

# *Harmonizing Great Lakes Regulated Species: Reconciling a Regional Patchwork of Approaches and Prohibited Species.*



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# Regulations only as strong as weakest link

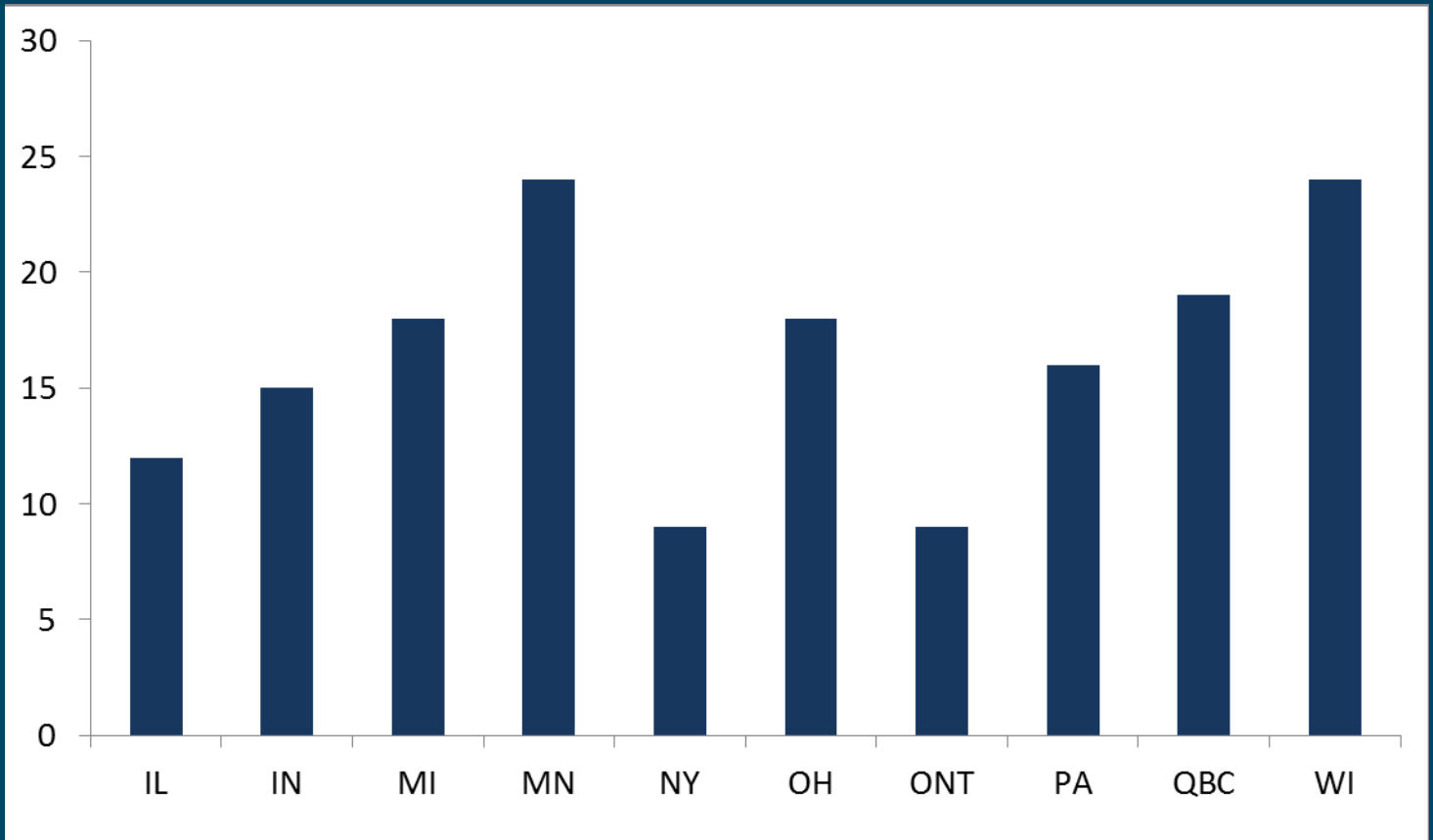


*Peters and Lodge, Fisheries, 2009*



