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Using shore-based surveys to assess vessel traffic patterns in two migratory bird sanctuaries

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Salish Sea Ecosystem Conference
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Why this study?

- The southern Salish Sea has some of the highest volumes of marine vessel traffic in North America (Simard et al. 2014)

Credit: Alvin Balemesa/Unsplash

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Why this study?

- The southern Salish Sea has some of the highest volumes of marine vessel traffic in North America (Simard et al. 2014)
- Vessel traffic a source of disturbance for marine birds (e.g., Burger 1998)
- But little known about small vessel traffic

Credit: Alvin Balemesa/Unsplash

Study site & methods

Locations

- Took place at 2 Migratory Bird Sanctuaries (Greater Victoria area)

Salish Sea bioregion, Aquila Flower, 2021. CC-ND 4.0

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Salish Sea bioregion, Aquila Flower, 2021. CC-ND 4.0

Study site & methods

Locations

- Took place at 2 Migratory Bird Sanctuaries (Greater Victoria area)
  - Sidney, Shoal Harbour MBS
  - Victoria, Victoria Harbour MBS

Salish Sea bioregion, Aquila Flower, 2021. CC-ND 4.0

Methods

Shore-based surveys

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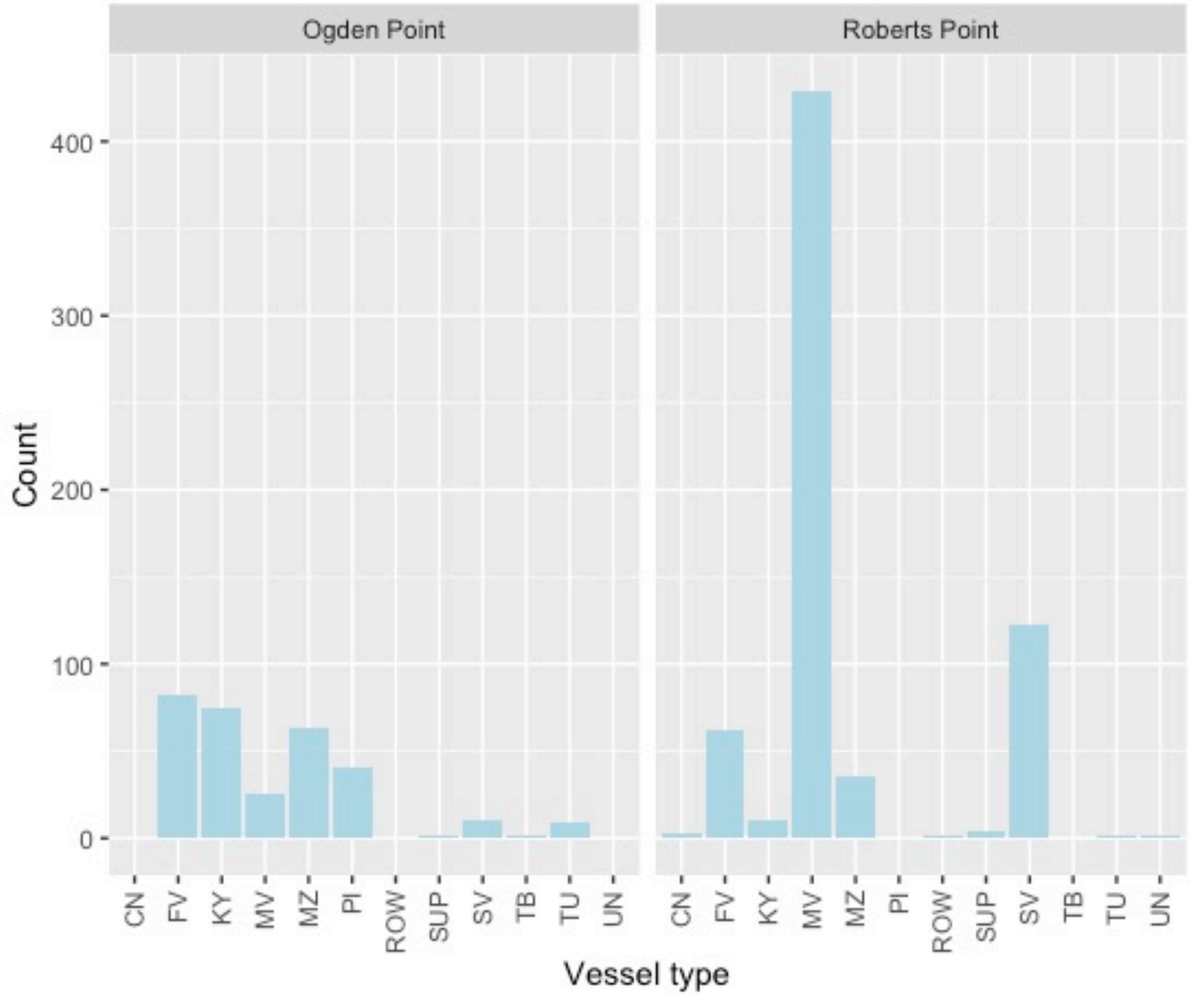
- 2 d/month (winter), March 2020 to Feb 2021, 7-8 h/d
- Recorded waterbirds, 3 min/hour

