



Phenology Calendar

2016-2017 OWL 7th Grade Life Science Students



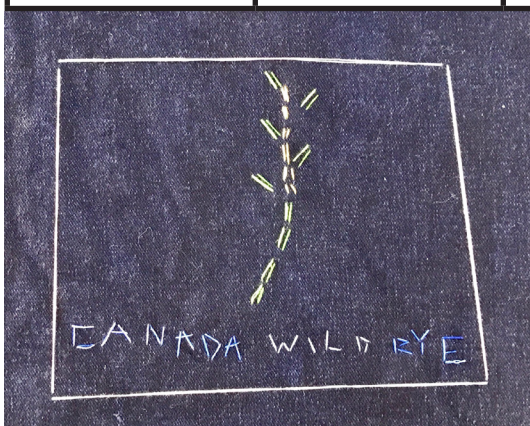
2018





January 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
☺ 2	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	☾ 9	☼ 16	☾ 24



Pileated Woodpecker by Ryuki Walker
 Woodpeckers' tongues curl all the way around their skulls to protect their brains.



February 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
☺ 1	☾ 8	☼ 15	☾ 22	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

Bur Oak by Mae Wrigley

As the warm weather starts to arrive, the leaves and flower bugs of the bur oak (*Quercus macrocarpa*) grow in. As the warm weather starts to arrive earlier in the year, the bur oak's leaves and flowers bud earlier. Once summer arrives, the bur oak is finished producing flowers and their leaves are fully grown and becoming a darker shade of green. Now the bur oak tree's acorns start to form. The acorns and leaves continue growing until the fall, when they lose color and fall off.



March 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
☺ 2	☾ 9	☼ 16	☾ 24	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

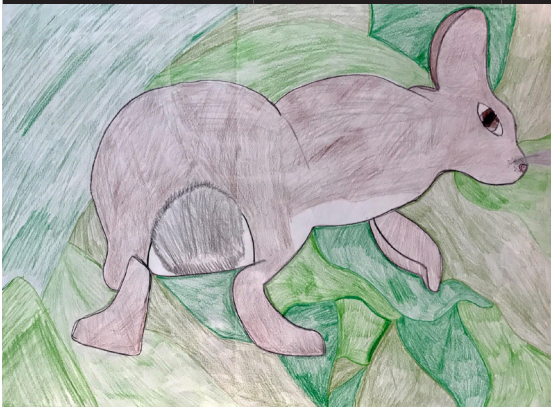
Northern Golden Bumblebee by Ingrid Ebbesen

The northern golden bumblebee (*Bombus fervidus*) life cycle lasts from late spring until early winter. If climate change progresses in the way it does, the bees will not be able to start worker or even food production. This means the bees will not produce enough food to last until the winter and will die off early, making it harder to start up the colony next year. Without these bees as pollinators, many fruit trees and flowers will suffer; so it is important to keep climate change to a minimum.