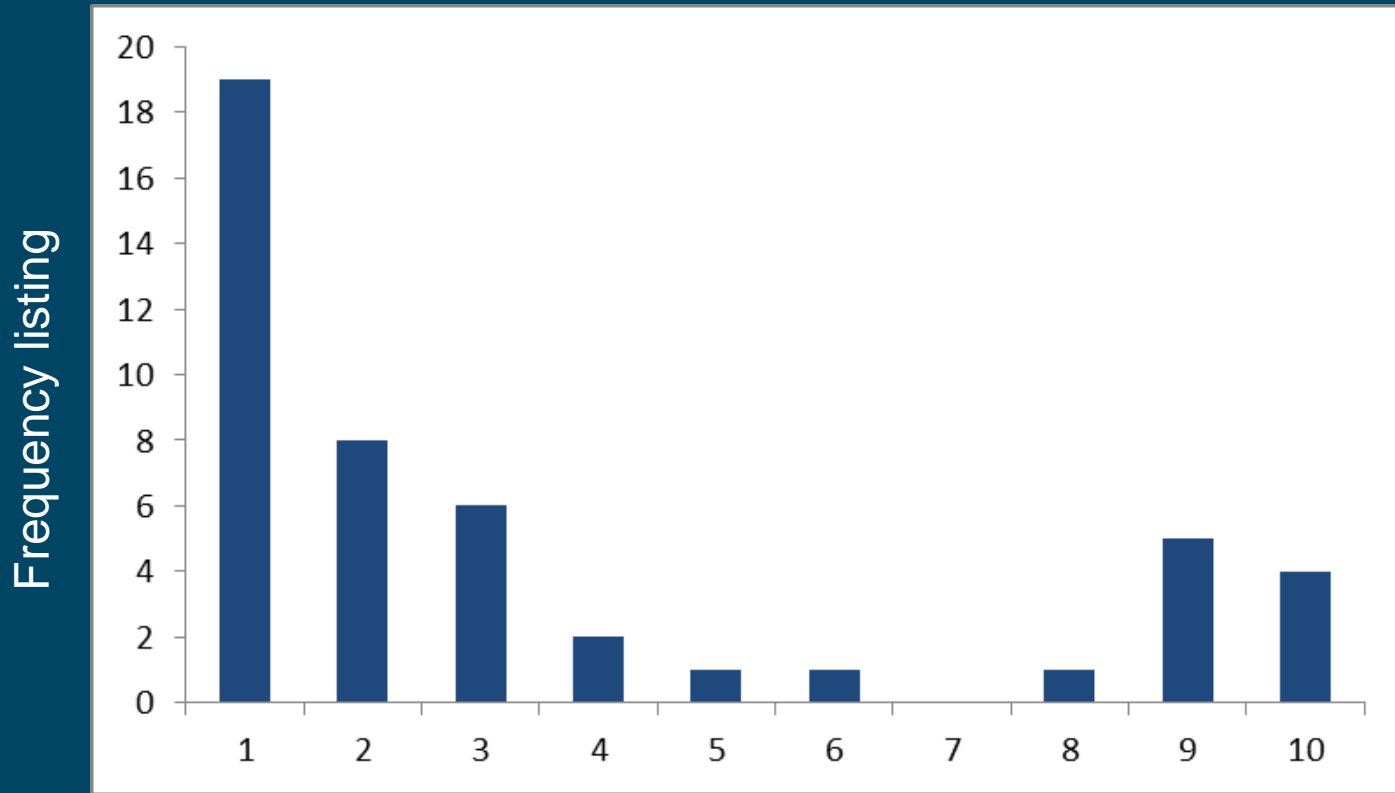
# Frequency of listing (state or province) (Animals: January - 2014)

No. of prohibited/restricted species



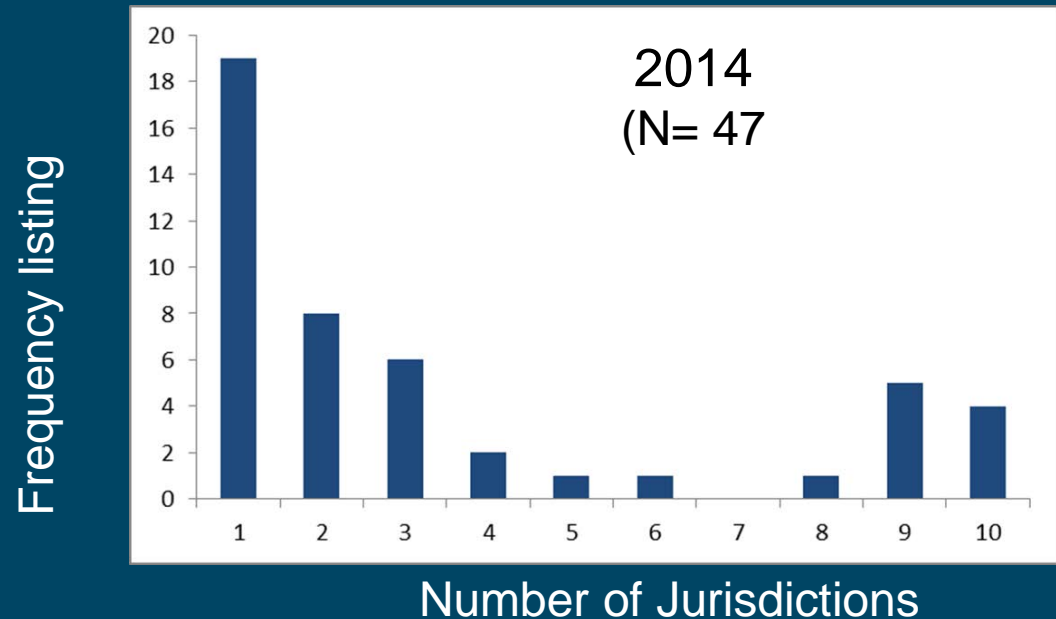
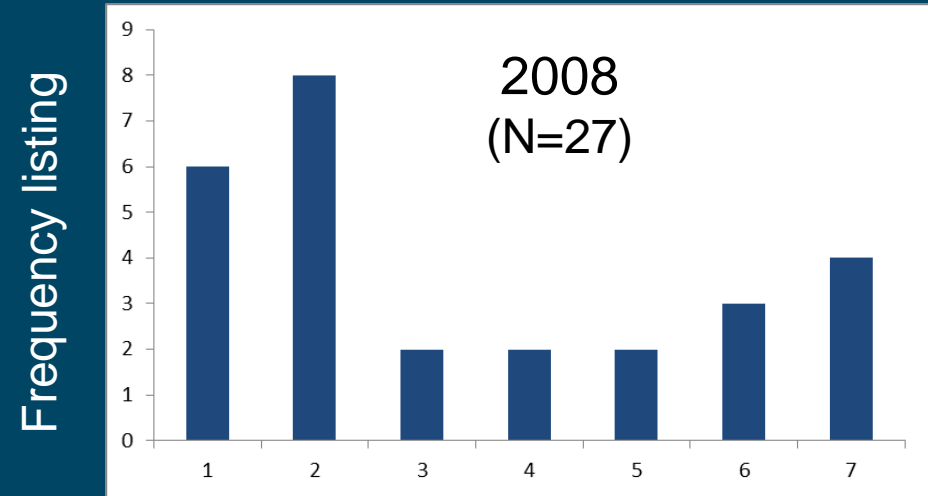
Great Lakes states or provinces

