Invasive wetland grass influences secondary production and aerial insectivore birds

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Photo: James Hawley

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Ontario
Ministry of Natural Resources and Forestry

ONTARIO PARKS

Aerial insectivores: consume invertebrates while foraging “on the wing”

Wetlands are important foraging habitat for aerial insectivores

Phragmites australis
subsp. *australis*
European Common Reed

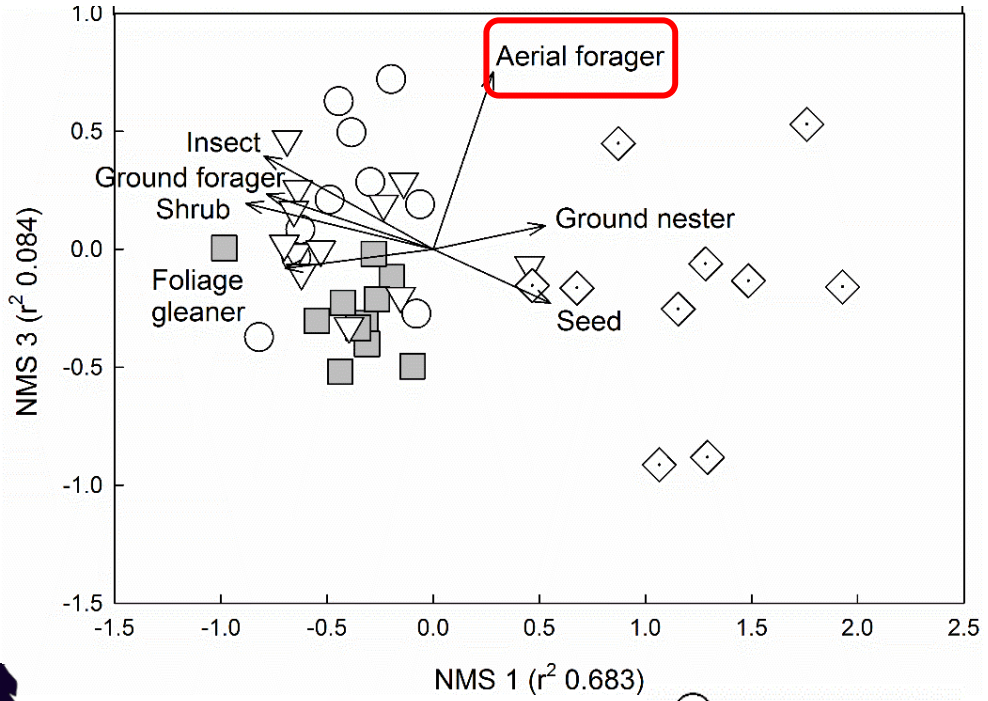
Perennial grass from Europe

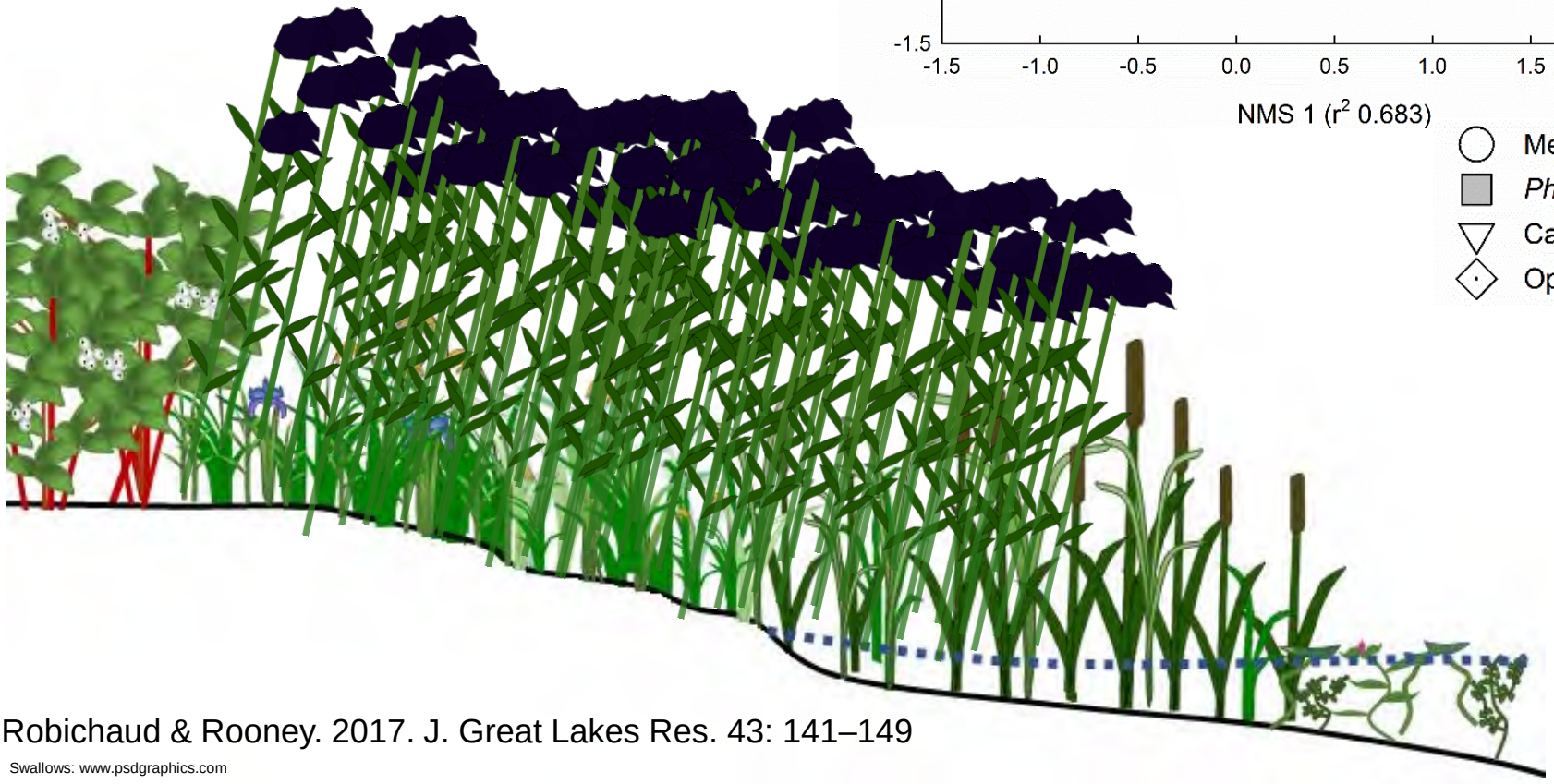
Tall, long-lived monocultures

Invasion reduces plant diversity and changes wetland habitat

Aerial insectivores avoid *Phragmites australis* habitat

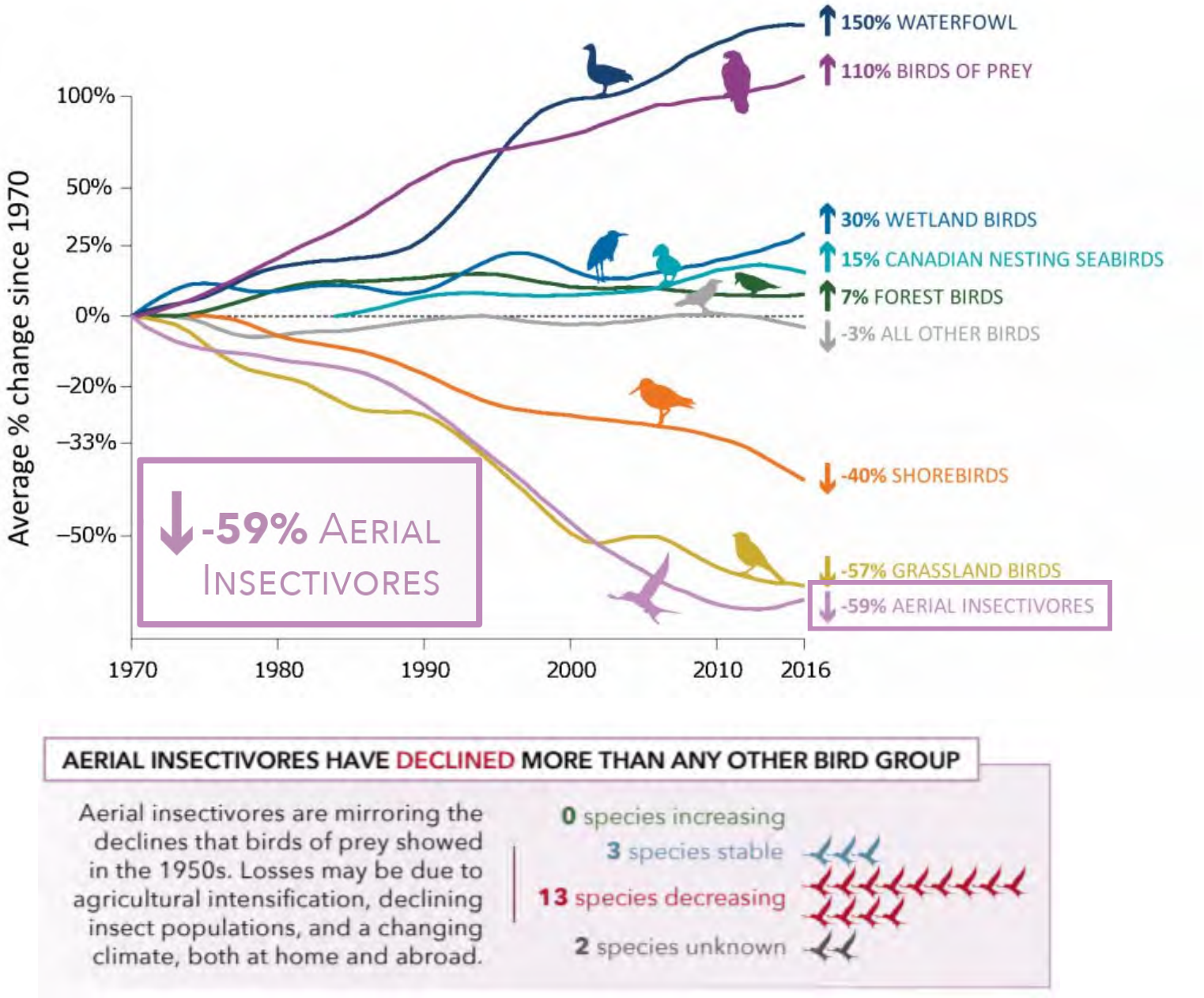
Began herbicide-based *Phragmites* control





