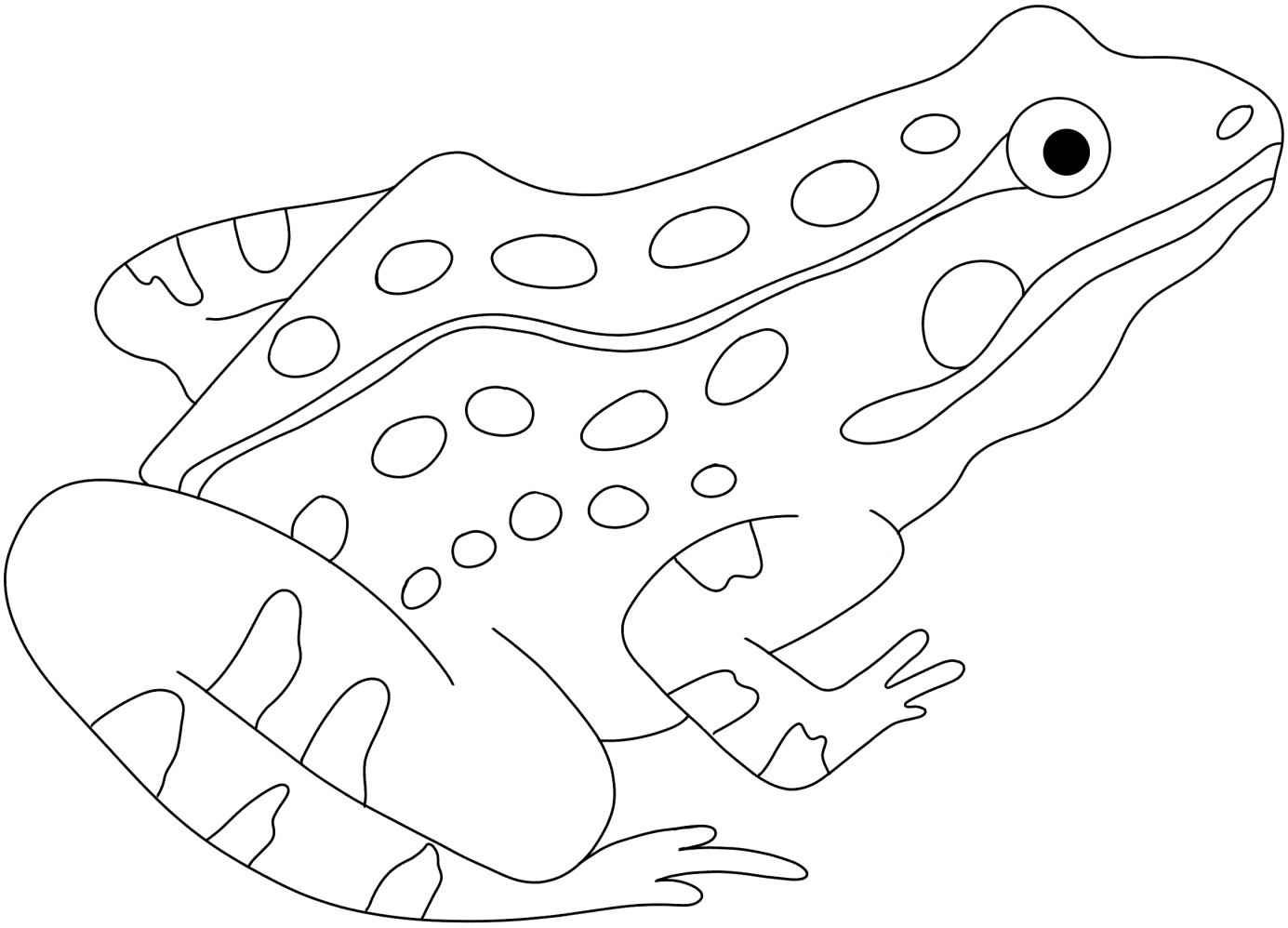
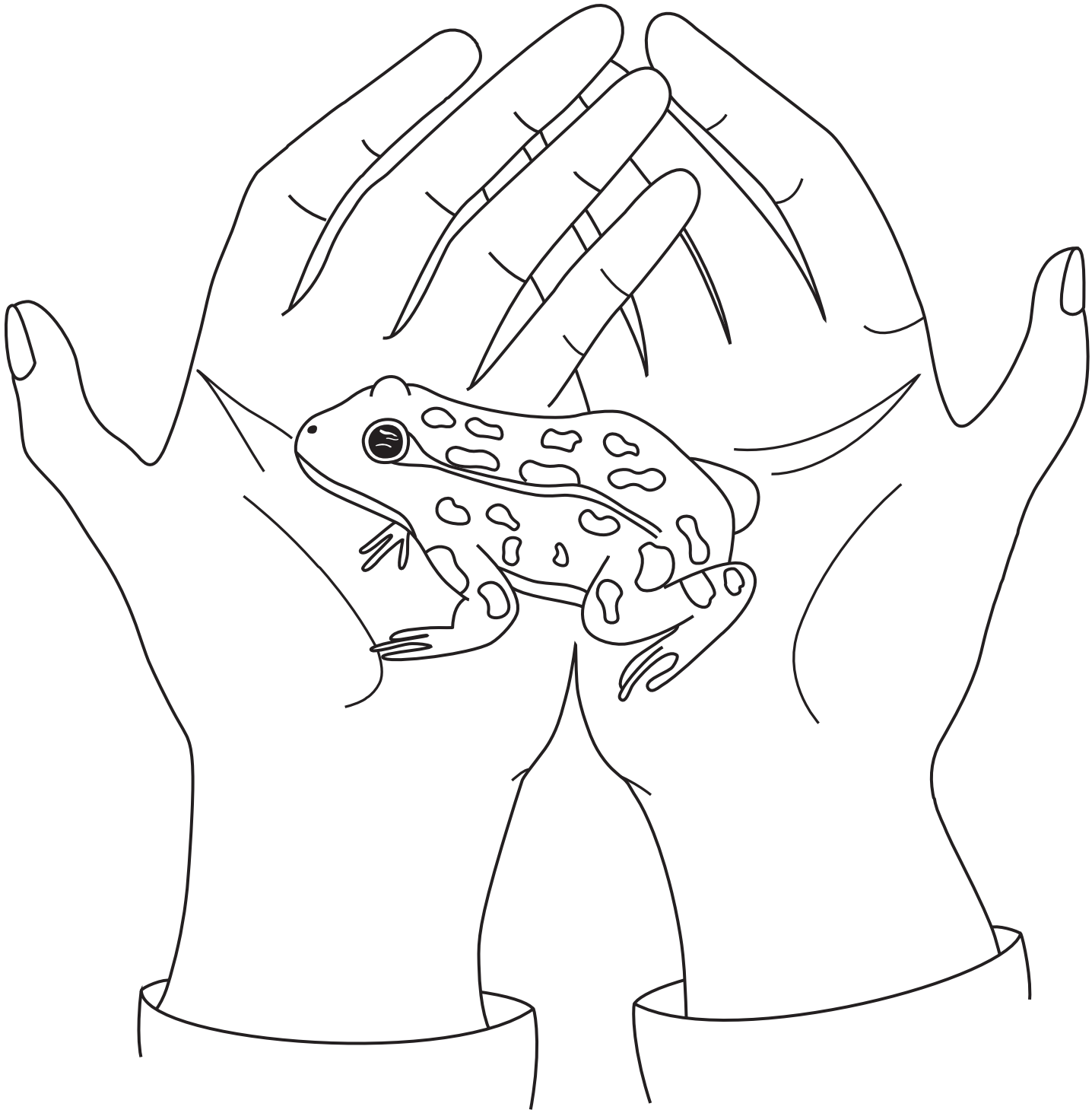
Northern Leopard Frogs:

