



SYMBIOTIC HARVEST

HUMAN MUSHROOM FORAGING
AND ITS IMPACT ON PUBLIC LAND

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Overview

- Introduction
- Methods
- Results
- Discussion



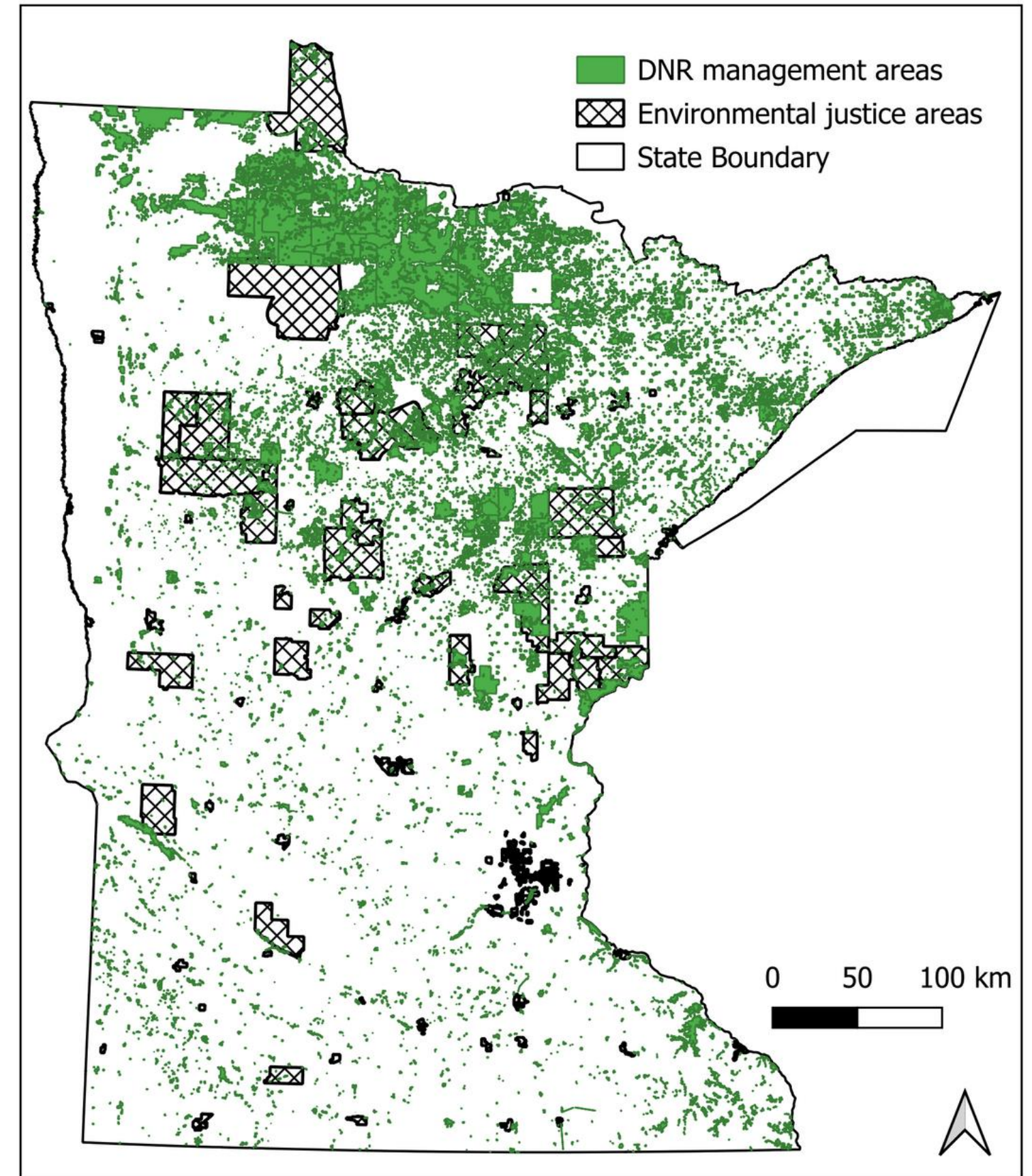
**Foraging
on
Public Land**



Introduction

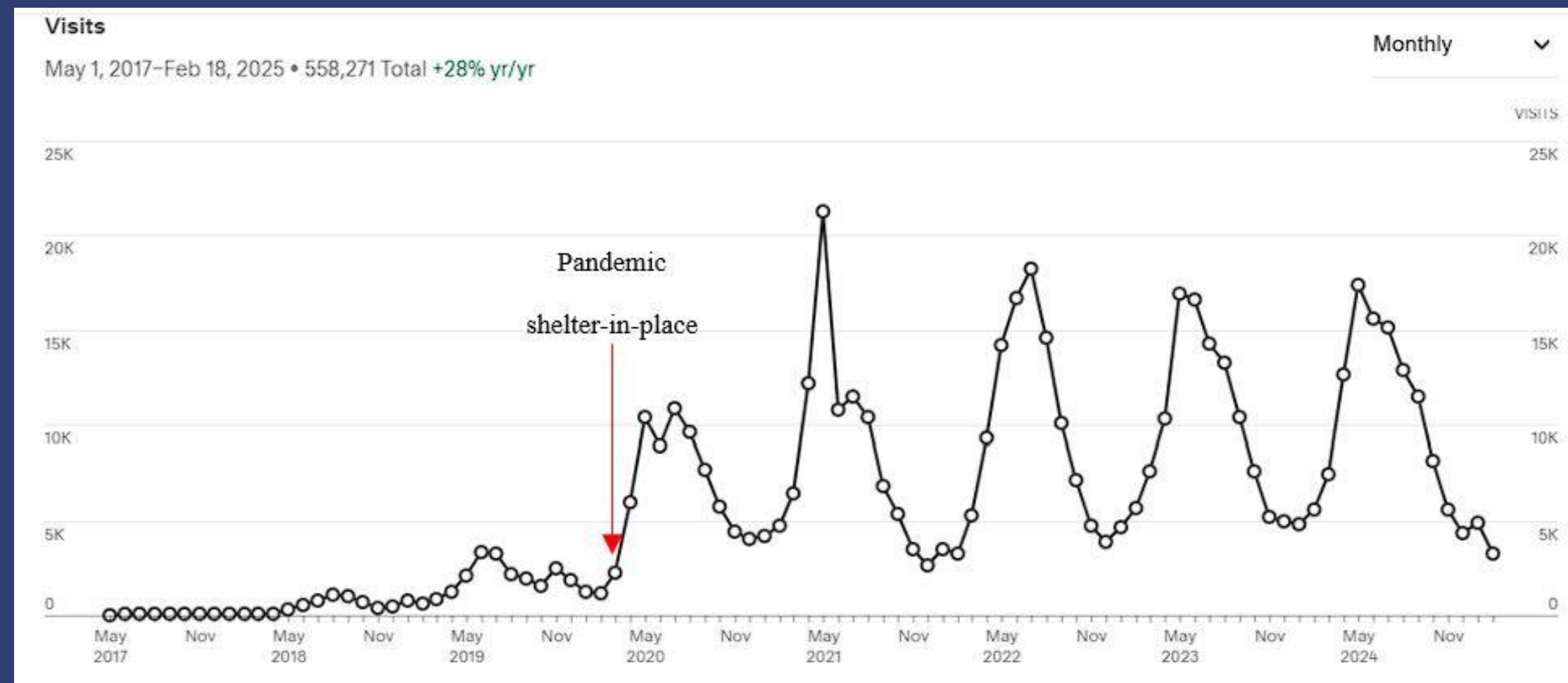
5,777,630 acres of public land

Land of 10,000 lakes





INCREASE IN FORAGING



Ironwood Foraging Co.

Jan 2019 – 3,000 followers

Jan 2025 – 52,000 followers



DNR proposed bag limit
of 1 gallon

Concerns

- Invasive species
- Trampling of plants
- Overharvesting



MINNESOTA
FORAGING
ALLIANCE





Is the DNR's claim based in scientific research?

EXPLORE THE IMPACT OF HUMAN FORAGERS

- foot traffic and soil compaction
- fruiting body removal
- harvest methods

Fruiting body
vs.
mycelium





METHODS – LITERATURE REVIEW

- Freezing temps, 1–3 months
- Forest biomes
- Recent 30 years



Peer-reviewed literature



METHODS– INTERVIEWS

- Resides in the Midwest
- 10+ year forager
- 5+ years foraging educator
- Indigenous knowledge holder
- Mycological society president
- Sustainable food systems professional



5 informational interviews



RESULTS

**Human
compaction of
soil off trail**



**Compaction
impacts on
fruiting bodies**

**Human
removal of
fruiting bodies**





RESULTS

Human compaction of soil off-trail

MEASURED

- Number of foot passes
- Campsite use
- Vegetation survival

PARAMETERS

- Penetrometer (pore space/soil compaction)
- Organic matter
- Moisture