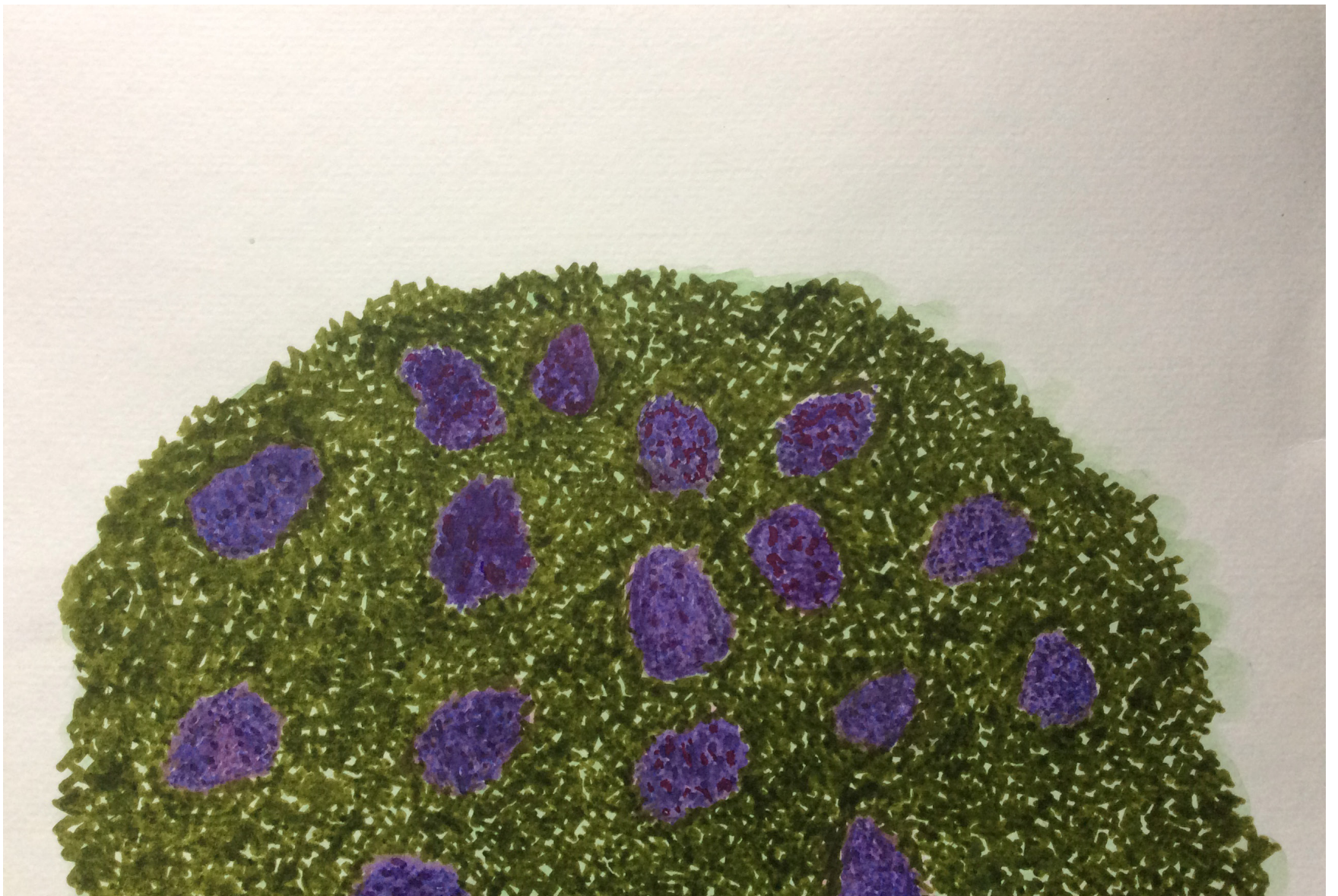


April 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	☺ 1	☾ 8	☼ 15	☾ 22	☺ 30



American Kestrel by Natalie Weimholt
 American kestrels fly to Minnesota in the summer to breed.



May 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
☾ 7	☾ 14	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	☾ 22	☺ 30

Common Lilac by Nora Verner

The common lilac (*Syringa vulgaris*) is a species of flowering bush. It begins to bud in late April and is in full bloom mid-May. But as the climate changes and it becomes warmer earlier the lilacs will start to bloom in early May or April.



June 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
☾ 6	☀ 13	☾ 20	☺ 28		1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Wood Lily by Liv Foust

The wood lily's ideal habitat needs to be sunny with slight shade. They can grow in dry woods, prairie, or meadows. Their bloom season is from June to August because they need it to be warm and dry. If people want to have a wood lily they need to plant it at the right time so it isn't too cold or too wet for the lily.

