

How Mental Shortcuts Can Bias Wildlife Management Decisions

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Wildlife Management Decisions

- **GOOD** decisions are
 - Consistent with beliefs (facts) and preferences (values)
- **HARD** decisions have
 - Uncertain outcomes
 - Multiple, conflicting objectives
 - Multiple parties
- **BAD** decisions are
 - **NOT** consistent with beliefs and preferences

Mental Shortcuts

- Evidence from experimental and observational studies
- Lead to systematic biases
 - “facts” (probabilities)
 - “values” (preferences, trade-offs)
- Examples from wildlife management
- Remedies

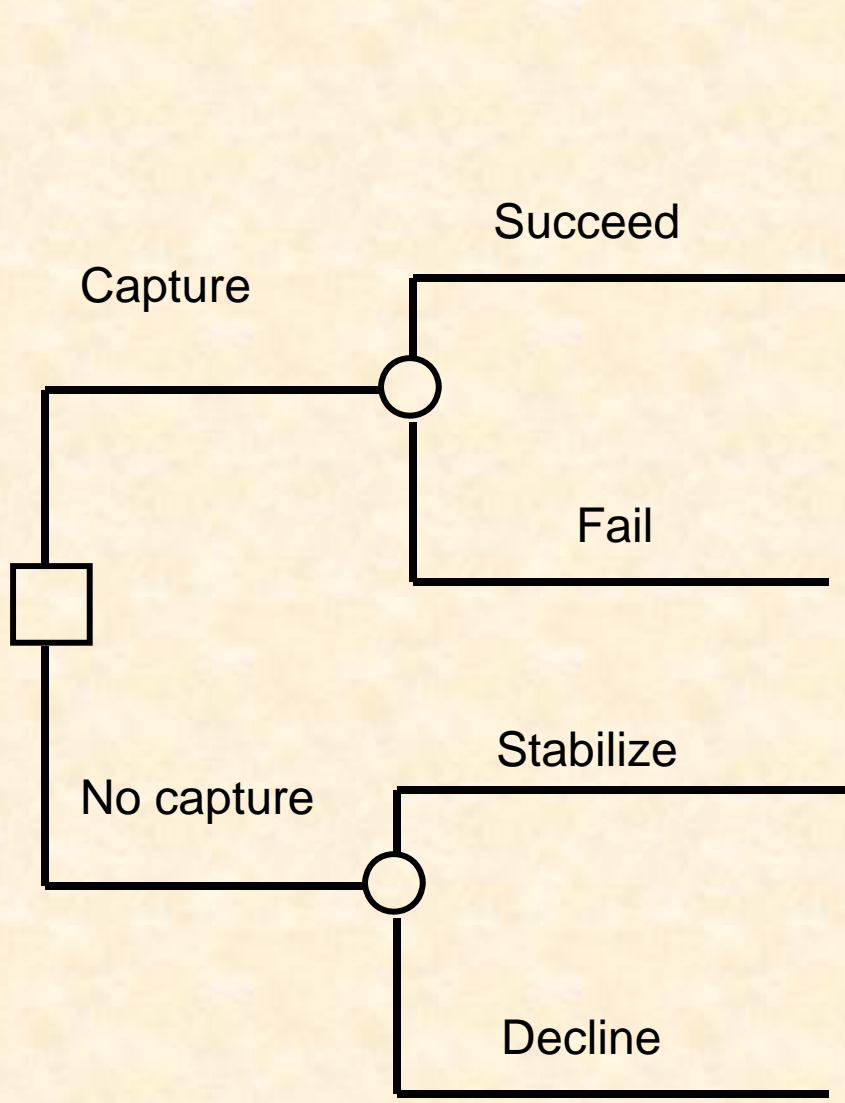
Risky Decisions in Wildlife Management

- Examples: capture of endangered spp, translocation, habitat restoration, reintroduction
- **Uncertain** outcomes
- Might cause **harm** to something you care about – people, property, endangered spp, sensitive habitats

Black-footed ferrets

- Mid-80's, precipitous decline (plague?)
- Capture for captive breeding? (zoos)
- State/federal wildlife agencies reluctant to authorize until only a handful left
- After a rough start, captive breeding successful and reintroductions have been made





