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# Linking endpoints from mesocosms and other field studies to environmental protection goals

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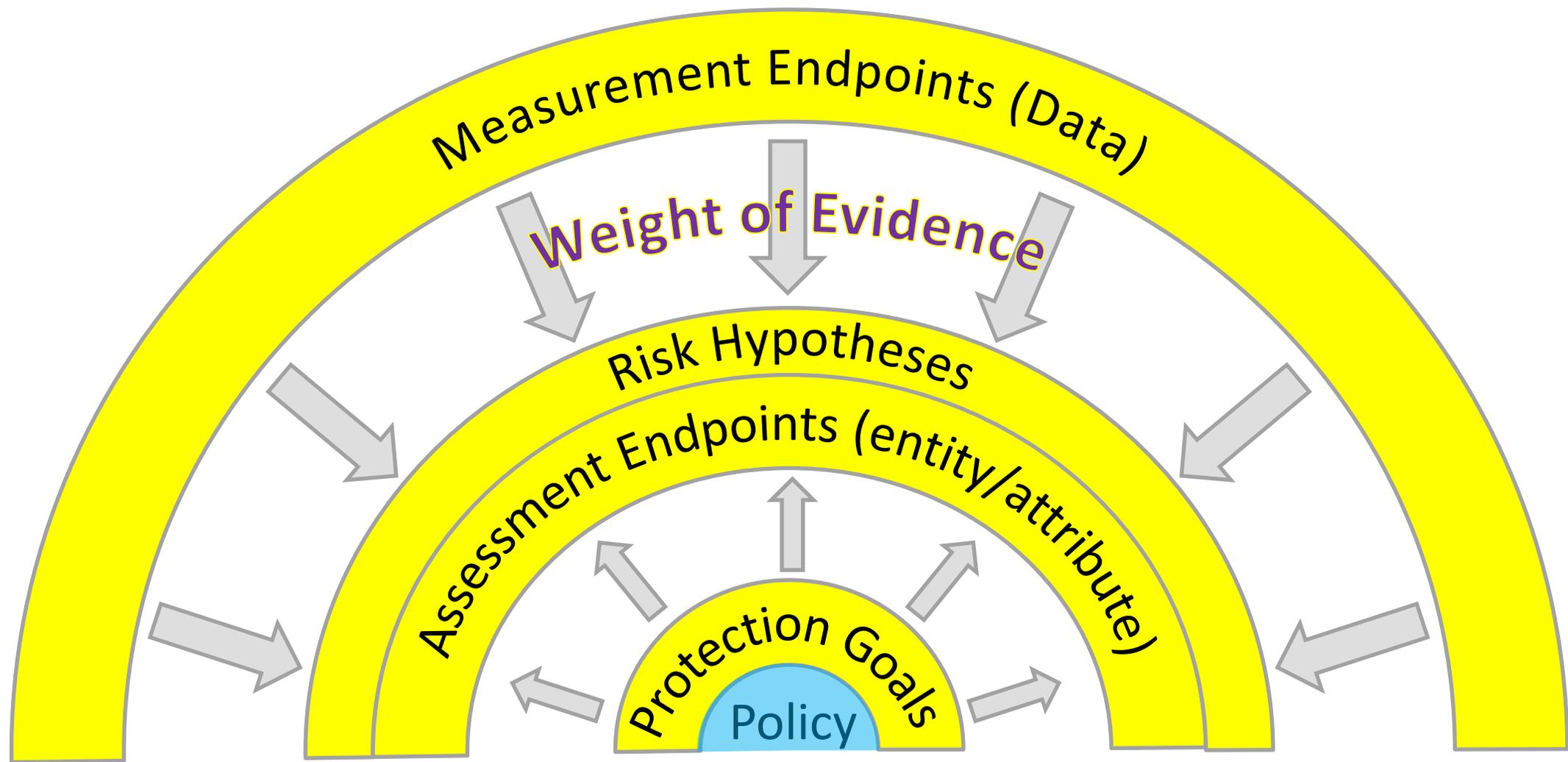
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# Questions that prompted this investigation

- Do field studies address risk assessment endpoints and protection goals?
- Could field study endpoints be used more effectively in evaluating risk hypotheses and reaching regulatory decisions?

