



Integrating science, policy and stakeholder outreach to manage an outbreak of an unwanted organism - *Mycoplasma bovis* 2017

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Growing and Protecting New Zealand



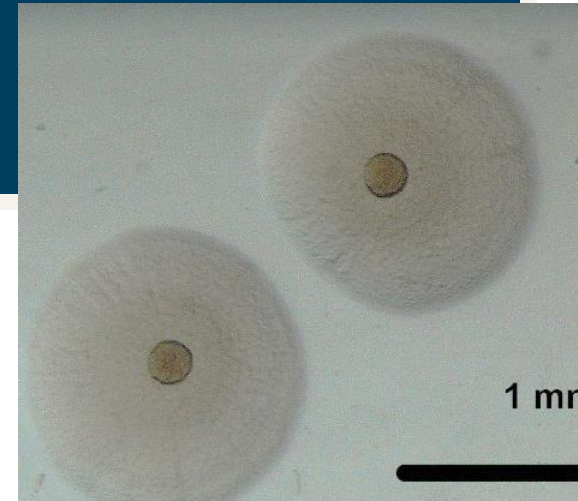
17 July - Exotic Disease Notification

- 1,300 cow dairy herd, South Canterbury,
- Severe clinical disease
 - Adult dairy cows
 - Mastitis, Arthritis, and Abortions
 - Calves
 - Stunted, swollen joints, pneumonia
- Samples collected
 - Milk and synovial fluid
 - PCR-positive for *Mycoplasma bovis*
 - 22 July - confirmed by sequencing
 - Urgent measures meeting held



The issue: *Mycoplasma bovis*

- “Unwanted organism” in NZ
- Small bacterium; no cell wall
- Colonises mucosal surfaces
 - +/- clinical disease, can be severe
- Spreads easily within a herd
- Poor response to antibiotic treatment
- Long-term, intermittent shedding



Early days, so many questions

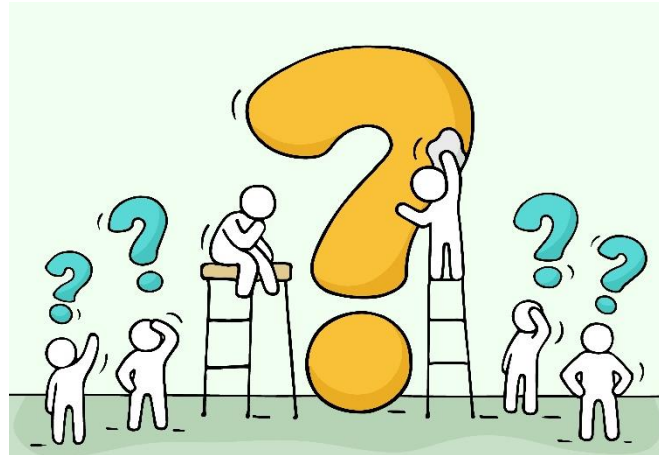
What control measures work for this disease?

Is it already present on other farms?

What tests do we have?

How and when did it get into NZ?

Why are you taking so long to do something?



I have a sick calf is it on my farm too?

How do I protect my cows?

Why aren't you telling us anything?

