# Fighting phytopathophobia

how to construct constructive public engagement with (pathogen) biocontrol for nature without augmenting public fears

**Keith Douglass Warner**
Center for Science, Technology & Society
Santa Clara University

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- Phobia = irrational fear

# Scientific logic

More
research

→ → → Better
knowledge

→ → → Improved
implementation

# Lay public logic

More science

→ → → More to worry about

→ → → Increased fears

# Where is the deficit?

1. *Scientific literacy, knowledge*
2. Trust: publicly perceived trustworthiness of scientific institutions

*Fundamental recommendation for fighting phytopathophobia:*

Construct public trust in invasive species control efforts

using public engagement processes that link trustworthy messengers and appropriate messages with the public

# menu

1. Understanding lay public risk perception
2. Constructing public engagement
3. Recommendations for practitioners and their institutions

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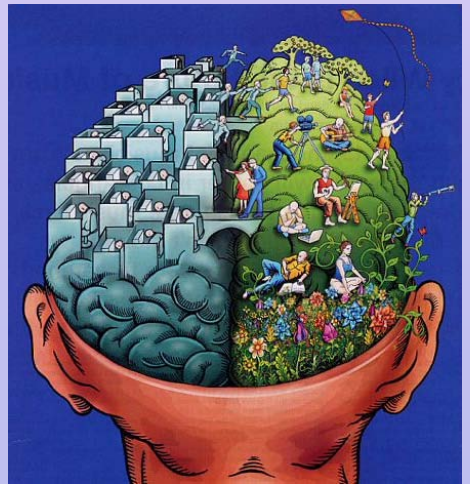
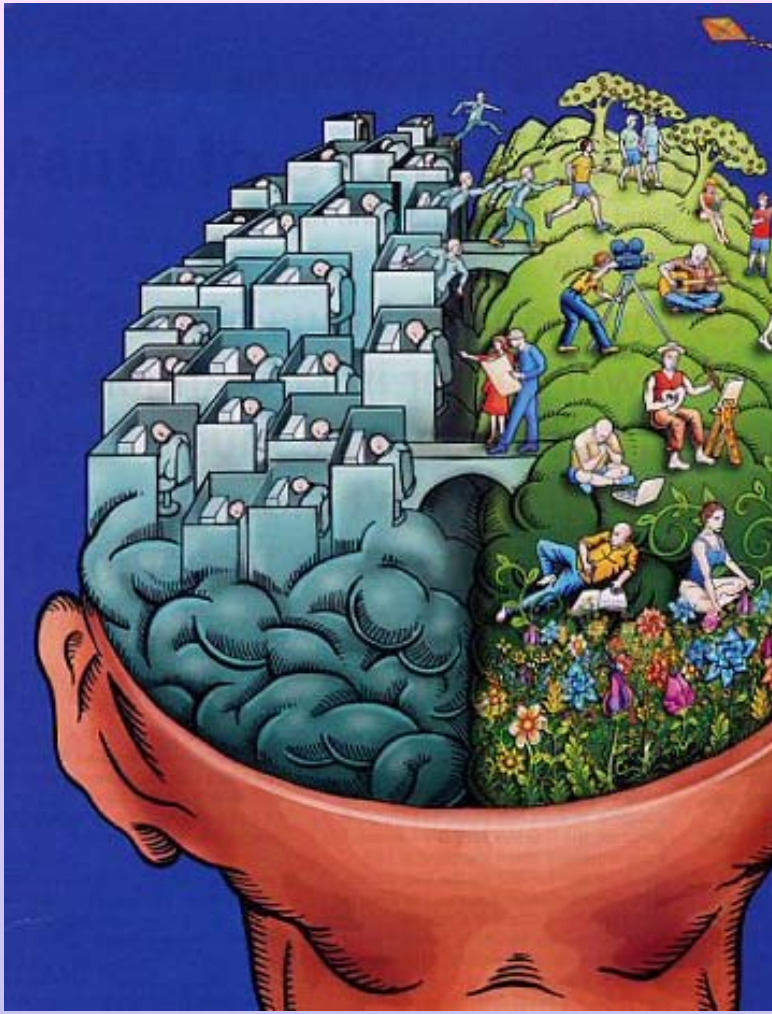
   a. +++ consistent quantifiable
   b. - - - - public feels excluded
   c. Perverse outcomes possible: augmenting public fears