Wild Pop **Captive Pop** **Agency Rep**

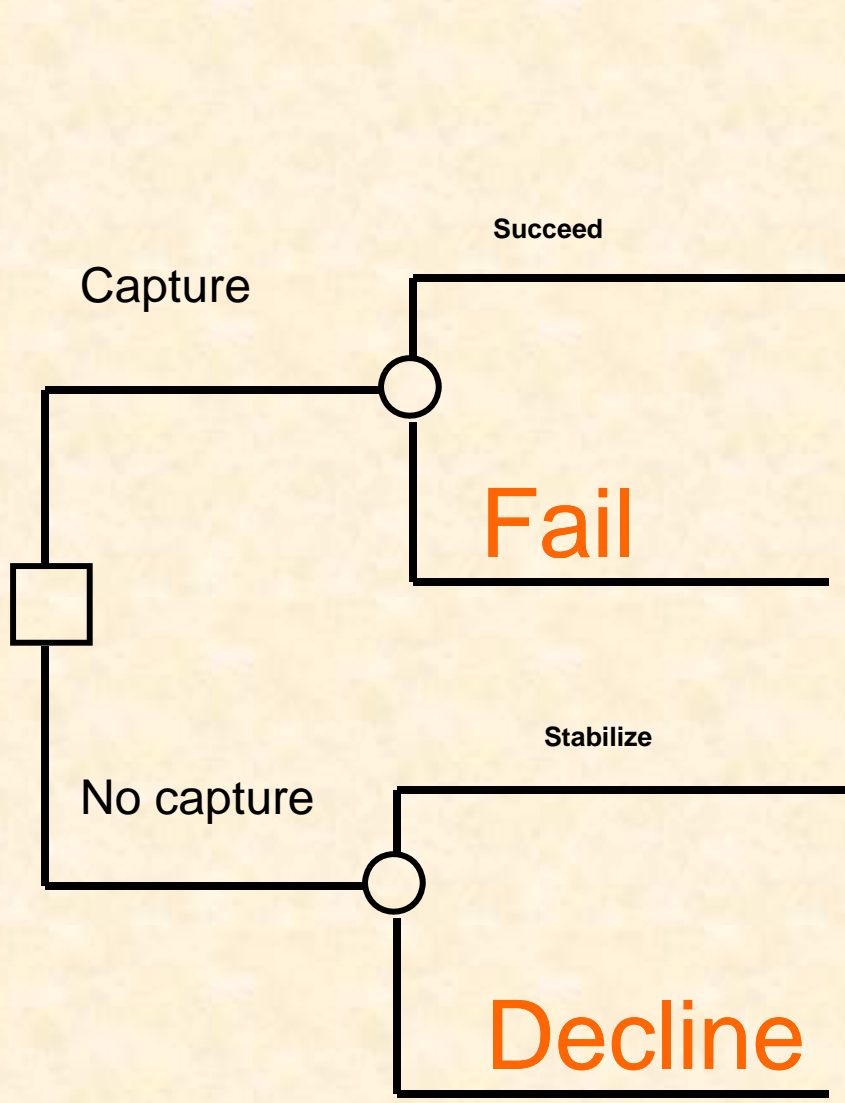


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Wild Pop

Captive Pop

Agency Rep



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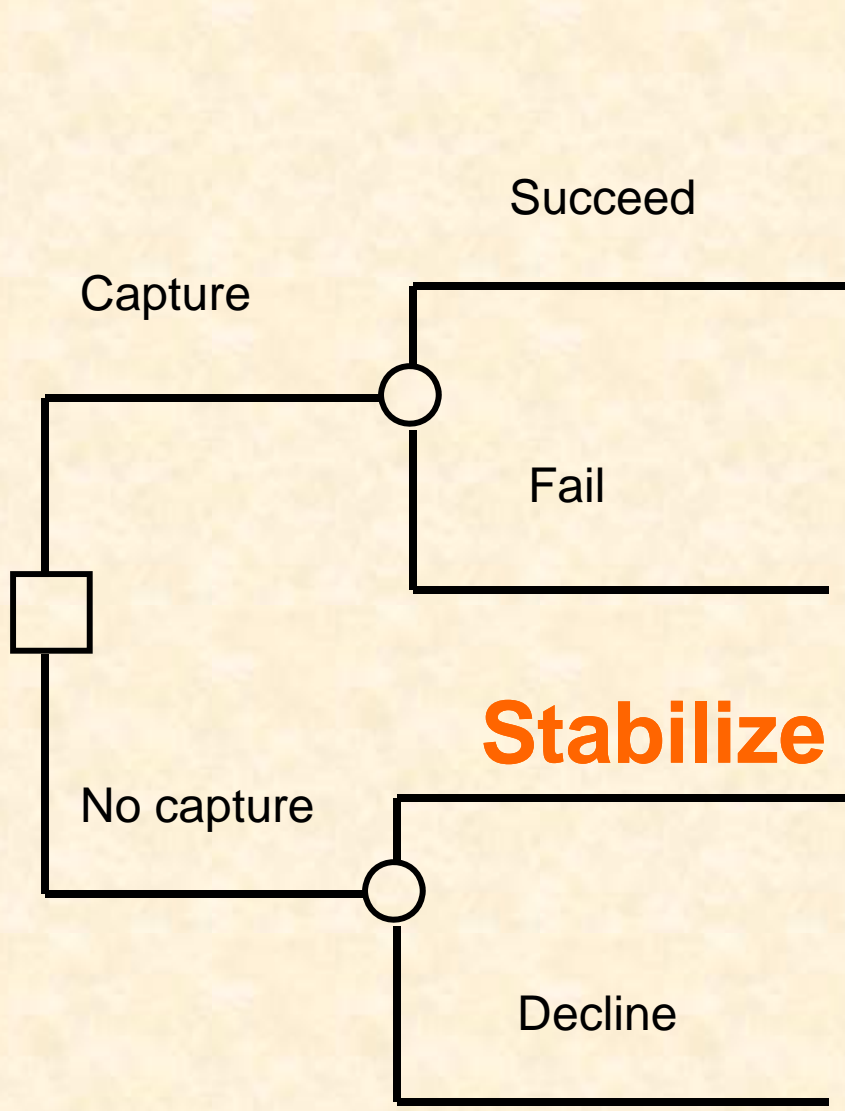


Fail

Decline

Mental Shortcuts

- Status quo bias
 - Less responsible for “no action”