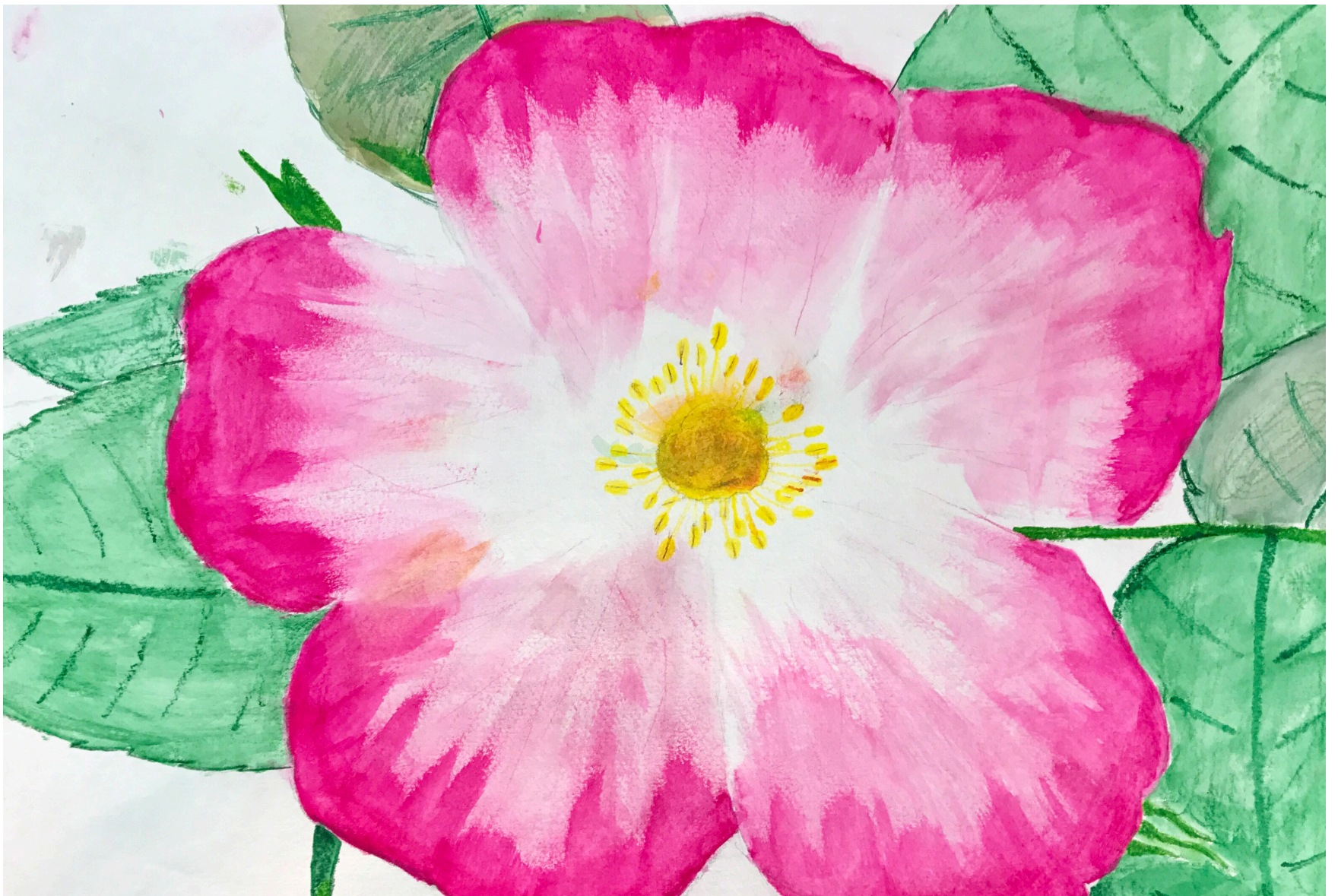


July 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	☾ 5	☀ 13	☾ 20	☺ 28

Red Pine by Skylar Van Guilder

The red pine would not survive well in tropical areas since they are mainly located and are adapted to northern areas. If global warming hits the pine forests then they would probably not survive.



August 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
☾ 4	☉ 11	☾ 18	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	☺ 26



Wild Rose by Momo Aung
 The fruit of the wild rose is rosehips.
 Rosehips are used to flavor tea.



September 2018






Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
☾ 2	☀ 10	☾ 17	☺ 25			1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23 30	24	25	26	27	28	29



Gray Squirrel by Annie Bandelin
 The signature bushy tail of the gray squirrel functions as an umbrella, shade from the hot sun, and especially balance.



October 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
 2	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	 9	 17	 24  31

Indigo Milk Cap by Amaya Boulanger

In the months of September and October, there is an abundance of Indigo Milk Caps.

The heat of the summer is decreasing, and the mushrooms do not have to work as hard to cool themselves off. The temperature of the earth rising could make the time when the mushrooms start growing better much later in the year.



