

Lunar Cycle in Drought

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i.

drought licks the last drop of
water from the back of your throat,
draws rivers out of you — loops the
creek around its body and
replaces your bloodstream
with sand. drought leaves rings against
your bones, each new season pulling
downward — each new flood cresting slightly
lower than the last. count the years by
how many feet the lake
drops. count the days by drops evaporating
off your toes. late july and the water
catches perseids, skips them stonelike
back into the night. we pull the
whole moon egg inside.

ii.

The lab sets its own circadian rhythms, maintains a steady 23°C through heat waves and cold flashes. Last night the world burned thirty-five degrees and fire. We scooped smoke from the air like thick cream, heavy against us, and reached clumsily for the moon. This afternoon, we pipette 300 microlitres of water into each divot of nine well plates and transfer fathead minnow eggs one by one in lab lighting that flickers fluorescent. Each plate has twenty-four little wells, depressions in the plastic casing, in a design that's often used for toxicity studies: in our case, each holds a tiny minnow egg. Because the eggs die at the slightest inconvenience, the lab is sealed by duct tape and black garbage bags that keep everything constant.

iii.

sink your teeth into the lake, rows of
molars / anchors in the silt. bury your
body collarbone-deep in the mud.
we've been waiting for rain: is it this
that we've been
looking for?
the slip of periphyton against
your calves, the slice of cold water the
lake won't let go. when you dive
does it sound anything like thunder?

iv.

Our well plates hold onto the light bulbs' glimmer, turning up reflections as
we move across them and pipette each egg over: round forms settling into
new space. We watch the tails flip, life push against the rims. The minnow
embryos aren't eyed-up yet, but we can make out some organs through their
transparent membranes.

Yesterday, I gathered benthic invertebrate traps from the lake bottom at
dawn and poured the contents into buckets between the narrow benches
of the boat. Its silver gunwale flashed with threads of sunrise that cascaded
down the metal sides of the small, open-backed hull. In one trap, baited with
a round white LED, we found four adult salamanders with their tails pressed
tight into each other. At breakfast in the research facility dining hall, I asked
each person what it would take to make them squeeze into a trap as if I didn't
already know the easy pull of the moon.

v.

the moon used to pull tides.
now it pulls us, ribs-first, down
to the edge of the lake, fills our
peeled-back bodies with light
though we thirst instead for water.
creeks run thick as creamy
smoke, their currents suddenly
turned silt. did you see the sunrise
out on the lake, clouds doused
in orange? did you hear the whirr of

water bombers, yellow flanks pressed
to forest, the fire loose
around the edges?

vi.

Before I worked on the lake, I worked in the living room of a third-floor apartment in Winnipeg where the moon squinted in sharp as glass. Before the drought, there was the first weary pandemic winter, when I burrowed into a borrowed orange couch and drew lake contours with code for months. Before we knew we wouldn't see each other until spring, a friend sent me a message:

Are you an aunt now?

Yes! The baby's name is ----- and he and my sibling are well.

They were discharged eleven days after the full moon. One day before Manitoba's first attempt at a single-household lockdown. After I visited the baby, I walked home in the broad darkness of November evening. The streets were muffled by deep snowbanks, plowed despite the lack of traffic, despite the city turning in on itself as it prepared to hibernate.

vii.

and what
of the river? its shoulders
bare, the slip of exposed rock along
the shore. its banks drip
tall grass roots like
fishing lines, wait days —
their careful walls
ribbed by candled ice, riparian
dogwood crimson in soft light.

viii.

I saw the baby on Wednesday nights: sleeping or eating or briefly awake on a video call, on my sibling's lap or my mother's. Sometimes I saw them outside, but it was hard to make out the details of a winter-bundled newborn from six feet away, his outline draped in a blue knit blanket. I called on other evenings,

in transition from a work meeting on the right side of my couch to a poetry reading or phone date on the left. Darkness sealed my apartment by 5 p.m.

When we learned about the baby, my dad said that this was his only chance to be a grandfather. On thin nights in January, this rattled inside me as I made another single serving of spaghetti, my fork clinking against the bowl. I stared out at the stars from my tiny window. I stared at the birds nesting in my neighbour's attic. I tried to fill myself but found only sand.

ix.

sand / silt / slick / creek lies
frozen, carries fishes close to
cobble bottom. above,
there's a quiet crunching as
you walk in the deep snow,
bound by cattail stalks beside each
margin of the ice. there's the long
whistling of prairie wind, the
downy woodpecker's chattered call.

x.

On weeks when we don't set light traps, we look for tadpoles: twenty-five minnow traps and twenty-five bottle traps around the lake and up to fourteen seines in each bay. I hop in and out of the bow at the sampling stations, staking each trap to the rocky bottom with a bright pink flag that hisses in the wind.

We set them just before dusk. A frog calls out to the evening from behind the reeds in the part of the lake where my rain boots always flood with water and then sink into the squelch of putrid muck. I don't know how most tadpole species look or sound after they metamorphose onto land, so I describe the call in my field book for identification later: croaks like vibrations against plastic. Monosyllabic.