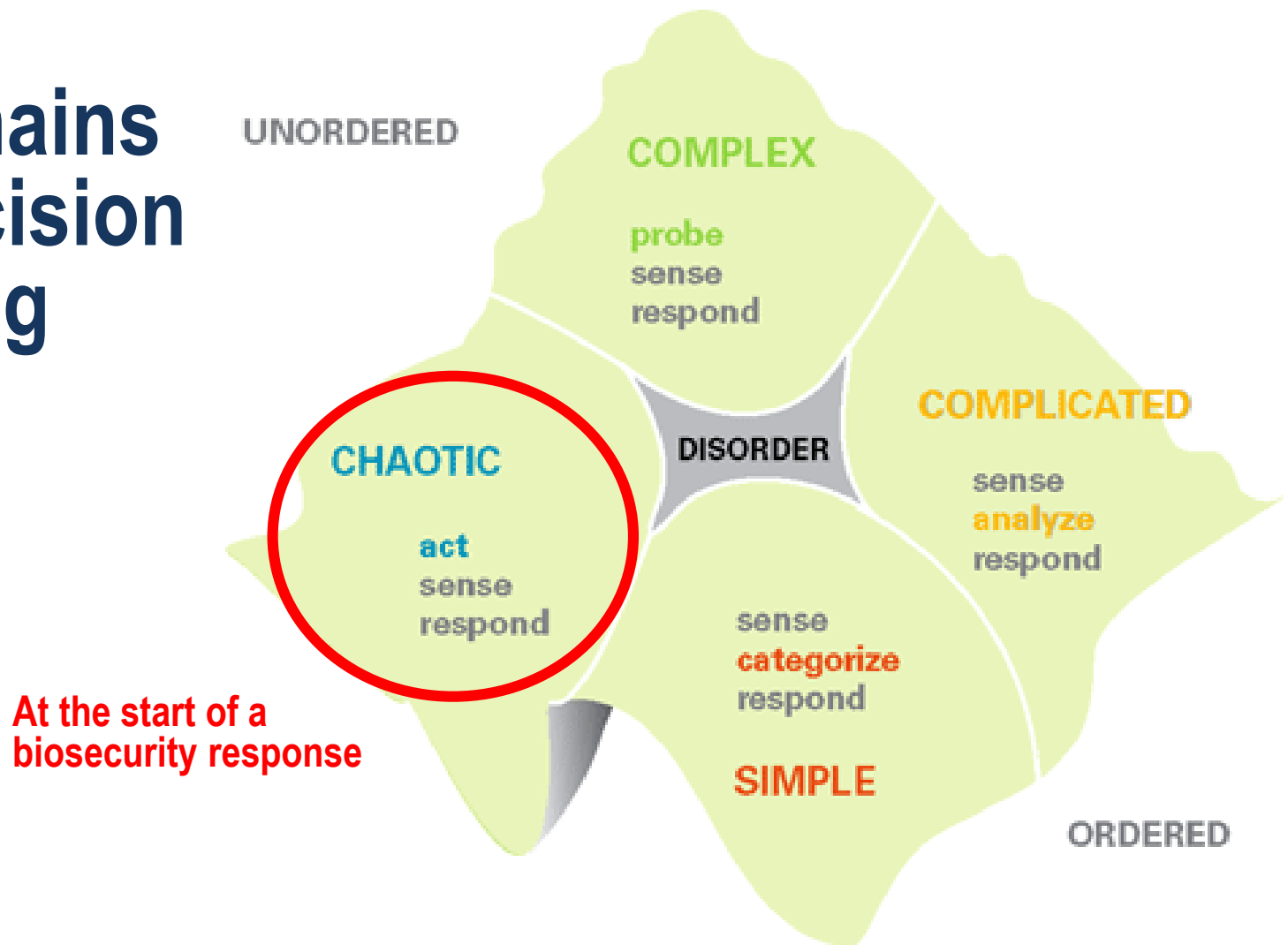
Who is to blame?

Why won't you use my miracle product?

Is it OK to collect milk from that farm?