- Temperature





RESULTS

Human compaction of soil off-trail

SUMMARY

- >100 foot passes no increase on soil compaction
- >2 years of campsite use no increase on compaction
- Grasses more resilient than shrubs





RESULTS

Compaction impacts on fruiting bodies

MEASURED

- With/without plant roots
- With/out foot traffic

PARAMETERS

- Abundance of hyphae
- Soil porosity
- Number of fruiting bodies

Less roots =
less mycelium





RESULTS

Compaction impacts on fruiting bodies

SUMMARY

- More hyphae in non-compacted soil
- More plant roots = more hyphae
- Foot traffic did not reduce proliferation of fruiting bodies

Less roots =
less mycelium





RESULTS

Human removal of fruiting bodies

MEASURED

- Cutting vs. pulling
- Control vs. foot traffic

PARAMETERS

- Number of fruiting bodies
- Fruiting body weight
- Surveys



RESULTS

Human removal of fruiting bodies

Summary

- No decrease of species
- No decrease of quantity



RESULTS



**Mycelium persists
through seasons**

Interviews

- Traditional knowledge
- Climate change
- Sustainability
- Community



APPENDIX A



People have a scarcity mindset toward nature...and think foragers will destroy it...a land of foragers would have larger budgets for public land, they would be more knowledgeable...they would volunteer at much higher rates to remove invasive species and plant native species on their own time. When we change the paradigm, foraging becomes a necessity for the health of our public lands over the next 300 years – T. Clemens.