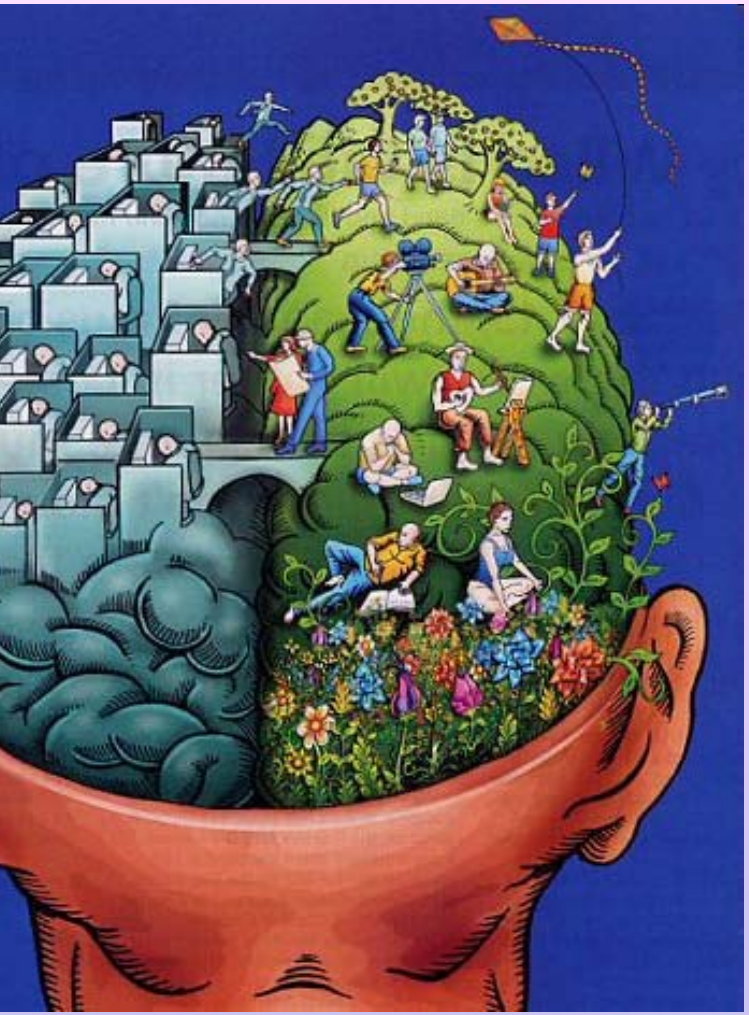
# Two modes of risk perception

Recent research in cognitive psychology and neuroscience has demonstrated two fundamental different ways in which human beings conceptualize risk (Slovic et al., 2004).



The "analytic" system uses formal logic, probabilistic reasoning, and scientific deliberation.





The “experiential” system is intuitive, largely automatic response to perceived danger, and often inaccessible to subjective awareness.

