

The contribution of passive surveillance to biosecurity outcomes

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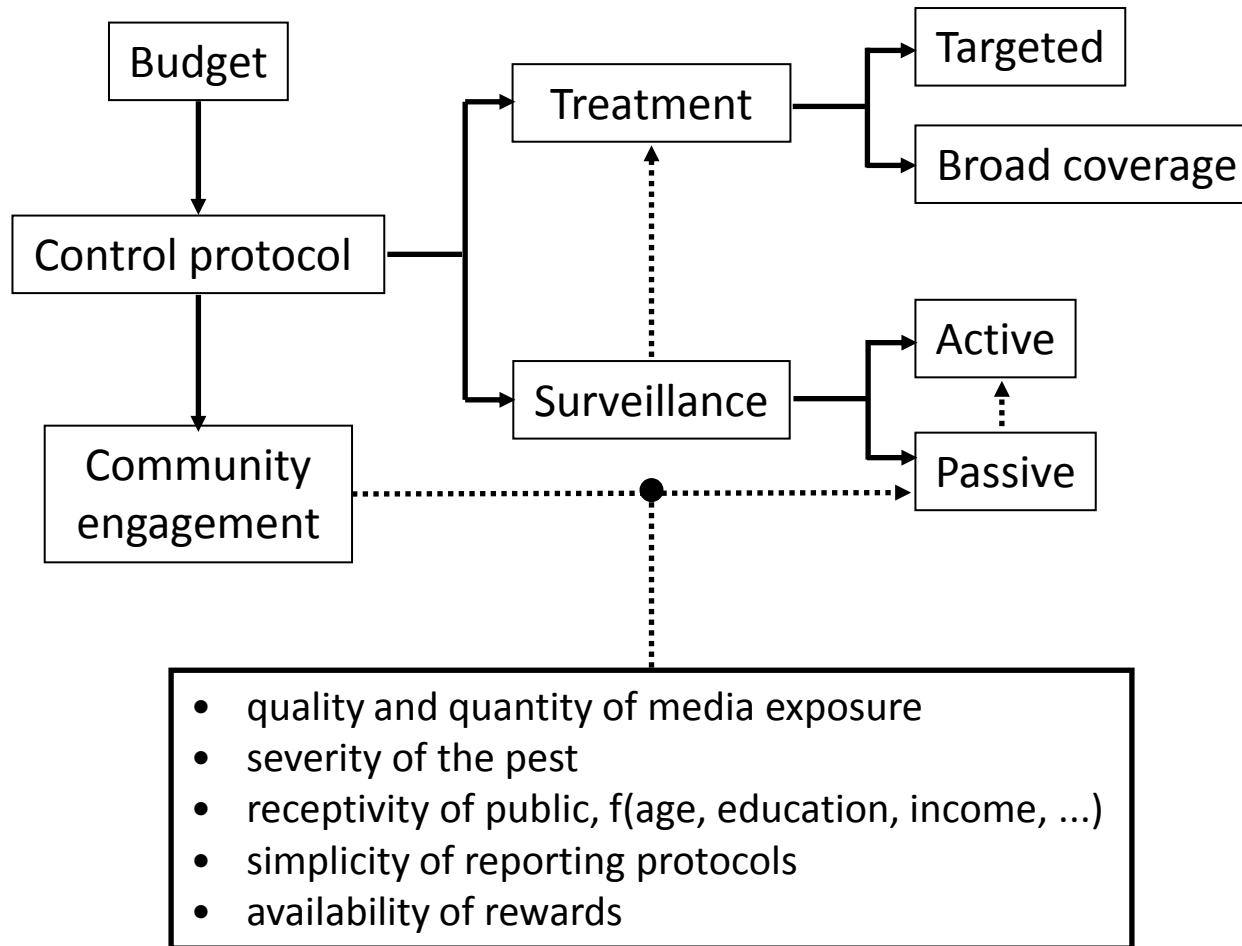
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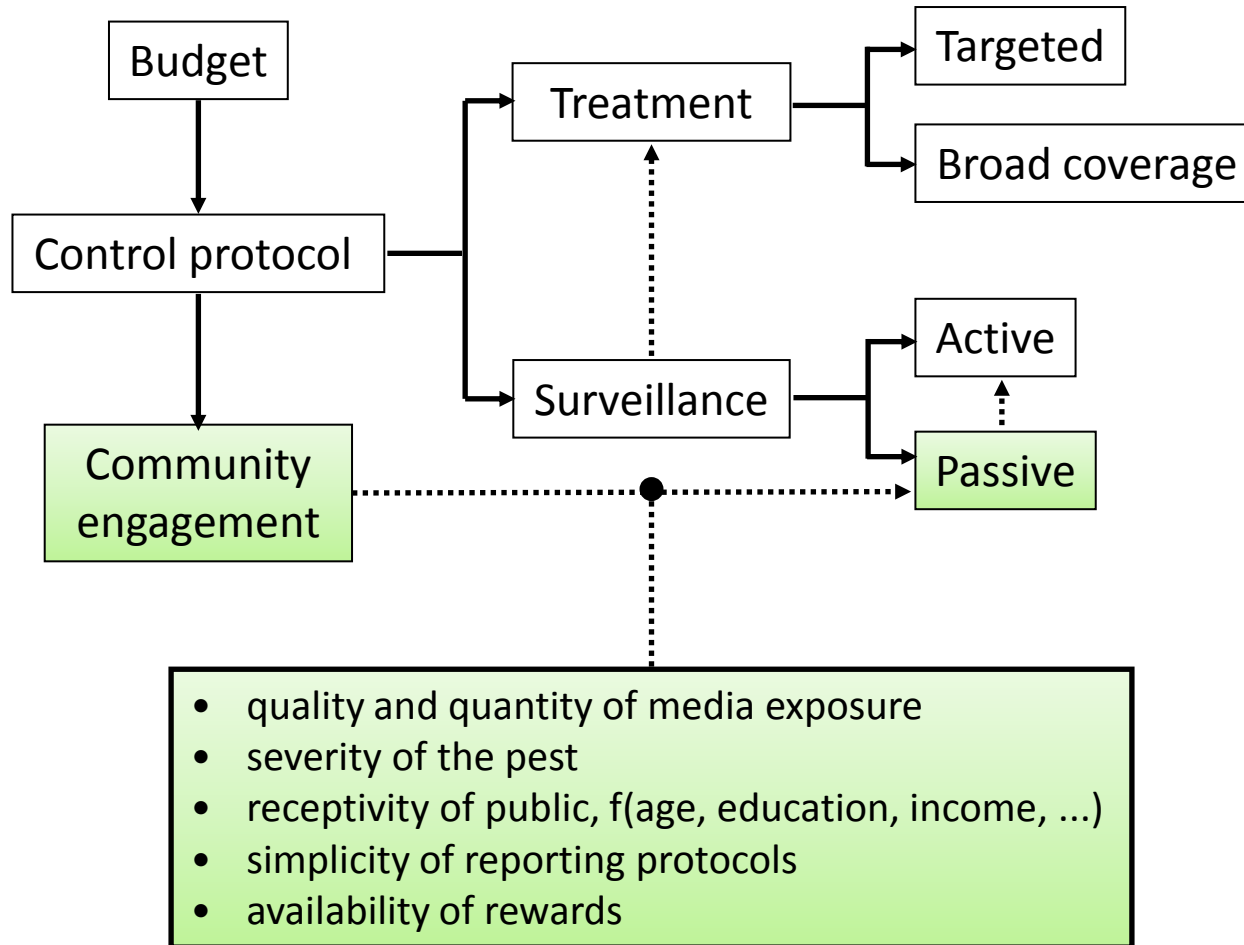
Some definitions

