Ecological Risk Assessment (ERA) and Assessment of Critical Habitat

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IAIA 2014
Viña del Mar, Chile

Overview

- Key aspects of lender guidance
- Example of new-to-science species
- Relevant ERA tools
- Recommendations for the practice

Lender Guidance—
No "Significant" Conversion or Degradation

- IDB Directive B.9
  - Only if benefits >> environmental costs
- IFC PS 6
  - Ability of species to persist over the long-term
- Both incorporate concept of mitigation hierarchy

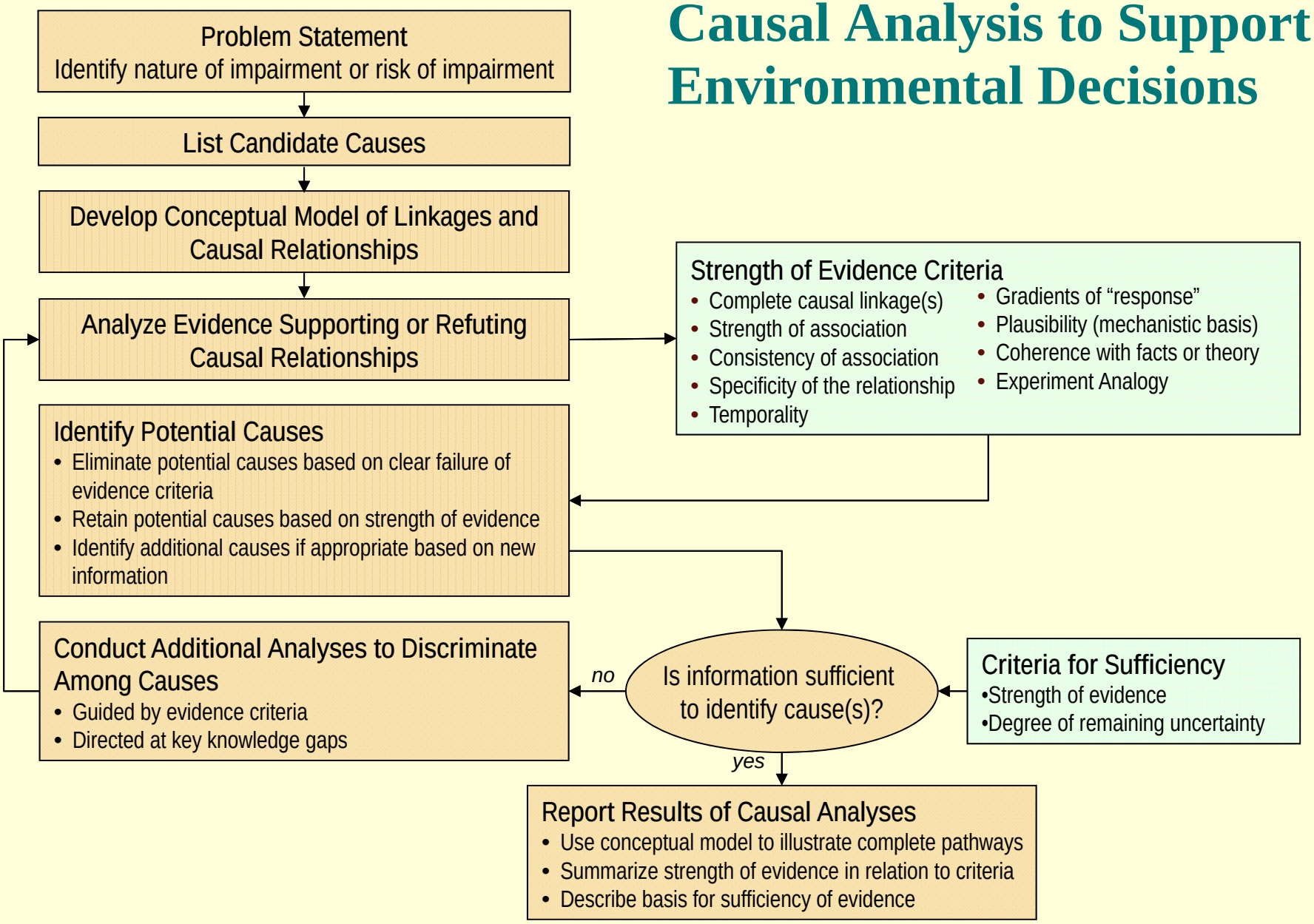
Special Case of New-to-Science Species

- By definition, they are range-limited
  - Known only from locations in baseline sampling or monitoring
  - May also have inferred range limitation in areas of high endemism
- Key life history variables are poorly known
  - Inferred from closely-related species
  - Documented via exhaustive investigation

Relevant ERA Tools

- Stressor identification and causal analysis
- Population viability analysis
- Relative risk models

Causal Analysis to Support Environmental Decisions



Detect or Suspect Biological Impairment

Stressor Identification

List Candidate Causes

Analyze Evidence

Characterize Causes

Elimination | Diagnosis | Strength of Evidence

Identification of Probable Cause(s)

Source: U.S. EPA 2000.

Stressor Identification

Source: ttp://hbldeforestation3.wikispaces.com/Background+Information+on+Deforestation+in+Sudan

Lines of Evidence and Associated Measures Used for Causal Analysis

- Co-occurrence
  - Chemicals, TSS, habitat quality, seasonal physical stressors
- Gradients
  - Distance from sources, spatial variability
- Plausible mechanisms
  - Relation between exposure to Project and baseline stressors and probable effects
- Consistency of association
  - Literature review and information from other areas
- Specificity
  - Diagnostic characteristics

Causal Analysis in Impact Assessment

- A potentially useful tool for critical/natural habitat and new-to-science species
- Provides solid analytical framework
  - Shed light on relative risk in cumulative impact assessment
  - Assist in developing “big picture” mitigation strategies
  - Assist in design of monitoring and management systems
- Assist in decision-making with high uncertainty
  - Identify sources of uncertainty and their relative importance

There is no substitute for expert judgment

In Closing

All scientific work is incomplete—whether it be observational or experimental. All scientific work is liable to be upset or modified by advancing knowledge. That does not confer upon us a freedom to ignore the knowledge we already have, or to postpone the action that it appears to demand at a given time.

Who knows, asked Robert Browning,
But the world may end tonight?

True, but on available evidence, most of us make ready to commute at 8:30 the next day.

A.B. Hill, 1965


Thank You!
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