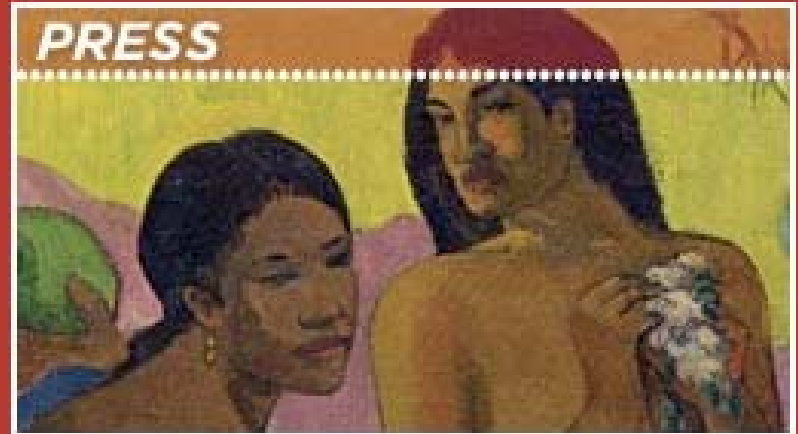
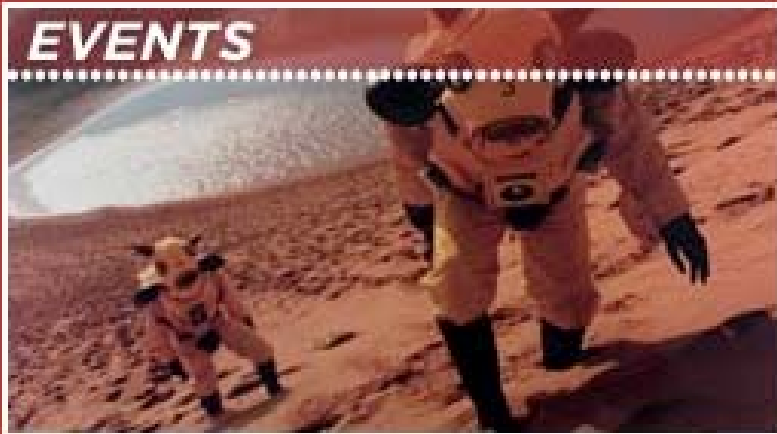
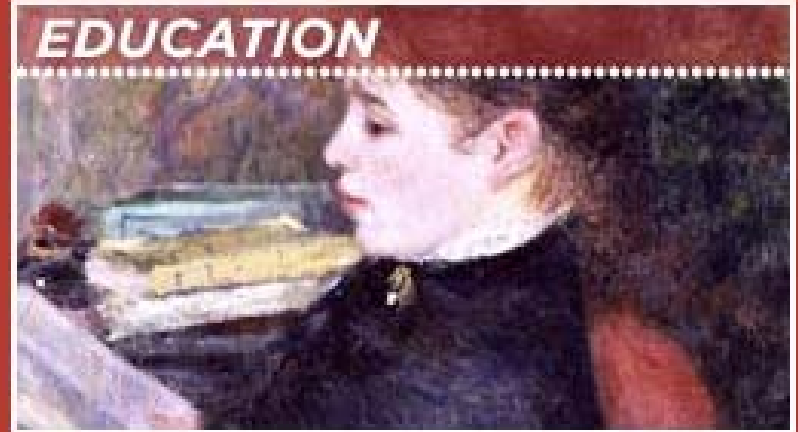
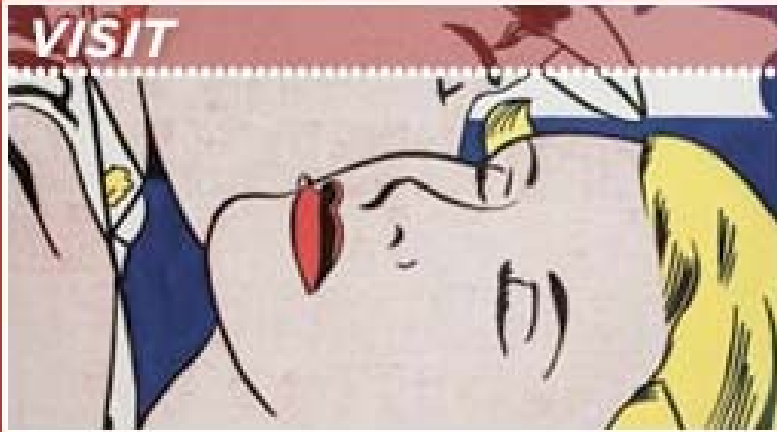