Results

VHMBS vs. SHMBS

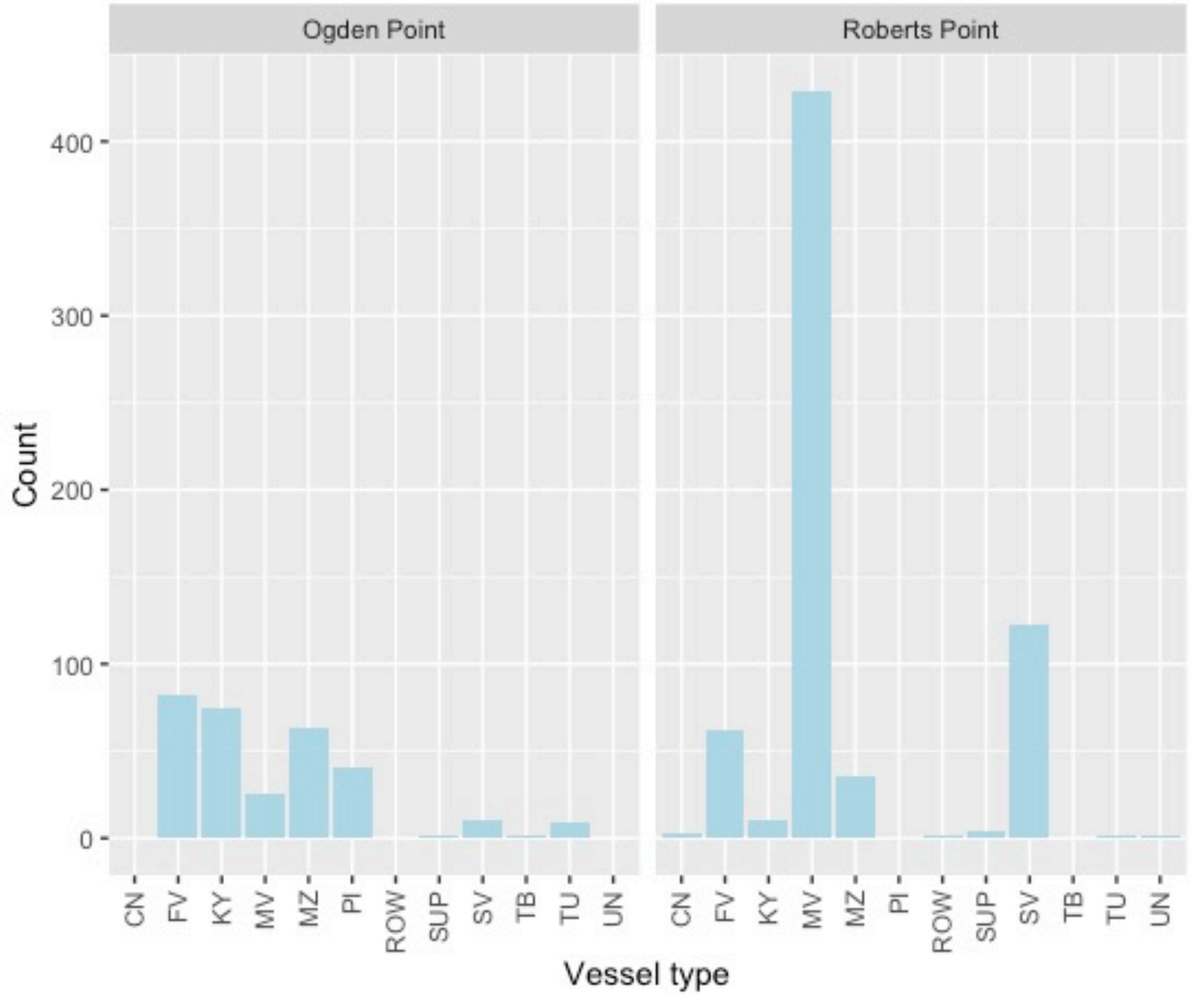
- Vessel characteristics varied by site



Results

VHMBS vs. SHMBS

- Vessel characteristics varied by site, e.g., size ($t = 2.61$, $p < 0.01$)



