

Macrophytes for Aquatic Toxicology Testing: Some Alternatives for Consideration

(What's wrong with *Lemna*)

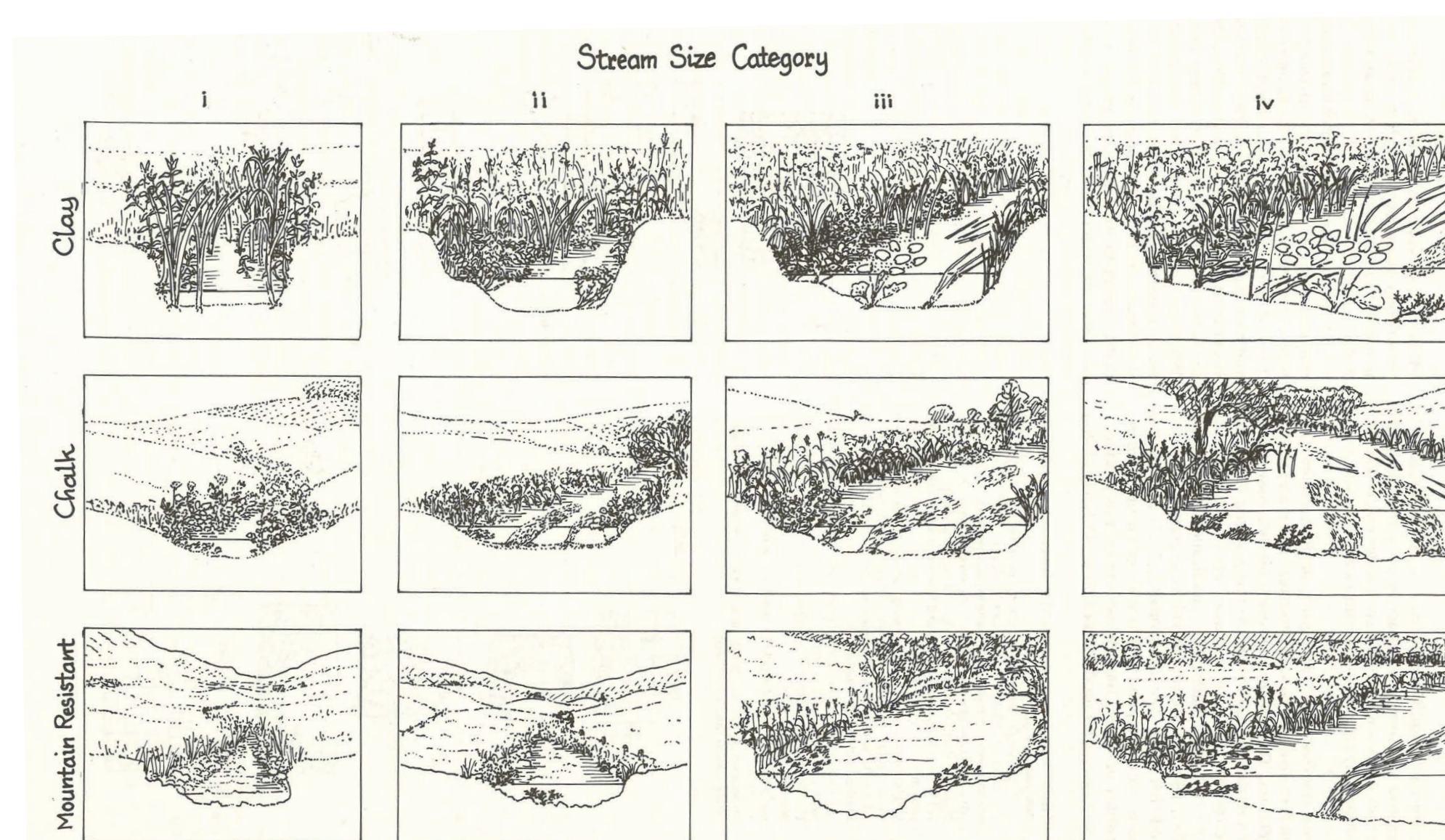
