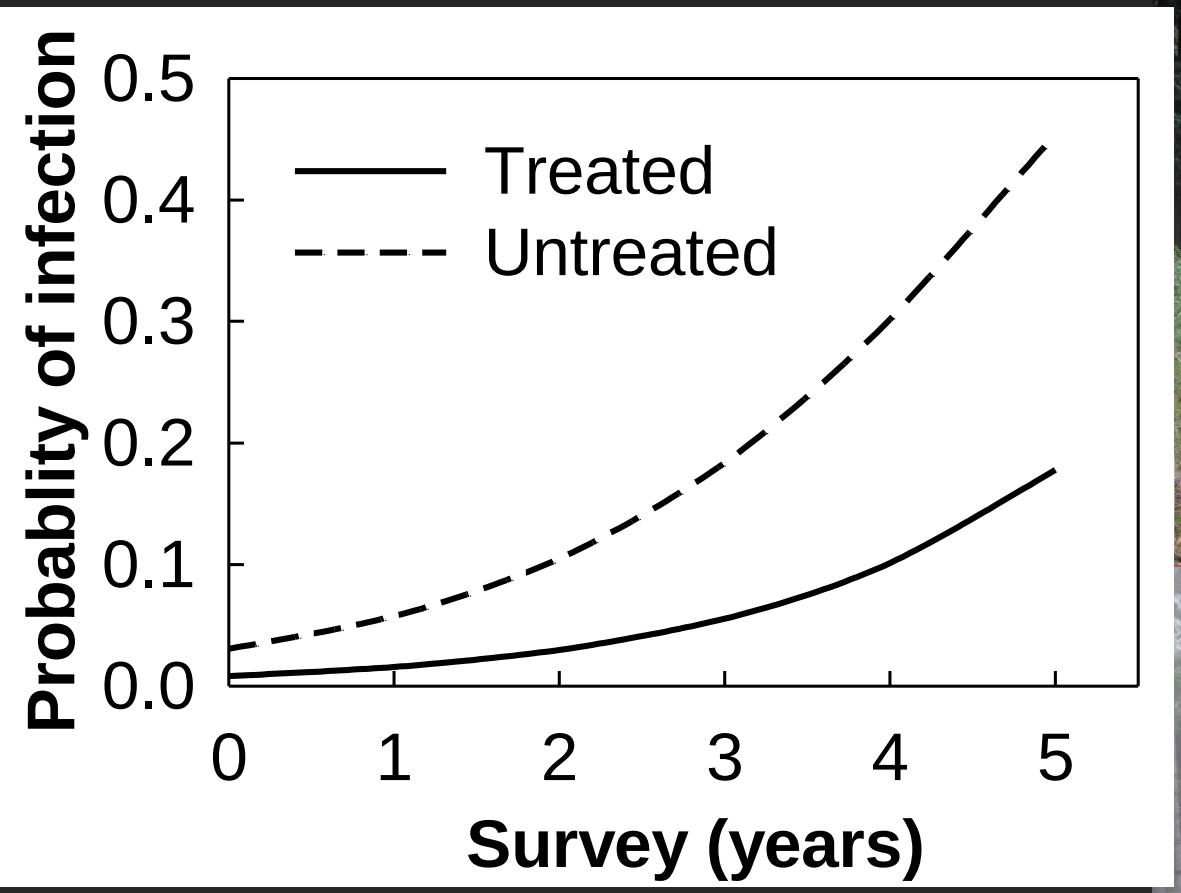



*Davis et al 2010
*McPherson et al 2010
*Cobb et al. 2012

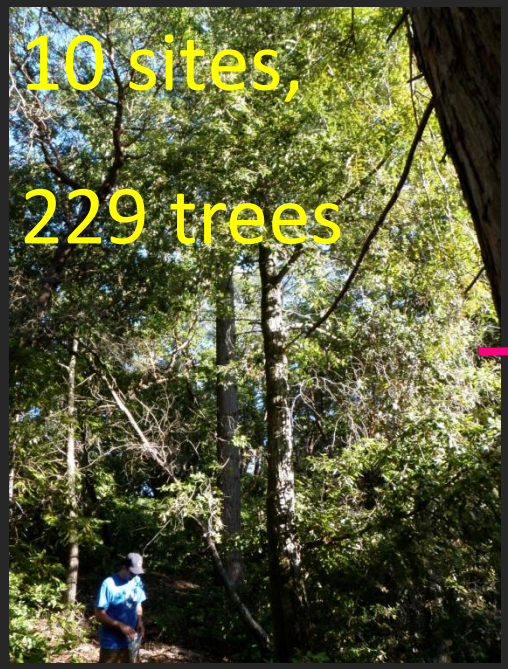
# A toolbox for tanoak conservation

- Change the conditions of disease:
  - Reduce infection rate
  - Reduce mortality rate
  - Exclude pathogen