# Experience Music Project


# Double Take



# Scientific Roles or Levels of Experts

- **Proponent** -individual evaluates data and develops a particular hypothesis to explain the data.
- **Evaluator** -expert who is capable of evaluating the relative credibility of multiple alternative hypotheses to explain all potential hypotheses
- **Resource Expert** - a technical expert with particular knowledge of a particular data set of importance to the analysis. Site specific experience.

# Types of Consensus

1. Each expert believes in the **same deterministic model** or the same value for a variable or model parameter.
2. Each expert believes in the **same probability distribution** for an uncertain variable or model parameter.
-  3. All experts agree that a **particular composite probability distribution represents them as a group.**
4. All experts agree that a particular composite probability distribution represents the **overall scientific community.**

# Tuesday Breakout Activities

Place of Refuge

Operational Decision Making

# Wednesday Breakout Activities

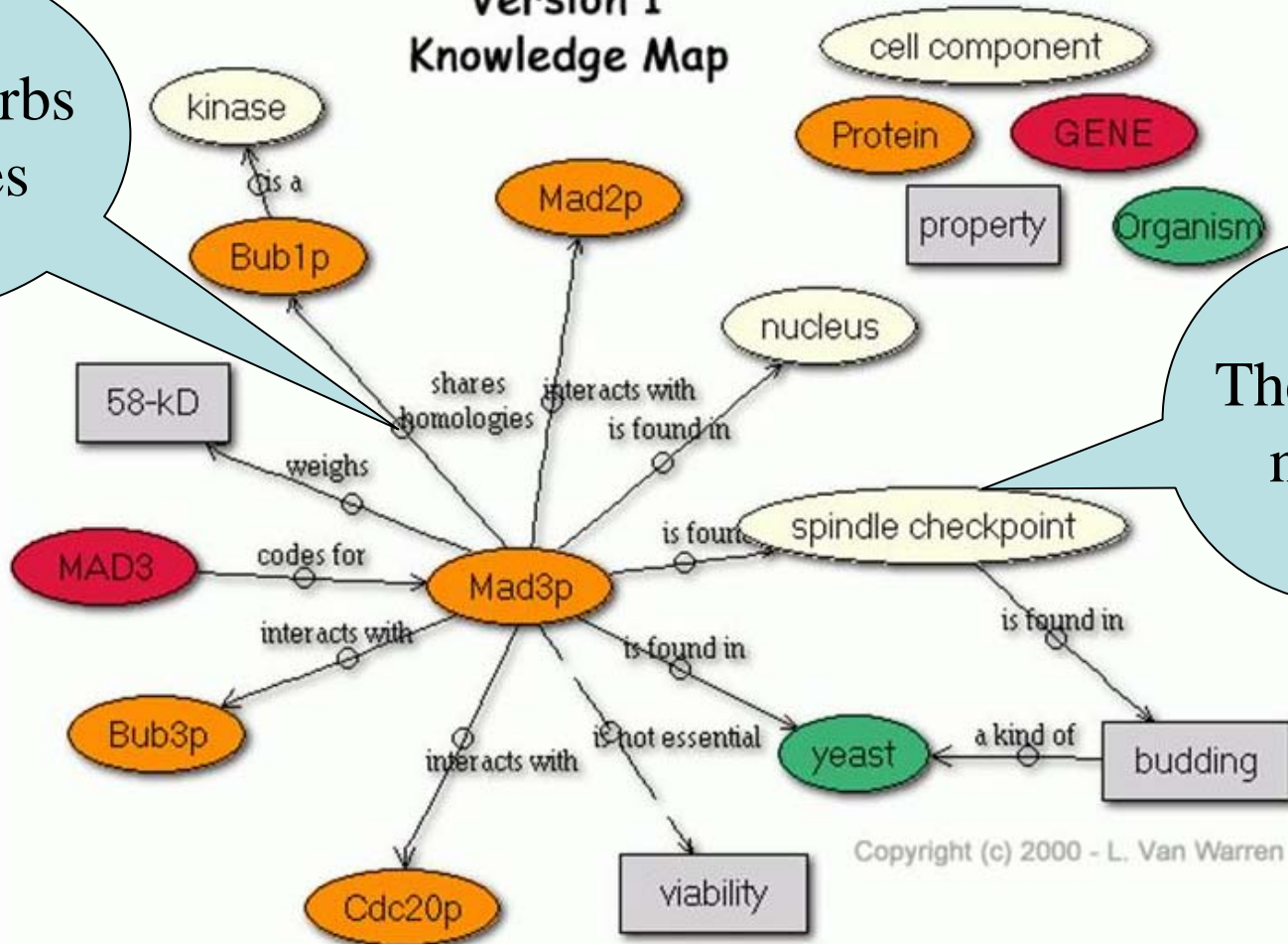
Influence Diagram

Wiring Diagram for an Integrated Model

# Influence Diagram (AKA Knowledge Map)

These are verbs and clauses

## Version 1 Knowledge Map



These are nouns

# Our Task: Create an Influence Diagram with these two elements.

Resource dosage  
caused by a  
chemical plume  
passing by

Population level  
effects  
caused by a  
chemical plume  
passing by