Robichaud & Rooney. 2017. J. Great Lakes Res. 43: 141–149

Swallows: www.psdgraphics.com



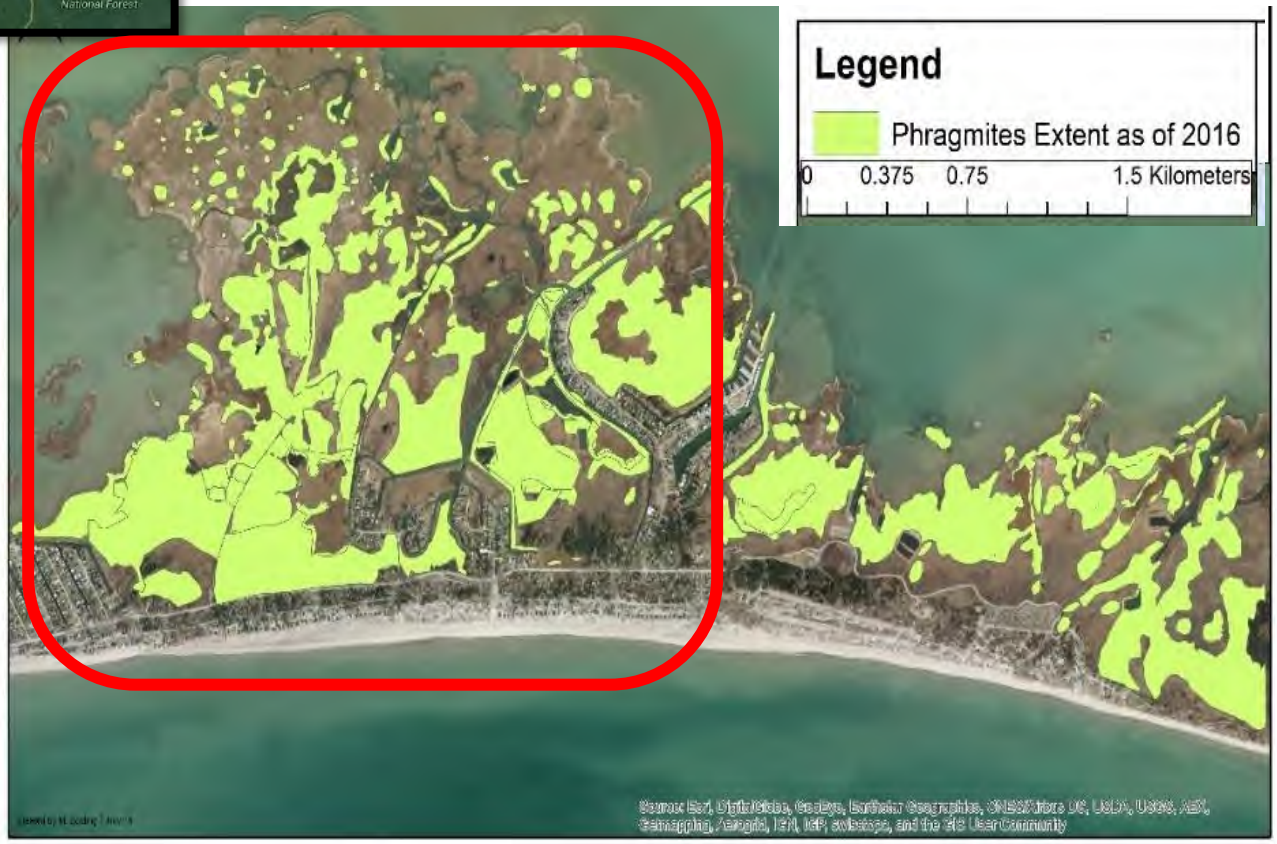
North American Bird Conservation Initiative Canada. 2019. State of Canada's Birds

Does secondary production differ in

- *Phragmites australis* habitat
- Uninvaded habitat
- Herbicide-treated habitat

Are aerial insectivores foraging less over *Phragmites australis*?

