



# Community and Regional Resilience

**One Health: Addressing the Challenges of  
Global Health and Food Security**

**Brian Dabson**

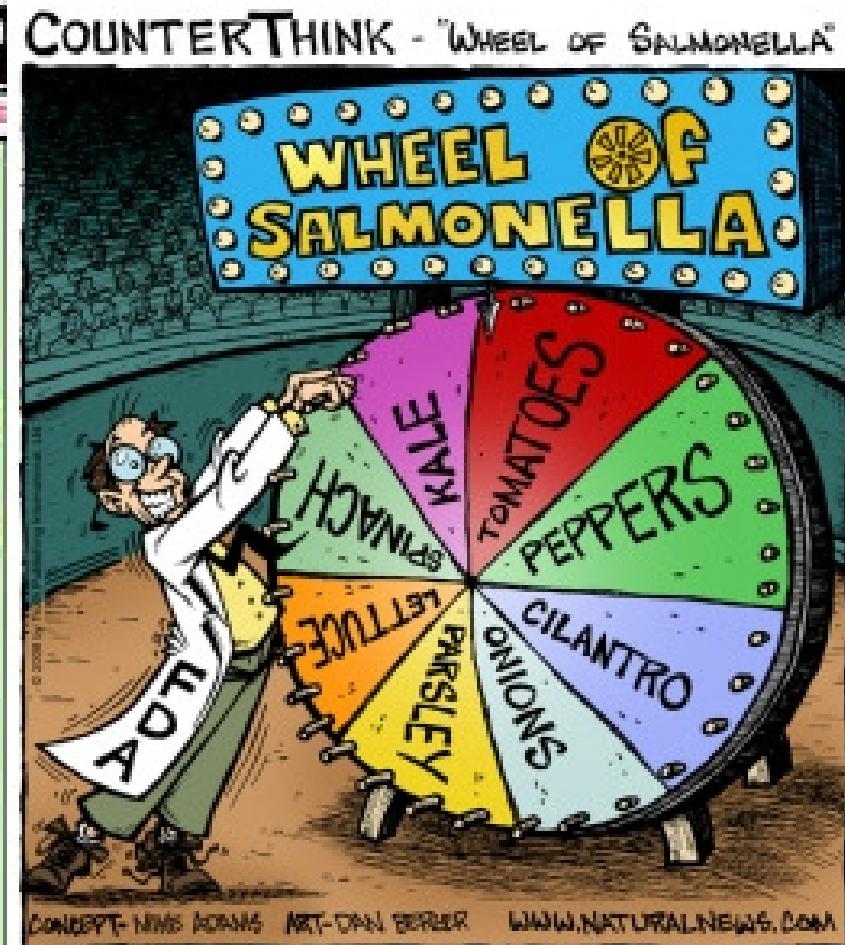
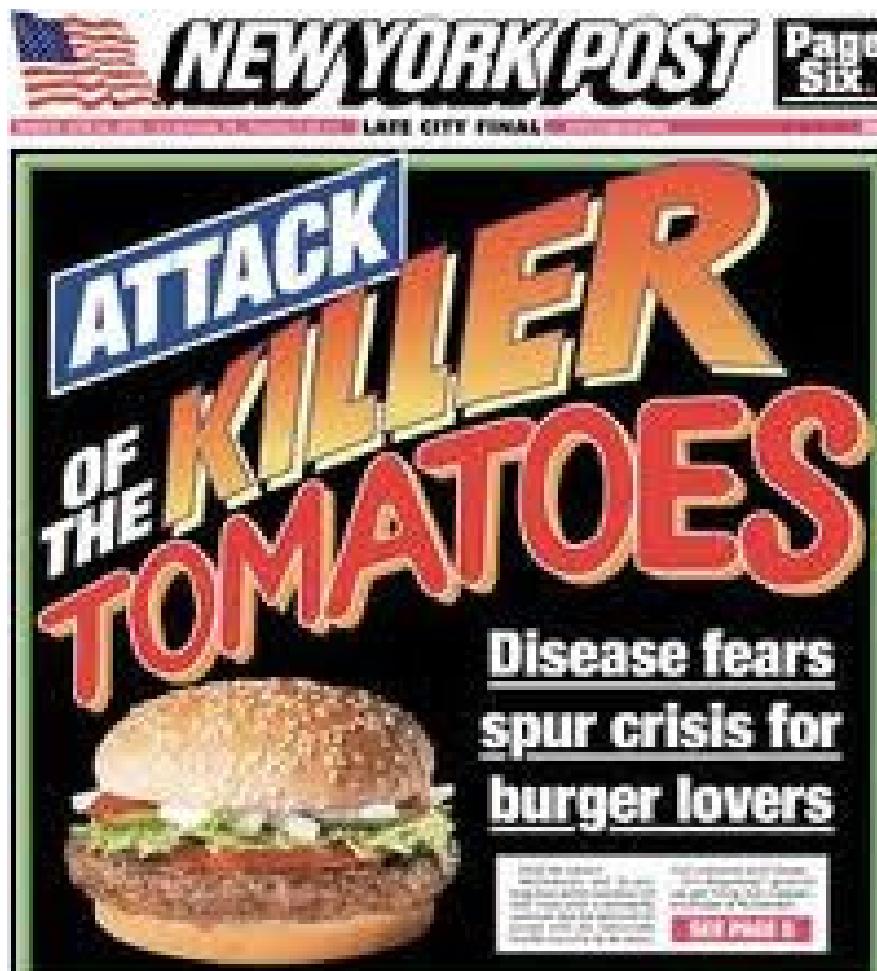
Emerging Threats to One Health:  
Implications for U.S. National Security  
Colloquium, April 12, 2011  
University of Missouri