# Integrated Model Wiring Diagram: Modules for Consideration

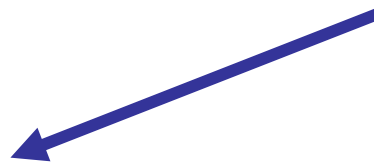
## Initial Information

- Spill Information
- Habitat and Species
- Field Sampling



## Modules

- Case History Database
- 3D Circulation Model
- Source Function Model
- Transport Models
- Chemical Database
- Toxicology Database
- Species Equivalency Database
- Chemical Weathering, Reactions and Fate
- Oil Weathering and Fate
- Oil Toxicity
- 4D Visualization and Analysis



## Products

# Thursday Breakout Activities

# References

*Environmental Information for Naval Warfare*, National Academies Press

Ferson and Ginzburg (1996) “Different methods are needed to propagate ignorances and variability.”  
Reliability Engineering and System Safety 54:133-144.

Senior Seismic Hazard Analysis Committee,  
“Recommendation for Probabilistic Seismic Hazard Analysis; Guidance on Uncertainty and Use of Experts”  
NUREG/CF-6372 UCRL-ID-122160 Vol I.

# Types of Uncertainty

- **Objective Uncertainty:** Underlying stochastic variability of system dynamics. “Aleatory Uncertainty”: the uncertainty inherent in a nondeterministic (stochastic, random) phenomenon; “off or depending on chance, luck, or contingency” (Webster’s Dictionary).
- **Subjective Uncertainty:** Incomplete knowledge of the system. “Epistemic Uncertainty”: the uncertainty attributable to incomplete knowledge about a phenomenon that affect our ability to model it; “of or having to do with knowledge” (Webster’s Dictionary).