From Rearing to Release

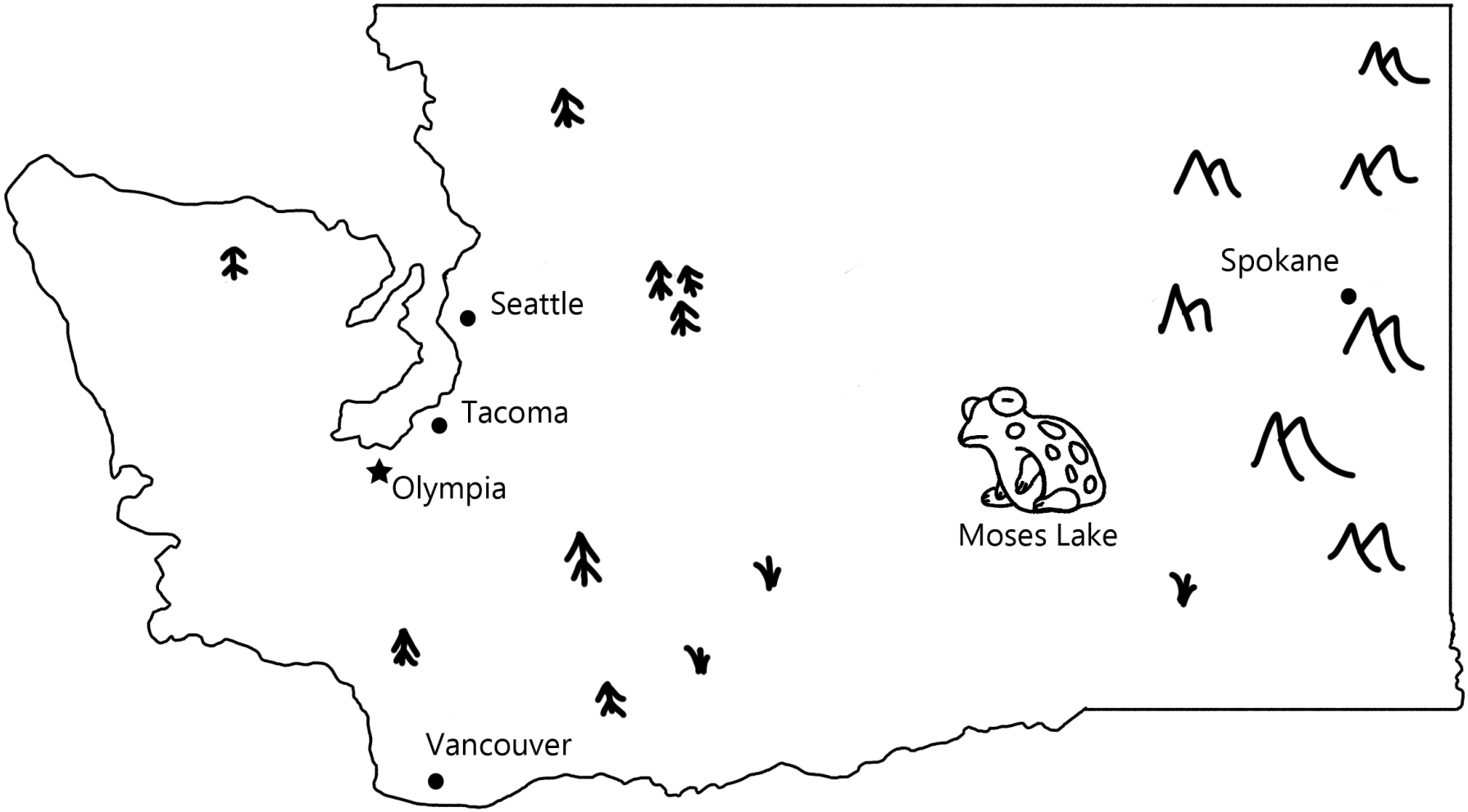
a coloring exploration



Northern leopard frogs are an important sign of habitat health and good water quality. Biodiversity supports clean air and water, controls diseases and pests, and helps make sure our climate stays cool. Simply put, biodiversity is crucial to life as we know it! By helping Northern leopard frogs, we ensure an important piece of the biodiversity puzzle doesn’t get lost forever.



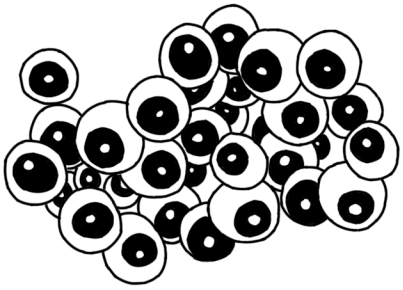
Northern leopard frogs (*Lithobates [Rana] pipiens*) are a medium size frog (3-4 inches) with golden eyes. On top, their color varies from tan to bright green with dark round oval spots. In fact, they get their name from their spotted, leopard-like pattern. They have light-colored ridges that run from behind their backs. Underneath, Northern leopard frogs are cream colored.



In Washington, Northern leopard frogs are a special frog because they are endangered within our state. This means they are at risk of extinction in Washington. Nothern leopard frogs were previously found in at least 17 areas of Eastern Washington, but now they are only found near Moses Lake.

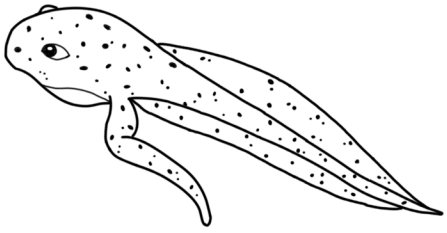
Frogs are amphibians. Amphibians' body temperature changes with the environment. Amphibians are vertebrates (have a backbone) have gills, lay eggs without shells, and live in water as larvae but breathe air as adults. They go through metamorphosis which is a series ofdramatic changes in an animal's body shape as they develop after hatching.