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SHMBS vs. VHMBS

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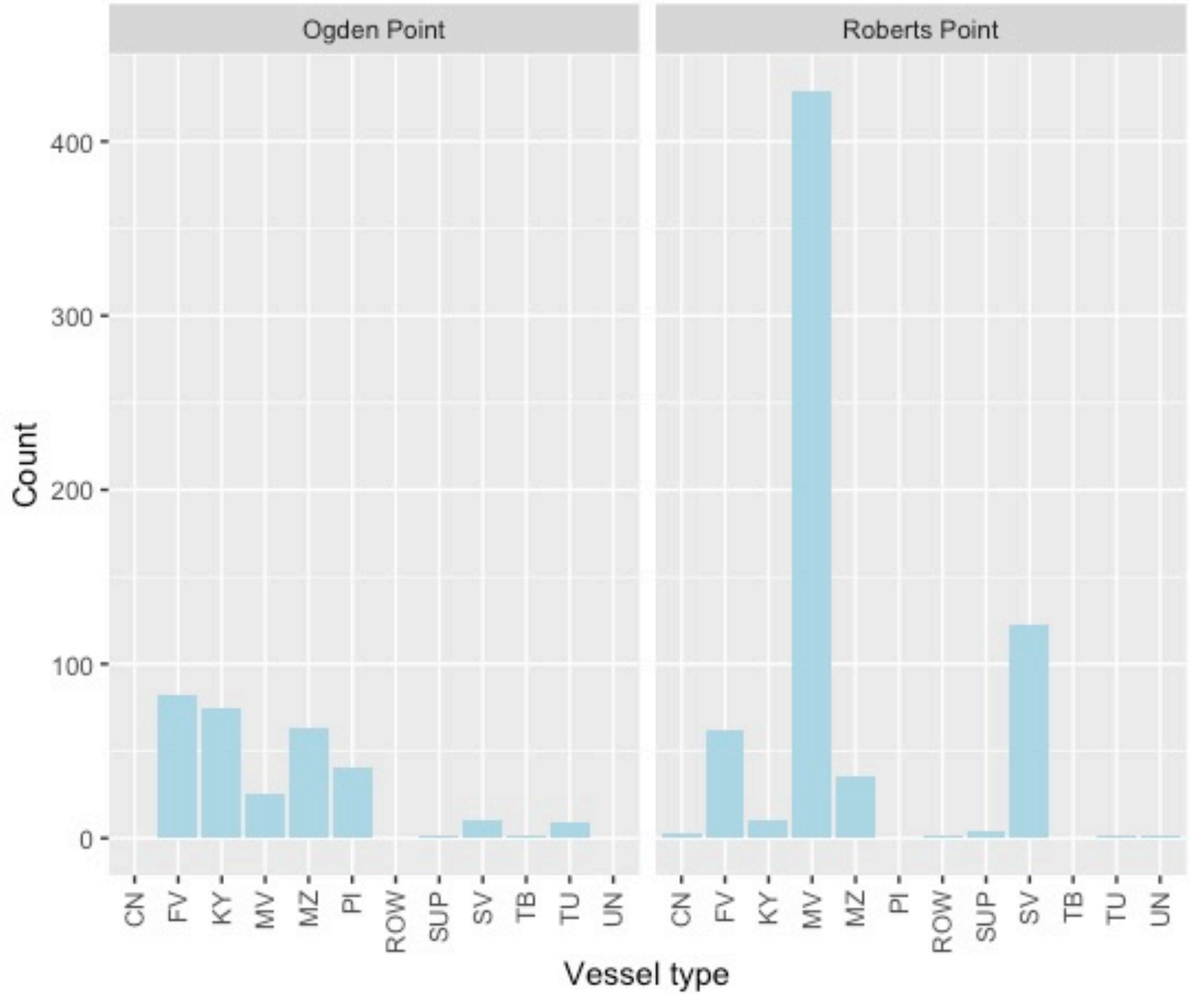
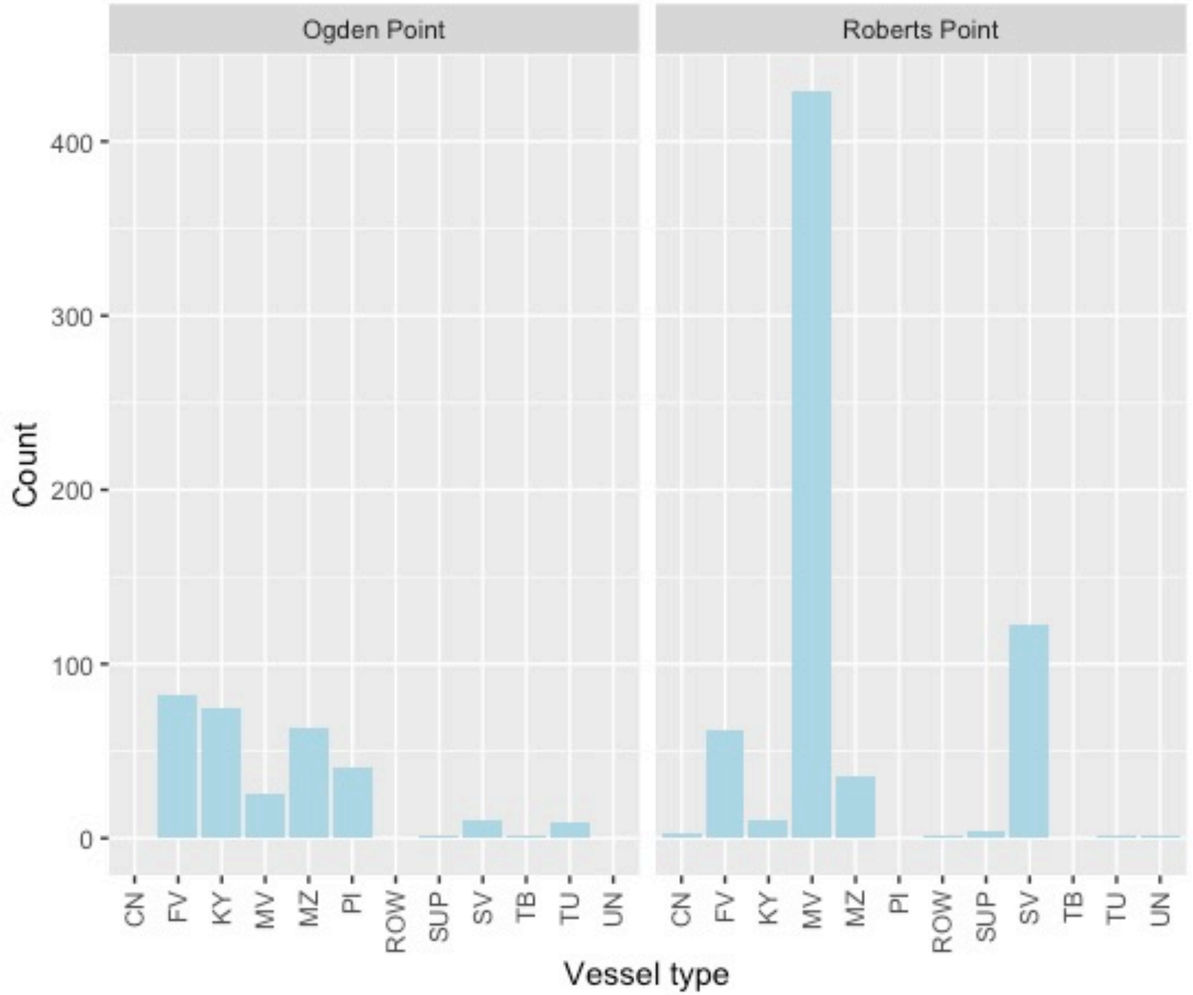
- More MVs, SVs at Shoal Harbour (Roberts Point)