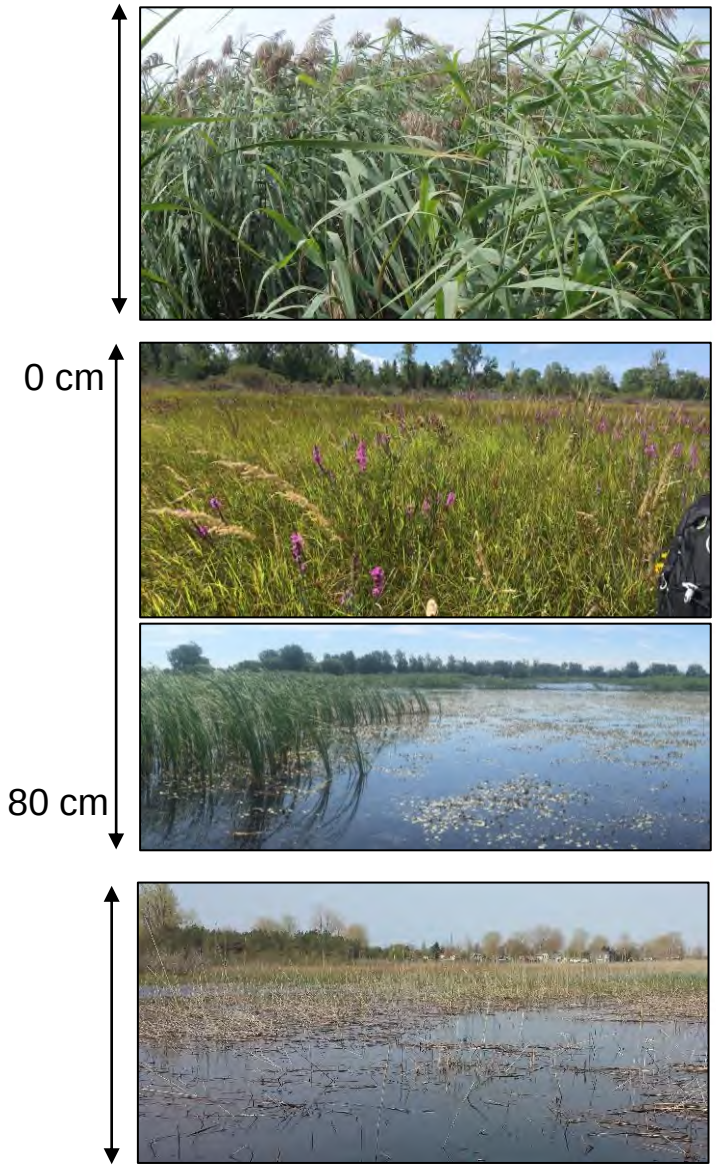
Does herbicide-treatment increase foraging activity?