# Number of species listed by state or province (animals)



Number of state or provincial jurisdictions listing individual species

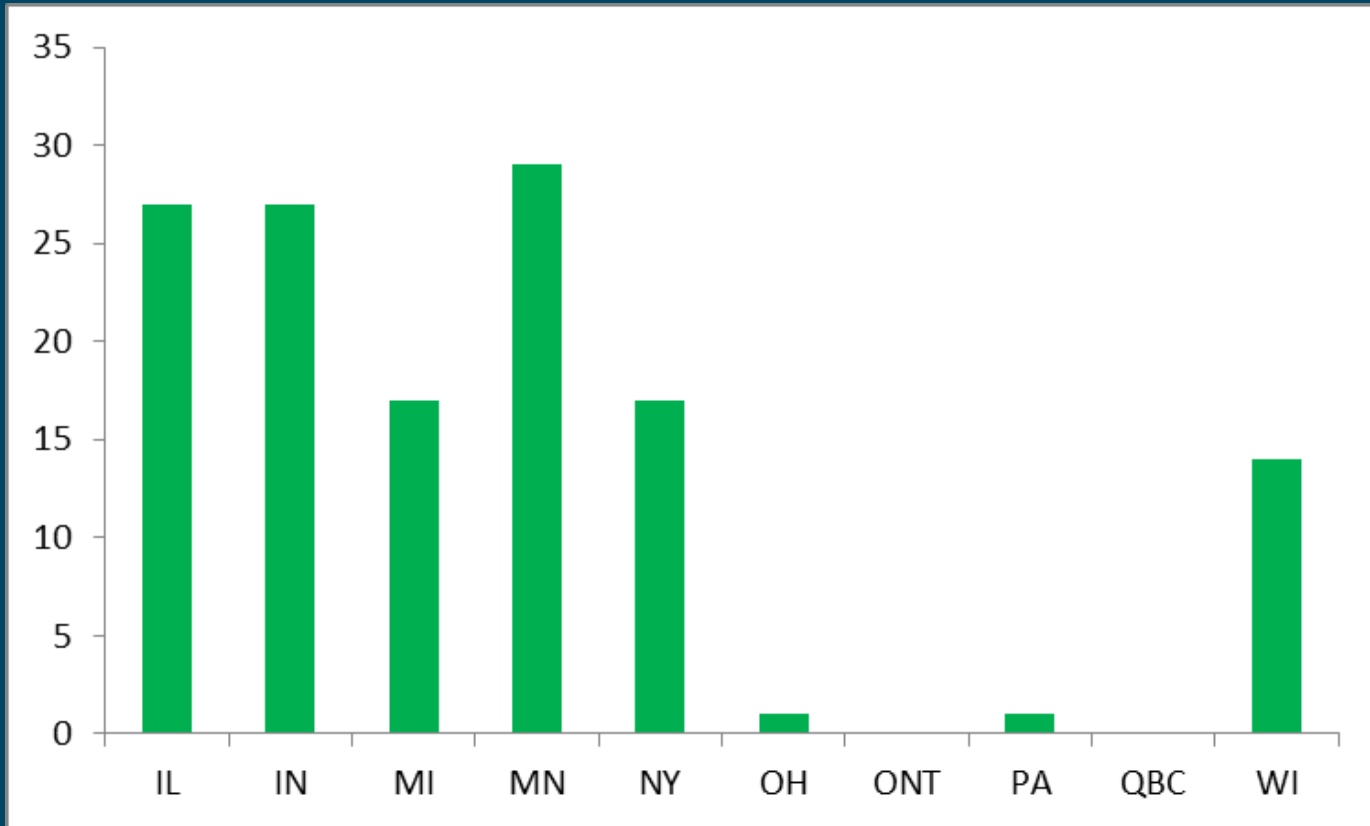
# Animals – slower progress





# Number of species listed