# Local pathogen reduction

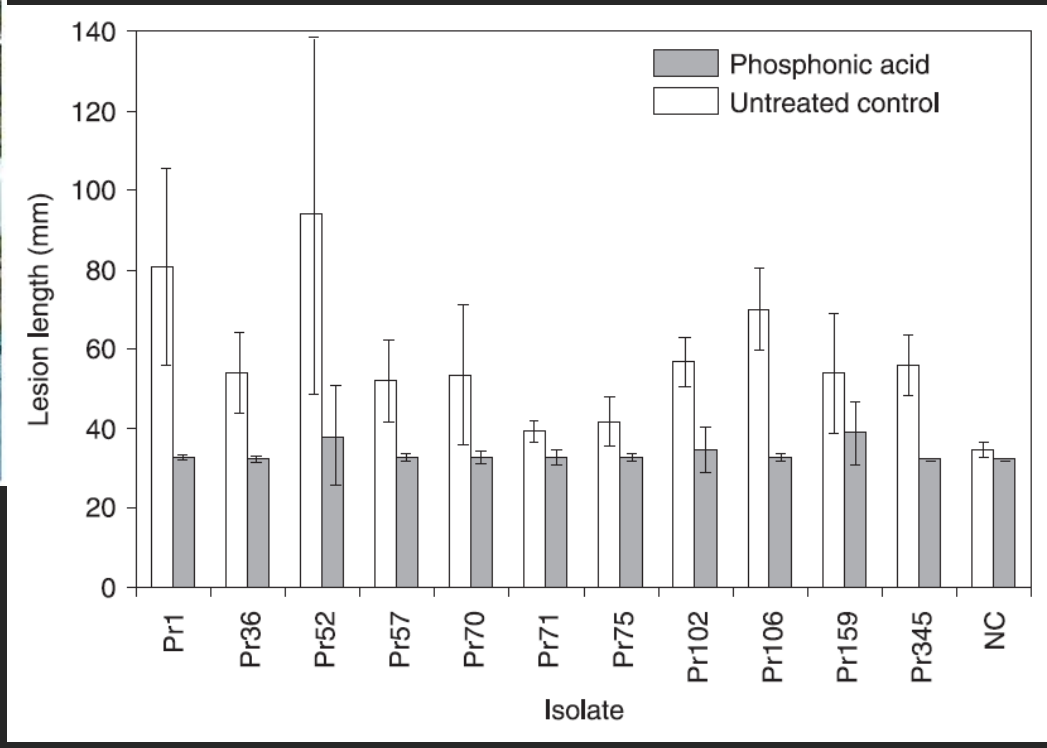


Valachovic et al. Southern Humboldt *Unpublished data*



Garbelotto et al., unpublished

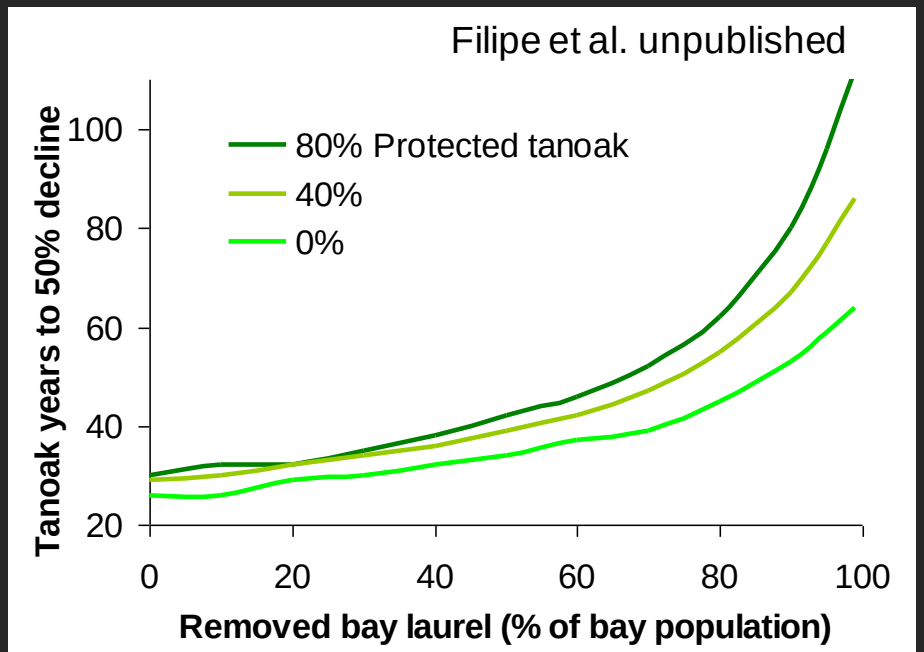
# Preventative treatments

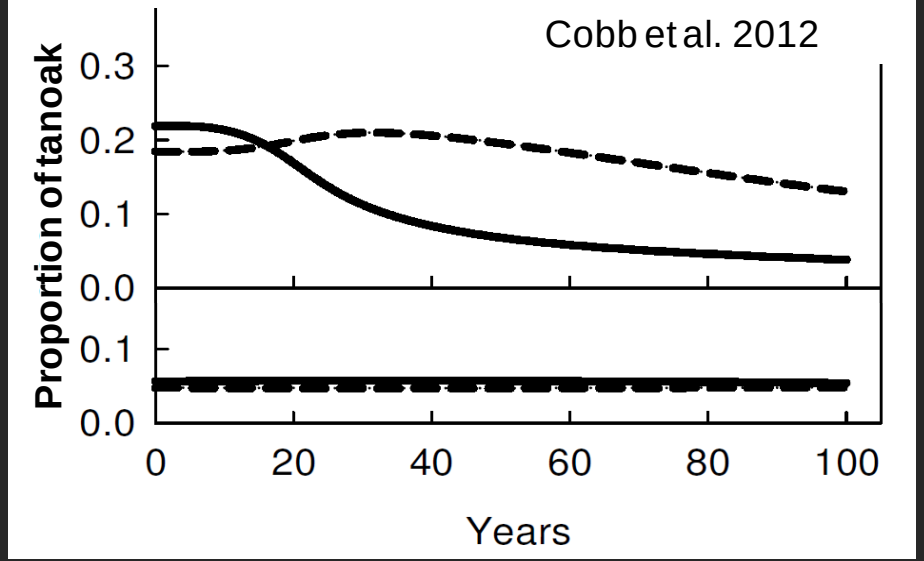



Agriphos® (phosphonate) treatments reduce pathogen growth in tanoak and coast live oak

Garbelotto et al. 2008
Swiecki and Bernhardt 2008

# Models: forecasting spread and efficacy



# Strategy: Uninvaded areas

- Plan ahead; slowing the spread saves tanoak, reduces impacts, and saves time/$$
- Act now to protect specific stands, trees
- Do not move infected plants
- Avoid doing to much; loss of genetic based resistance

Mendocino county

# Strategy: Invaded areas

- Agriphos ®, host density reduction, planting of resistant stock
- Disease selects for more resistant individuals: do not cut/remove lone surviving tanoak
- Manage to reduce impacts (human suffering)

Big Sur

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K. Frangioso