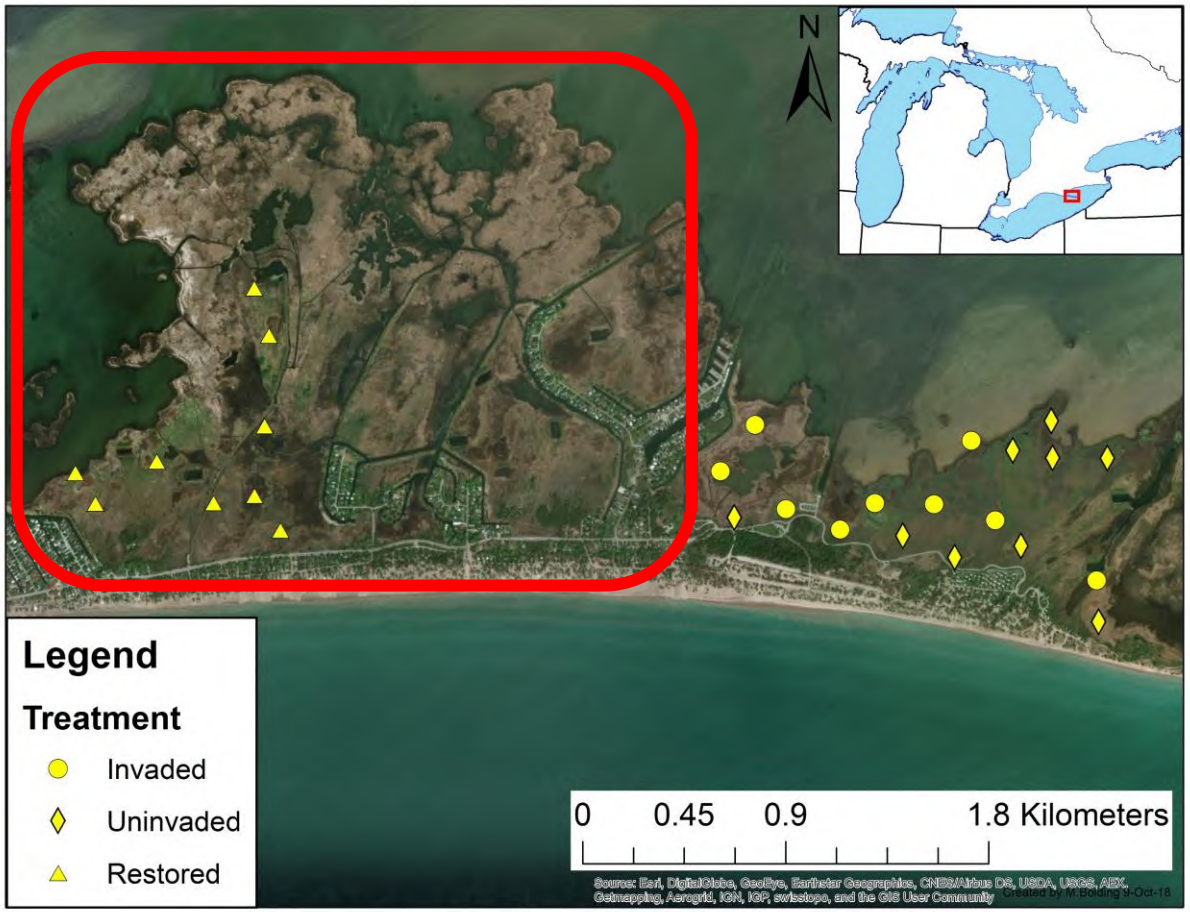


Pre-treatment *Phragmites australis* covered 70%

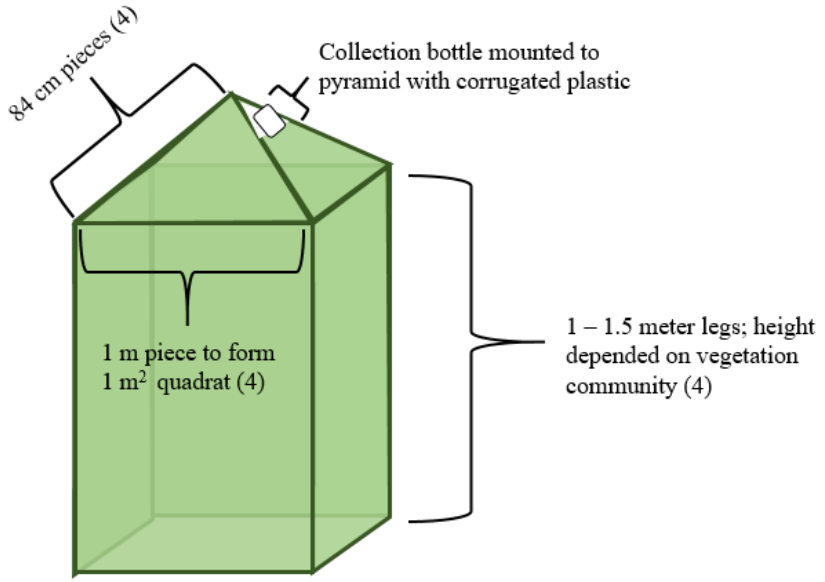
Field methods

- 3 treatments: Invaded (*P. australis*), uninvaded, herbicide-treated (2016)
- 9 sites per treatment along a water depth gradient (~0 - 80 cm)





Paired emergence traps and point-count surveys



Diurnal point-counts every 10 d

- Recorded foraging activity
- Collected emergence trap bottle

2017: June – July
2018: May – July

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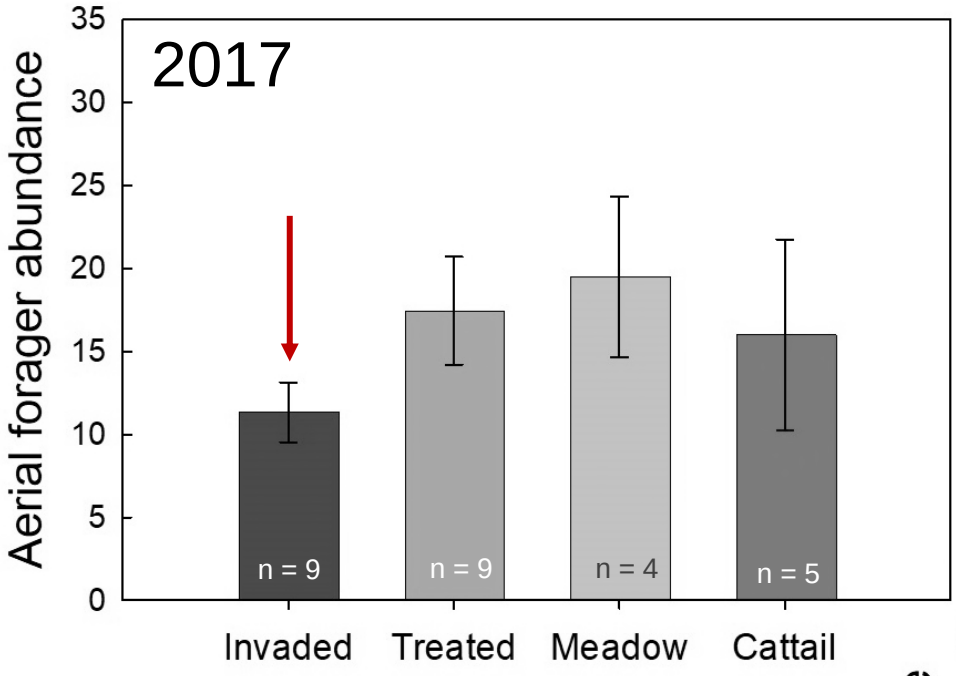
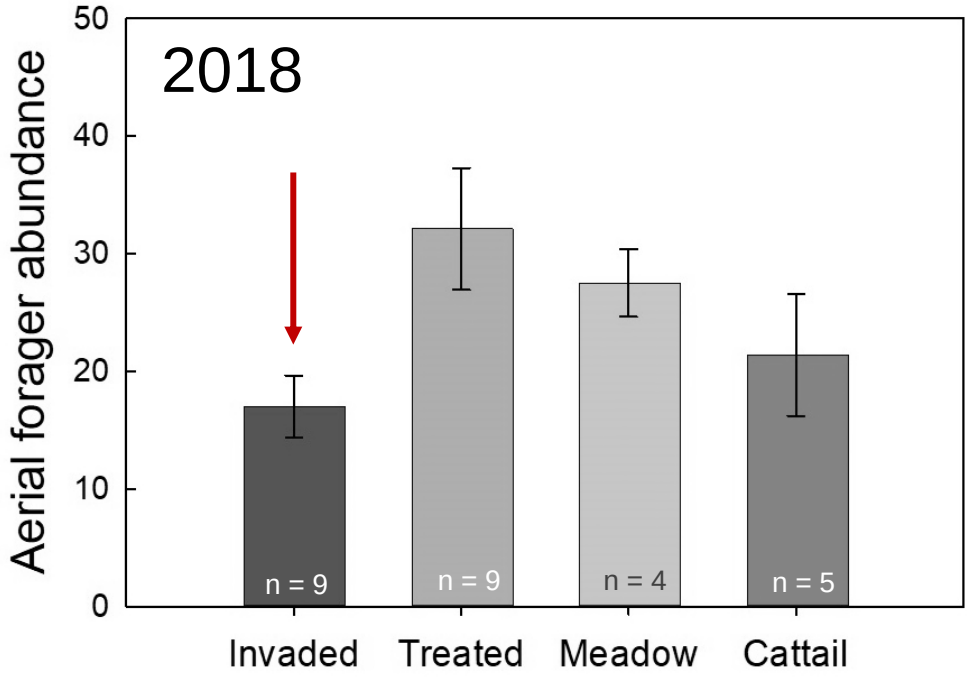
Fewer aerial insectivores use invaded habitat