by state or province (Plants)

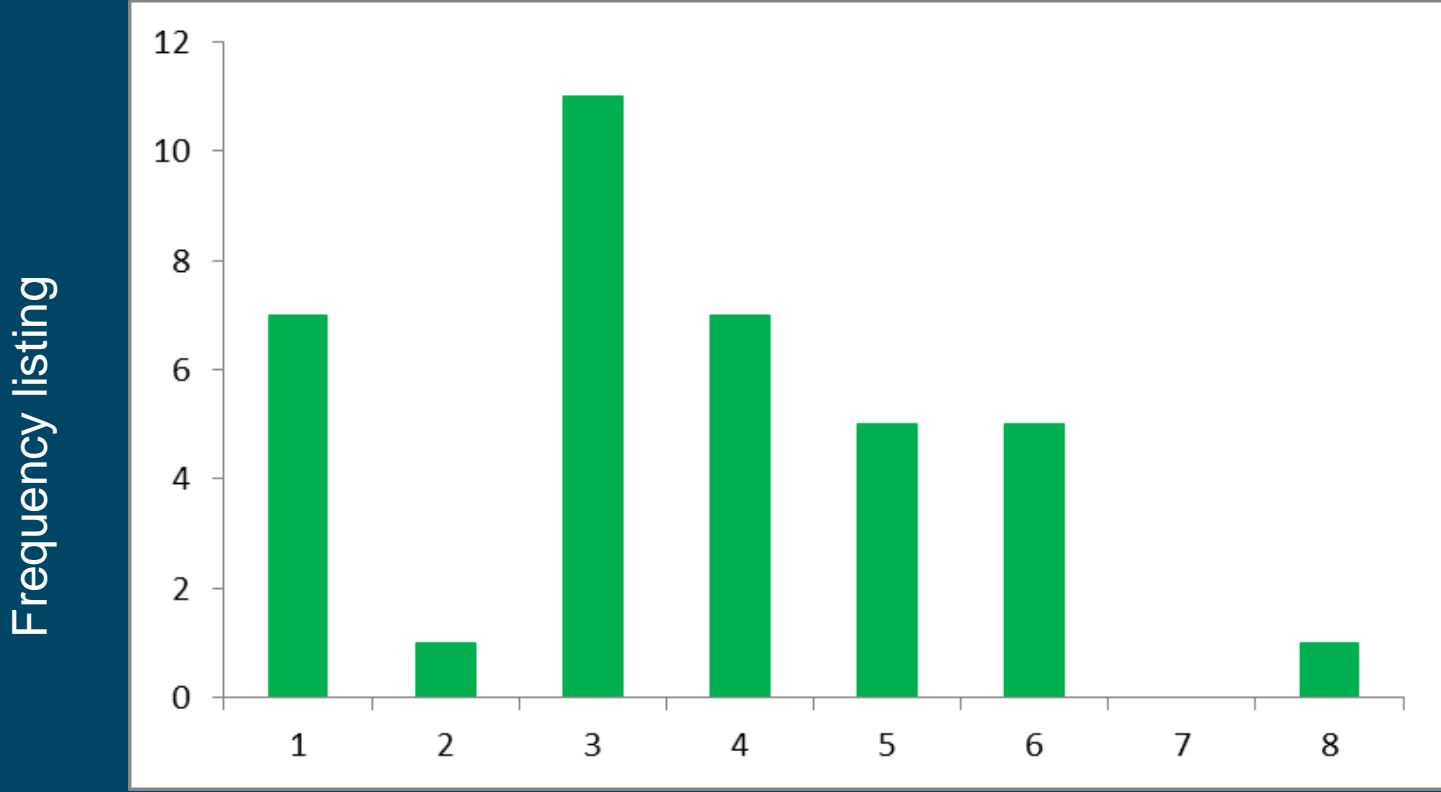
No. of prohibited/restricted species



Great Lakes states or provinces

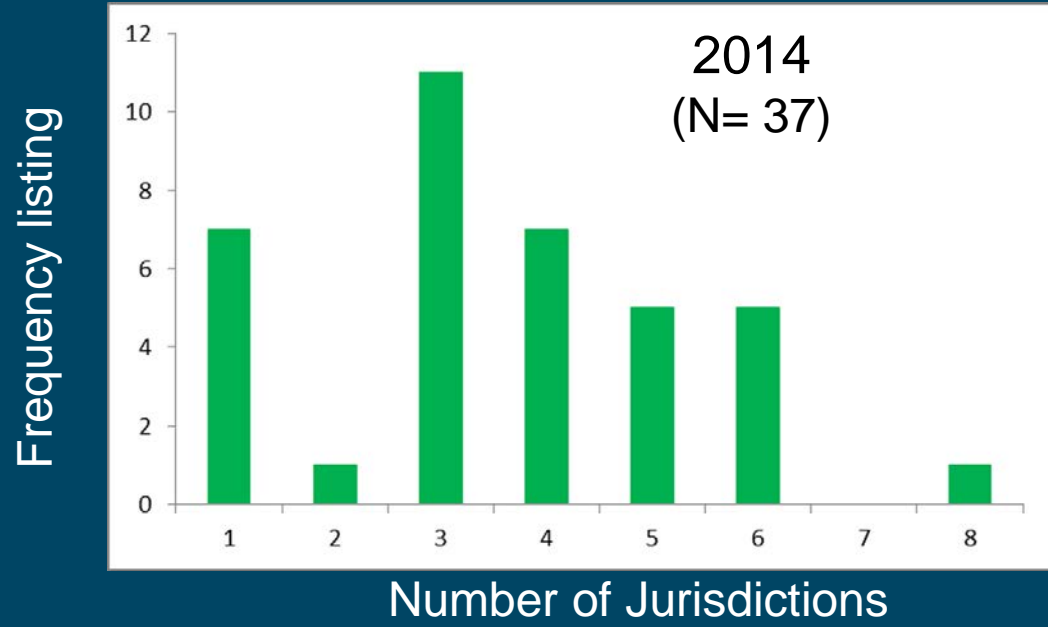
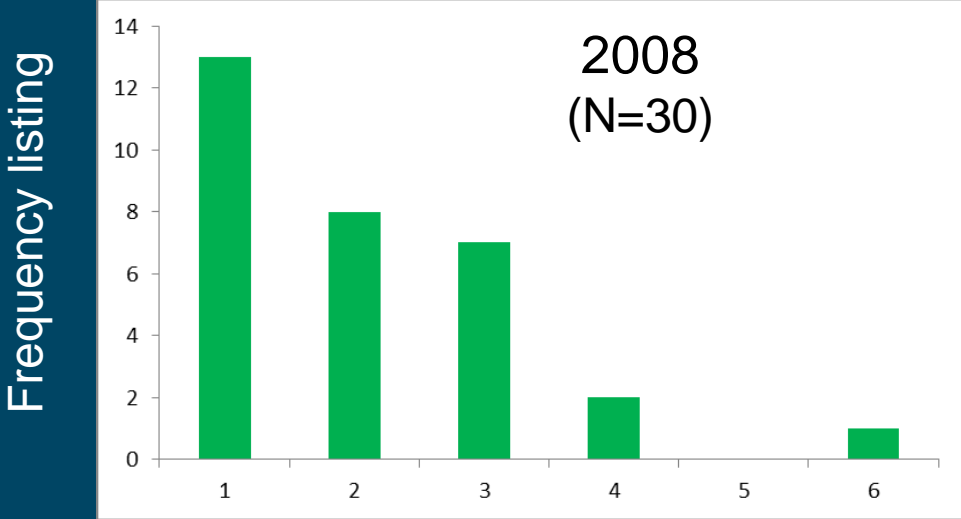