Life Cycle

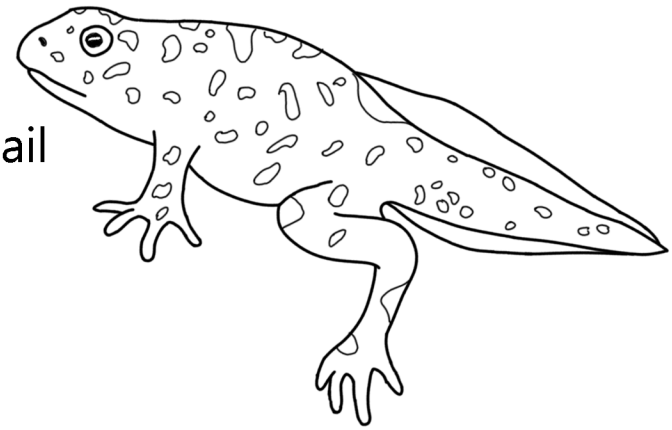


Eggs

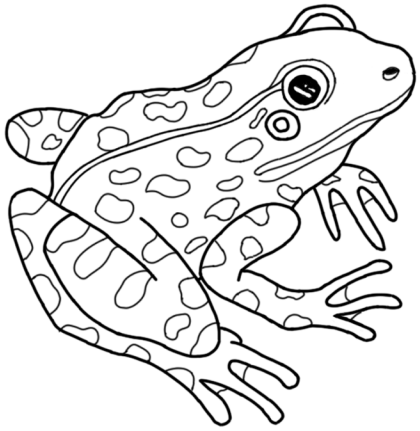
Tadpole



Tadpole with Legs

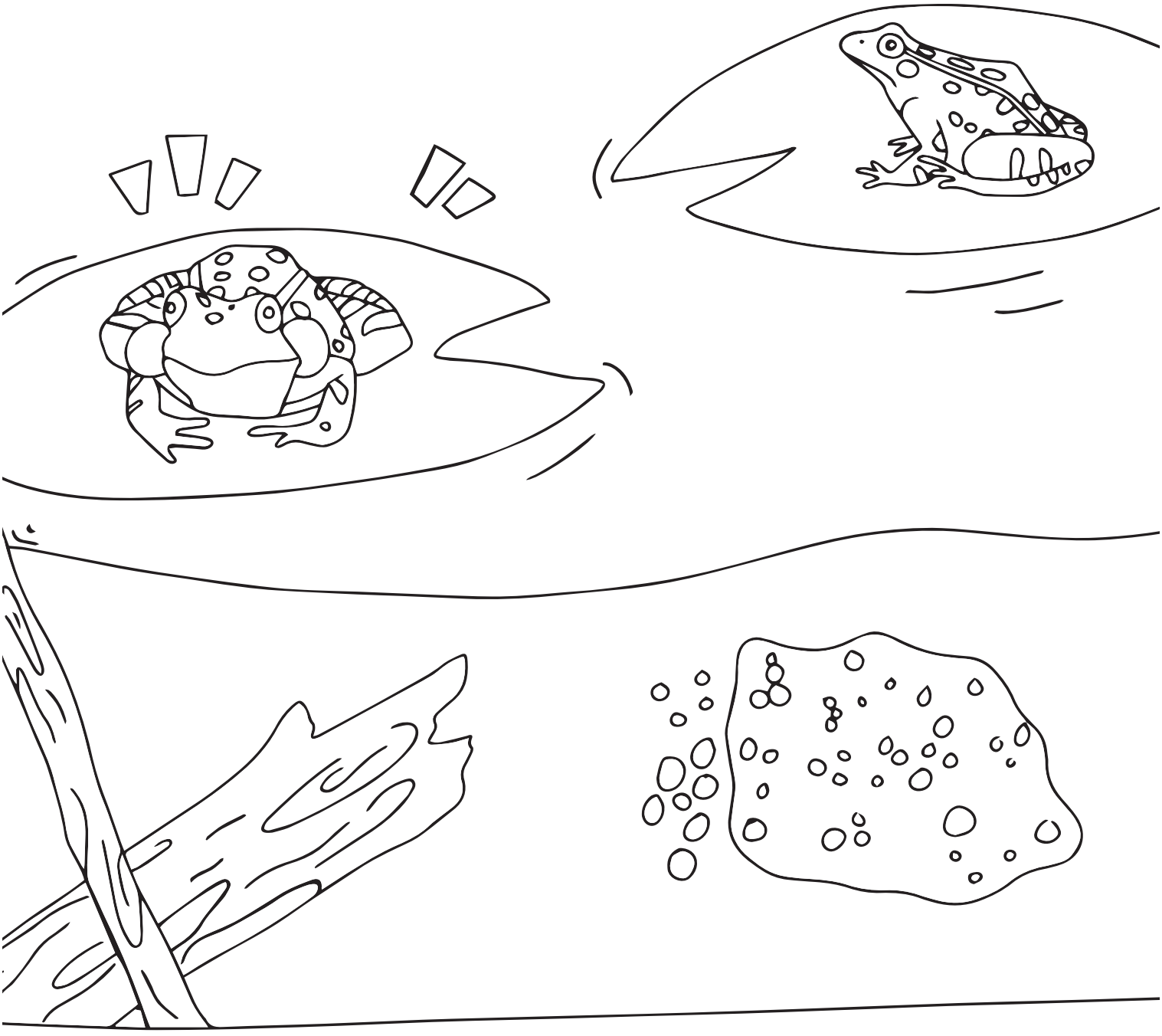


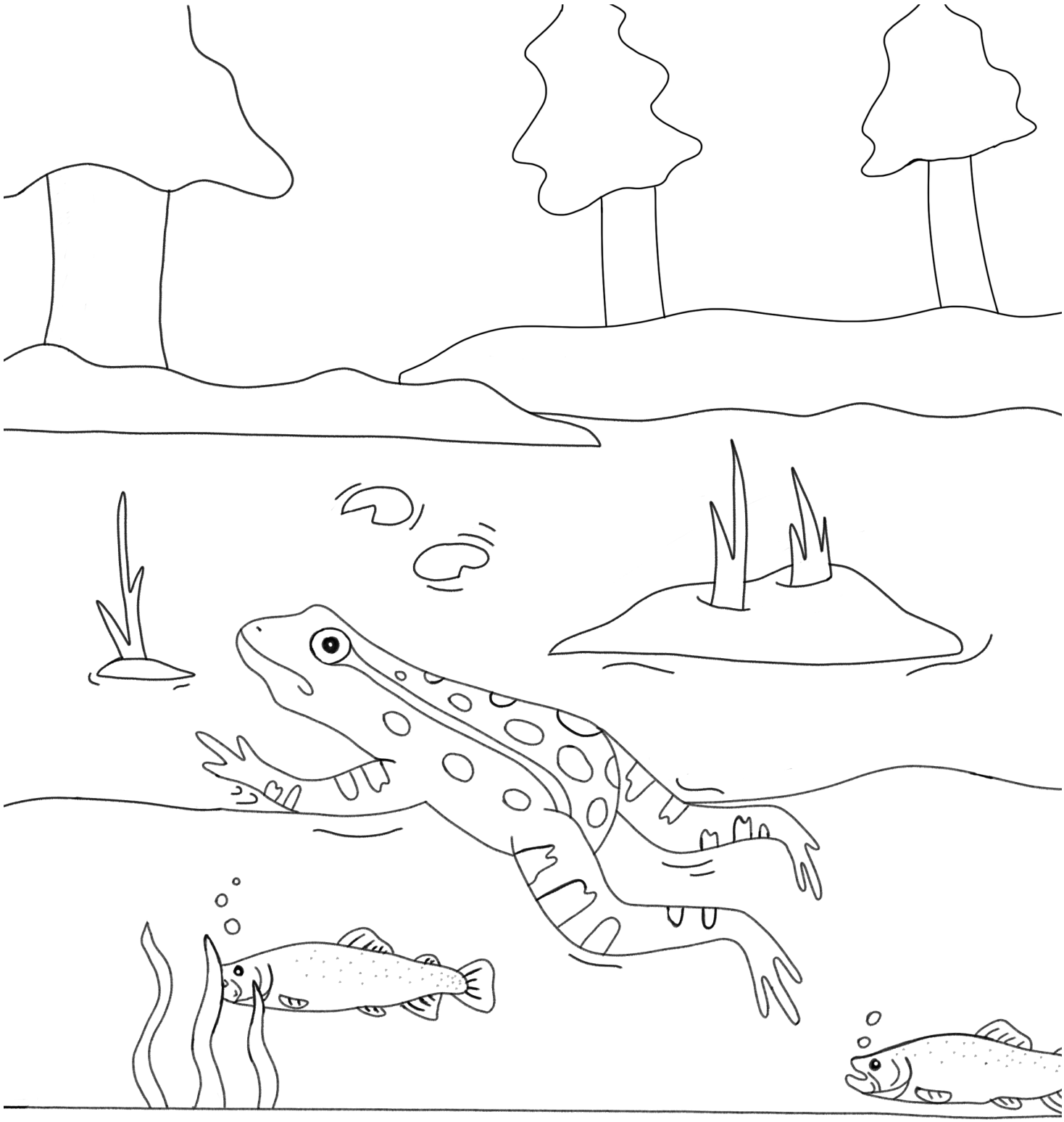
Frog with Tail



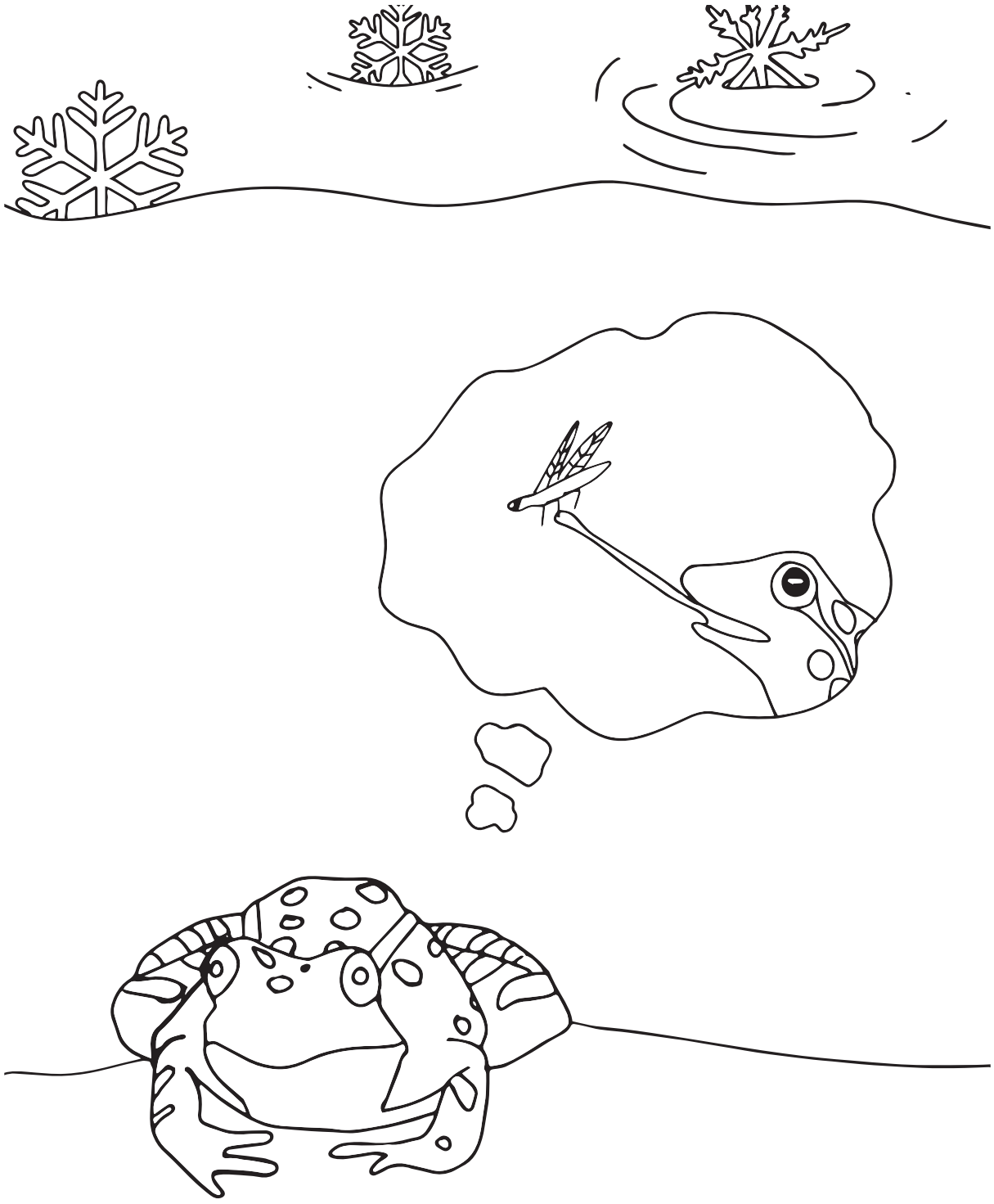
Mature Frog

Between March and May, male leopard frogs make low snoring sounds, followed by grunting noises to attract females. Females lay jelly-like egg masses that they attach to plants in shallow water. The egg mass is small when laid, but the jelly around the eggs absorbs water and becomes the size of an orange or grapefruit. The egg mass can contain up to 7,000 eggs!





Northern leopard frogs are semi-aquatic, which means they require both water and land. Tadpoles eat algae and adults eat a variety of small insects and even smaller frogs!

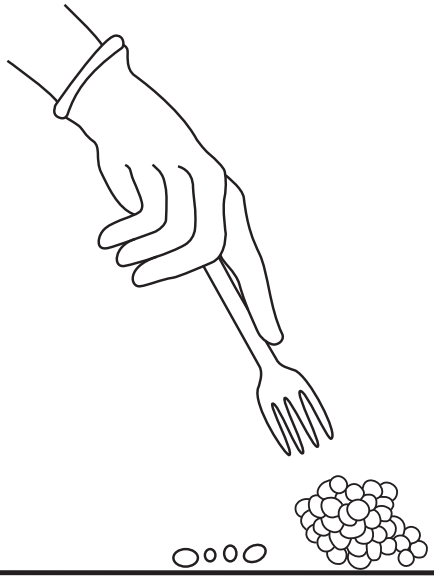


When temperatures get too cold, Northern leopard frogs go into deep, unfrozen water with a lot of oxygen. They stop eating and go into a light sleep called brumation. In brumation, their heart rate, breathing, and digestion slows down. This helps the frogs survive through winter when food is hard to find.