 - Foregone gains less serious than incurred losses
- Discounting
 - Future gains vs. present losses
- Optimistic bias
 - Underestimate prob. bad outcomes and overestimate prob. good outcomes



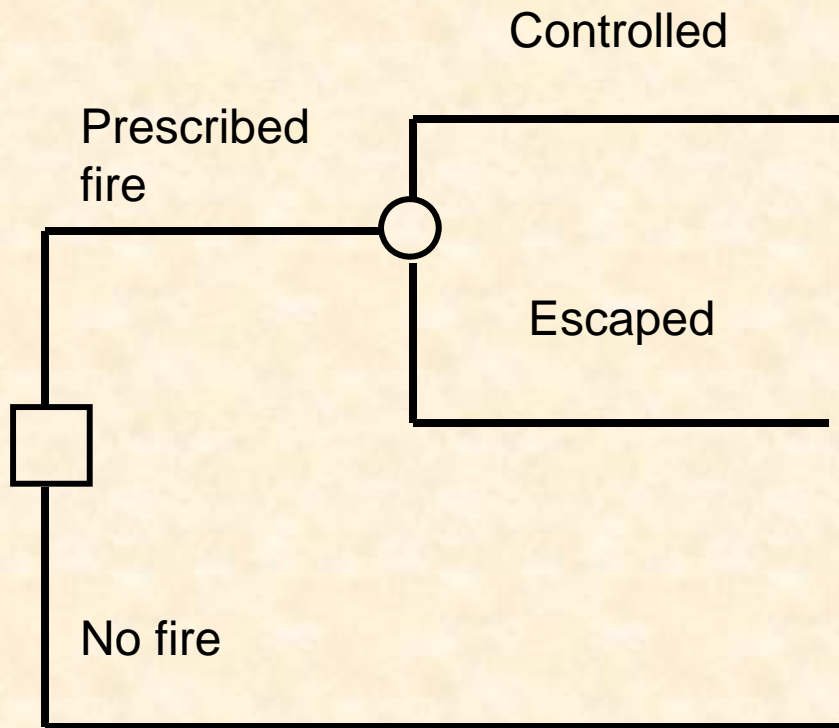
	Wild Pop	Captive Pop	Agency Rep
Succeed			
Fail			
Stabilize		--	
Decline		--	

Precautionary Principle?

End
Spp

Habitat
Restor.