November 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
☀ 8	🌙 15	😊 23	🌙 30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

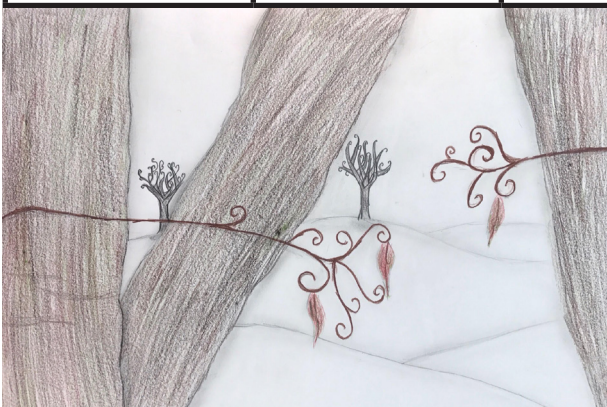
Ruby-throated Hummingbird by Desmond Haug

The ruby-throated hummingbird goes to North America in the summer to breed. Ruby-throated hummingbirds eat bugs, drink nectar, and like bees they pollinate flowers. If global climate change alters the length of the seasons, the ruby-throated hummingbirds might come to North America too early and die or their natural instincts will get messed up. Also the flowers that they would pollinate would eventually die because they can't reproduce.



December 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
☀ 7	🌙 15	😊 22	🌙 29			1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23 30	24 31	25	26	27	28	29



Sugar Maple by Stian Asper

In Minnesota there are lots of this species. These trees are famous for their sap that can be turned into maple syrup. In the fall the leaves turn a beautiful orange red.

Additional Phenology Notes

Spring

When temperatures start to rise in the spring, the snow and the ice on the lakes begins to melt. Many animals migrate back north or awake from hibernation.

The morel mushroom (*Morchella*) starts to grow early in spring. They are often found near the roots of living trees or all around dead ones. — Liam Hutchinson

The American hophornbeam (*Ostrya virginiana*) begins to develop its seeds during the beginning of spring, but doesn't drop the seeds until late August. However, if climate change causes the seasons to begin earlier and earlier, the hophornbeam will produce and drop its seeds earlier than it should, which can throw off the lifecycle of the tree. — Nicholas McGeeveran

Summer

Summer is the time when most species in Minnesota are active. Minnesota's state flower, the lady slipper, blooms in early summer.

Honeysuckles (*Lonicera*) are a part of the Caprifoliaceae family and bloom in the early summer. — Erica Polta

The willow tree (*Salix babylonica*) is unable to survive in extreme summer heat. If climate change continues, the willow tree will eventually lose its main habitat by lakes and rivers. — Frida Hilbritch

Fall

As the weather in fall gets colder, many animals store food to prepare for hibernation. Minnesota is home to over 40 types of deciduous trees, and they all turn beautiful colors in the fall.

Though the maximillion sunflower (*Helianthus maximiliana*) blooms in mid spring and lives all the way through summer. When the weather gets colder the plant starts to decay, and eventually "dies." — Josie Gibson

Winter

Minnesota is known for especially cold winters, but there are still active animals in this chilly season.

The Eastern bluebird (*Sialia sialis*) migrates south in the winter. But unlike many other birds, it isn't for breeding. The birds simply can't tolerate the cold Minnesota winters. — Fiona Connell

Cold or early winters can affect the life cycle of the prairie sunflower (*Helianthus giganteus*). The cold conditions can cause the flowers to wilt early, before they drop their seeds. — Oskar Holm

The northern golden bumblebee (*Bombus fervidus*) starts to die off in early winter. The new queen who was born in the summer will be the only one to survive. She does this by hibernating in dead brush and producing a sort of antifreeze so she won't die of cold. In the spring, she will wake up and start laying eggs to jump start the new colony. — Ingrid Ebbesen



About the 2018 Phenology Calendar

This first phenology calendar was created, edited, and produced by the intrepid 2016-2017 7th grade Life Science students at Open World Learning Community (OWL). Each student researched and illustrated one Minnesota species. In the process, the class discovered the phenology, or seasonal events, important to their species, as well as relevant global climate change impacts.

The proceeds from this calendar will go toward creating a monarch garden for the Life Science students of next year, and hopefully for many years to come. It was presented and purchased at the OWL 2017 Celebration of Learning.

Editor-in-Chief & Layout Designer
Ingred Ebbesen

Additional Editing & Writing Work

Nora Verner, Mae Wrigley, Karina Bary, & Lili Hobday

Thank you to Ryuki Walker, Nicholas McGeveran, Erica Polta, Desmond Haug, Momo Aung, Liam Hutchinson, Liv Foust, Annie Bandilen, Amaya Boulanger, Natelie Weimholt, Oscar Holm, Fiona Campbell, Stian Asper, Frida Hilbrich, & Josie Gibson for their writing and artwork.

**Special thanks to Megan Hall & Brie-Anna
Medin for inspiration & supervision,**

and to Leo Bickelhaupt for letting us use his computer I guess.