Because Northern leopard frogs are close to extinction (gone forever) in Washington, the Washington Department of Fish and Wildlife (WDFW), Northwest Trek Wildlife Park, and the Oregon Zoo are all working together to help the frogs bounce back. Let's learn more about this work!

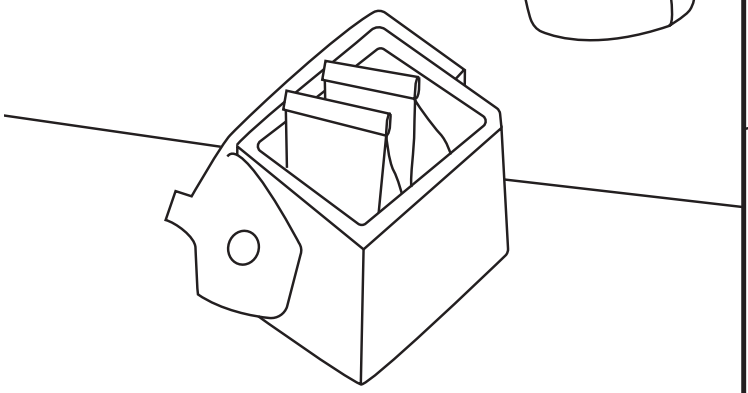
The year begins near Moses Lake when WDFW biologists carefully walk around wetlands during breeding season and listen for the snores and grunts of male frogs calling. Biologist use these calls to find breeding sites where they can conduct egg mass surveys.