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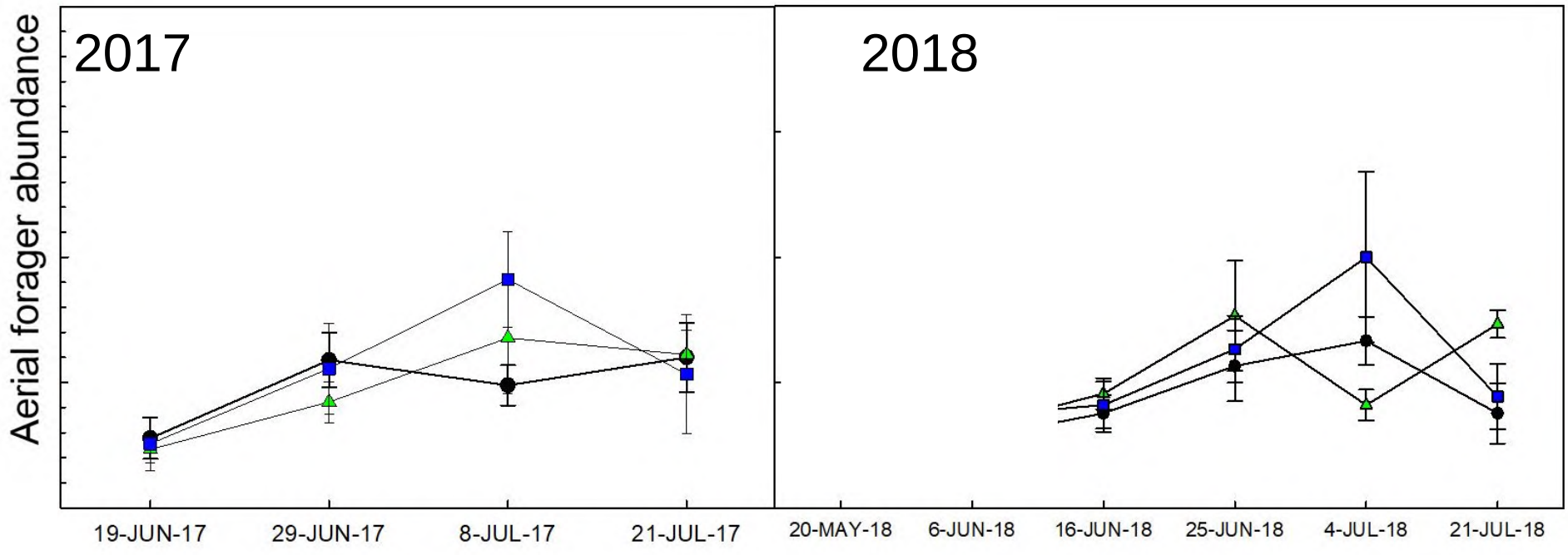
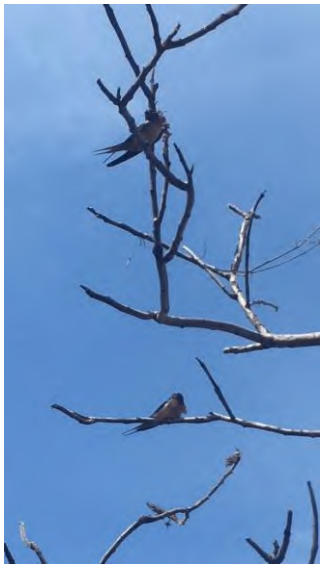
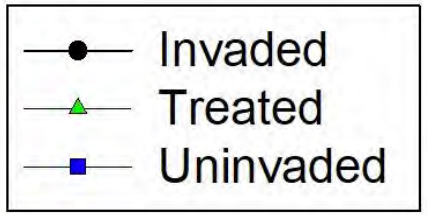
Temporal trends in abundance