Results

SHMBS vs. VHMBS

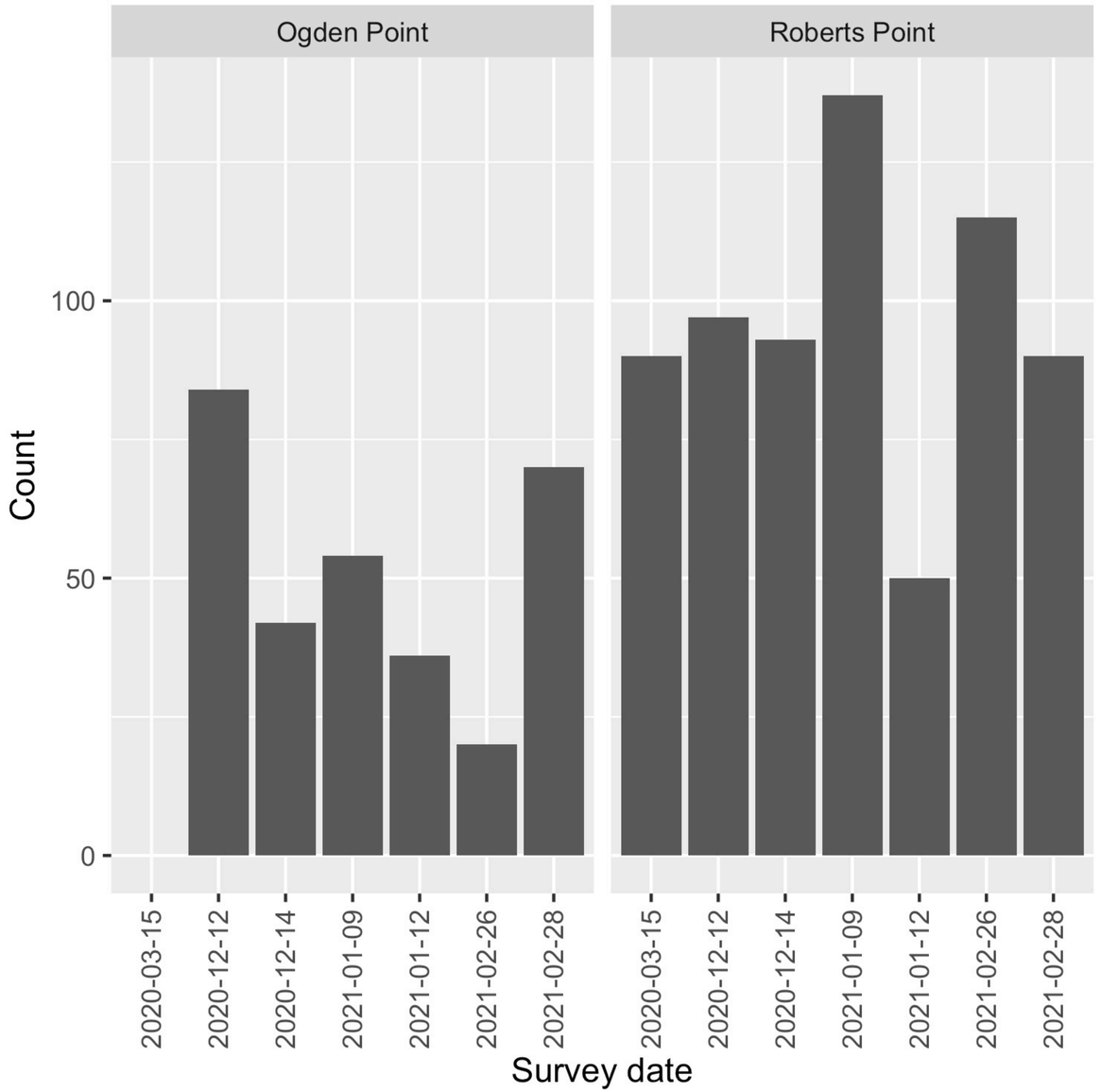
- Vessel characteristics varied by site, e.g., size ($t = 2.61$, $p < 0.01$)
- More MVs, SVs at Shoal Harbour (Roberts Point)
- Most kayaks (88% of total) at Victoria Harbour (Ogden Point)



Results

VHMBS vs. SHMBS

- Vessel count varied by site ($F = 10.33$, $p < 0.01$)



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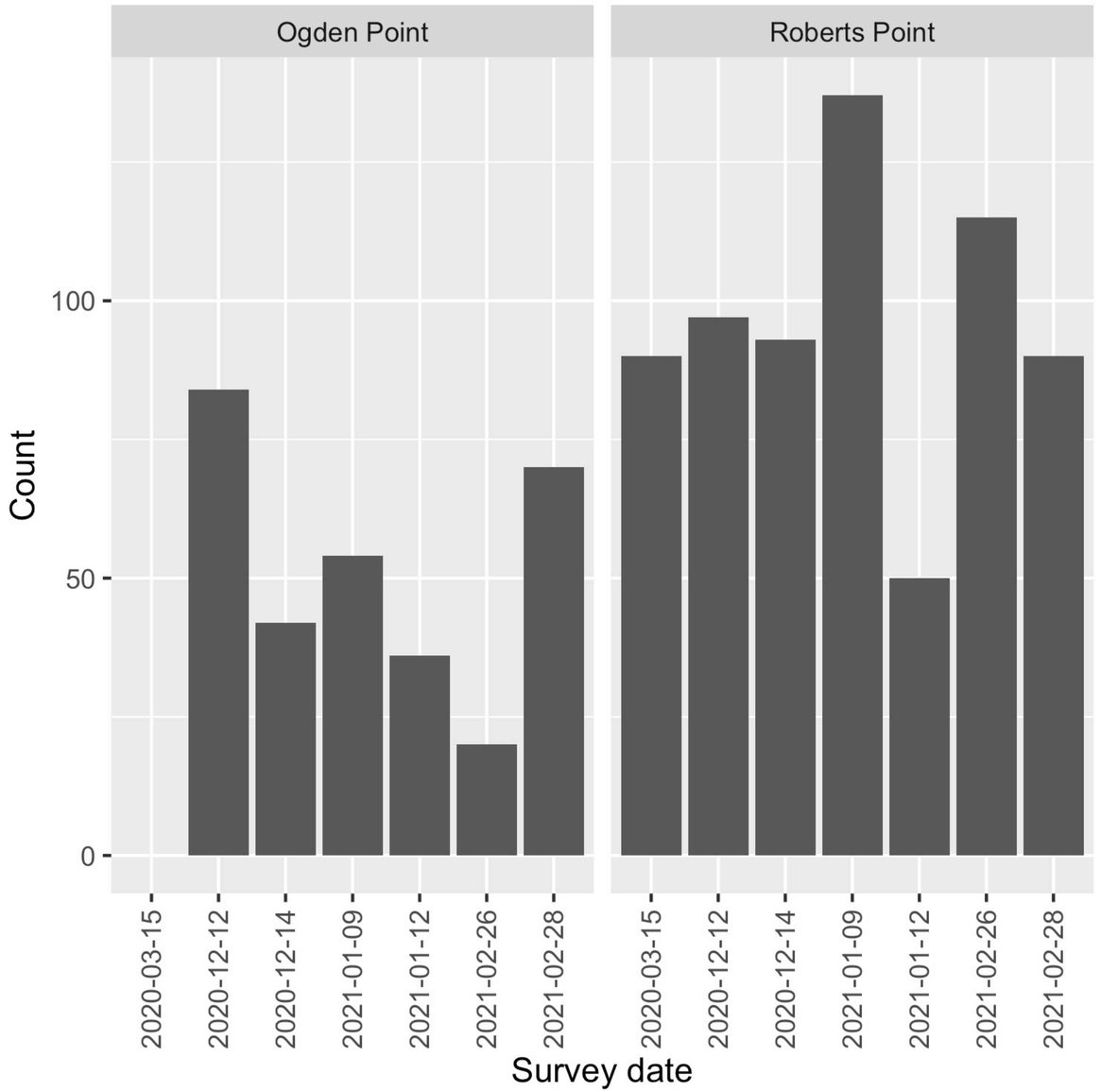
VHMBS vs. SHMBS