① Separating egg masses

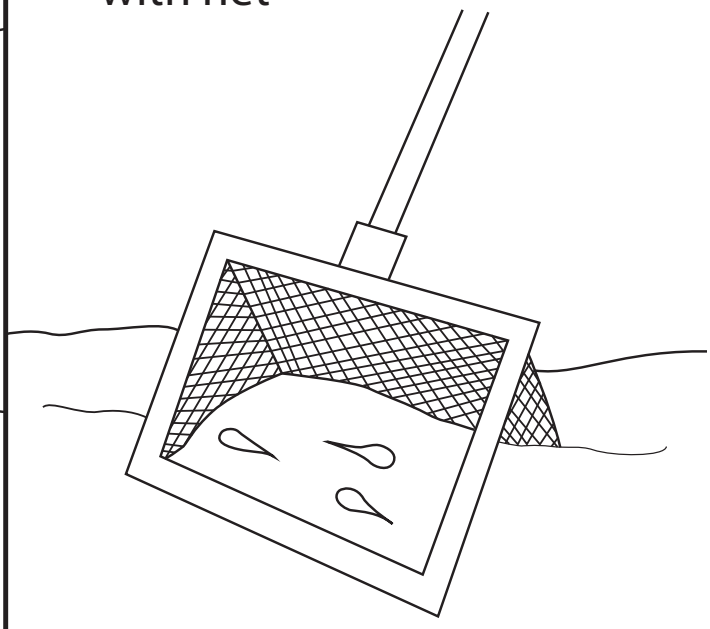


② Bagging egg masses & tadpoles

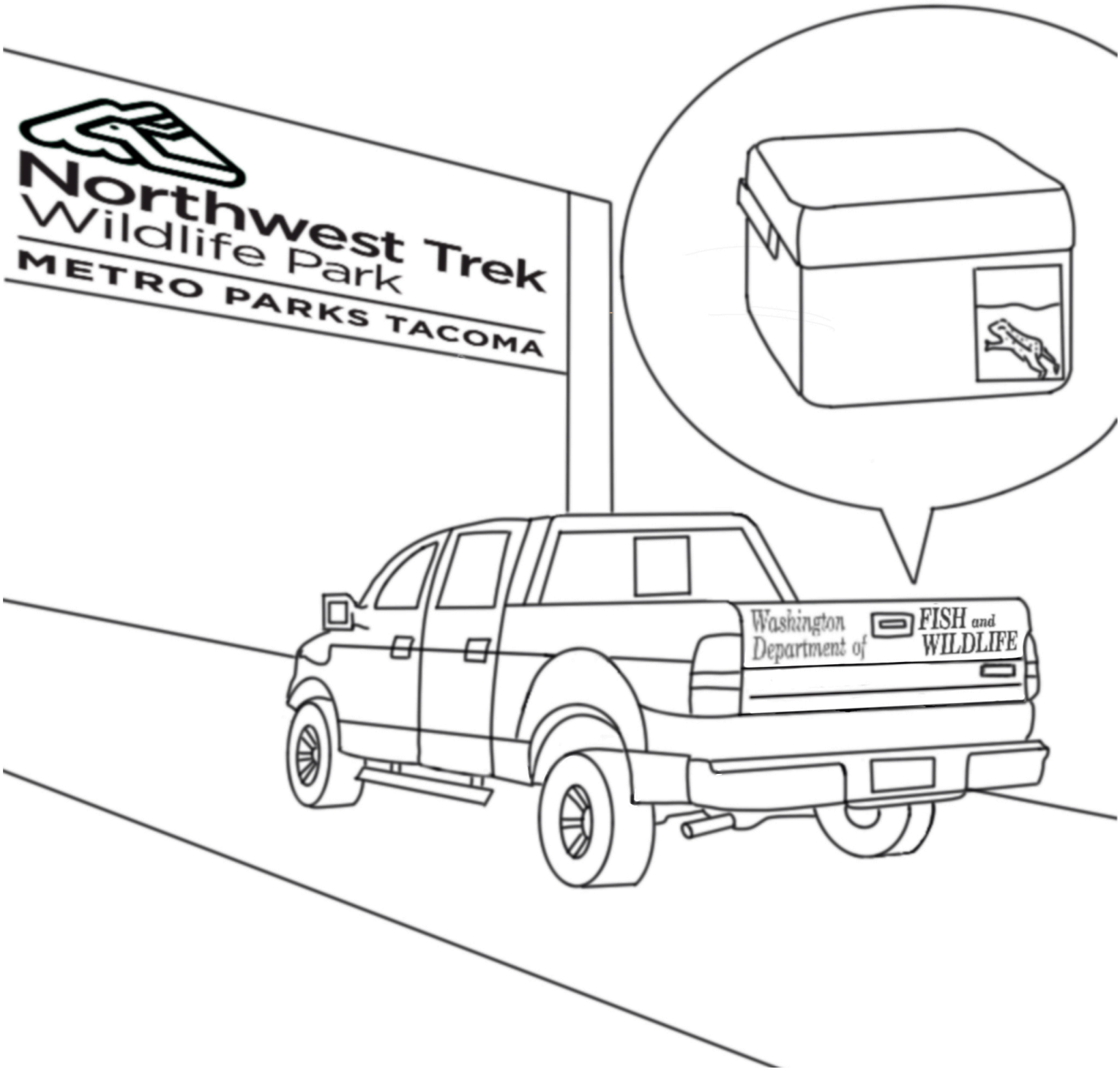
③ Putting into cooler



④ Collecting tadpoles with net

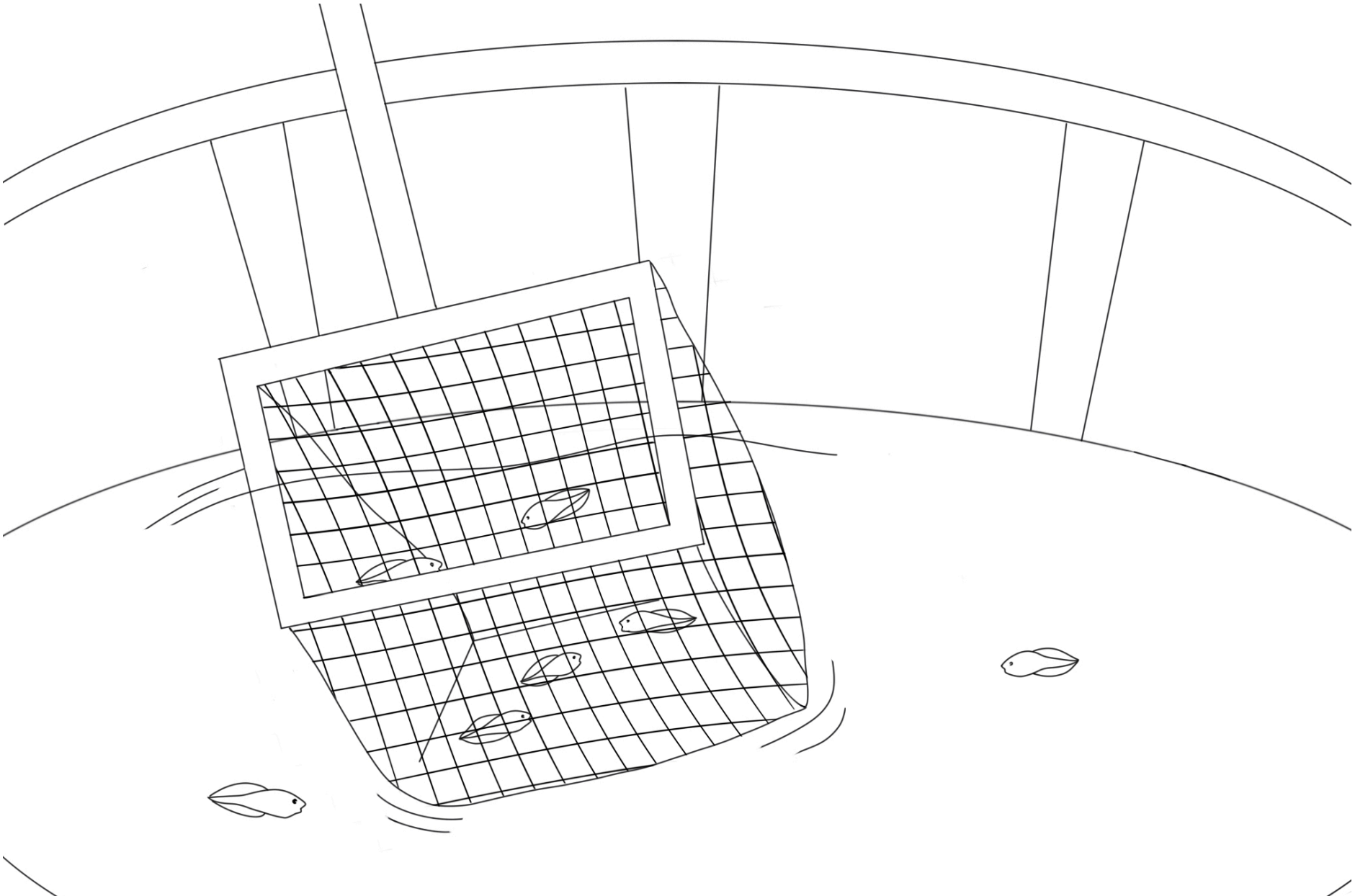


Once biologists find egg masses, they use plastic forks to carefully remove between 50-150 eggs from the egg mass. Next, biologists put the separated eggs into a breathable plastic bag and then store them securely in a cooler. Biologists also look for tadpoles to collect.

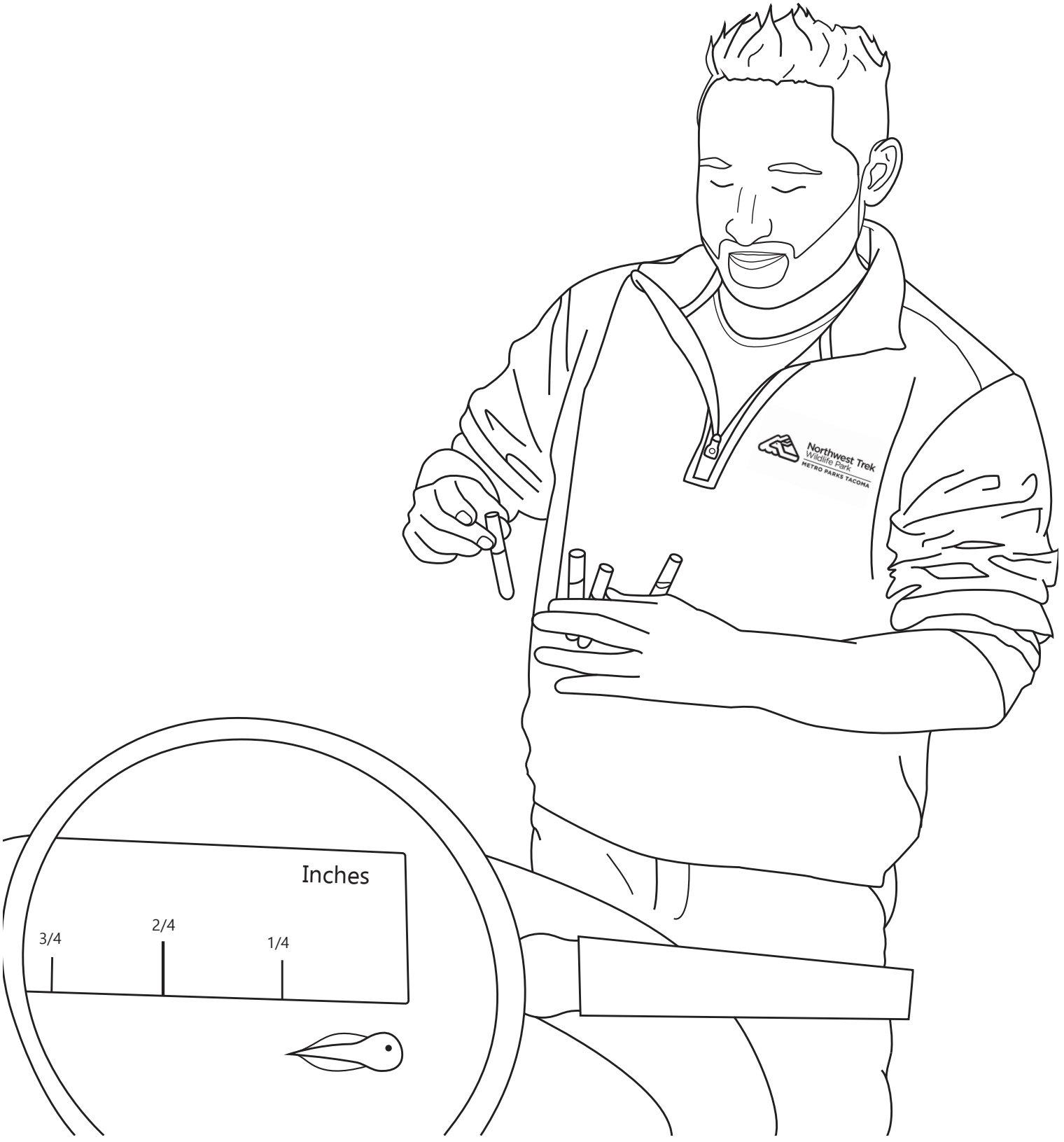


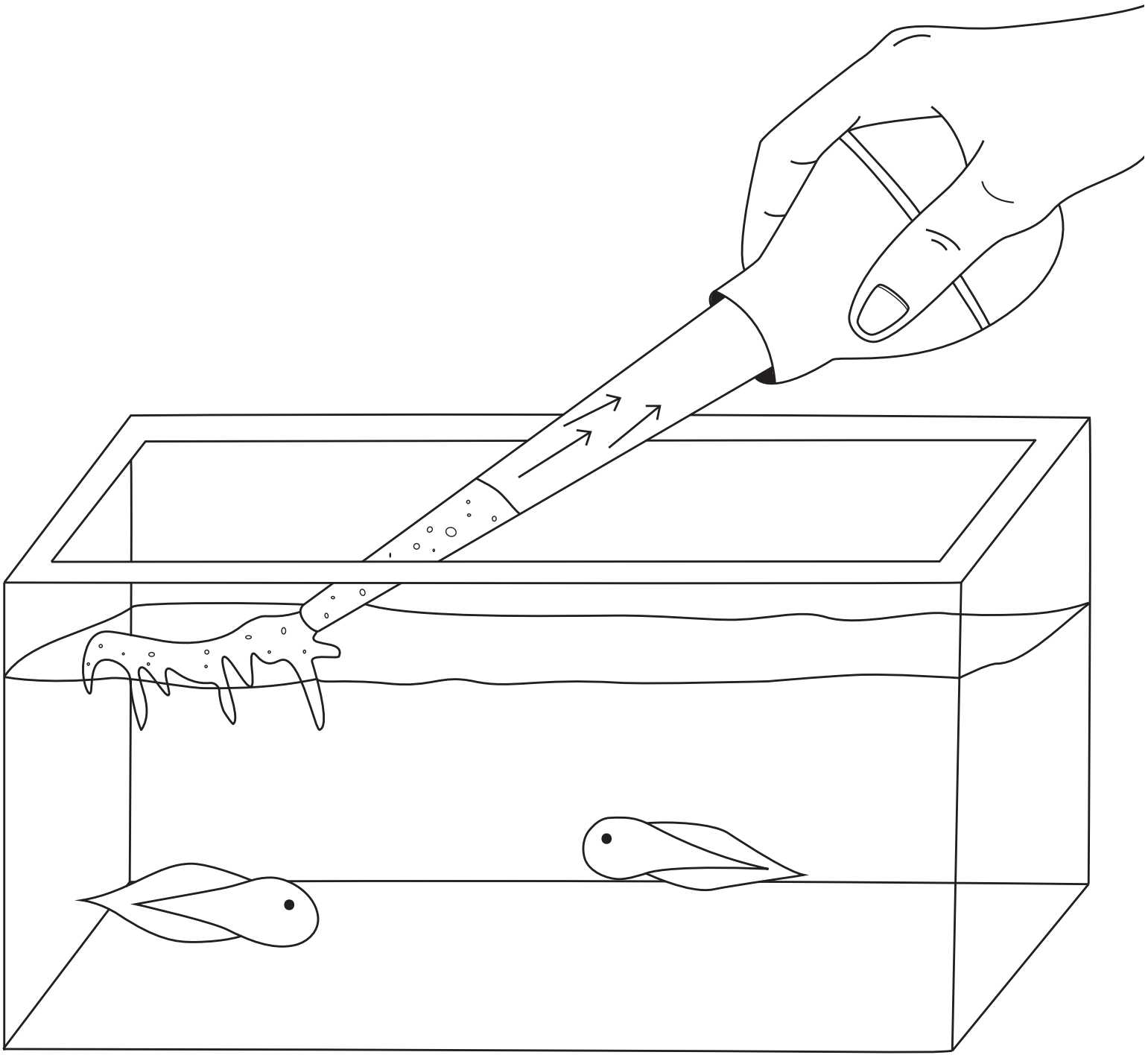
WDFW biologists carefully drive eggs and tadpoles to Northwest Trek and Oregon Zoo where frog keepers will raise them to be froglets (recently metamorphosed frogs). Raising frogs at the zoos gives eggs and tadpoles protection from predators (like invasive bullfrogs) and can help improve chances of survival when released and help make frogs stronger before they are released.