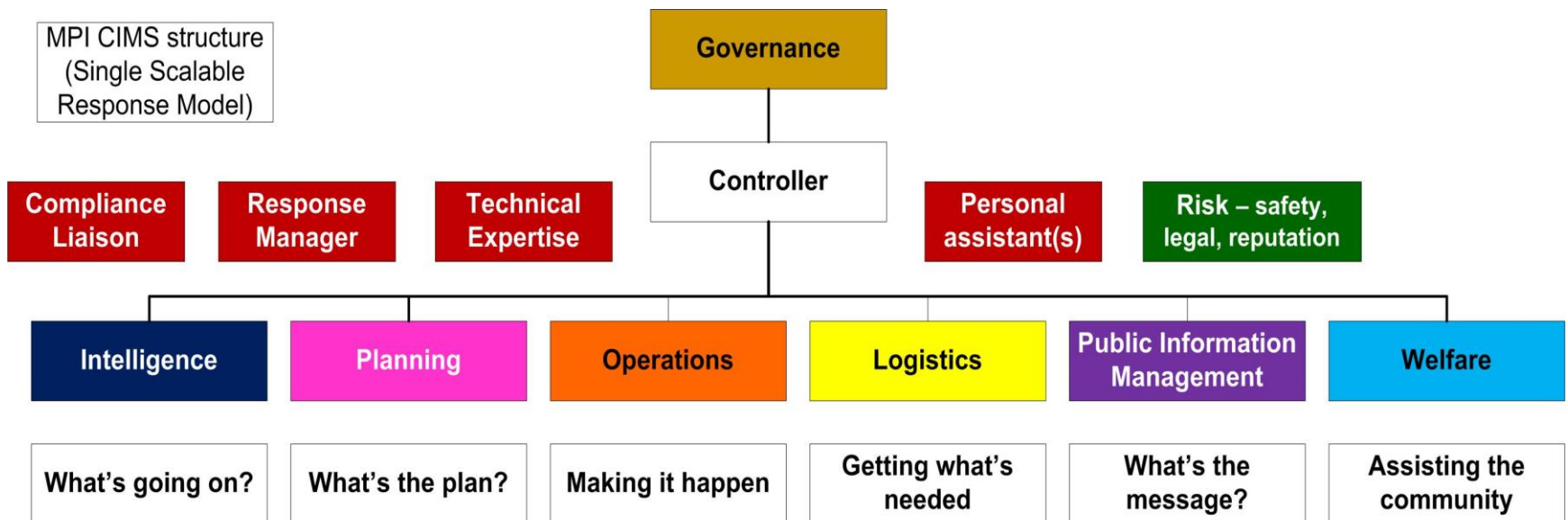
Dave Snowden's Cynefin Framework

5 domains of decision making



Decision Point 1: 22 July 2017

- Establish a Biosecurity Response
- MPI uses CIMS
 - Coordinated Incident Management System



Set Clear Objectives

AIM = to minimise and manage the impacts of *Mycoplasma bovis* on New Zealand by...

Containing *Mycoplasma bovis* to its known distribution in NZ

Determining and tracking distribution of *Mycoplasma bovis*

Assessing feasibility of eradication

Engaging with industry partners, stakeholders and Iwi and work with them to effectively manage this outbreak

Ensuring that the welfare of affected farmers and their livestock is effectively managed

Maintaining confidence in New Zealand's biosecurity system

Contain the disease

- Legal movement control notices
 - Prohibiting unpermitted movement of “risk items” on & off
 - Infected and Suspect Infected Places
- Boundary fencing
- Cleaning and disinfection procedures
 - On-farms
 - Transportation



Impacts of containment measures...

- Calving dry cows stranded on run-offs
- Breeding bulls unable to move
- Calf numbers outstripping farm capacities

- Transporters unwilling to collect stock
- Farm contractors unwilling to visit farms
- Farmers unwilling to purchase cattle from South Canterbury
- Social stigmatisation of farm workers

Assess Longer Term Options

1. Eradicate	and ongoing surveillance
2. Slow the spread	prolonged containment measures
3. Live with it	long-term management plan
4. Do nothing	industry to manage it

Informed Decisions Require Information...