- **Active surveillance:** deliberate, coordinated searching by pest-management agencies
 - Occurs in response to, or independently of, passive surveillance
- **Passive surveillance:** discretionary reporting of suspected sightings by the public, industry groups, plant & animal health professionals
 - Used interchangeably with **general surveillance, community surveillance**
 - Related to **citizen science, community detectives**
 - Activated by **community engagement activities**
- **Passive detection:** The action of detecting a pest by a member of the public, industry groups, plant- & animal-health professionals

Where does passive surveillance fit in?



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Examples

Reports from public of:

- RIFA (Qld)
- European wasp (WA)
- EHB (WA)

Identification of diseased animals and plants, new weeds

- Weedspotters
- Bushcare

Identification of diseased animals, plants or wildlife

Surveillance for:

- Siam weed, miconia
- Varroa mites
- AI, FMD, Hendra virus
- Aquatic animal diseases
- Wild dogs, wild pigs
- citrus canker

Passive

Active

Group

Members of the public

Community groups

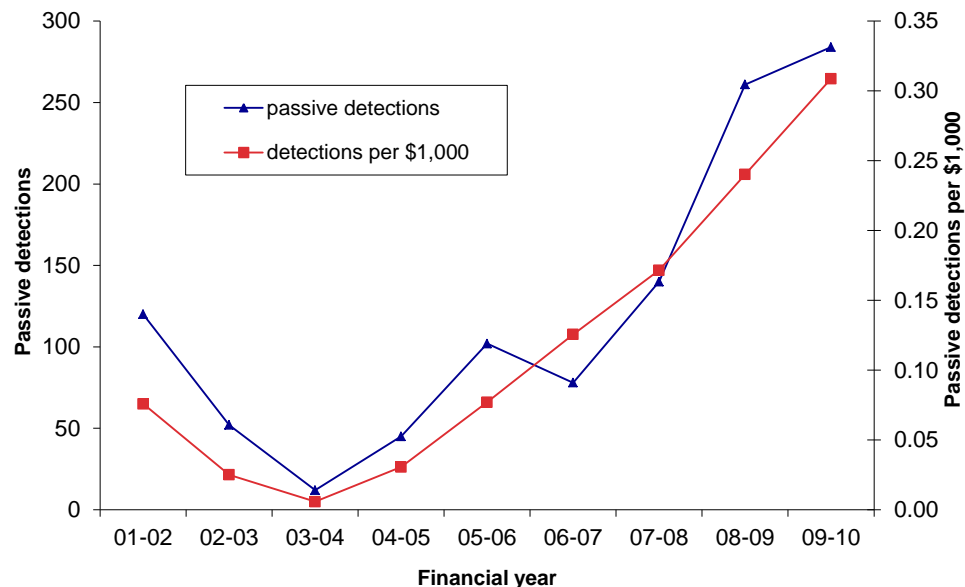
Farmers

Agronomists, vets

Pest/disease management agencies

What we know about passive surveillance from quantitative studies

- ACERA research with RIFA data (Cacho et al. 2012):
 - Cost-effectiveness of public engagement events has increased over time
 - Impact on public awareness decreases as distance from an event increases (1 – 4 km)
 - \$1m invested in public engagement events is estimated to save \$60m in active surveillance



What we know cont'd

- Scenario-tree analysis of Karnal bunt, WA (Hammond 2010)
 - Passive surveillance can be used to prove freedom from pests and diseases
 - Farmer identification of suspect grain samples provides > 75 % confidence that WA is free of the disease
- Analysis of NZ exotic pest & disease hotline using PPV, (Froud et al. 2008)
 - Most calls (98%) to hotline were from general public, resulting in PPV of 0.1%
 - Across all sectors (pre-border, border, post-border), PPV of passive surveillance = 4.7%