# Lay public logic

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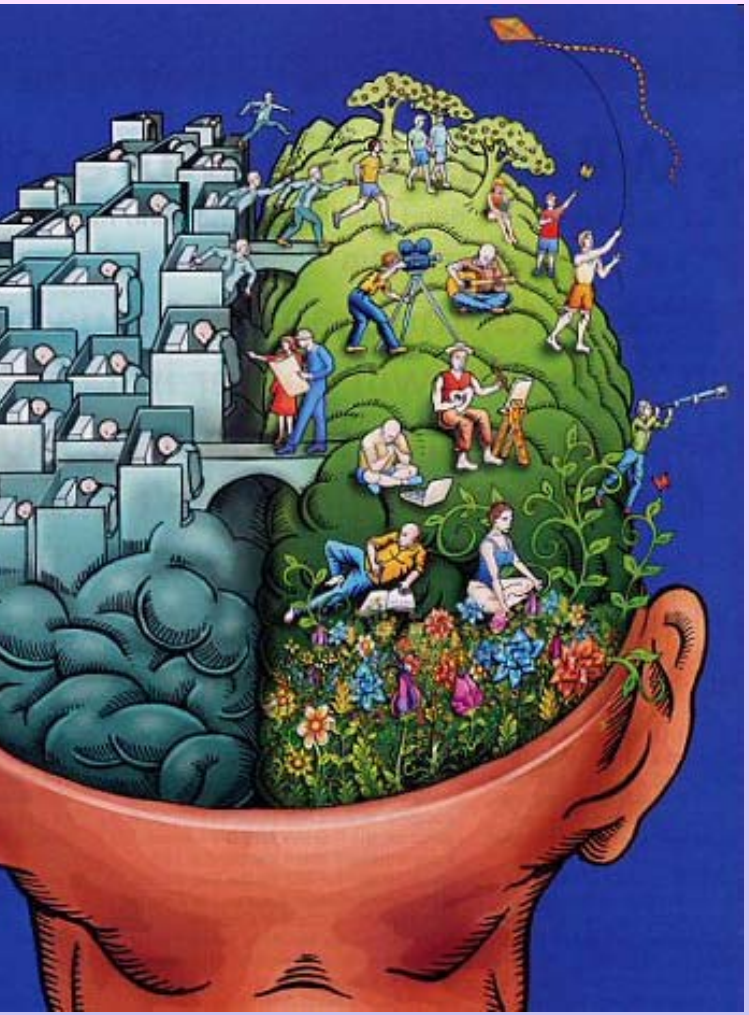

- human evolutionary processes
- select against those who fail to perceive environmental risks (e.g., larger predators, foul water)
- the default approach to human risk perception (Slovic et al., 2004).

# Implications:

1. Perverse outcomes occur when the analytic risk assessment paradigm is used to communicate with audiences who can only use experiential risk perception paradigm.

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1. Perverse outcomes occur when the analytic risk assessment paradigm is used to communicate with audiences who can only use experiential risk perception paradigm.
2. Biocontrol scientists are trained to use the risk assessment paradigm

# Use the right metaphor

Don't use militaristic metaphors (Larson 2005)

- Attack
- Battle plan
- Biological invasion, biological warfare
- Fight
- Weapon

# Use the right metaphor

Don’t use militaristic metaphors

Analogy of a pharmaceutical (Simberloff & Stiling 1996)

# Remedy proposed without agreement on purpose

- Analogy of pharmaceutical
- Only meaningful in context of invasive species threatening conservation values

# Public asks very simple questions:

- *Why introduce new organism to an environment?*
- *What will a control agent do once it consumes all its prey?*

# Recommendations 1 & 2

1. Public messages should always state positive conservation values + invasive species-caused harms first, as the premises for any proposed introduction.
2. Use pharmaceutical or medical analogies, not militaristic metaphors. Do not call them phytopathogens in public.

# Recommendation 3

3. “Biocontrol for nature” messages targeting the public need to be restructured with the idea of trustworthiness and validation.