Science

Industry expertise

Economic analyses

Legal powers



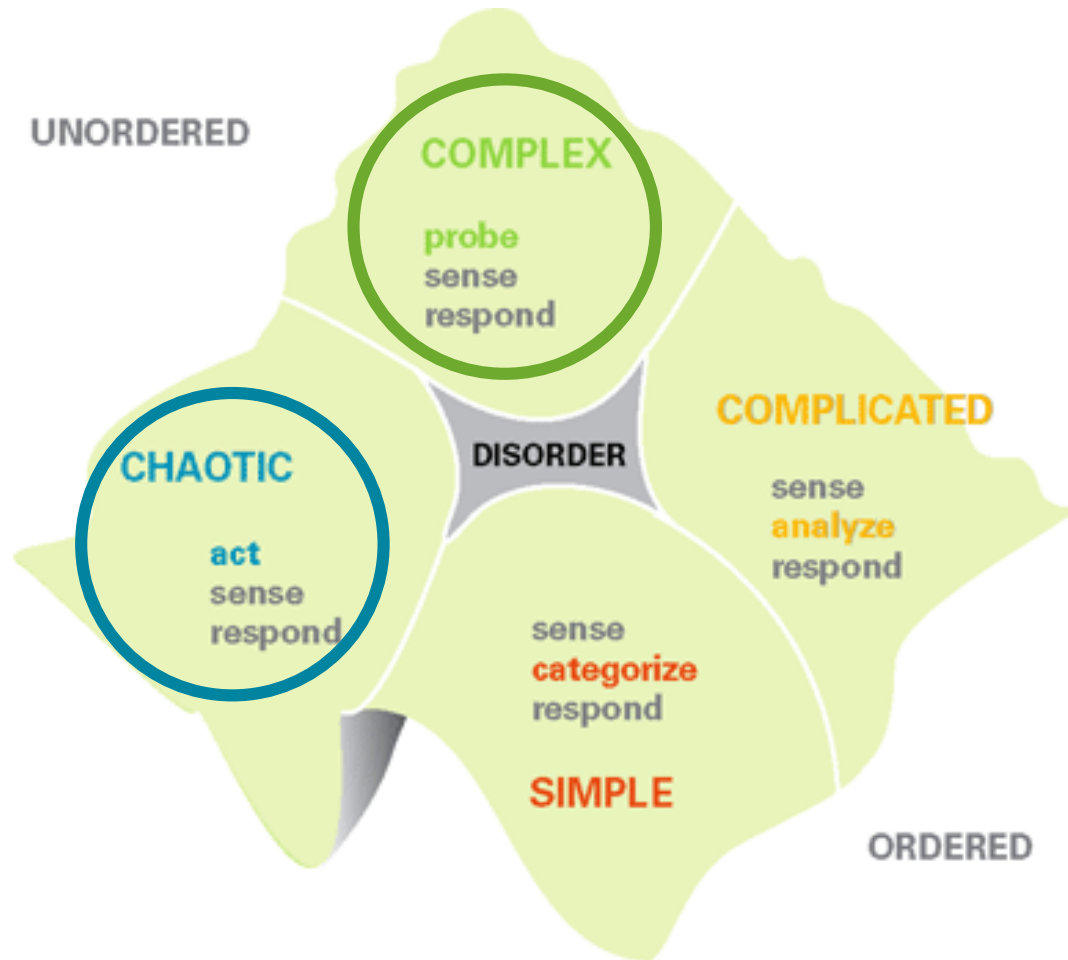
Market and trade impacts

Public, social, cultural concerns

Human and animal welfare

Health and safety

The Realm of Unknown Unknowns

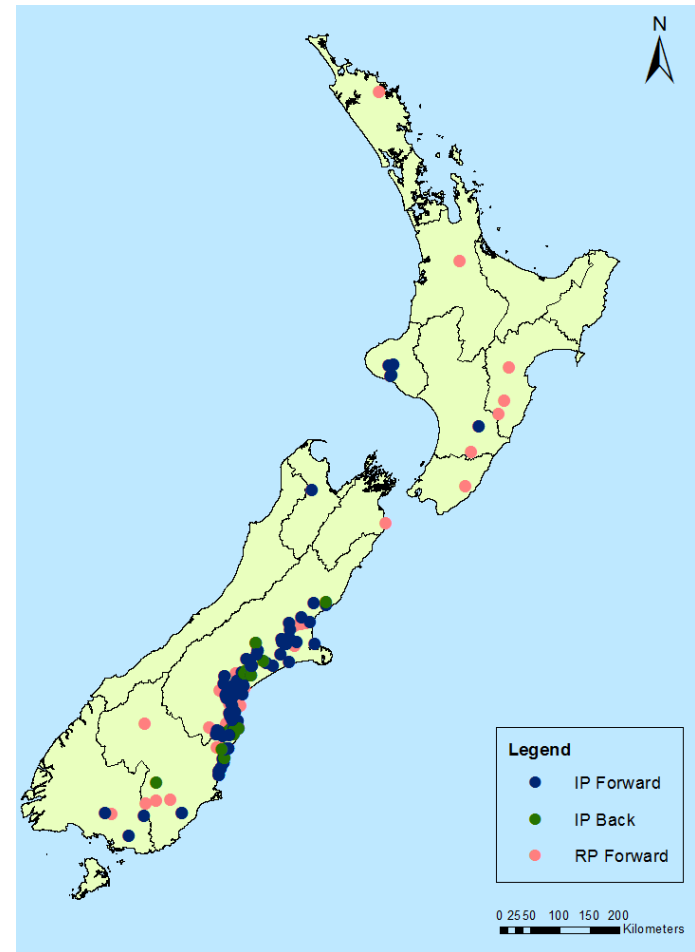


Building The Epidemiological Picture



Tracing

- Tracing
 - Animal movements on and off affected farms
 - Nov 2016 – July 2017
 - 237 properties
 - 2 positive



Delimiting Surveillance

- Delimiting surveillance
 - Affected group
 - 5 positive / 17
 - Neighbouring farms
 - 1 positive / 58
 - But probable trace property
 - Industry-led bulk milk testing
 - All 180 farms in two affected districts

