

Biomimicry Project
Maddi, Rachel, Kelsie
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“There’s Snow Better Way to Stay Warm.”

Idea: To use some type of removable house covering mechanism as a way to trap snow and use it as insulation during harsh winter than may be removed for the drastic climate change during the winter.

This reminds me of an Igloo and the use of snow is key to creating habitable dwellings in severe cold weather.

Burrows in the ground

Team Information:

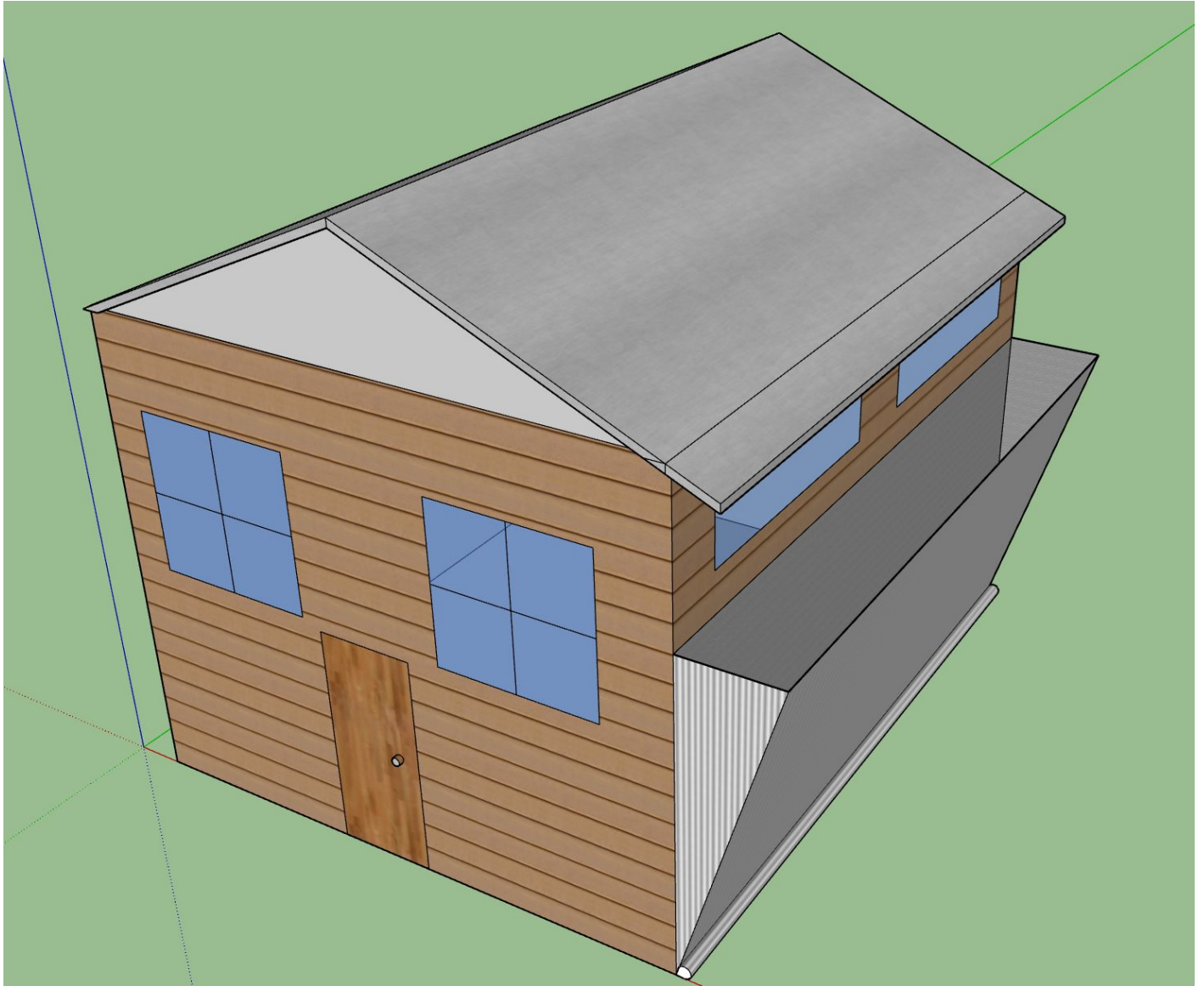
- Maddi Froiland, froila1@stolaf.edu
- Kelsie Gerovac, gerova1@stolaf.edu
- Rachel Marshall, marsha7@stolaf.edu

Location: Japan (northern region)

School: St. Olaf College, advisor = Kiara Jorgenson

Scholars Marshall, Gerovac, and Froiland met in Australia 1997 at a research convention studying the biophilic effects of shark skin. After several cocktails, they all discovered they held deep roots in the American Midwest, but had moved away due to the cold and rising heating costs. From this conversation, a revolutionary idea was born--to use the essence of winter itself, snow, to combat its frosty bite. After 21 years of gathering research on snow and the animals which call it home, these distinguished scholars felt qualified to tackle this important, potentially world changing issue.

<https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1029/2009JD012798>



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Zhang, Tingjun. "Influence of the Seasonal Snow Cover on the Ground Thermal Regime: An Overview." *Reviews of Geophysics*. December 31, 2005. Accessed April 26, 2019. <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2004RG000157>.

There's Snow Better Way to Stay Warm

Rachel Marshall, Kelsie Gerovac,
Maddi Froiland

Scoping Process

- In Japan, they use space heaters in each room rather than a centralized heating system, which lowers unnecessary energy consumption
- Insulation would make this even more efficient for containing the heat in the winter, but it would trap too much heat and moisture during the hot, humid summers
- We wanted to come up with a way to temporarily insulate the houses in order to increase personal comfort and lower energy consumption during the winter but still allow for a cool refuge in the summer

Biomimicry Inspiration

- When considering the natural resources in Japan, we were considering the similarities to Minnesota. The northern regions get feet of snowfall in the winter that then melts away in the spring.
- Small animals bury themselves in the snow to hibernate, and the snow provides insulation for them to survive the winter. This served as our inspiration to create a way to trap the snow against the house for heat in the winter and then let it melt away to restore the airflow for the hotter months.