- Vessel count varied by site ($F = 10.33$, $p < 0.01$)
- Total vessel counts at Shoal Harbour nearly double those at Victoria (672 vs. 306)



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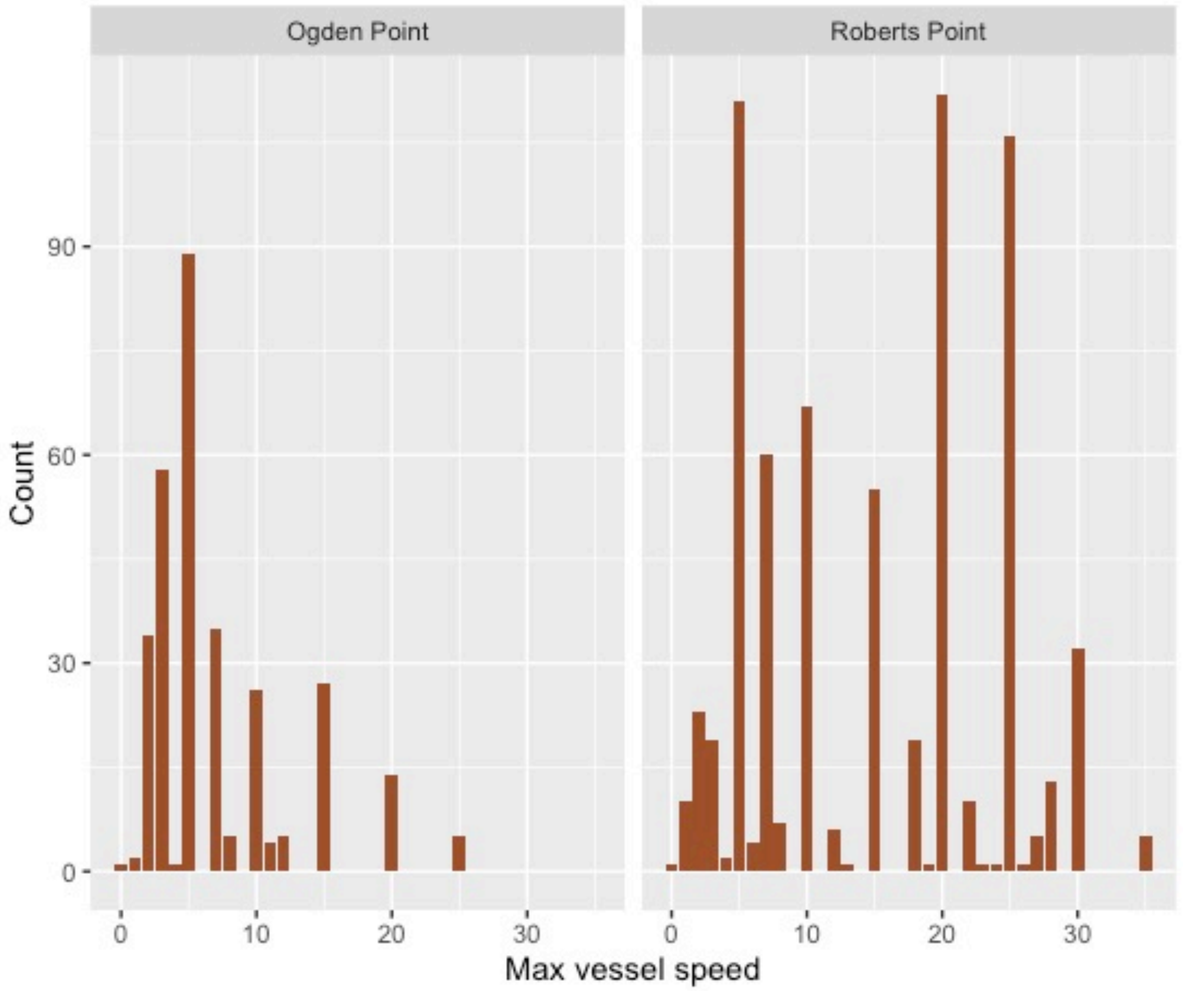
VHMBS vs. SHMBS

- Vessels also slower at Victoria Harbour than at Shoal Harbour (t = -17.03, $p < 0.001$)