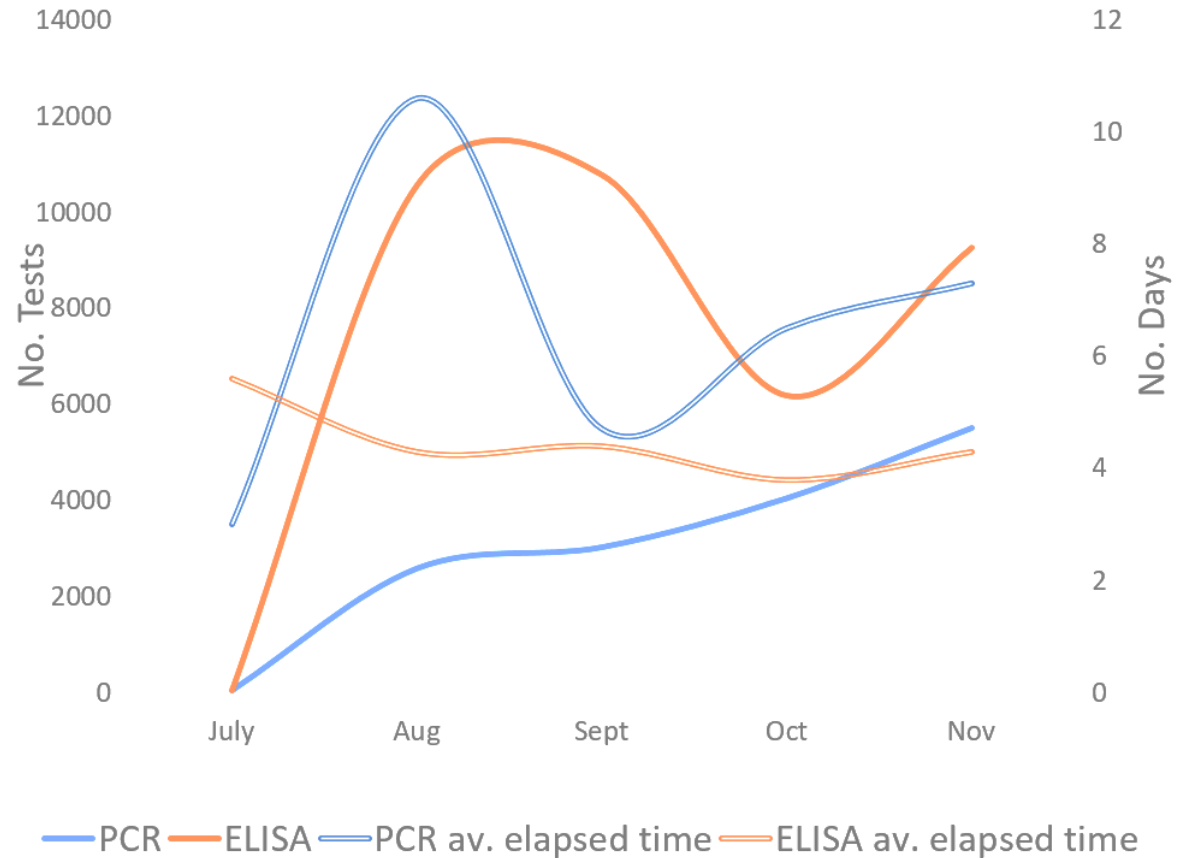
National Surveillance

- Targeted surveillance
 - “High-risk” dairy farms (89)
 - EpiCentre, Massey
- Passive surveillance
 - Hotline report cases (83+)
- Mastitis milk samples
 - Regional vet labs
 - 245 farms
- Beef feedlots (3)
 - Finishing animals originating from 500 farms



Laboratory Testing

- Real-time TaqMan PCR
 - Milk
 - Swabs
 - Semen
- BioVet ELISA
 - Serum



Decision Point 2: 10 October 2017

- 30,757 samples processed
- 7 Infected Places identified
 - 5 in van Leeuwen group
 - 2 traces from van Leeuwen group
- No evidence to suggest disease is present outside this immediate network
- Is eradication feasible?