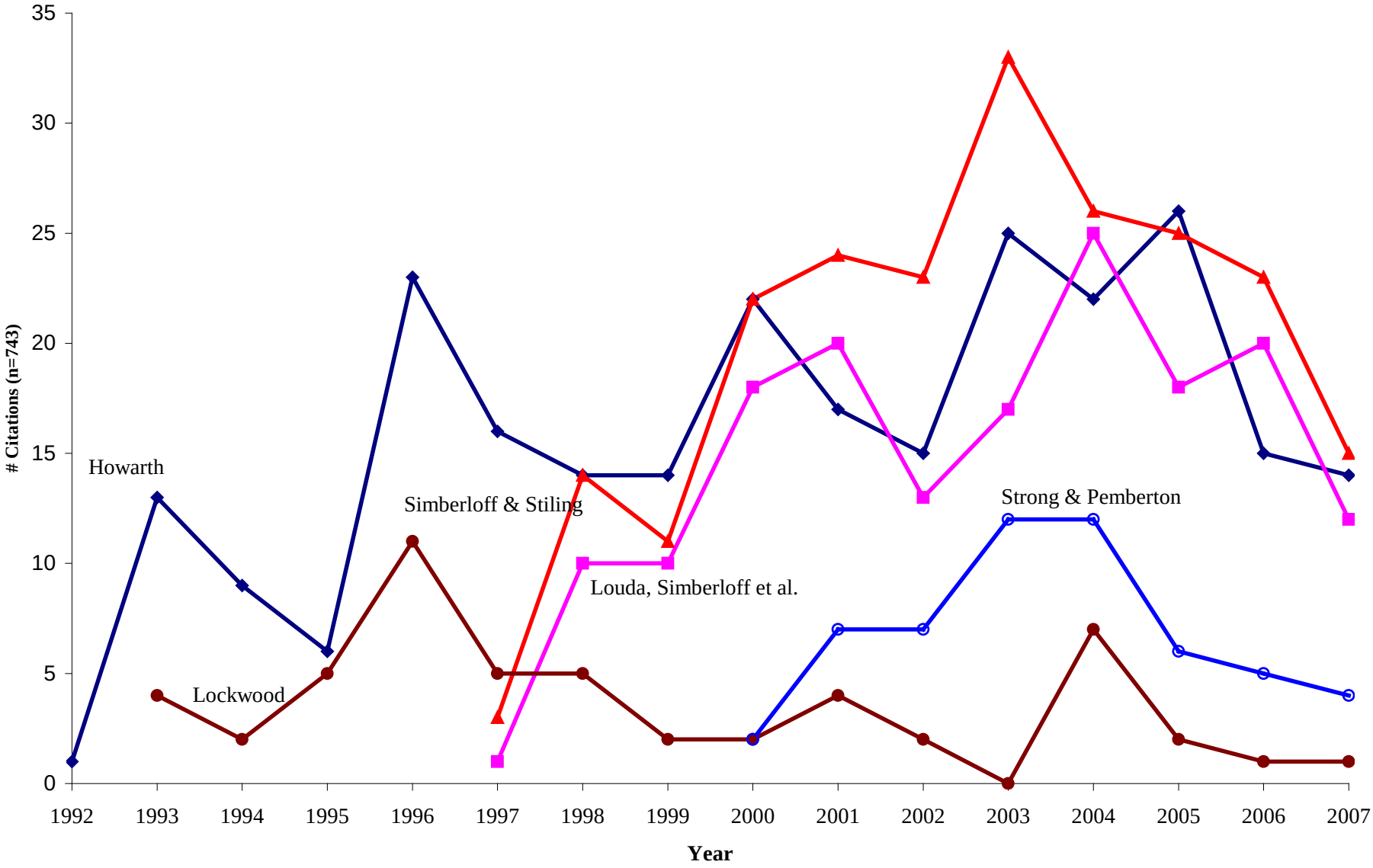
# Scientific controversies can undercut public support

Science controversies that are considered routine by scientists, when shared with the public, can erode the public's trust in scientists.

# 5 major critical papers

| | | |
|---|---|---|
| Howarth 1991 | Annual Review of Entomology | Impacts on native biodiversity; duties of practitioners; reform of practice and policy **252** |
| Lockwood 1993 | Env. entomology | Impacts on native biodiversity; ethics of neo-classical biocontrol; policy reform **53** |
| Simberloff & Stilling 1996 | Ecology | Assessing and reducing risk of introduced species **219** |
| Louda, Simberloff. et al. 1997 | Science | Clear evidence of feeding on nontarget native plants **164** |
| Strong & Pemberton 2000 | Science | Biocontrol policy reform **55** |

## Number of citations for 5 major critics 1992-2007



# Not data, messengers

The public evaluates proposed decisions not on data, but on the perceived trustworthiness of the messenger.