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Both sites

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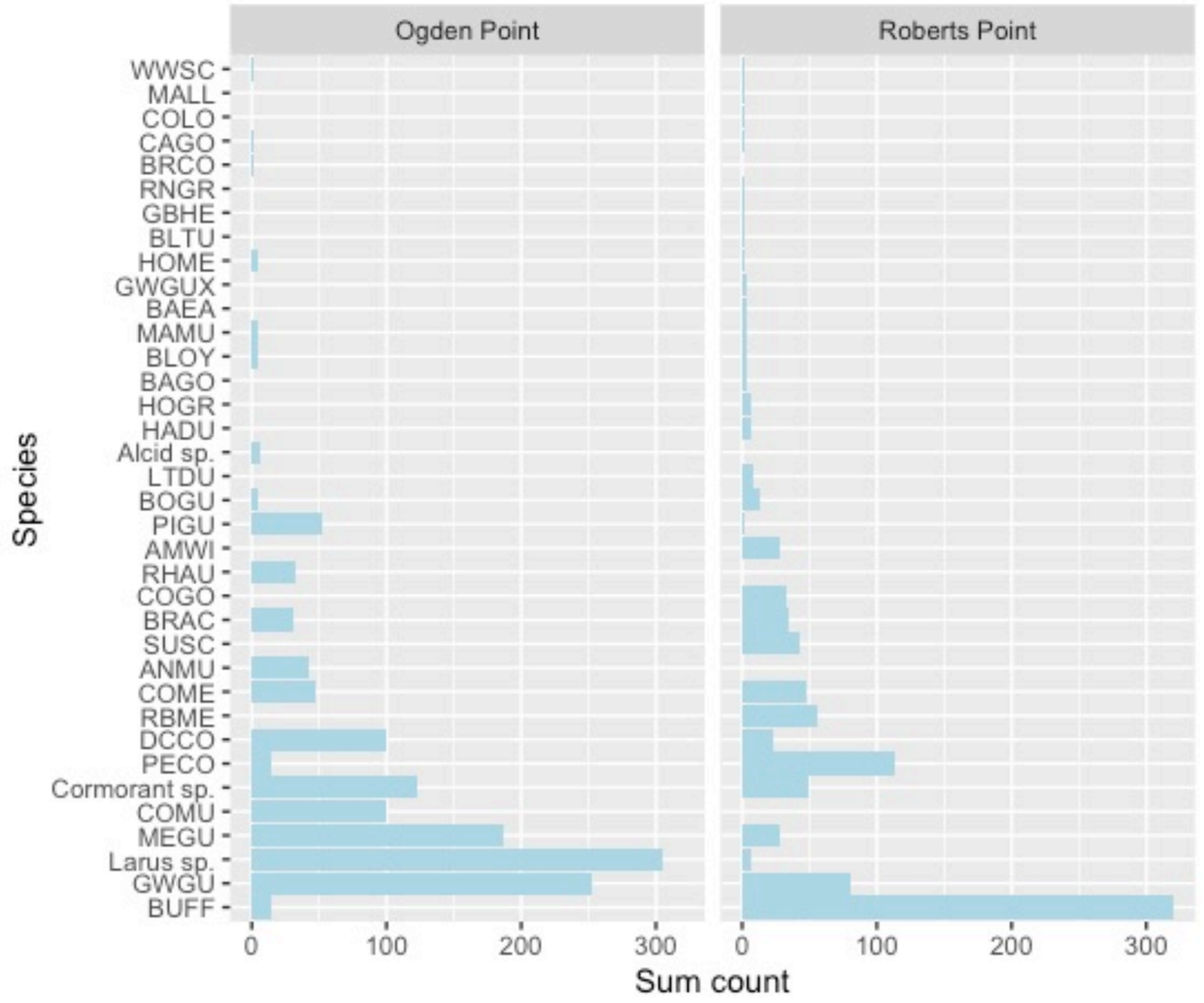
- Overall, 16% of vessels (~1 in 6) were ‘noisy’
- No US-flagged vessels

Results

Waterbirds

- 36 taxa at both sites combined



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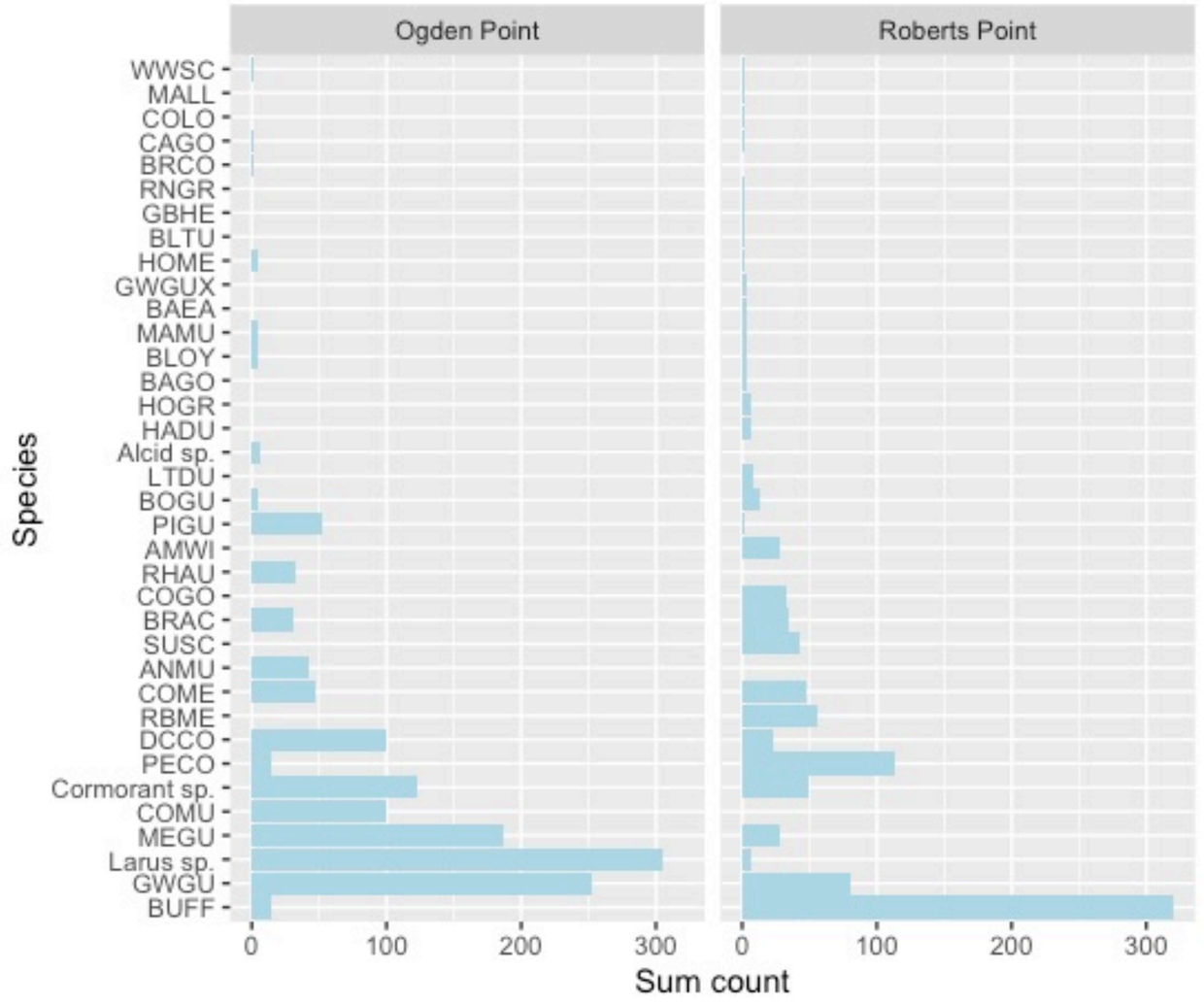
Waterbirds