# Frequency of listing (state or province) (Plants)



Number of state or provincial jurisdictions listing individual species

# Plants – measurable progress





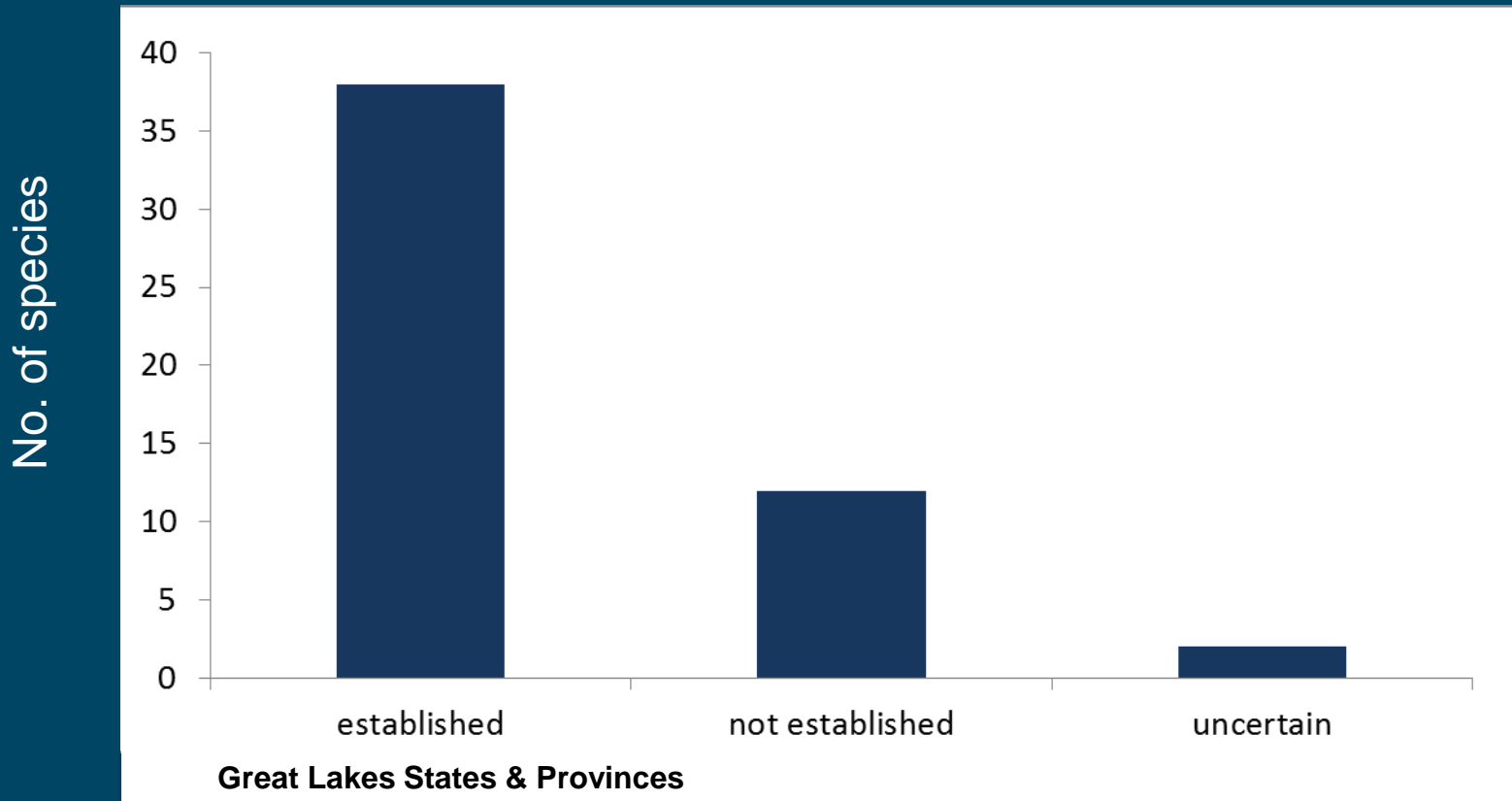
# Existing risk assessment information within GLB

- Expert panel approach (e.g. MN, OH, MI)
- Detailed literature reviews (e.g. WI DNR, DFO Canada, GLANSIS, Lacey Act Listed Injurious sp. & USDA noxious species listing, Invasive Species Specialist Group (*ISSG*))
- Questionnaire -score based risk assessment tools (e.g. USAWRA [*Gordon et al 2013, Gantz in prep*], NY Plant risk assessment method)
- Statistical tools (USFWS model [*Hoff in review*], Kolar and Lodge 2002, Keller et al 2007)