Agency
Rep



OK



OK



OK

Mental Shortcuts

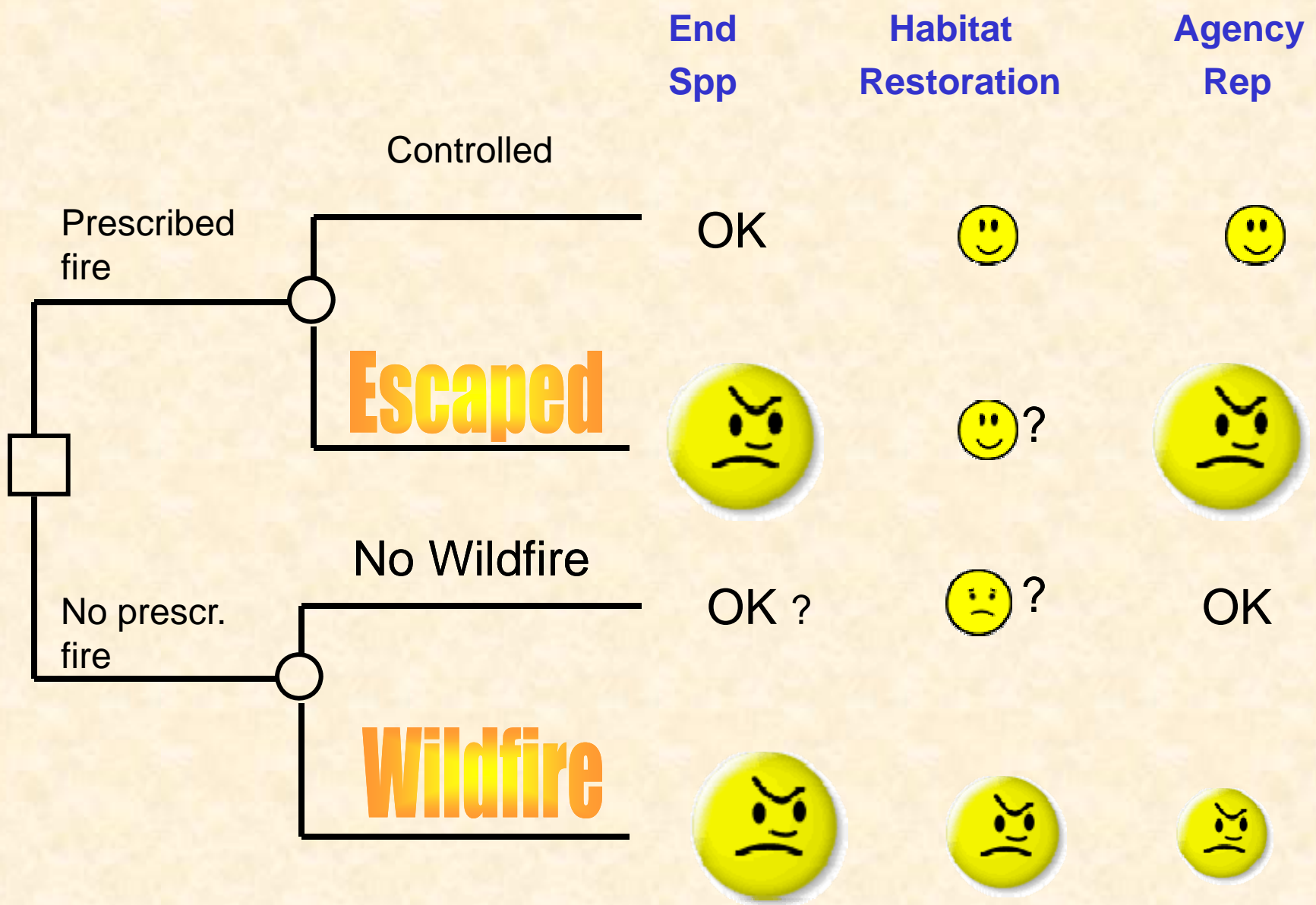
- Ignoring risk-risk tradeoffs
 - Certainty bias
- Availability – recent, dramatic events loom large
- Cumulative probabilities
 - Short-term vs. long-term rationality