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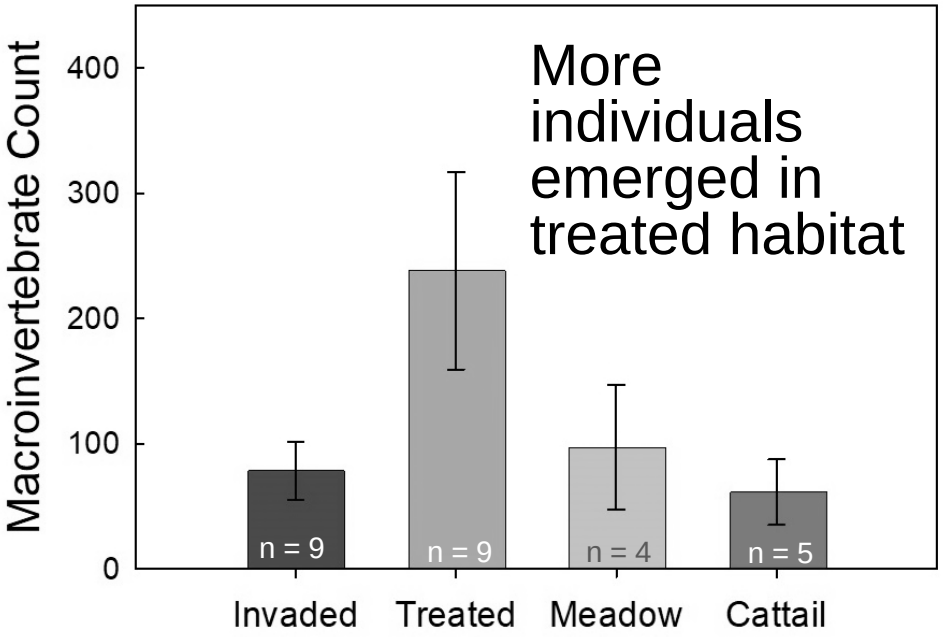
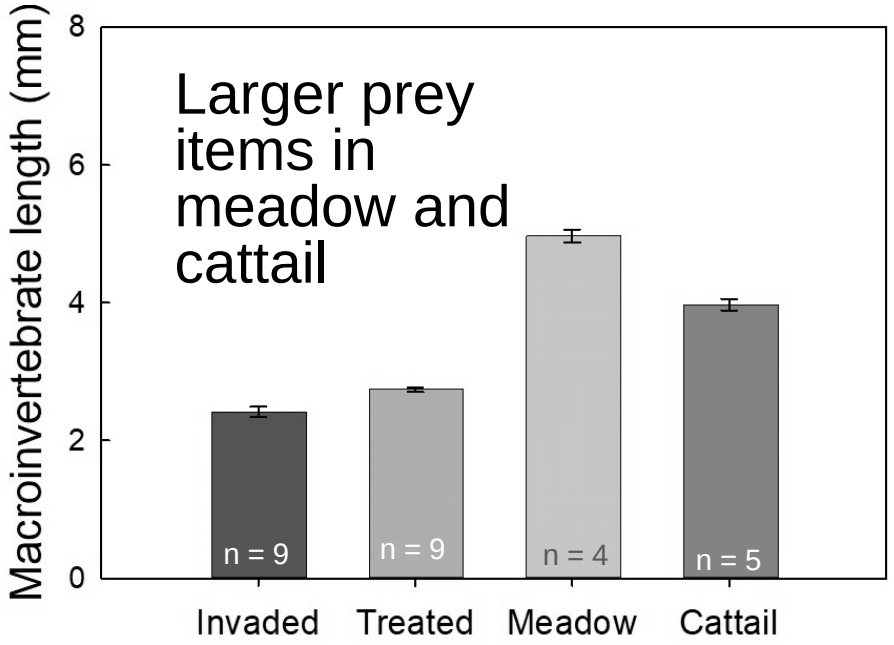
Invertebrate count and size in 2017 (June – July)

Preliminary results





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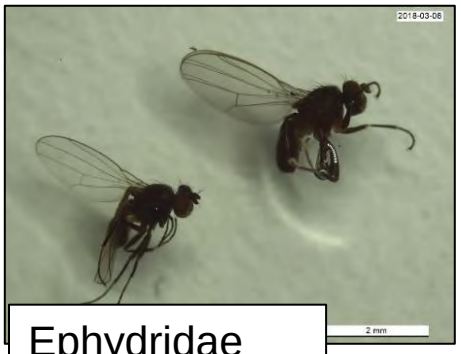