When Northwest Trek and Oregon Zoo biologists receive the eggs and tadpoles, they slowly get them used to the water temperature, acidity (pH), and saltiness (salinity) in a process known as acclimatization. Once eggs and tadpoles have acclimated, they are moved into net pens.

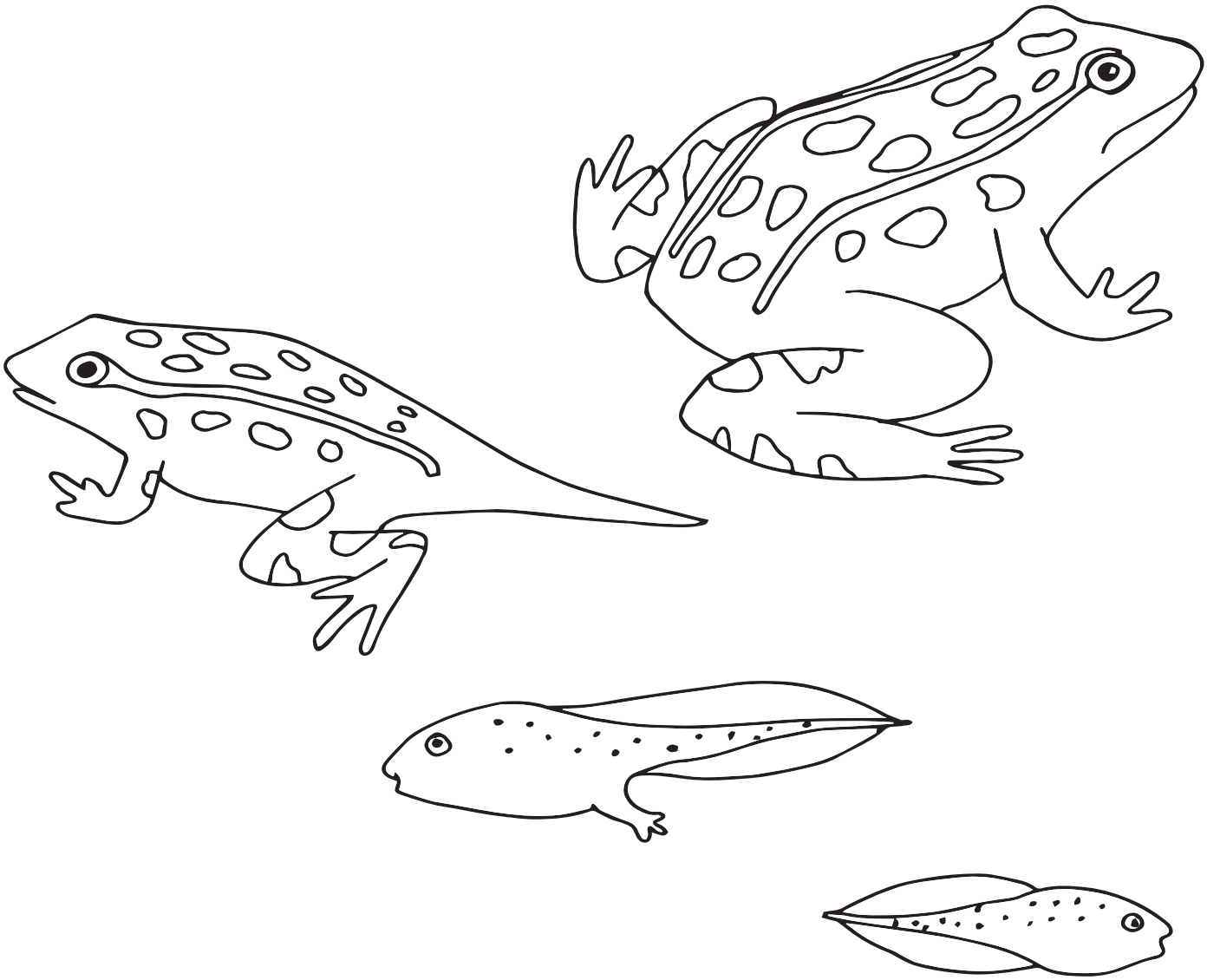


Keepers monitor the eggs and tadpoles in their net pens very carefully each day. Once the eggs begin to hatch, keepers can begin to count tadpoles. They continue to take many different recordings such as: water temperatures, pH, salinity, oxygen level, and waste levels.

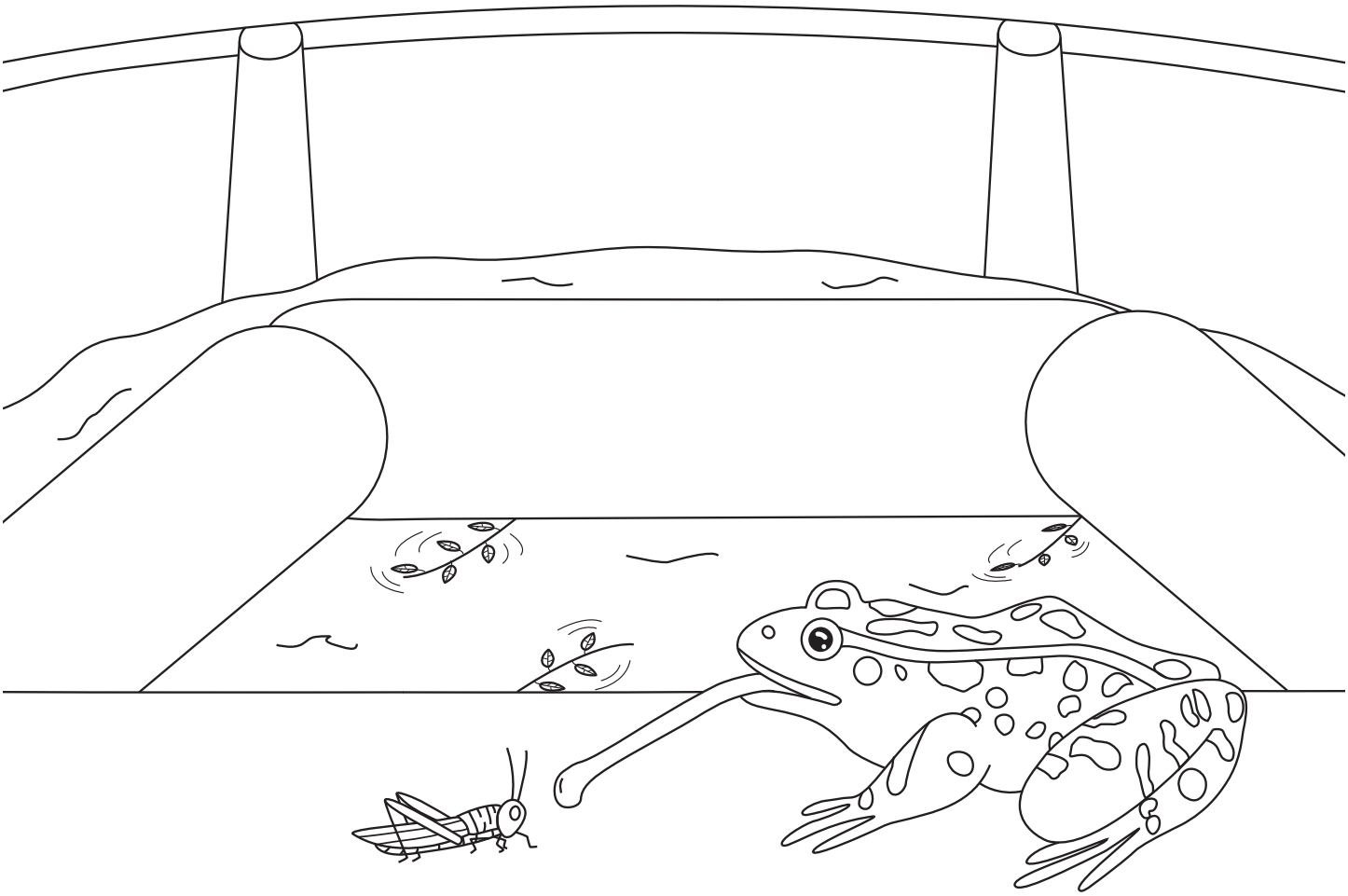




When the tadpoles become about an inch long, they move out of the net pen and get to explore the larger tank. During this time, keepers continue to monitor the welfare of the tadpoles by doing inspections to make sure tadpoles are healthy. This includes feeding the tadpoles algae and mixed greens and cleaning waste from their tank with a turkey baster.