# Recommendations 4 & 5

4. Create intentional partnerships with trustworthy messengers (e.g., stakeholders)
5. Decision-making process improved by a different form of external scientific peer review (not perceived insiders) guided by clear criteria accessible to public

Communication,
Public consultation → → → Public engagement

# Public communication

Scientists
Public agencies

Generic
lay publics

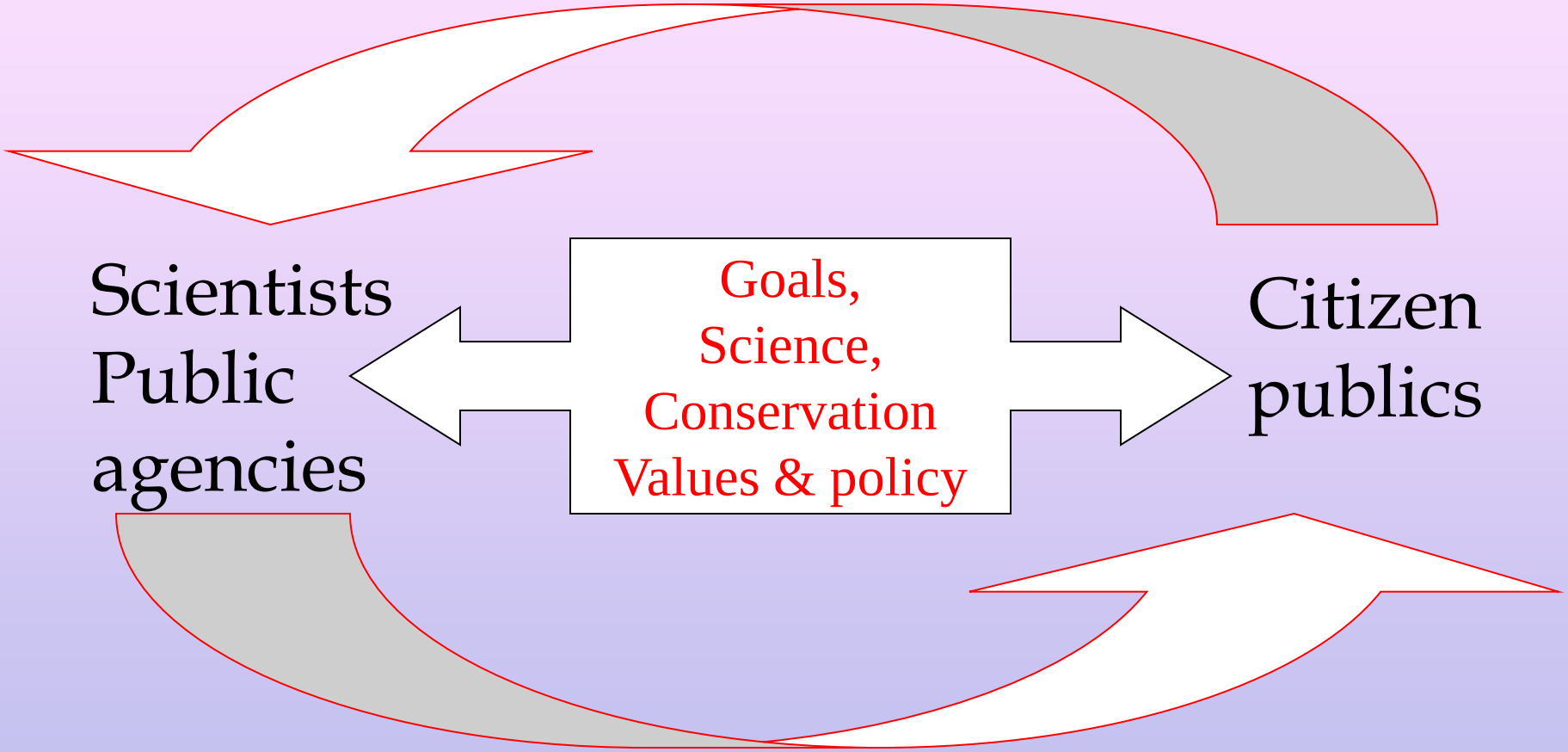
# Public consultation

Scientists
Public agencies

Generic
lay publics

1. Lay public unconstrained by evidence or logic
2. Public fear and mistrust are at record highs….and these are more real to the public than scientific knowledge
3. Fringe voices get the microphone