# One Health Considerations



- Rural America is an important arena for potentially disastrous or even catastrophic events.
- Some obvious sources for infectious diseases:
  - Intensive animal feeding operations
  - Food processing facilities
  - Infected wildlife
  - Infected visitors, contaminated transport modes
  - Contaminated water sources

# Food Poisoning Outbreaks



# Severity



	Emergencies	Disasters	Catastrophes
Impacts	Localized	Widespread, severe	Extreme, physical and social
Response	Mainly local	Multi-jurisdictional, intergovernmental but bottom-up	Federal initiative and proactive mobilization
Procedures	Standard operating procedures	Disaster plans into effect, but likely challenges	Massive challenges beyond pre-existing plans
Resources	Within response resources	Extensive damage to emergency services	Emergency response system paralyzed
Recovery	No significant challenges	Major recovery challenges	Cascading long-term effects, massive recovery challenges

# Foot & Mouth 2001 UK

**rupri**  
*rural policy research institute*



Brian Dabson

April 12, 2011

# Foot & Mouth 2001 UK



- Outbreak lasted 7 months  
>2,000 cases
- 6 million animals culled
- Est. \$11 billion impact on UK economy
- Major impact on Lake District -  
- 40% cases,  
5 million tourists stayed away
- Spread to mainland Europe

# Foot & Mouth 2001 UK



- Led to major changes in:
  - Contingency planning, exercises
  - Integrated strategies at national and local levels
  - Controls over animal movements
  - Farmer education
  - Communications improvements