Results

Sustainability in harvest

We are not
meant to
forage alone.
– L. Black Elk

- Only gather what you can eat
- Self-limiting
- Climate change & habitat decline





DISCUSSION



**Intentional
walking**



**Accountability in
community**



**Future
generations**

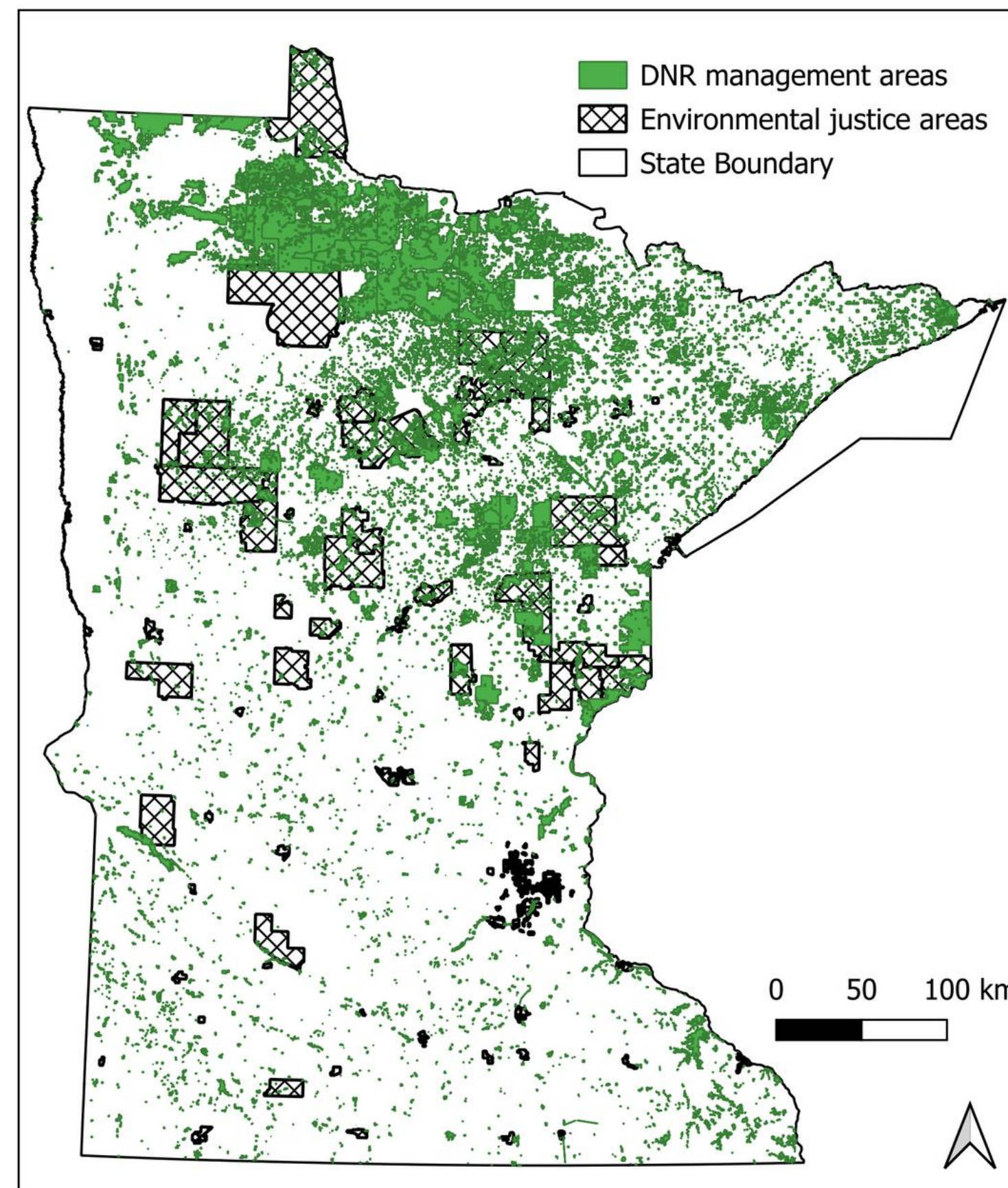


Discussion

5,777,630 acres of public land

76.5% of DNR managed land is within 10 miles of an environmental justice area

**Changing climate
&
traditional knowledge**





CONCLUSION

Is a permitting system needed?

- Education
- Mentorship program
- Volunteer data
- Wildlife use



I do not believe in the mantra of 'leave no trace.' You know that whole concept of leave only footprints, I don't believe that, because in our Lakota philosophy, we actually should be having a net positive impact on the natural world, not just net zero. – L. Black Elk





ACKNOWLEDGEMENTS

This work is dedicated to all the amazing foragers in my life who have inspired the development and work of this project.

Photo credits: Alan Toczydlowski Photography