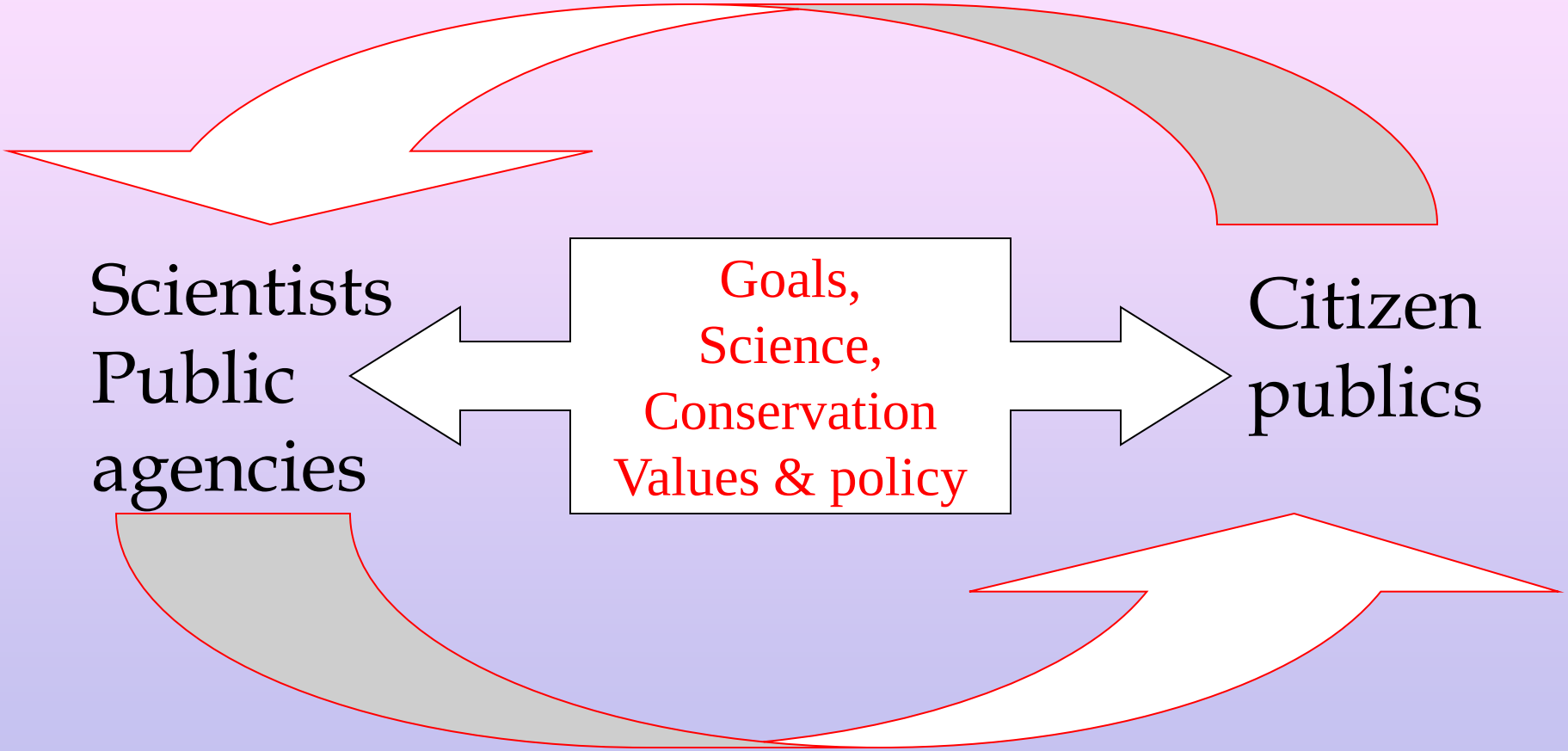

# Public engagement



# Public engagement can help…

1. Build agreement on conservation goals
2. Require ground rules for discussion
3. Establish consensus scientific views
4. Facilitate deliberation

# Public engagement



ERMA
New Zealand




1. California Invasive Species Advisory Committee

*Fundamental recommendation for fighting phytopathophobia:*

Construct public trust in invasive species control efforts

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# Recommendations - messages

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# Recommendation – means

6. **Construct** public engagement processes
7. **Get help** from a science communication expert

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# Thanks to….


NSF


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