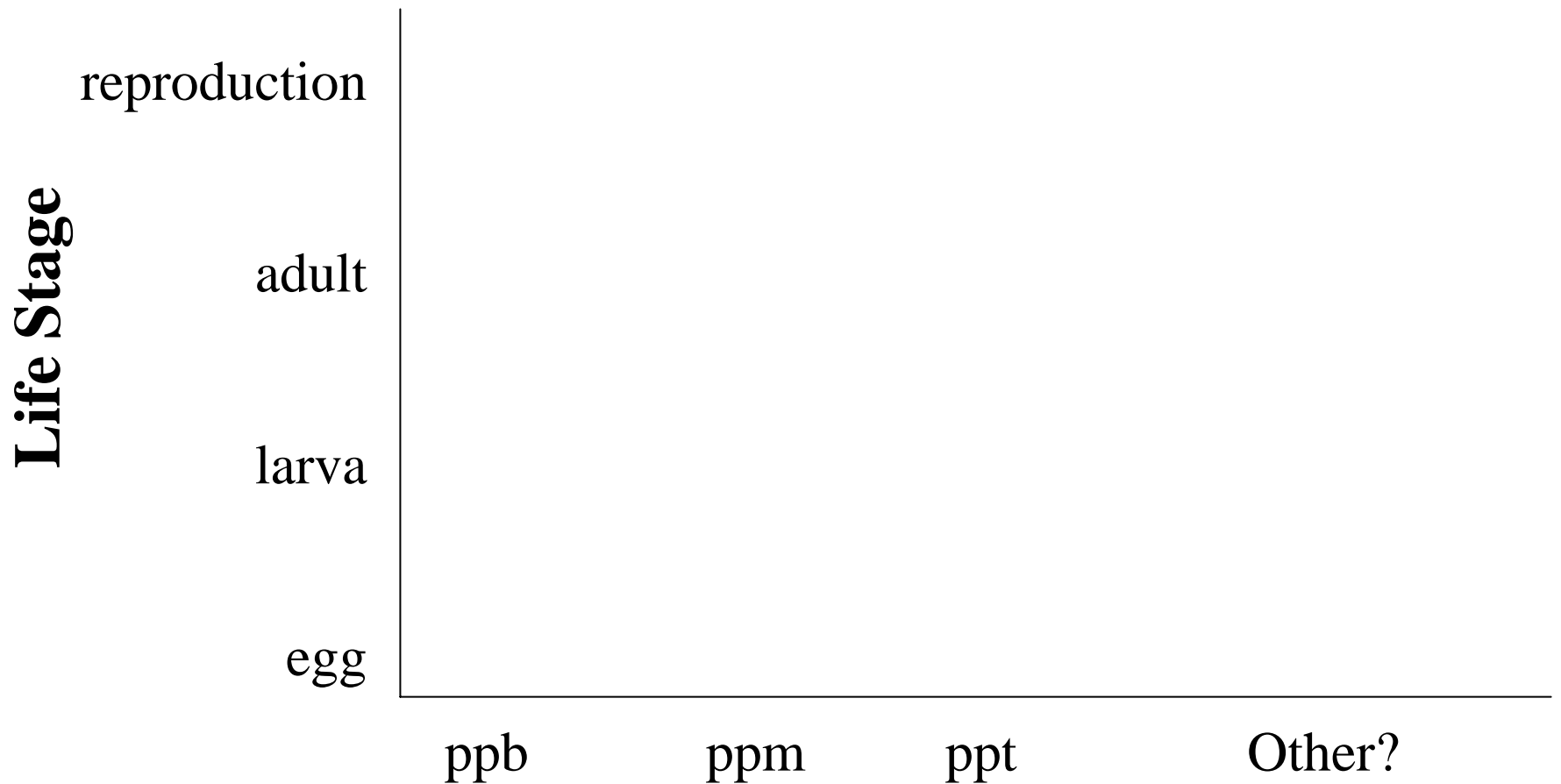
# Questions

- What are acceptable/useful levels of prediction for biological/resource decision making?  
(50 ppb +/- 50 ppb at 50 m accuracy or bust!)
- What future effects can be predicted from biological models during response time-scale for use by decision makers?
- What spill information is needed on response time-scale (first hours to days) for resource prediction?