What we know cont'd

Reliability of citizen-science

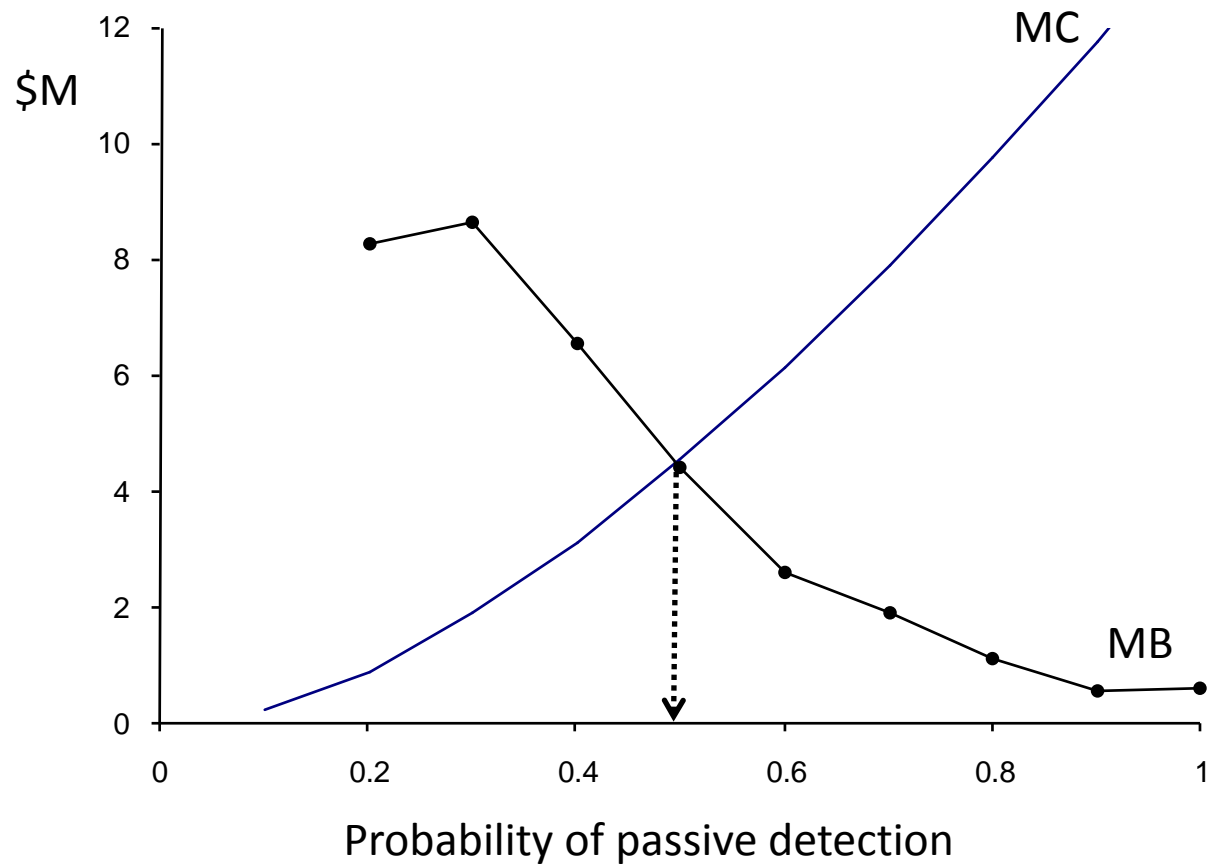
- Garden bird Health Initiative, UK, Robinson et al. (2010)
 - surveillance of garden bird mortality via opportunistic reports from the public & weekly reports from volunteers
 - Showed a decrease in occurrence of 3 species of birds due to disease
- Analysis of data in the Species Gateway (Sweden), Snäll et al. (2011)
 - Volunteer data compared to targeted surveys
 - Weak positive relationship

What we would like to know.....

- What is the return on investment in public awareness?
- What is the likelihood that particular types of people will report pests?
- What is the reliability of these reports?
- What types of public engagement activities work best?
- How can we measure the probability of detection?
- How can we use passive surveillance to delimit an incursion?

WHAT IS THE OPTIMAL LEVEL OF PASSIVE SURVEILLANCE?

Optimal passive surveillance



Which data should be collected?

- **Date of detection**
- **Location of detection** (GPS coordinates, and for negative samples as well)
- **Information on the reporter** (where they live, age, education level, occupation, motivation etc)
- **A measure of the age of the incursion** (size/number of nests, %coverage of the plant(s))
- Details of **community engagement activities** (initial and follow-up), including expenditures
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Acknowledgements

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The trade off between active and passive surveillance