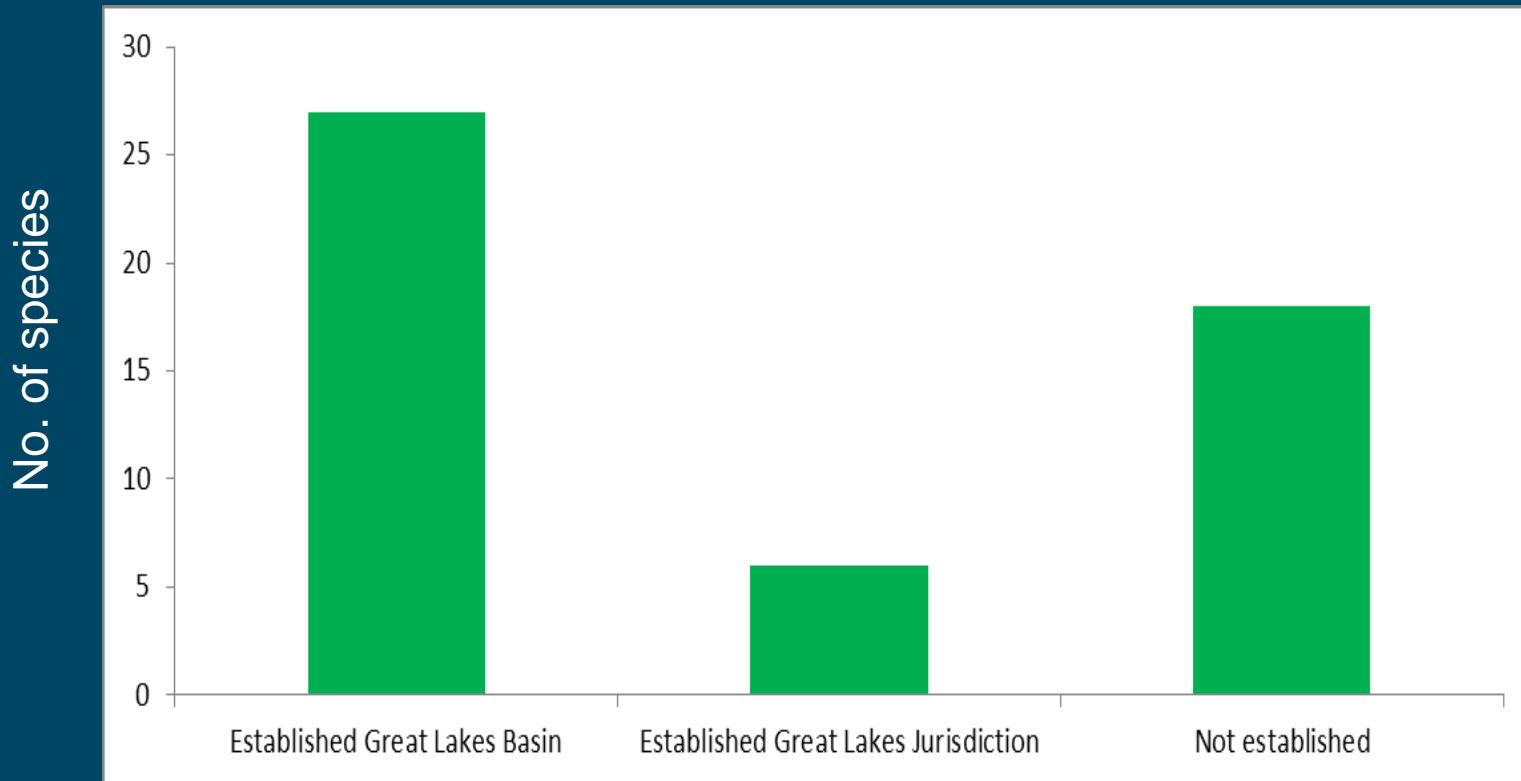
# Common criteria used to assess risk

- Probability of introduction
- Environmental suitability – can species establish, reproduce and spread (climate match and habitat suitability)
- Evidence of impacts
  - history of invasiveness elsewhere
  - competition
  - predation
  - disease
  - economic impacts
  - or human health