- 36 taxa at both sites combined
- Gulls (Laridae), cormorants (Phalacrocoracidae) dominant



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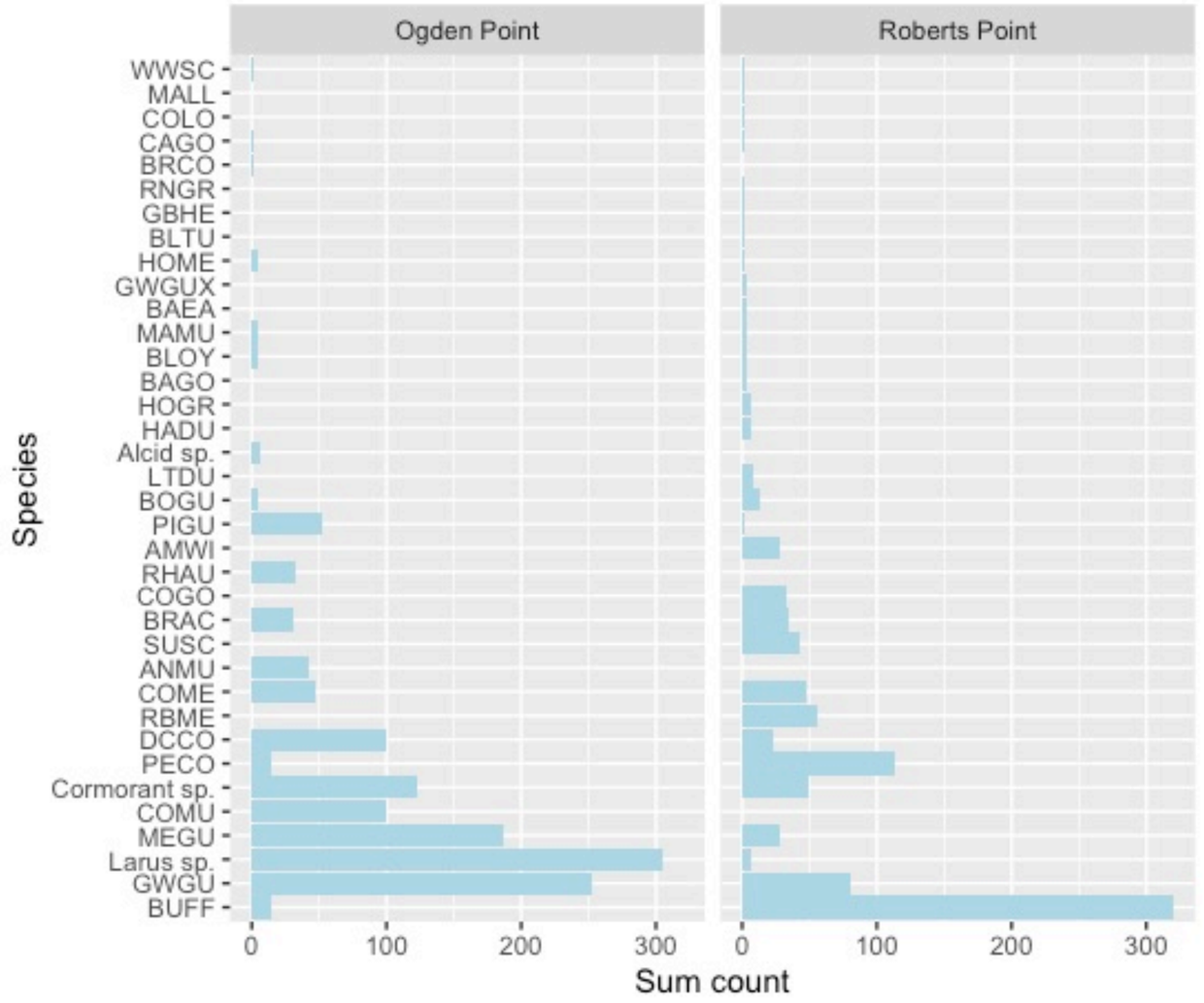