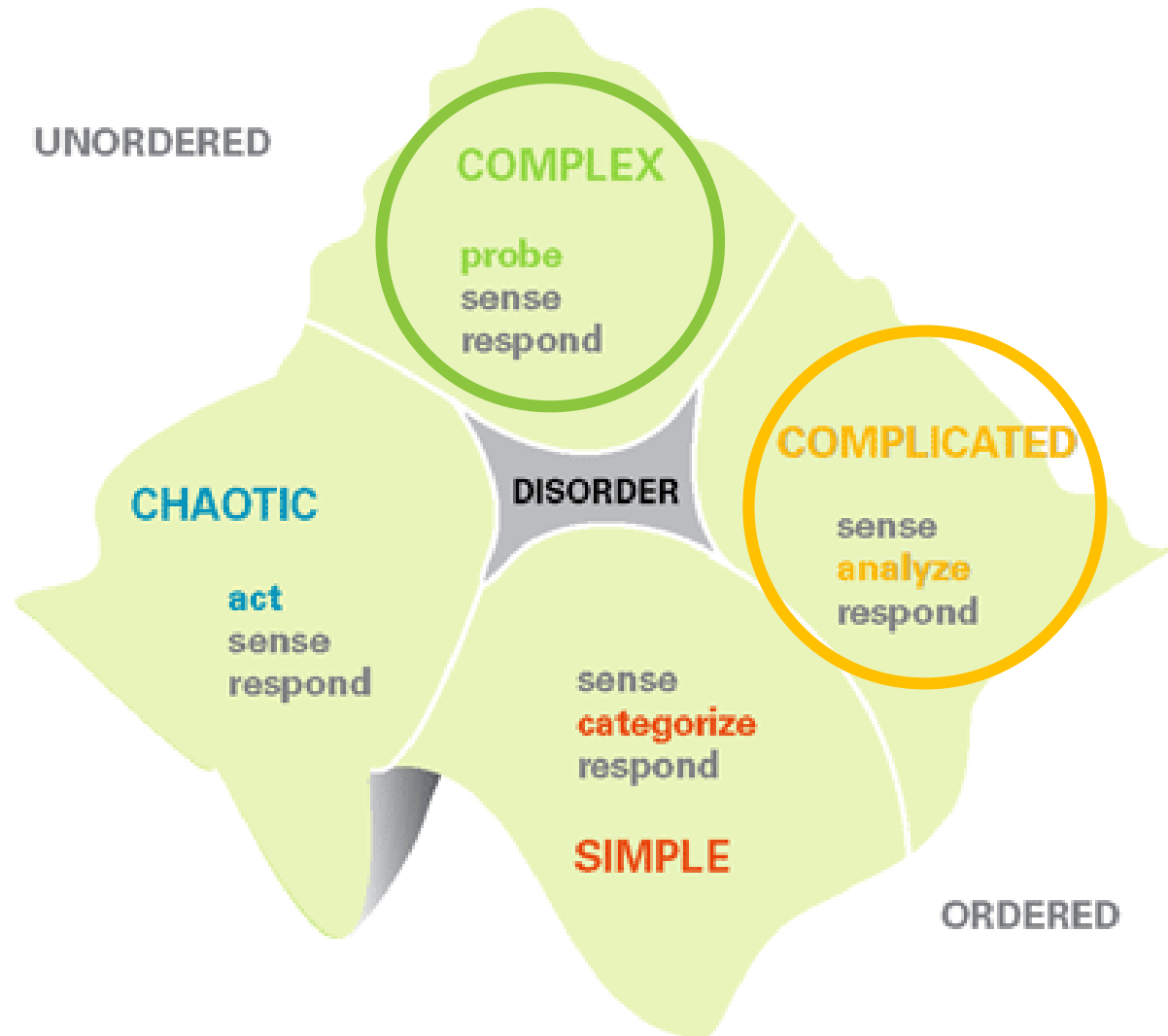
Other Important Information

- Source pathway analysis
 - Including genotyping
- Economic impact assessments
 - Dairy NZ
 - NZ Institute for Economic Research
- Industry Working Group
 - Livestock industries, NZ Veterinary Association, Massey University
- Technical Advisory Group
 - Independent expert group

Situation at 12 December 2017

- >55,000 samples tested
- Ten infected places identified:
 - 5 within van Leeuwen group (VLG)
 - 2 definite traces off VLG
 - 1 neighbour of VLG – probable trace
 - 1 in Napier – possible trace
 - 1 in Southland – possible trace

Where we're at



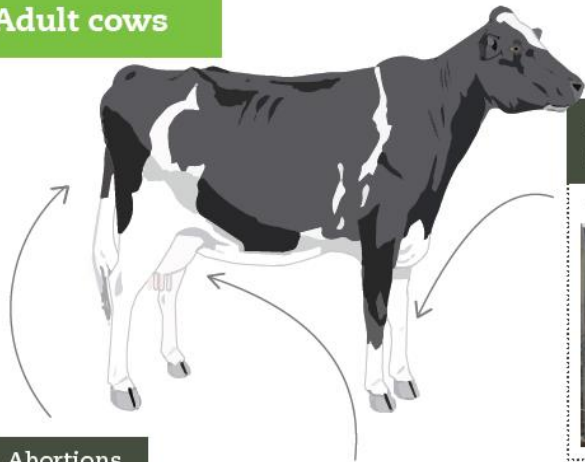
Steps Towards Decision Point 3

- Assess all information gathered
 - Is eradication a feasible option?
 - What would it entail?
 - What would be the benefits?
 - What would it cost?
 - What would be the adverse effects and impacts?
 - What are the alternatives?



Questions?

Adult cows



Lame cows with swollen legs/joints

- Painful and hot



Abortions

- Slips, early calves, small calves

Mastitis

- Swollen (rubbery quarters), involves multiple quarters
- Not painful or hot
- Non responsive to treatment
- Affected quarters will rapidly dry off
- Cow is not sick



Calves / young stock



Lame calves with swollen legs/joints

- Painful and hot



Fading calves

- Inflammation of the joints, and sometimes the brain



Ear infections

- Droopy ear
- Ear discharge
- Head tilt



Pneumonia

- Hacking cough



Conjunctivitis

- Sticky eyes, white eyes