# Community & Regional Resilience Institute



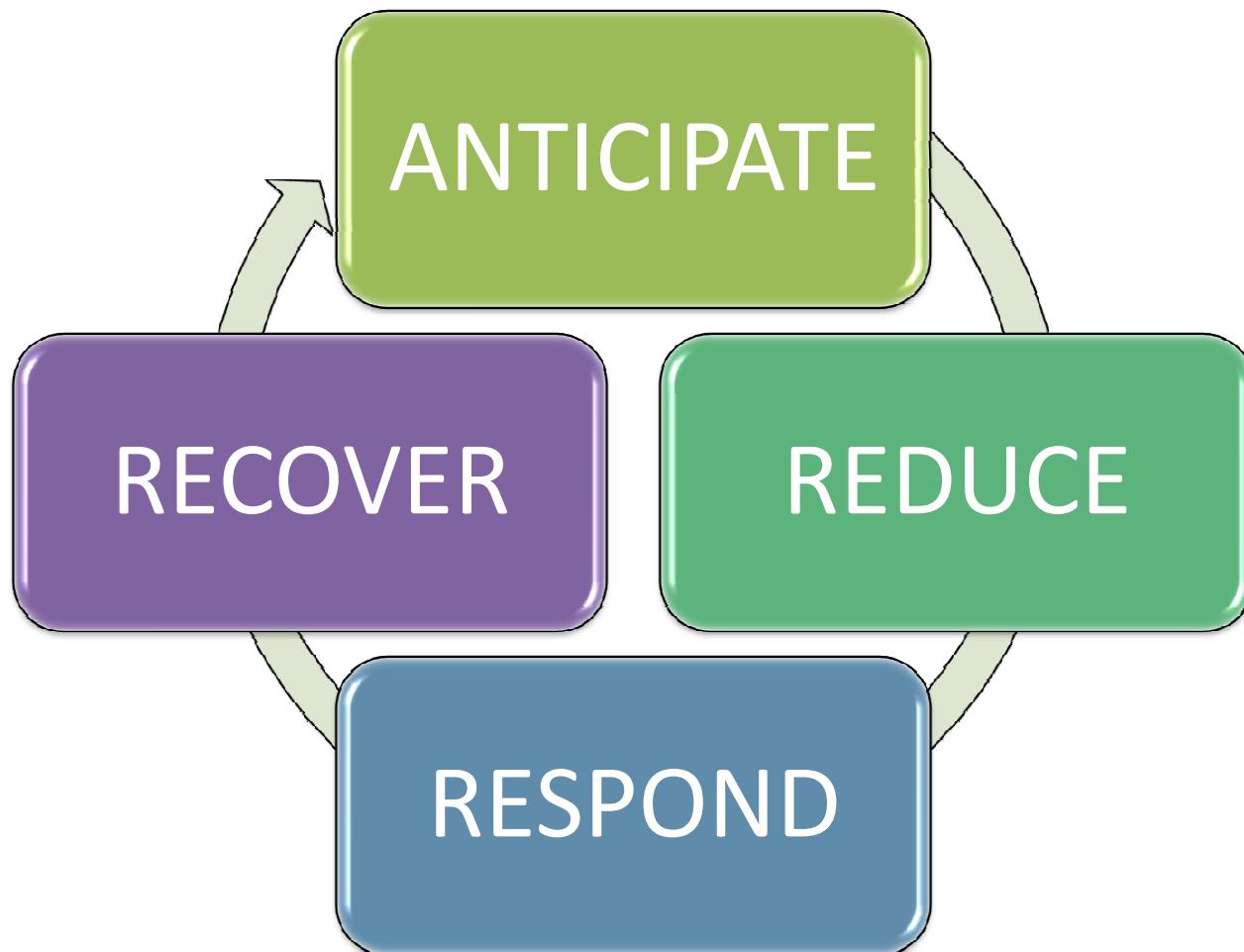
- Program of the Oak Ridge National Laboratory
  - Develop processes and tools with which communities and regions can better prepare to withstand effects of natural and human-made disasters
  - Establish better understanding of community resilience that is accurate, defensible, welcomed, and applicable to communities nationwide
  - RUPRI part of effort to develop a “community resilience system” facilitated by Meridian Institute

# Community & Regional Resilience Institute



- CARRI commissioned a series of research syntheses to capture the current state of knowledge about resilience – what it is, how to get there, how to measure it.
- This presentation is a very brief summary of certain elements of those research syntheses
  - Cutter et al (2008), Moser (2008), Colten, Kates & Laska (2008), Morrow (2008), Gunderson (2009), Tierney (2009), Wilbanks (2009) and Rose (2009).