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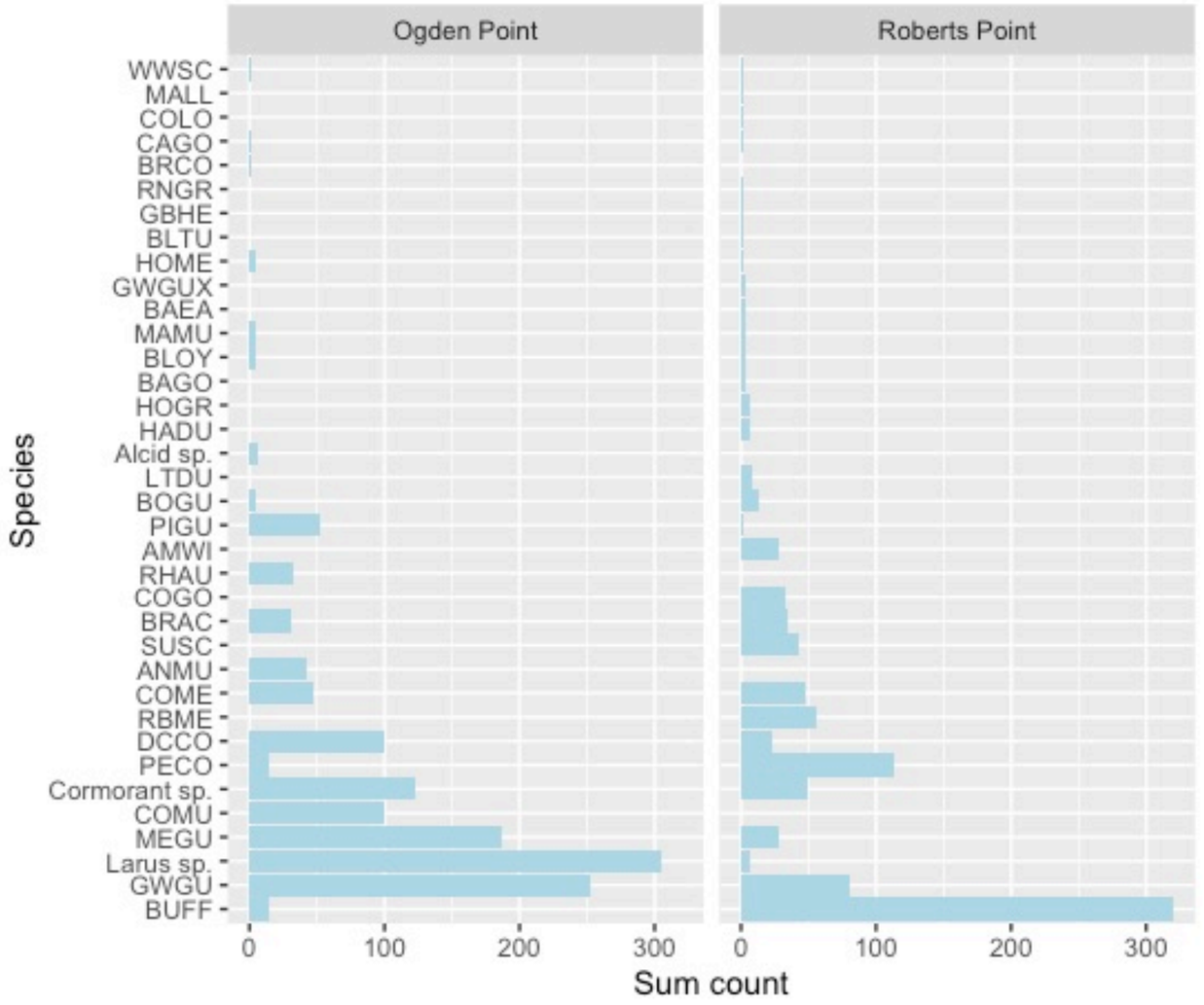
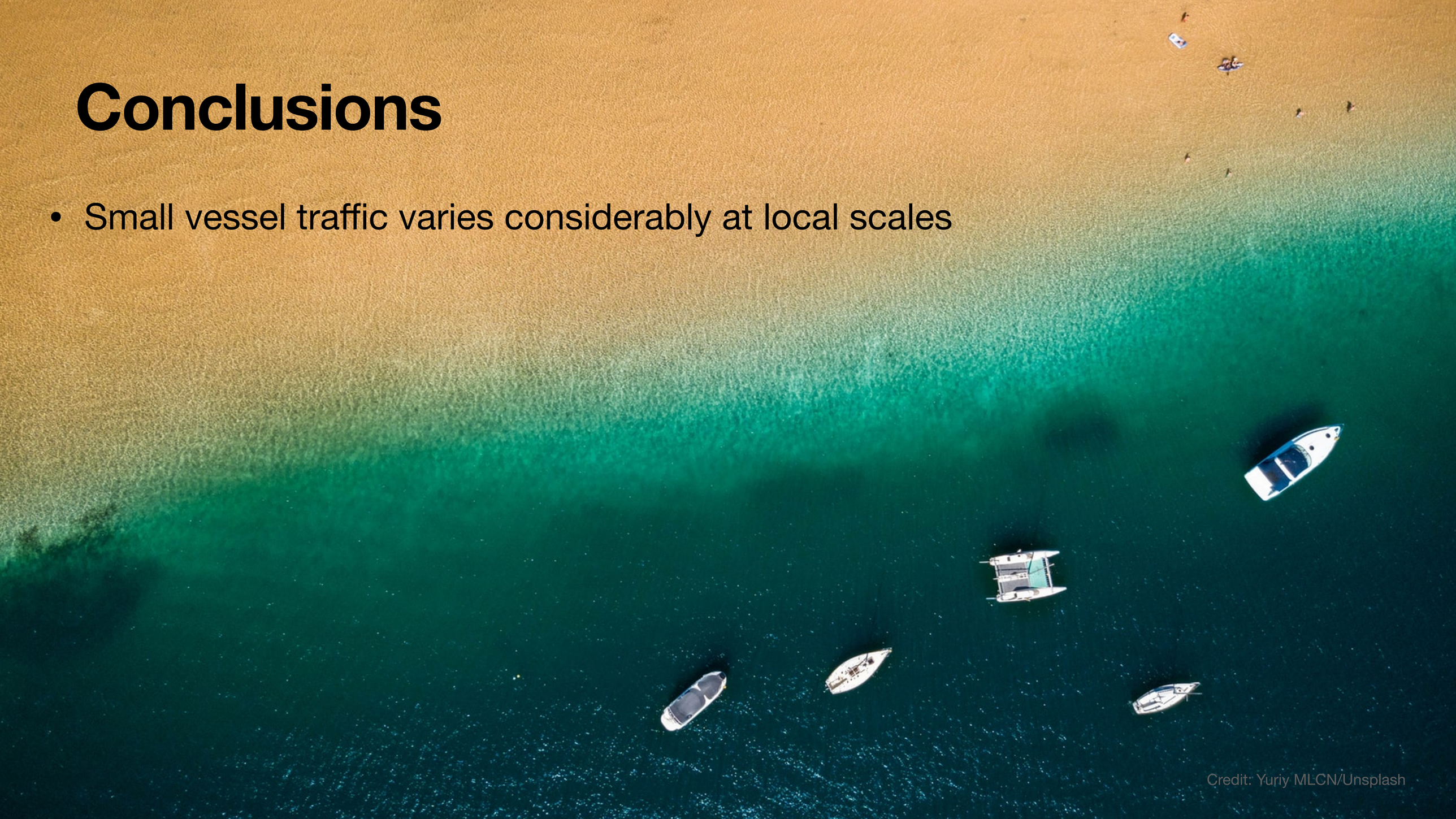
Waterbirds

- 36 taxa at both sites combined
- Gulls (Laridae), cormorants (Phalacrocoracidae) dominant
- At VHMBS/Ogden Point, alcids predominated
- At SHMBS/Roberts Point, seaducks common



Conclusions

- Small vessel traffic varies considerably at local scales



Credit: Yuriy MLCN/Unsplash

Conclusions

- Small vessel traffic varies considerably at local scales
- Any effort to quantify small vessel traffic must take such regional variability into account

Credit: Yuriy MLCN/Unsplash

Conclusions

Waterbirds

- Approach worked well to describe vessel traffic; 2 observers per site required to record bird behaviour in response to vessels
- Could be applied to local conservation planning efforts

Credit: Jacques Sirois

Acknowledgements

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