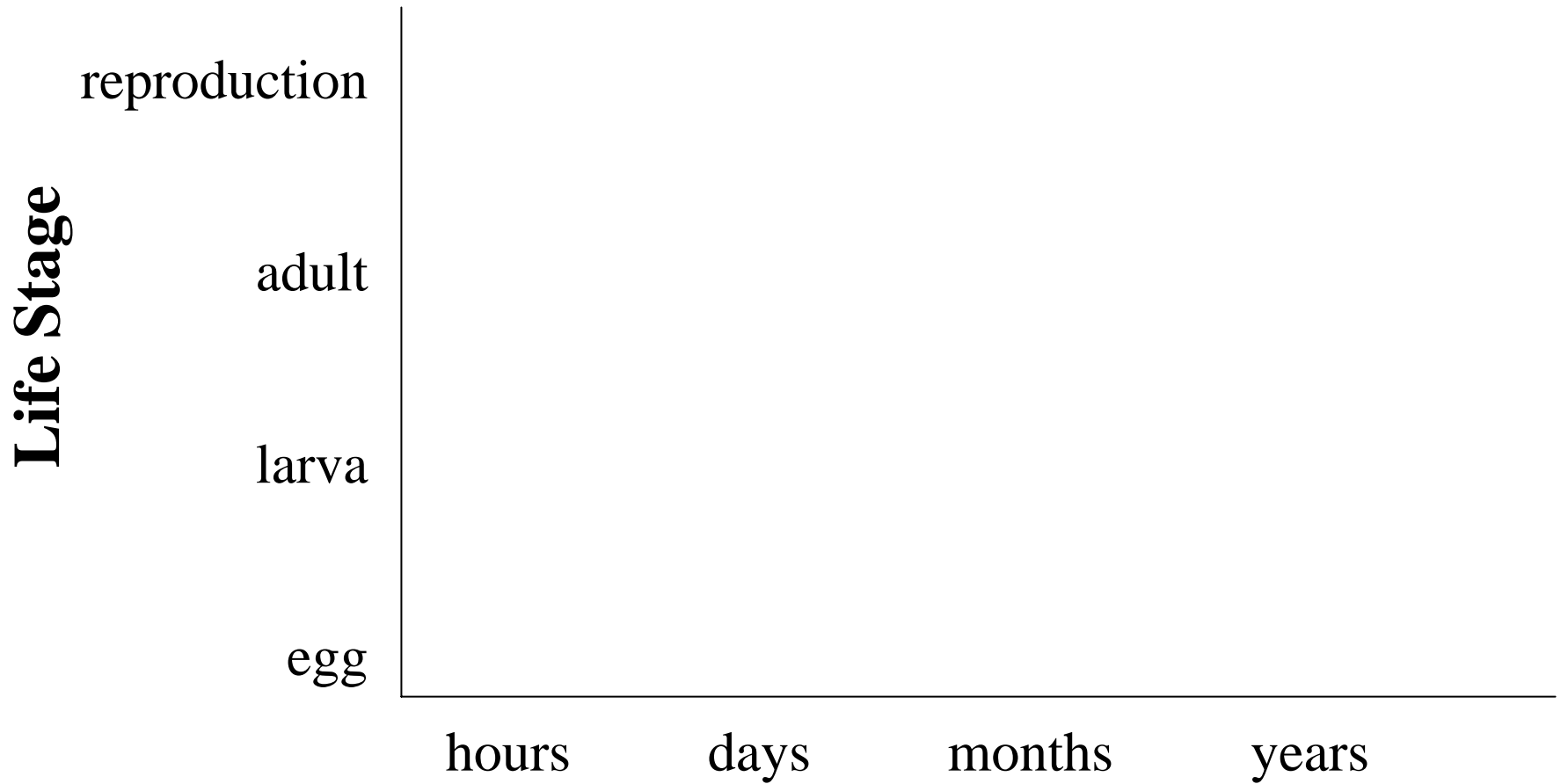
# Resource Prediction and Types of Uncertainty

	Define Predictive Ability	Objective Uncertainty	Subjective Uncertainty
Acceptable Predictive Skill			
Moderate Predictive Skill			
Some Predictive Skill			
Low or No Predictive Skill			