# CARRI's Four Dimensions of a Resilient Community



# CARRI's Four Dimensions of a Resilient Community



- **Anticipates** problems, opportunities, and potential for surprises
- **Reduces vulnerabilities** related to development, socio-economic conditions, and sensitivities to possible threats
- **Responds** effectively, fairly, and legitimately
- **Recovers** rapidly, better, safer, and fairer

# CARRI's Four Dimensions of a Resilient Community



- **Anticipates** problems, opportunity, potential for surprises
- **Reduces vulnerabilities** related to economic development, socio-economic sensitivities to possible threats
- **Responds** effectively, fairly, and transparently
- **Recovers** rapidly, better, safer, and fairer
  - An unanticipated event
  - Anticipated events but failed response
  - Anticipated events that were proven wrong by experience

# Vulnerability



- “...the pre-event, inherent characteristics or qualities of systems that create the potential for harm, or a differential ability to recover following an event”  
(Cutter et al, 2008)
- Extent of vulnerability depends on **exposure** (who or what is at risk) and **sensitivity** of the system (the degree to which people and places can be harmed)

# Vulnerability



- **Location/proximity to hazard-prone areas** – coasts, floodplains, seismic zones...a function of magnitude, duration, frequency, impact, rapidity...
- **Built environment** – quality of construction and repair of buildings and infrastructure
- **Economic assets** – degree of dependency for employment
- **Social and demographic characteristics** – function of inequalities

# Vulnerability



- **Location/proximity to hazard-prone areas** – floodplains, seismic zones...a function of hazard type, duration, frequency, impact, rapidity
- **Built environment** – quality of construction, availability of repair services, repair of buildings and infrastructure
- **Economic assets** – degree of dependence on agriculture, employment
- **Social and demographic characteristics** – social inequalities

**Social vulnerability** –  
the unequal  
exposure to risk  
coupled with  
unequal access to  
resources  
(Morrow, 2008)

# Resilience



- “...the ability of a human system to **respond and recover**. It includes those inherent conditions that allow the system to absorb impacts and cope with the event” and
- “...post-event adaptive processes that facilitate the ability of the system to **reorganize, change, and learn** in response to the event.” (Cutter et al 2008)

# Economic Resilience



- Speed at which a business/sector can recover from a severe shock (Rose 2009)
- Distinguish between **stocks** (buildings) and **flows** (inputs and markets)
- Distinguish between **inherent resilience** – everyday ability to cope with crises, and **adaptive resilience** – extra ingenuity, effort to deal with major disruptions
- Distinguish between **levels of response**: firm-specific, sector or community-specific, and macro responses