Ephydridae

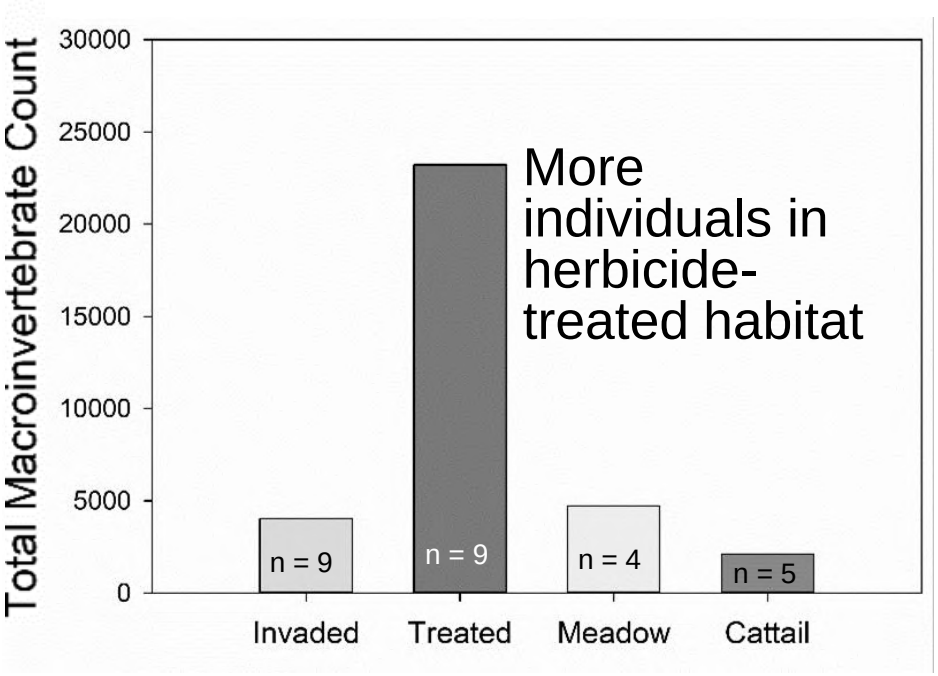

Chironomidae

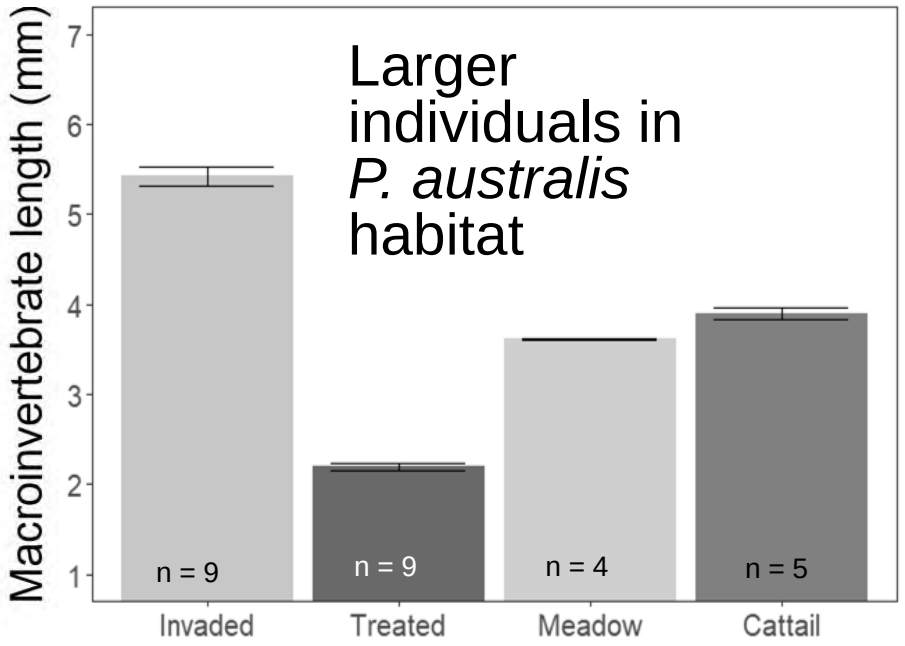

Anisoptera

Error bars = standard error

Invertebrate count and size in 2018 (May – July)

Preliminary results





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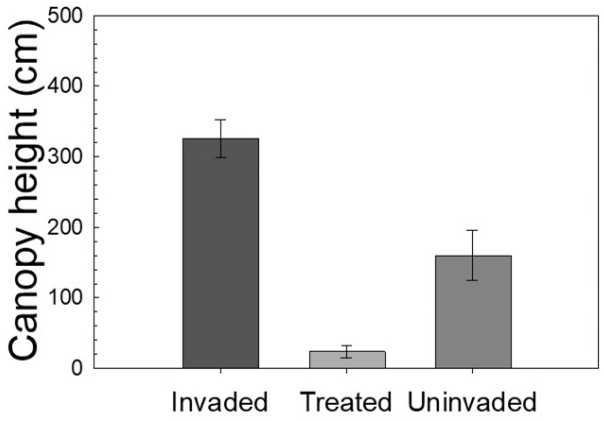
Chironomidae

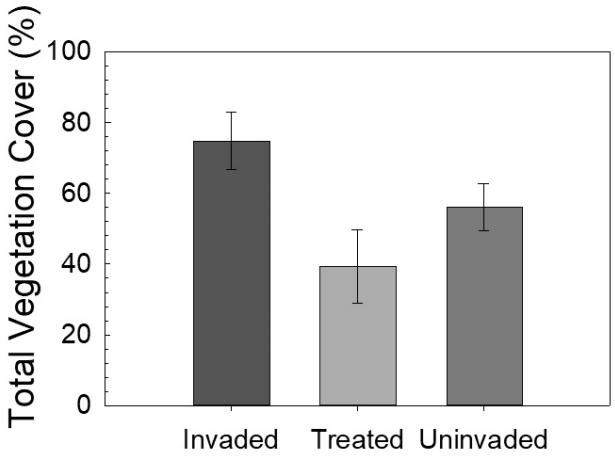
Trichoptera

Habitat characteristics may also play a role in foraging habitat preferences

Aerial insectivores foraged often over herbicide-treated sites and uninvaded sites

- Lower canopy height
- More interspersion





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Summary

- Aerial insectivores are foraging less often over invasive *P. australis* compared to resident vegetation and herbicide-treated *P. australis* control sites

- High count of emerging invertebrates for at least two years after herbicide-treatment
  - Temporal trends in count and size of emerging invertebrates over the season – likely driven by differences in community composition