# Concentration Levels for Resource Prediction

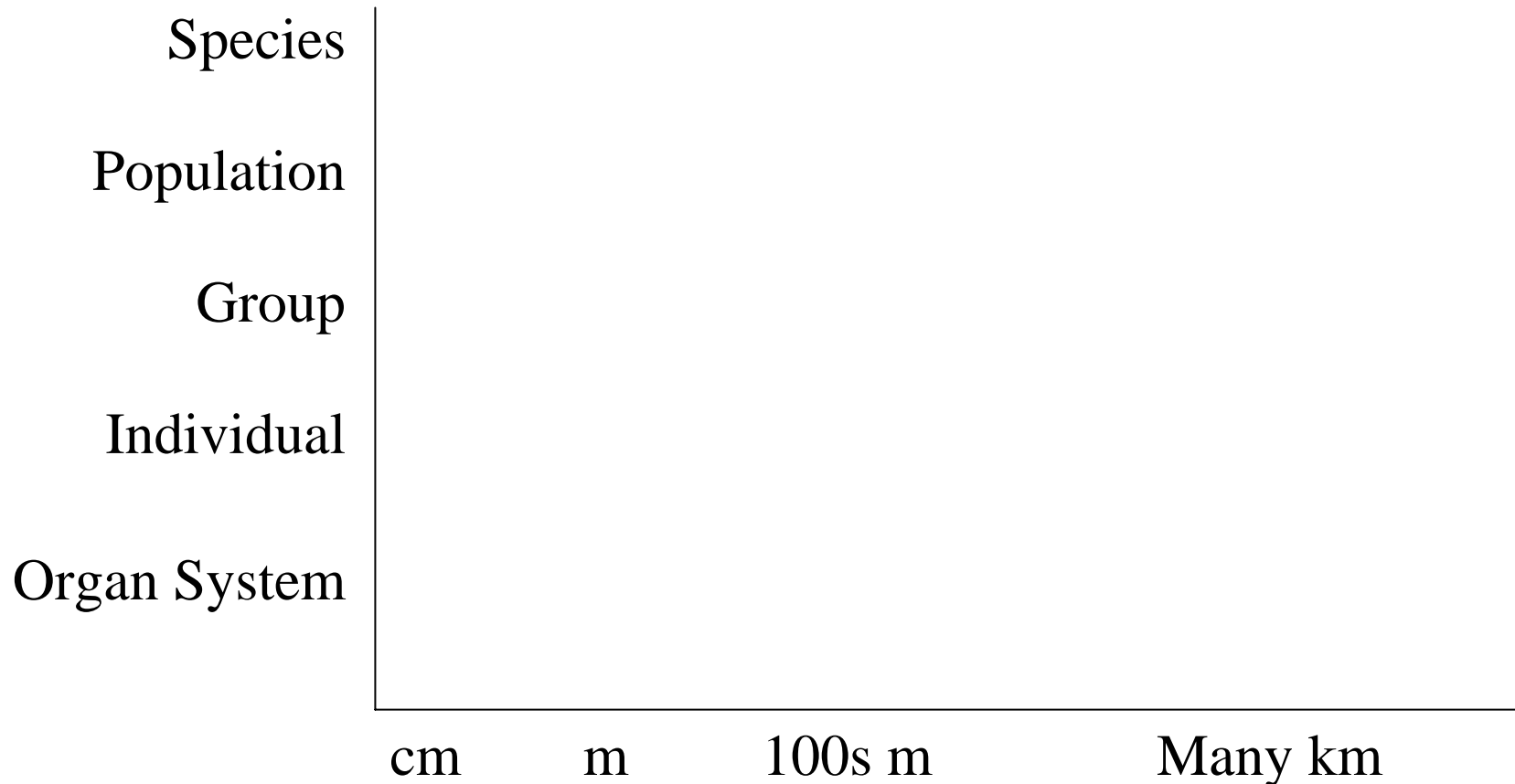


# Timescales of Resource Prediction





# Identify Abilities and Needs for Prediction **Horizontal Length Scale**



Accuracy needed from chemical plume trajectory / concentrations

# Identify Abilities and Needs for Prediction **Vertical Length Scale**