# Environmental suitability (animals)



# Environmental suitability (Plants)



# Assessing strength of evidence

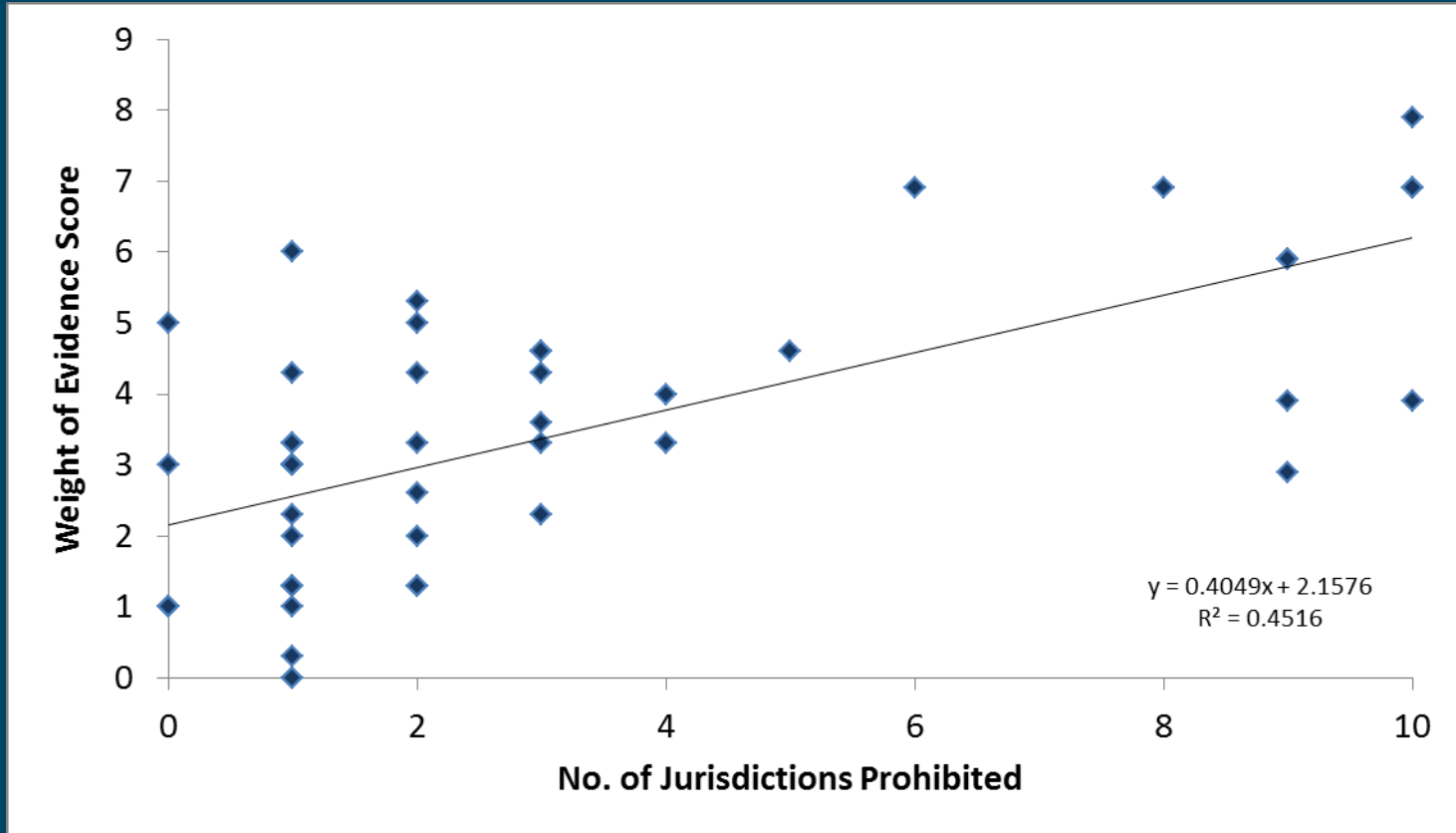
Strength of evidence	Risk Assessments
stronger	Identified by multiple peer reviewed risk assessments & expert panels
	Identified by a peer reviewed assessment and expert panel(s)
	Identified by a peer reviewed risk assessment
	Identified by multiple expert panels
weaker	Identified by one expert panel