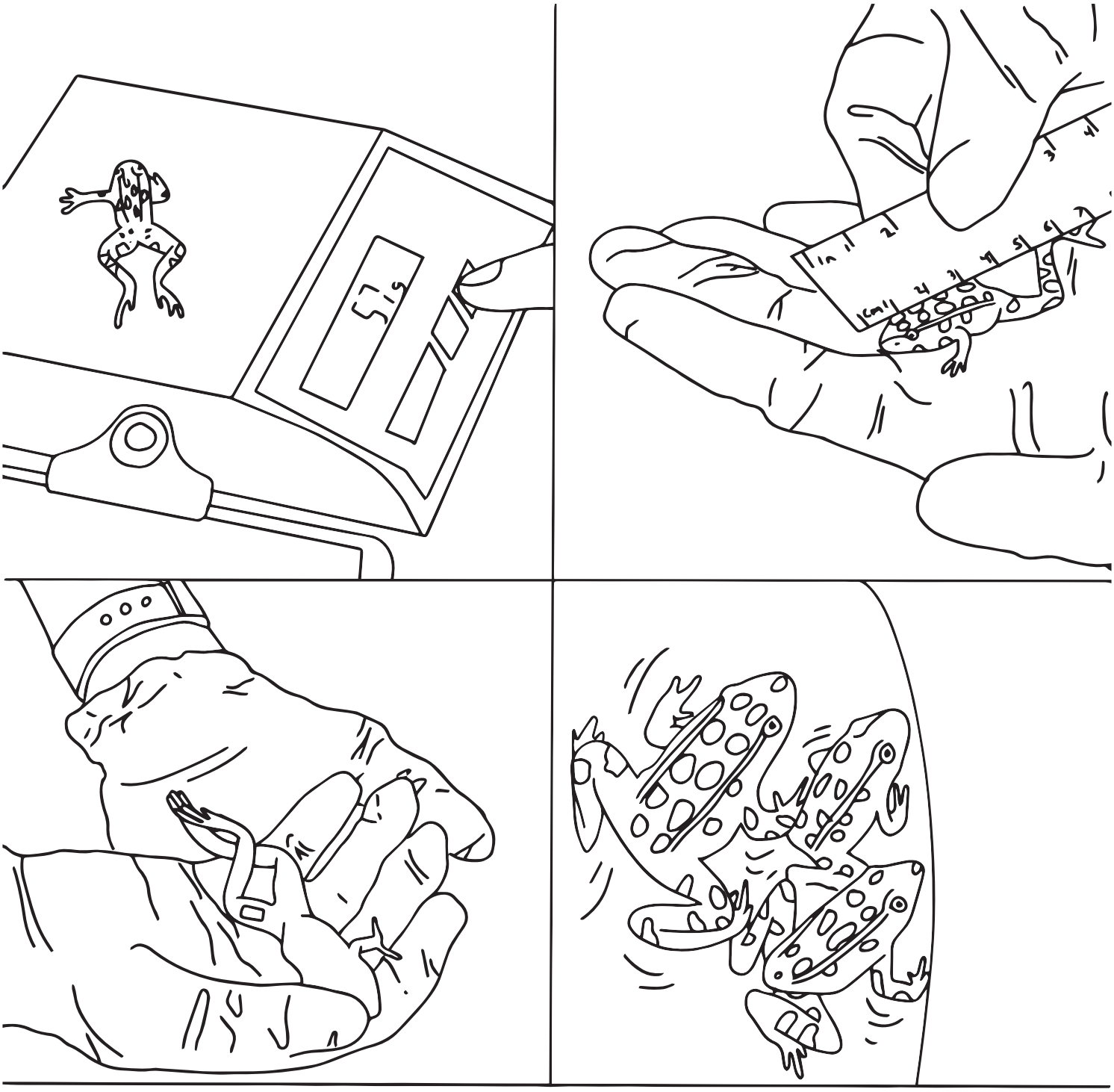


The tadpoles continue to eat and begin to grow legs, then arms, and then their tail re-absorbs into their body in a process known as metamorphosis. Their mouth parts will change so that they can eat insects instead of algae and plants. Finally, instead of breathing air from the water through gills, the tadpoles are now able to breathe oxygen from the air through their skin and lungs.



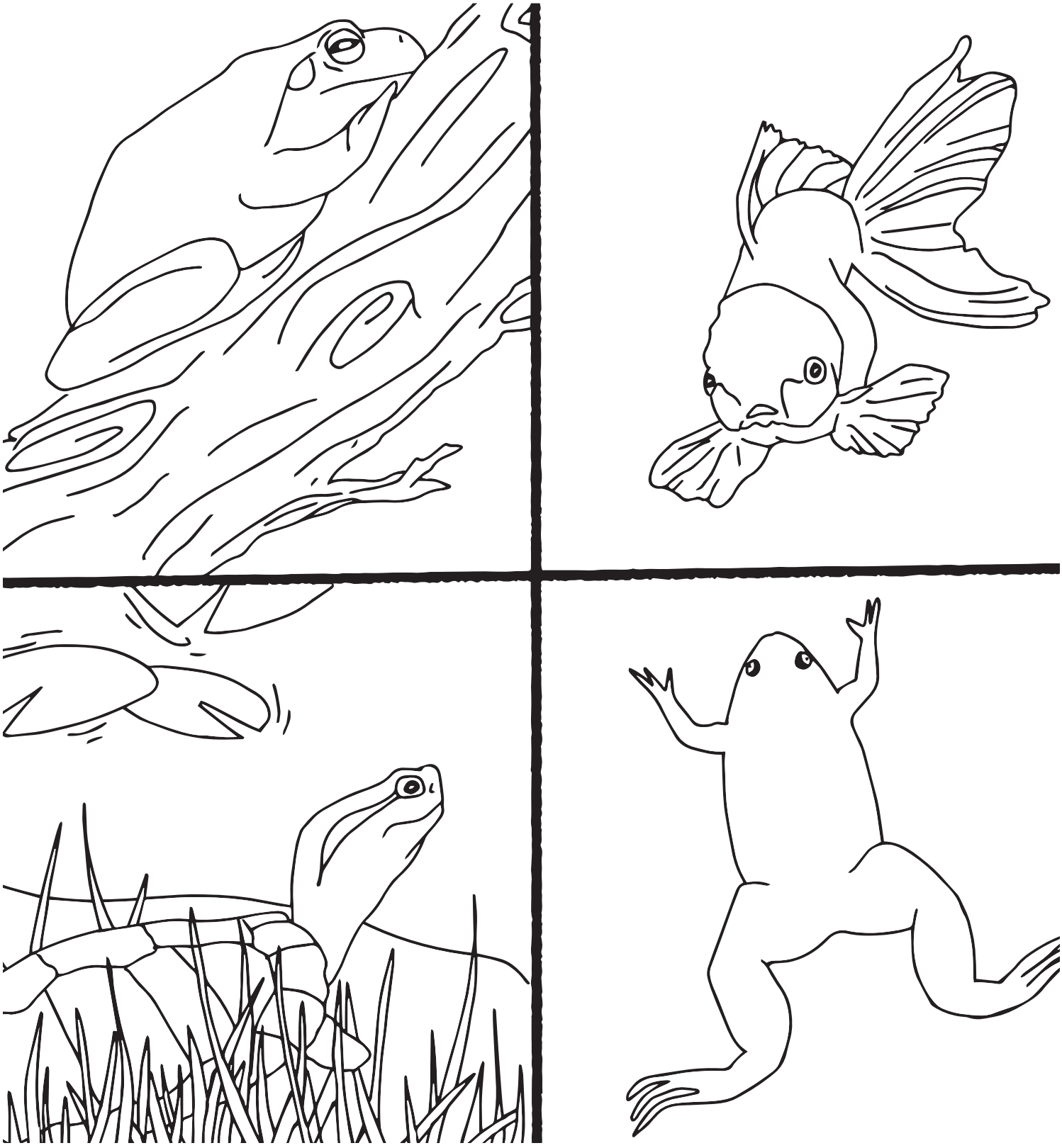
By mid to late July, the keepers will have froglets. Keepers set up floating islands in the tanks and hide crickets on the islands for the frogs to hunt. The froglets like to bask in sunlight and hide in foliage on their floating islands. Keepers continue to monitor frog development and behavior.

Once the frogs are ready for release, keepers, biologists, and the zoos' veterinarians give the frogs a physical exam to make sure they are healthy. This includes weighing and measuring the frogs, and putting a plastic chip in their leg. The plastic chip helps biologists identify the age of the frogs they observe in the wild.