CropLife America recently initiated a project to review measurement endpoints from different kinds of field studies and evaluate their relevance to assessment endpoints and protection goals. Expected completion June 2020.



# Aquatic mesocosm endpoints

- Individual level
  - Survival, growth, reproduction (cage studies)
- Population level
  - Abundance and dynamics of mesocosm populations
  - Recovery and recolonization
- Community level
  - Biomass and productivity
  - Species diversity
- Ecosystem level
  - Production/respiration
  - Litter decomposition
  - Nutrient cycling



# Avian field study endpoints

- Individual level
  - Bird mortality
  - Biomarkers
- Population level
  - Abundance
  - Nesting activity and success
- Community level
  - Species richness
- All levels: bird use of field area and edge habitat

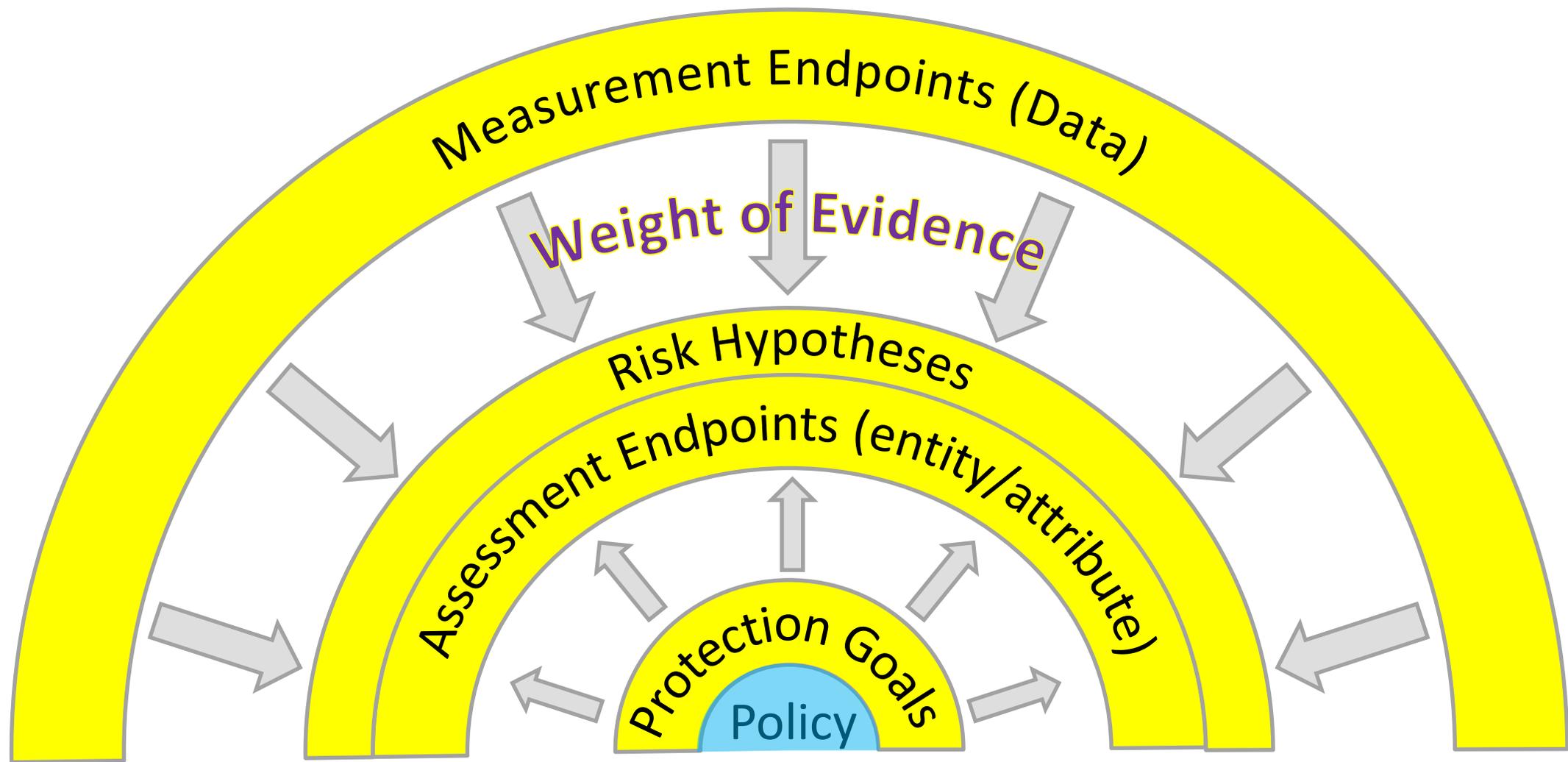


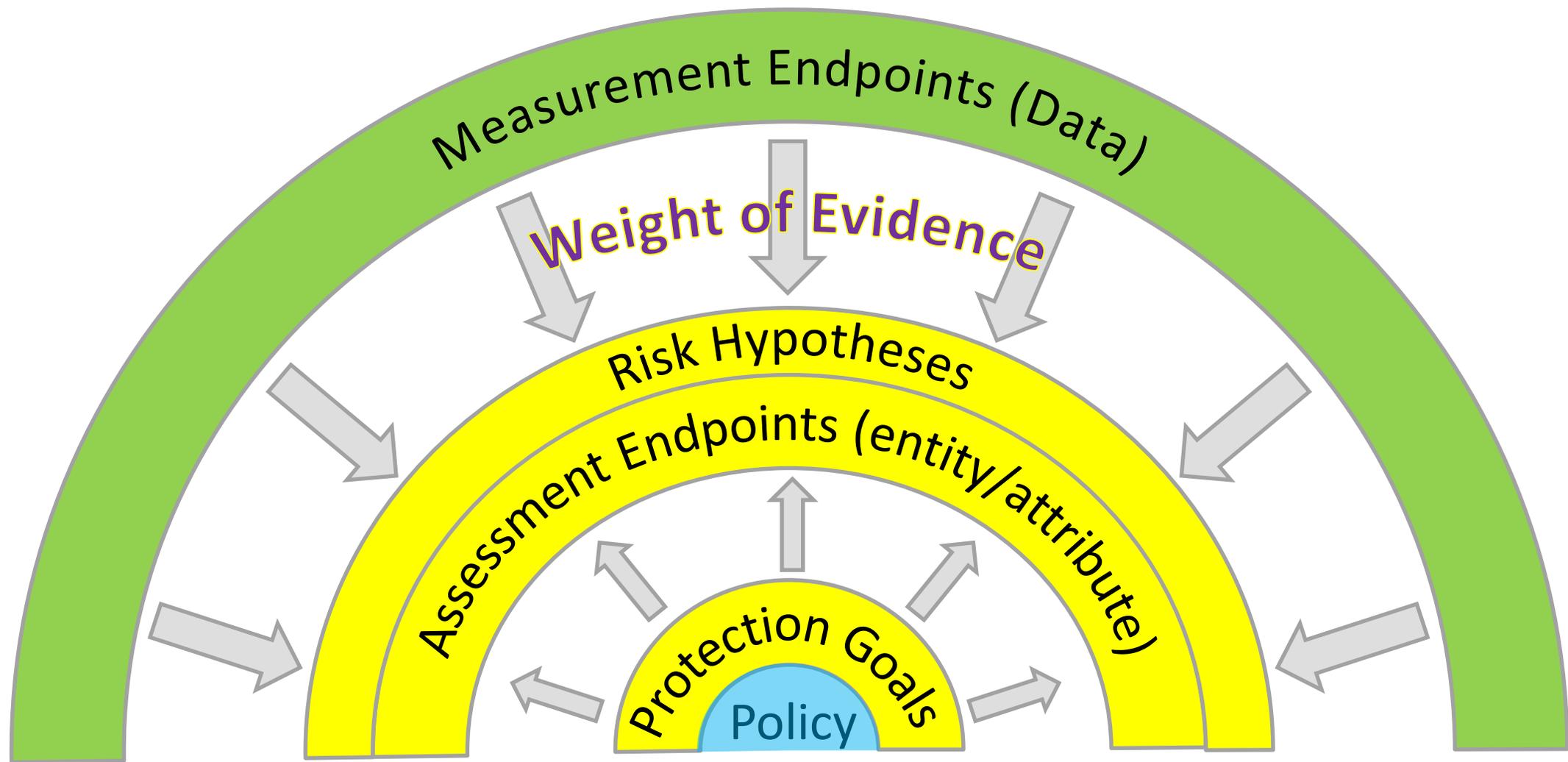


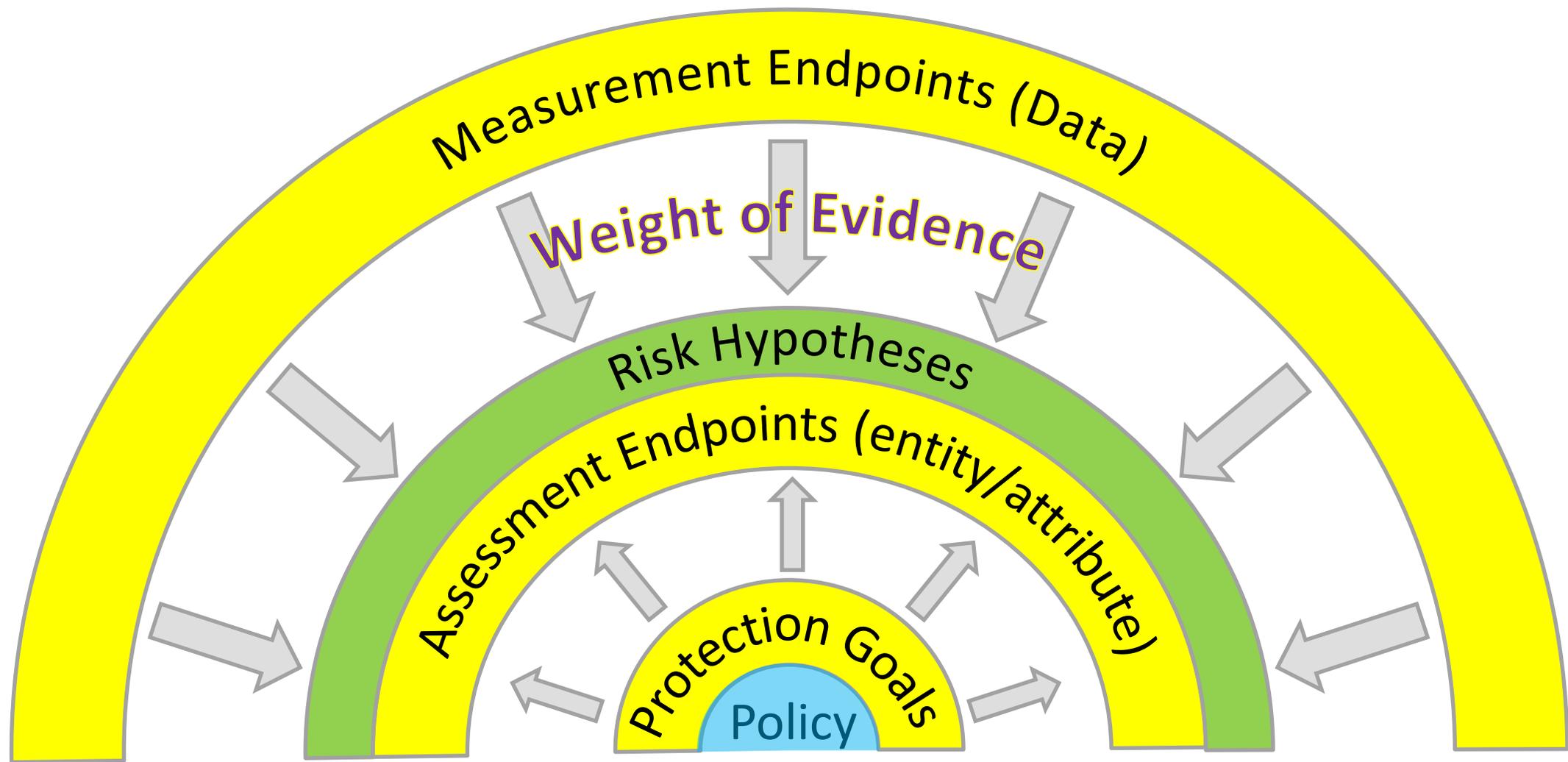
# Pollinator field study endpoints

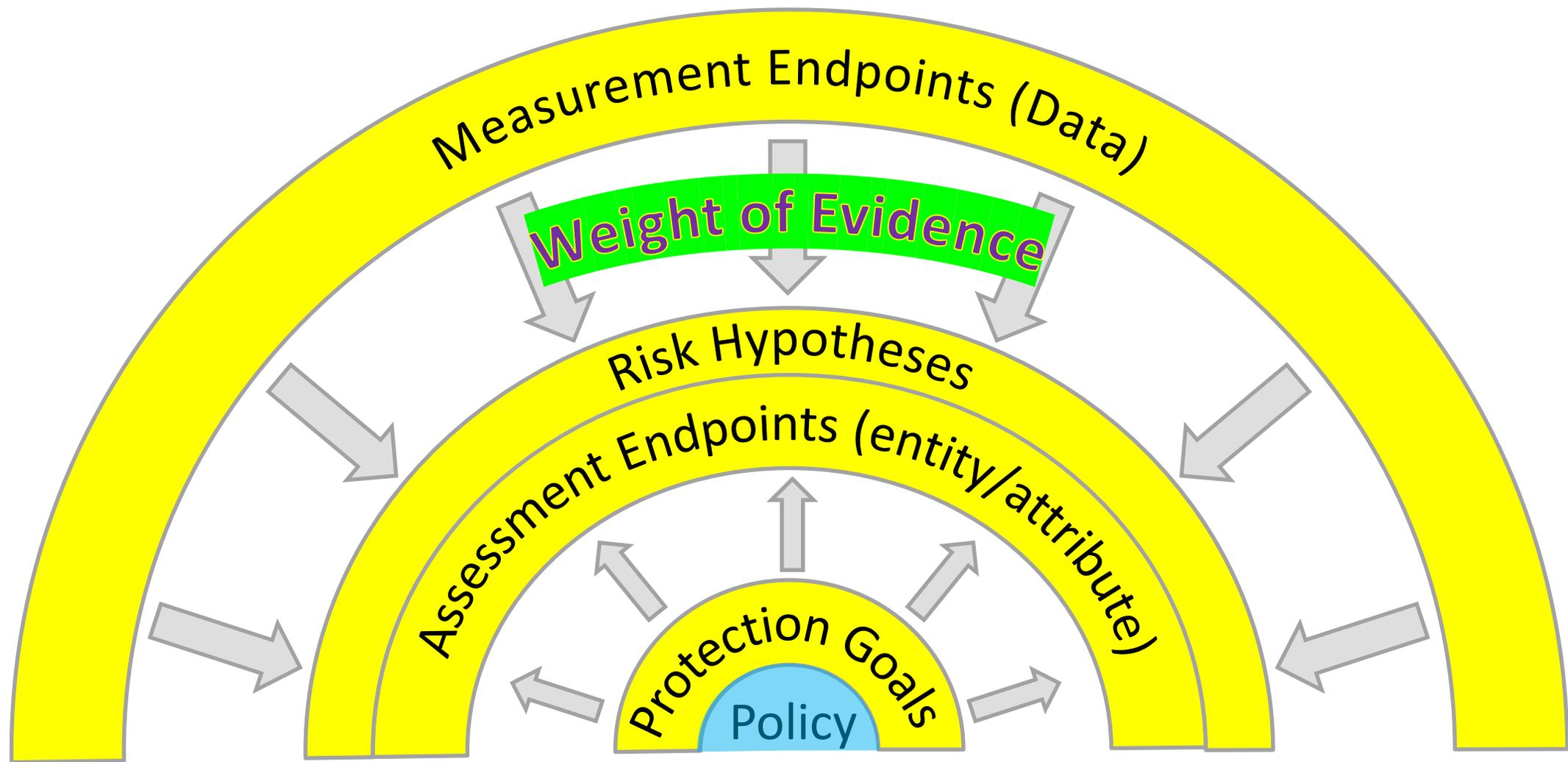


Protection Goal	Assessment Level	Measurement Endpoints
	Individual	Worker survival; queen survival and fecundity; disease and parasite loads
Honey and hive products	Population (colony)	Colony strength and survival; hive weight; brood production and termination; honey and hive product production; overwintering success
Pollinator diversity	Community	Not addressed directly in honeybee tests
Pollinator services	Ecosystem	Forager behavior and success; pollen and nectar stores; honey and hive product production









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Thank you!

**QUESTIONS?**