<http://discovermagazine.com/2006/jun/fire-in-the-sky>



<http://www.ag.arizona.edu/research/redsquirrel/main.html>



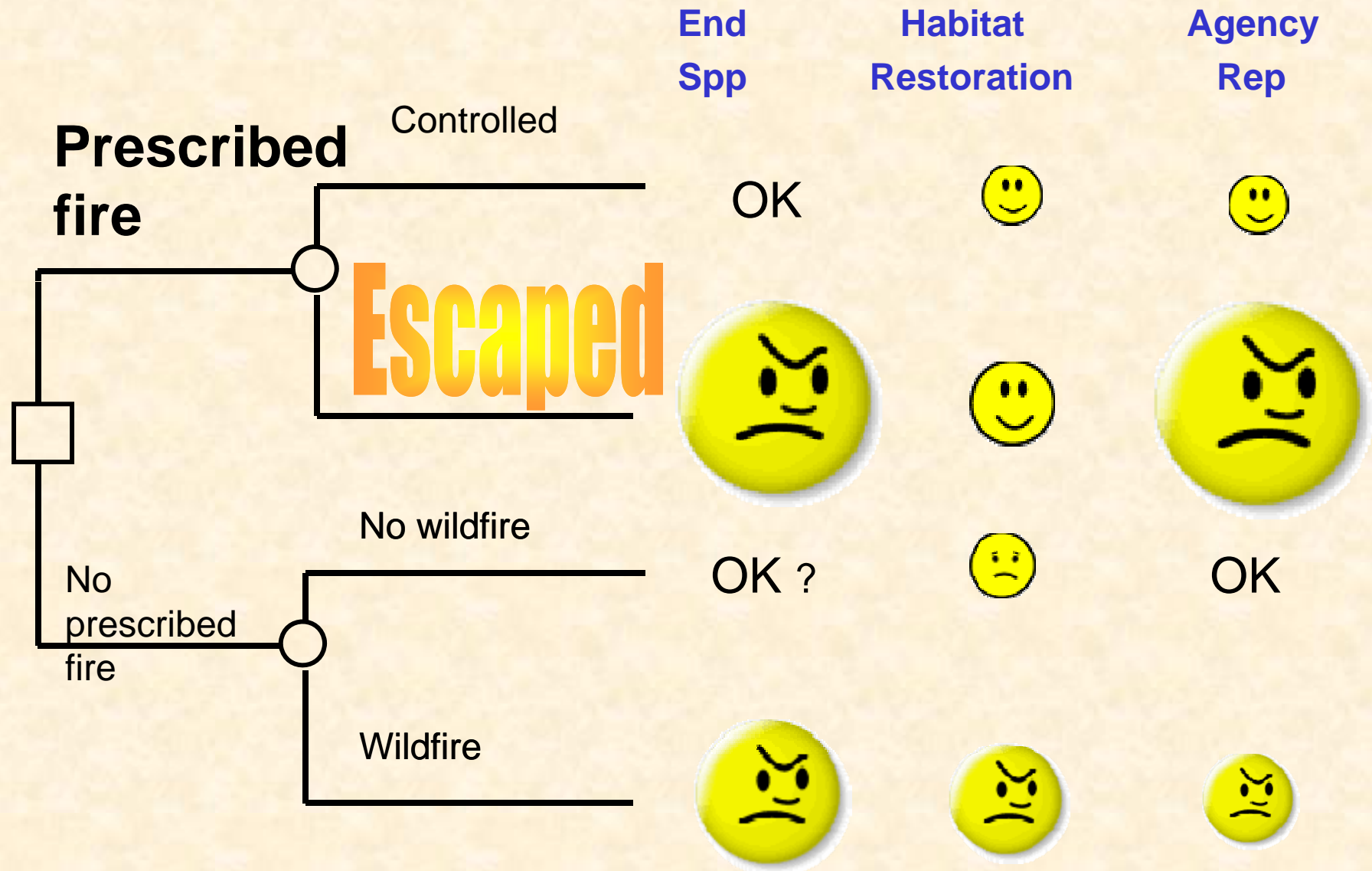
Retrospective Analysis

- Usually of **BAD** outcomes
 - Opportunity for **learning**
- Often done poorly
 - Focus on **OUTCOME** vs. **DECISION**
 - **GOOD** decisions can have **BAD** outcomes!
 - Hold accountable for **DECISION**, not **OUTCOME**

Mental Shortcuts

- **Hindsight bias** (past decisions)
 - Retrospective overestimate of probabilities of what DID occur
 - Elaboration of explanatory “story”
 - Focus on costs/benefits of what DID occur
- **Regret theory** (future decisions)
 - Minimizing regret vs. maximizing utility
 - Focus on events with worst outcomes

Hindsight Bias and Regrets



Excessive Risk Aversion?

- Many mental shortcuts lead systematically to more risk-averse decisions
- Poorly done retrospective analyses can misplace blame and inflate individual risk aversion
- Organizational rewards and punishments can exacerbate individual risk aversion

Remedies

- Education about mental shortcuts and resulting biases
- Use of structured analysis to elicit both “facts” and “values,” with attention to avoiding mental shortcuts
- Changes to organizational culture at all levels, to avoid inadvertent reinforcement of excessive risk aversion