In the morning, the bottle traps are flooded with American toad tadpoles, their collective movement pulsing against the walls. I could easily fit fifty of them in the small palm of my hand. Maybe one will survive to adulthood.

xi.

when the water dries up —
leaves skins along the earth, pinched

where moulds take over the growing —
the toads will move upland,
gather their eggs and go.
there's a puddle on top of the ridge
where rain still falls, gleaming,
and where the water turns
viscid with tadpoles.

xii.

The baby learned to smile over winter. My family, all living together a ten-minute walk from my apartment, told me he smiled more when he saw me on video calls, but I had nothing to gauge this by. They passed him around and his body softened into theirs. From my bedroom window, I could see the family across the road turn their front yard into a rink and slide makeshift milk-jug curling rocks across the ice. Sometimes one of them would retreat briefly inside and return with hot chocolate for everyone.

I took three weeks off around the solstice. The sun leaked low against the horizon, barely lifting above the houses before dipping down again. At 4:30 each evening I walked down to the river and watched as day gave way to the moon, trailing ribbons of pink sky. When I arrived home, I poured myself a scalding bath and watched my skin turn the same colour. I hadn't been within six feet of another person in weeks.

xiii.

pour water as if you can pull fertile
land from the plastic corners of the tub.
grow lettuce on the kitchen table,
young leaves unwinding into shallow
light. let starlings roost in the wooded lodge
of your windowsill, tap at the glass. tend
to this ecosystem: till the potted soil.

xiv.

The summer after high school, I sat at the water table in a cramped community centre room with the younger of the two children who I nannied, spinning the plastic wheels of toy turbines while the older one was at school. We fingerpainted next, smearing blue streaks across the gritty paper, and then read books in the far corner. When it was time for the parent-and-child

program coordinator to lead songs on the carpet, I tried to recede into the groups of mothers. Sometimes the only grandma and I smiled at each other across their conversations.

At the back of a bus, a man asked if the two-year-old was my daughter and told me he wondered because my shawl looked like it would be good for breastfeeding. Later, in the stroller section of another bus, women glared at me while I tried to soothe her brother's tears. At a summer camp picnic, the three of us ran through the narrow forest that edged along the water. There, I didn't bother correcting the people who called me their mum.

xv.

soft land gorges on
water, its contours spilled
by the rivers' paths.
a swarm of dragonflies
emerges — a whole migration
from benthic zones to sky —
while the girl rolls words
in her mouth, learns
the name for cormorant.

xvi.

The next summer, I dated someone who cooed every time we passed a baby and showed me birth announcements from his childhood friends. Once, as we crossed the street, he stopped in the middle and listened to a baby's laugh while the walking signal counted down narrowly close to zero.

When my nephew was born, I told the person I was dating that I likely didn't want children: that I had decided in elementary school that I wouldn't have children, and that my stance had since eased — but had not fundamentally changed. I said this on the phone, curled on the couch as our call spooled into the night. We still thought that the lockdown would end soon.

xvii.

In the tadpole boat, everything has to be sterile. Please pass me the swab, plastic wrap partially opened, so that I can pull it out with one gloved hand while the other holds a freshly rinsed amphibian. Collect the sample in a tube. Move the scissors through fire before using them. If the forest is on

fire, let's finish this sample and make note of it, for the water quality may have changed.

xviii.

My nephew's first summer chokes on smoke from forest fires like the one that burns near the main lake that I'm studying. Right before field season, we walked to the neighbourhood creek and watched a northern leopard frog struggle to swim upstream, his eyes still too young to make out the movement. Instead, he watched the water billow along the creek bed and then spill into the river. This creek typically floods. It doesn't usually spill into the river because both water bodies are high enough to soften into each other at the outflow, the boundaries between them incomplete.

In genetic terms, fitness is calculated by the number of offspring you have who survive to sexual maturity. Expecting most eggs to die, amphibians lay hundreds, often in shallow water. Most species provide no parental care. Many fishes don't parent either, but fathead minnows show allopaternal care: males will protect not only eggs fertilized with their own milt but also those of others.

xix.

if i ask you to hold the moon for me
will you? tonight it's just a quarter
moon, not too heavy, and the craters
lend good hand holds. i'll be back
before dawn. since it's rock, it doesn't
need much attention but please sing
a lullaby and offer the good down quilt.

xx.

My sibling is not a woman. But I am. I have been told that cis womanhood means to give birth, to swell round like the moon, to nurture, to care for children. I don't know who told me this. Some days it's my own body. Some days it's the circles of family that draw tighter around parents and children. I am terrified of these circles knotting so tightly that I fall outside of them. Some days it's the birth stories that I hear with each new wave of babies, when one recent labour lures retellings of all those past, or conversations about being a woman in science that often centre cis women to the exclusion of others.

At the top of a hiking trail, two friends say they also don't want children — cautiously, the words salty as we catch our breath in the wind. The lake murmurs below us, its long lobes reaching into forest. While a long-distance friend makes dinner on a video call, he tells me about the argument he had with his girlfriend about where their future children will go to school. My closest friend starts to imagine what it will be like to parent.