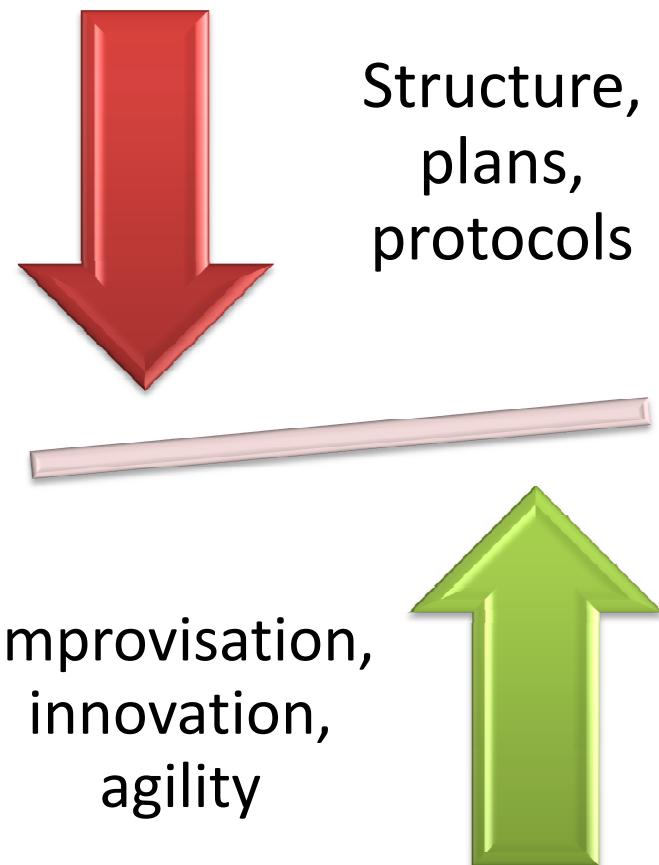
# Resilient Communities



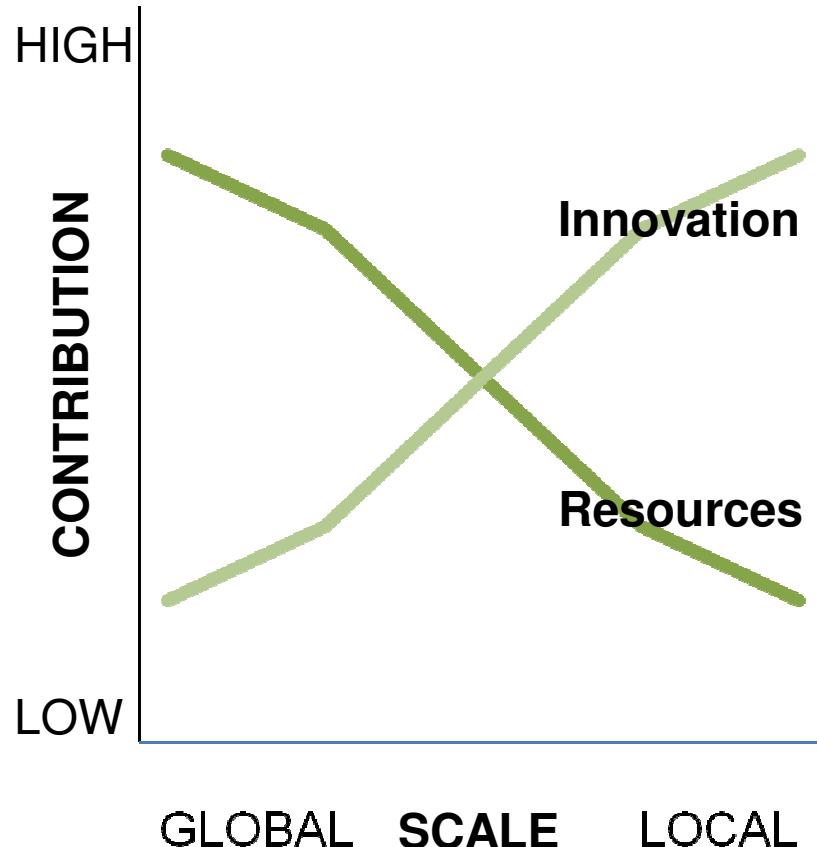
- **Key to local success** – balancing environmental and development issues, while promoting safe and livable places
- Underscores the **importance of planning** in building resilience and reducing losses from disruptive events

# Collaboration

- Across jurisdictions – vertical and horizontal
- Across sectors – public, private, voluntary
- Balance between formal and informal



# Collaboration



- Combination of maximizing resources and innovation requires:
  - Trust
  - Expert communications
  - Information systems
  - Leadership

# Foot & Mouth 2001 UK



- *The enduring and complex nature of events taking place in often scattered communities may have prevented statutory agencies from 'seeing' the FMD epidemic as a human disaster.*
- *A 'disaster' in the more conventional sense...tends to prompt pro-active and innovative approaches on the part of service providers, who feel able to dispense with 'peacetime' rules.*
- *There were some examples of innovative responses during the FMD crisis, especially in primary care, but these were scattered, informal, and not formally recorded; thus knowledge about them was hard to share.*
- M. Mort, I. Convery, C. Bailey, J. Baxter (2002) “The Health and Social Consequences of the 2001 Foot & Mouth Disease Epidemic in North Cumbria” Institute for Health Research, Lancaster University

# **Rural Policy Research Institute**

## **Rural Futures Lab**

**www.rupri.org**