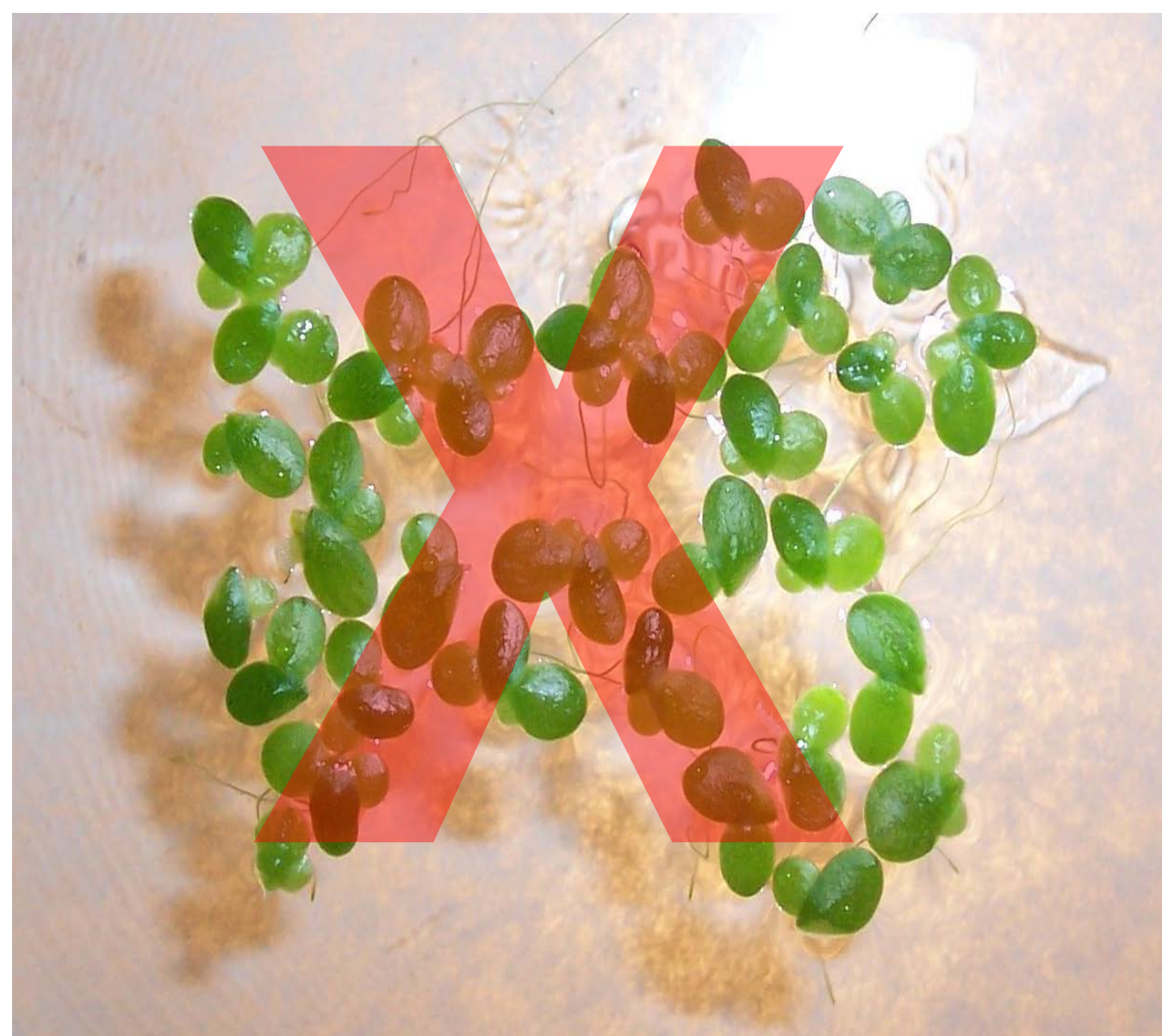
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What's Wrong with *Lemna*?