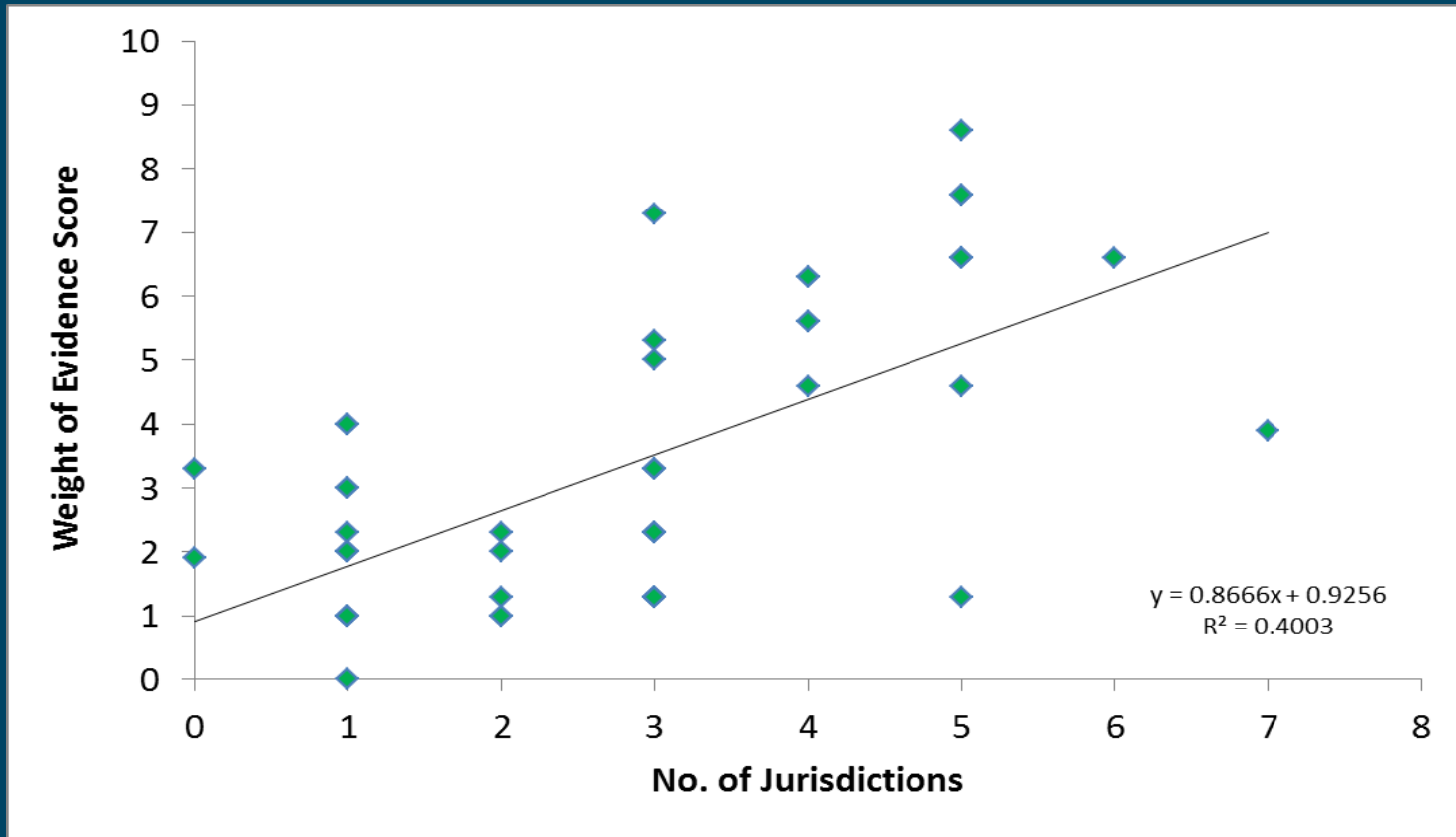
# Assessing strength of evidence

- Scored each species on basis of cumulative evidence for regulating
- Expert panel approach (Score 0.3 per expert panel)
- Detailed literature reviews (Score 1 point per process)
- Questionnaire -score based risk assessment tools (Score 1 point per process)
- Statistical tools (Score 1 point per process)

# Weight of evidence (animals)



# Weight of evidence (plants)

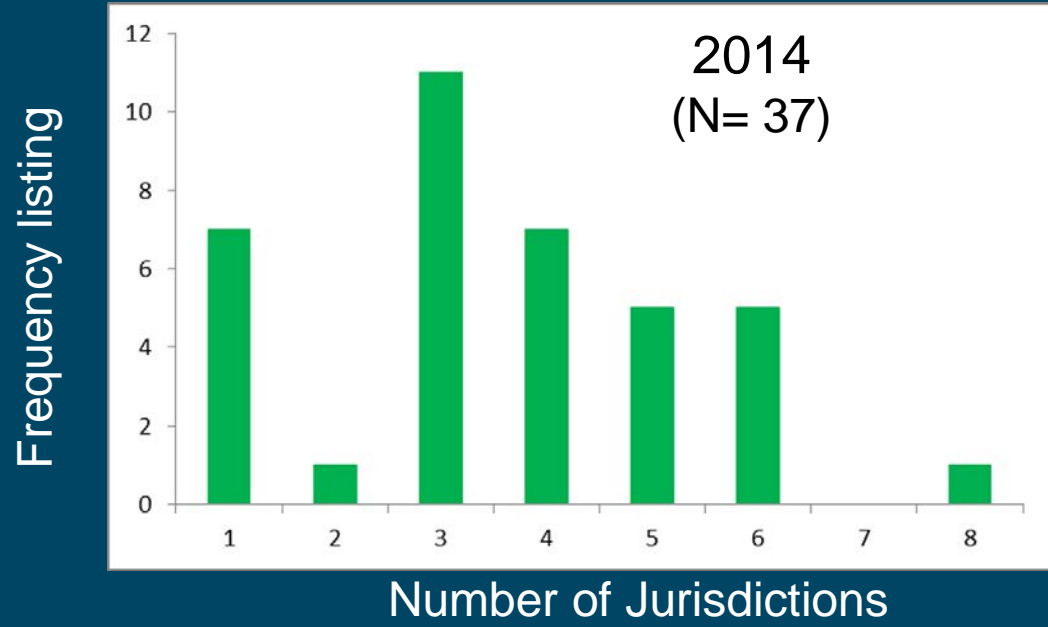
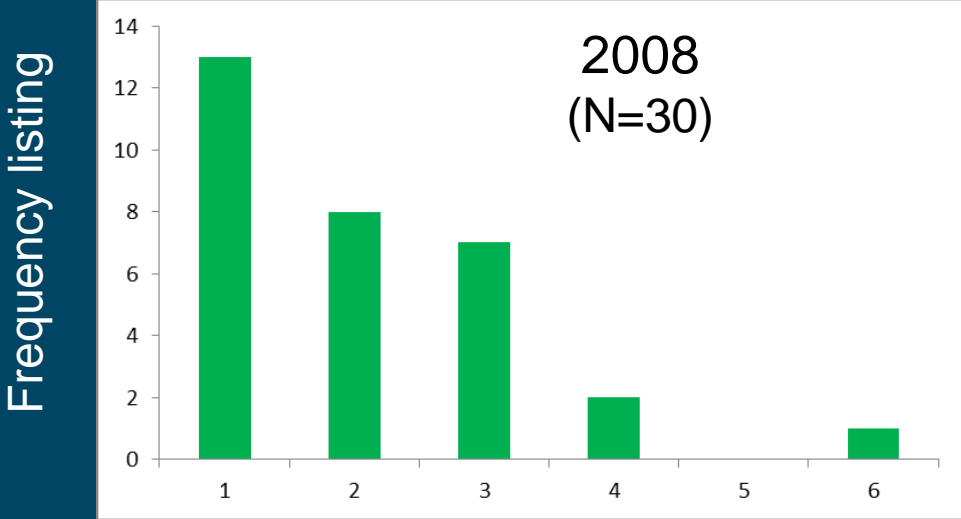




# Plants – measurable progress

## Reasons for progress

- Adoption of risk assessment methods
- Indiana and Illinois – (GL) AWRA
- New York – Plant Risk assessment method



# Conclusions

- Current prohibited species lists appear to be largely reactive
- Variety of risk assessment methods have been used across basin
- Breadth of data on potential for establishment and impacts
- Collectively provide evidence that the majority of listed species can establish and are likely to cause impacts
- Probability of introduction and spread needs to be assessed (*evidence that species is or could be present in invasion pathways*)
- Variety of management reasons for regulating possession, transport and sale of species