I tend to these friends, and I tend to the fish, and I tend to my family, and I offer this tenderness like a plea: see, I am a good and caring woman! Someday, I won't offer it like this. I'll keep my tenderness close, nurture careful circles of community, reach for connection without tendering myself inside out. I am a good woman.

xxi.

hold onto the moon
with your feet
when you dive, bring it
trembling into the water.
draw it behind you
as you swim, slip between
layers of tepid and cold water,
arc your body just above
the substrate. let it rest
among the boulders at
lake bottom, its eerie glow
refracted where water meets air.

xxii.

When I walk with my nephew, I smile at all the babies. I know why people stop in the middle of the street to listen to a baby's laughter now. Other than toadlets, I have never seen anything cuter than a child learning to walk in a snowsuit. My nephew will soon be at this stage.

xxiii.

the clouds draw back
again this afternoon, before
the promised storm.
toadlets swarm the
wide drape of sand when we

pull up our canoe,
mottled bodies camouflaged
but for the jumping —
the quiet leap over and over again
as they make their way
down the beach, a tiny stream
against the drought.

xxiv.

Some models predict a complete loss of coldwater fish in so-called Canada by 2070. That year, my nephew will turn fifty. Maybe we'll celebrate together. I'll be retired by then, the species I study gone extinct. Nobody will ask if I'm going to have children. Maybe he'll have some, and we'll fish together for warmwater smallmouth bass. Maybe the mosses will be dry as the rocks, the land fallow.

At work, I switch myself off. I ask a stream researcher about the implications of drought for dissolved organic carbon movement and don't think about how the desiccation feels in my veins. I wonder how best to show the quantity of suitable whitefish habitat for a conference presentation and do not wonder about the fragmentation of my own. I don't often try to imagine the arc of my research or my life as the lakes warm, or the arc of my nephew's life amid this. If I did, I would never get anything done.

xxv.

cleave the earth from lake at its
sandy interfaces, fistfuls
of loam turning over. trace the
lines where water nestles
into land. or: trace the lines where
prairie gives way to concrete,
pothole lakes to reservoirs,
the soil crumbling in our hands.

xxvi.

The summer I spend catching tadpoles in the forest, several Manitoban communities declare drought-related states of emergency, among them the towns where the other side of my nephew's family lives. This is on top of the wild-fire states of emergency further north in the province, which are in turn

layered over the Manitoba-wide pandemic state of emergency. The lakes that I work on sink below the typical waterline, exposing bands of unweathered rock. One evening, on my way to set tadpole traps, the smell of smoke balloons in the truck and a water bomber whirrs right above us. It will be the first of three times within two months that I have to radio back to camp to say there is a fire pressing against our research lakes.

The boreal forest needs to burn. Without fire's scalding heat, jack pine and black spruce seeds can't germinate. Wild blueberries and willow shrubs thrive in the light that pours into recently burned areas, feeding everyone from butterflies to rabbits to moose to us. Birches and aspens also grow quickly in the sun. In time, pine and spruce fill in the forest again, and thread-like lichens twist among the trees. This is how the forest works.

But how do you hold that when the whole continent is burning? How do you hold that while the blueberries wither in drought? How do I hold my nephew and pass on names of threatened species alongside fragile hope? How do I hold myself, a woman but not a mother, a biologist caring for ecosystems untangling before my eyes?

How do we hold?

xxvii.

once, rivers slipped
through the fingers
of this land and creeks
ran clear as sunlight
amid the moss. once
this land traced its hands
along the rock, carved
rivers into itself. once water
pooled deliriously, rich
with promise, its surface
holding up the moon.

xxviii.

Waist-deep in the lake, my coworker and I argue about what kind of minnow just darted by. Neither of us will win. Some species are differentiated by the number of scales, a metric that overlaps between them, and we don't even get into the common hybridizations. We close the loop of the seine and gather what we have caught. The fish flip silver in the net and then slide back into the water.

At peak spawn, the fish biologists rub anaesthetized white sucker abdomens on the measuring board and squirt milt everywhere, their rain suits dripping with moony eggs. I scoop fish out of the recovery bin once they're swimming again and return them to the lake. The work is steadied by the rhythm of the biologists classifying each one: *Female, ripe and running. Female, spawned out. Female, ripe and running. Female, spawned out.*

xxix.

when you dive
does it sound anything
like thunder? bow
into water from the end
of the dock — land
inverted — and perch
among moon eggs nesting
in the rocky bottom,
the gentle lull of suckers
released back
to the lake. watch them
lift off again, glide
through the water,
the easy shimmer.

xxx.

We set up the microscope camera so that the well plates of fathead minnows show up on the large monitor and zoom in on one embryo. It's eyed-up now, one black dot on either side of the head, its tail still flipping back and forth against the edges of the egg. We turn the focus knob until its heart sharpens and pulses, heavy across the screen, and watch it beat. One by one, people from our team stream into the room and breathe in sharply, awed like they're attending an ultrasound. Life pushes at the rims.