- The test species is not relevant to the environmental impact of the pesticide
- The exposure pattern is not representative
- *Lemna* are short-lived
- No root / sediment interaction
- No pesticide / sediment interaction
- Don't assume every watercourse is the same
- *L. gibba* / *minor* variability
- Limited to atmospheric CO₂ / O₂ exchange
- No pH, alkalinity, temperature effects
- No indication of any recovery potential
- No flowering in tests
- Single habitat niche
- Poor trophic links
- Not representative of responses in most ditch systems
- Indicative of organic matter enrichment



Spot the Duckweed....

Temperate



Lagarosiphon major



Ceratophyllum demersum



Cabomba caroliniana



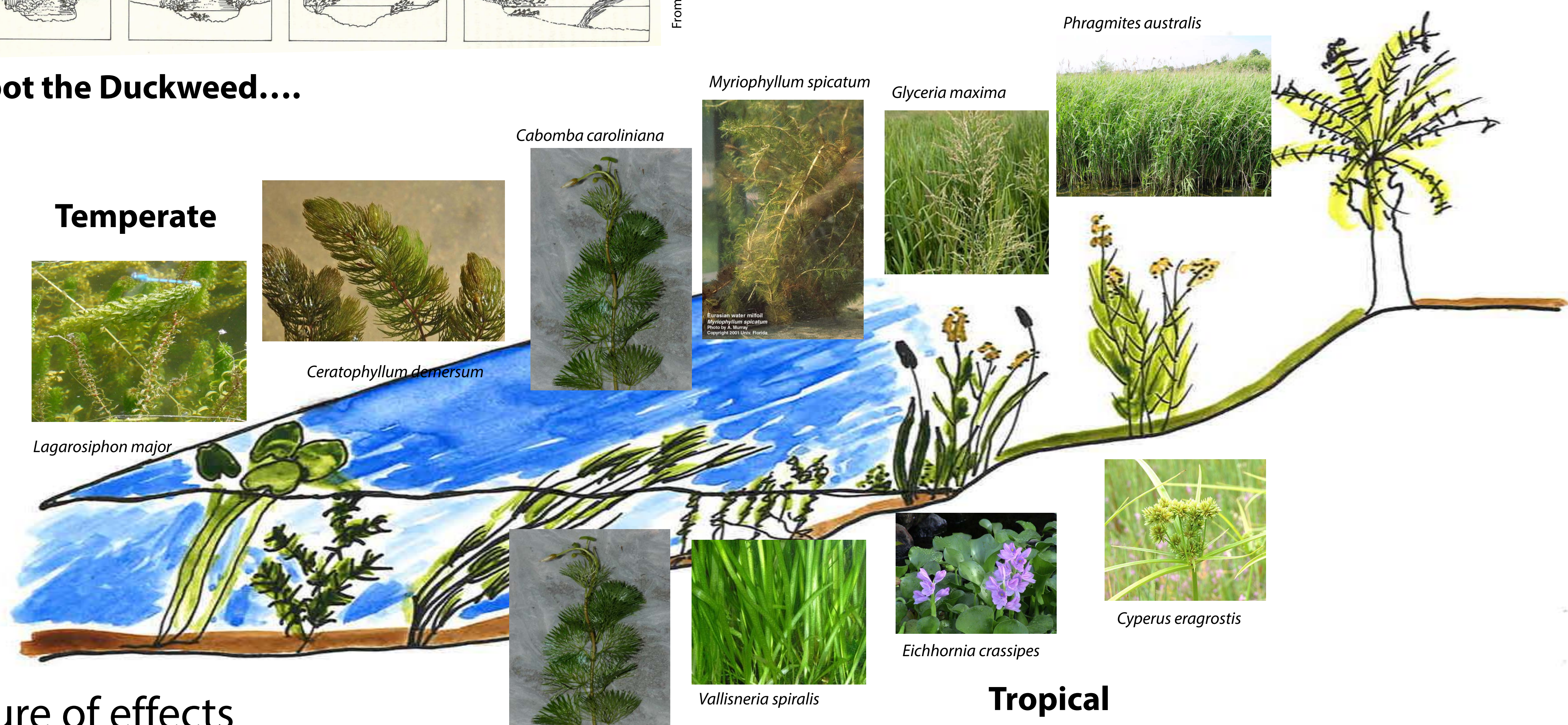
Myriophyllum spicatum



Glyceria maxima



Phragmites australis



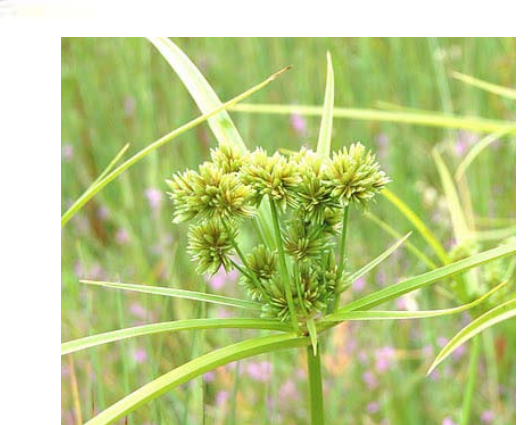
Cabomba caroliniana



Vallisneria spiralis



Eichhornia crassipes



Cyperus eragrostis

Tropical

Benefits to Industry:

- Demonstrates transient nature of effects
- Allows for recovery periods
- Demonstrates lower impacts
- Demonstrates robust nature of aquatic systems
- Allows holistic assessment of impacts,
- Potential larger range of active ingredients
- Broader uses of existing products
- Reduction of LERAP safety margins
- Reintroduction of aquatic herbicides

Benefits to Regulators:

- More robust risk assessment
- Better understanding of aquatic environment processes
- Better understanding of aquatic plant physiology
- Selection of standard assessment suite of plants
- Easier defence of scientific process
- Broader range of products available for crisis management