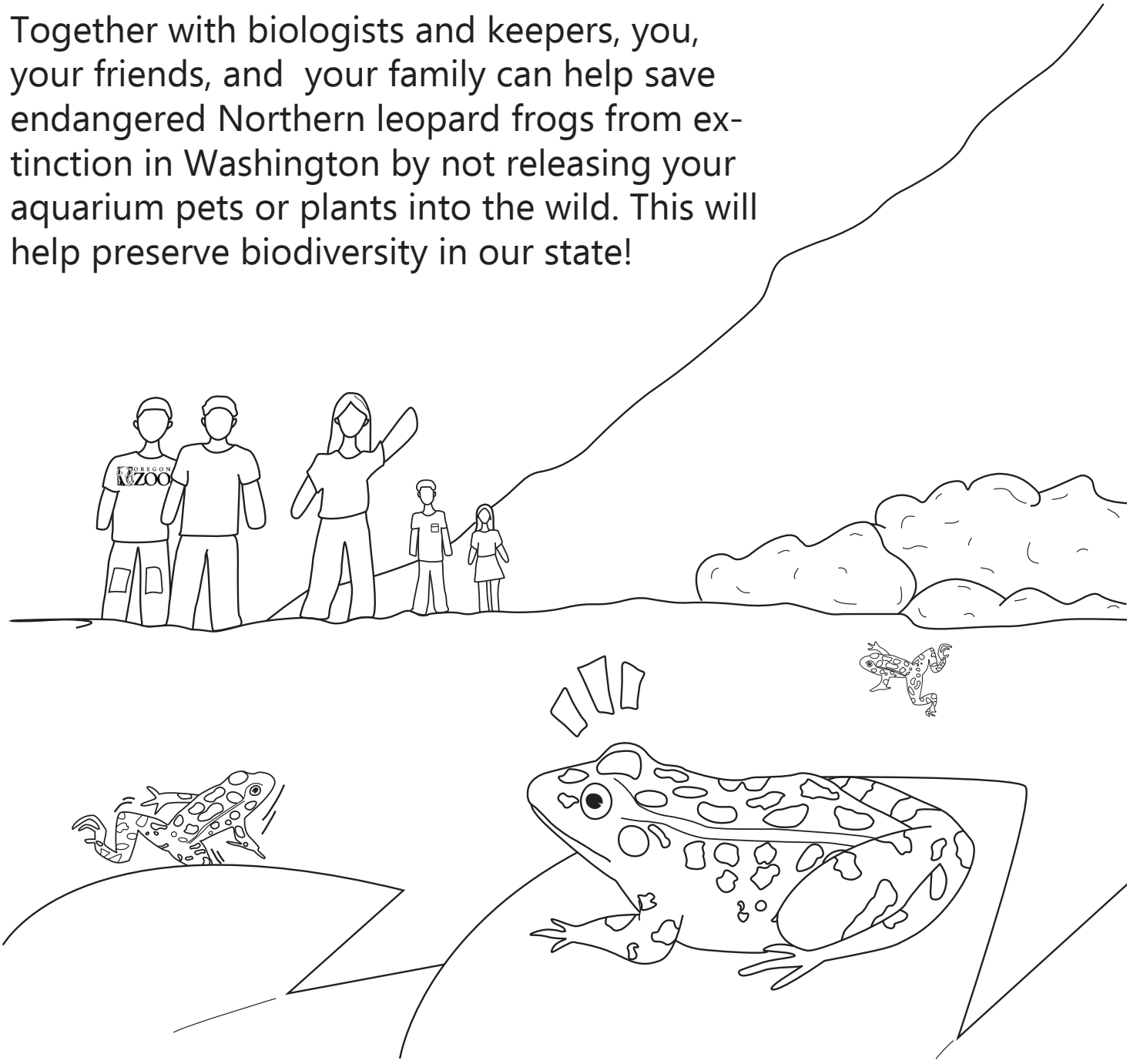
Thanks to the hard work of many, release day has finally come for the frogs. On a mid-summer day, biologists, keepers, land managers, and many more will gather to see the release of the frogs back into their native habitat.The frogs are released into an area protected by netting to let them get used to their new home for a week. It's a celebration for many.

After release, frogs continue to be monitored by biologists twice a week. Biologists will look for frogs with orange, pink, green, and yellow chips in their legs that glow under a black light. They record information about the frogs to make sure they are healthy. Biologists need your help to ensure that Northern leopard frogs continue to live in Washington!



Abandoned pets such as red-eared sliders, goldfish, and African clawed frogs that are released into the wild become a serious problem and may carry diseases that can harm wildlife. Never release unwanted home or classroom pets, animals or plants into the wild, such as rivers, streams, lakes, or stormwater ponds. This includes Northern leopard frogs you may have as pets. Make sure you "Don't Let it Loose," and share this information with your friends and family.

Together with biologists and keepers, you, your friends, and your family can help save endangered Northern leopard frogs from extinction in Washington by not releasing your aquarium pets or plants into the wild. This will help preserve biodiversity in our state!



Word Search

Q C Z U M B U L L F R O G S G N B E
G B I O L O G I S T A D P O L E N L
W A T E R Q U A L I T Y Y J F T Y A
V Y J P O M N I V O R E K U R P E R
X Q L Y Q A M P H I B I A N O E G V
L E N D A N G E R E D X T Z G N G A
A M E T A M O R P H O S I S L S M E
L T S F H A L M A R S H J J E G A A
G W R E A R I N G H D K Q H T I S Z
A D I L L A C C L I M A T I O N S M
E K P A Y C R I C K E T S Z A Y V E
W Q D R B N V R E C O V E R Y L O X

Find the following words in the puzzle.
Words are hidden → ↓ and ↘ .

ACCLIMATION
ALGAE
AMPHIBIAN
BIOLOGIST
BULLFROGS
CRICKETS
EGG MASS
ENDANGERED
FROGLET
LARVAE
MARSH
METAMORPHOSIS
NET PENS
OMNIVORE
REARING
RECOVERY
TADPOLE
WATER QUALITY

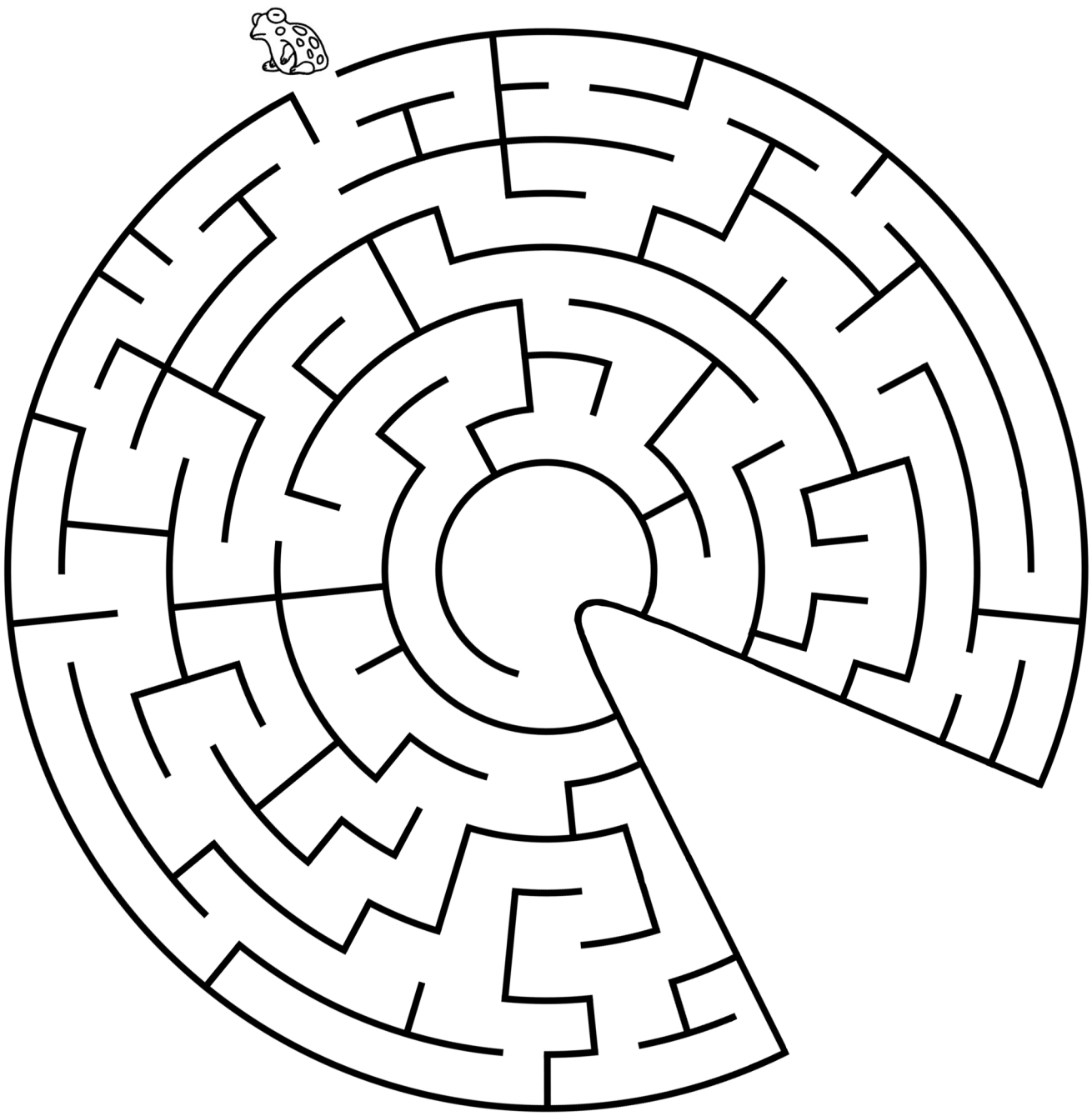
SOLUTION

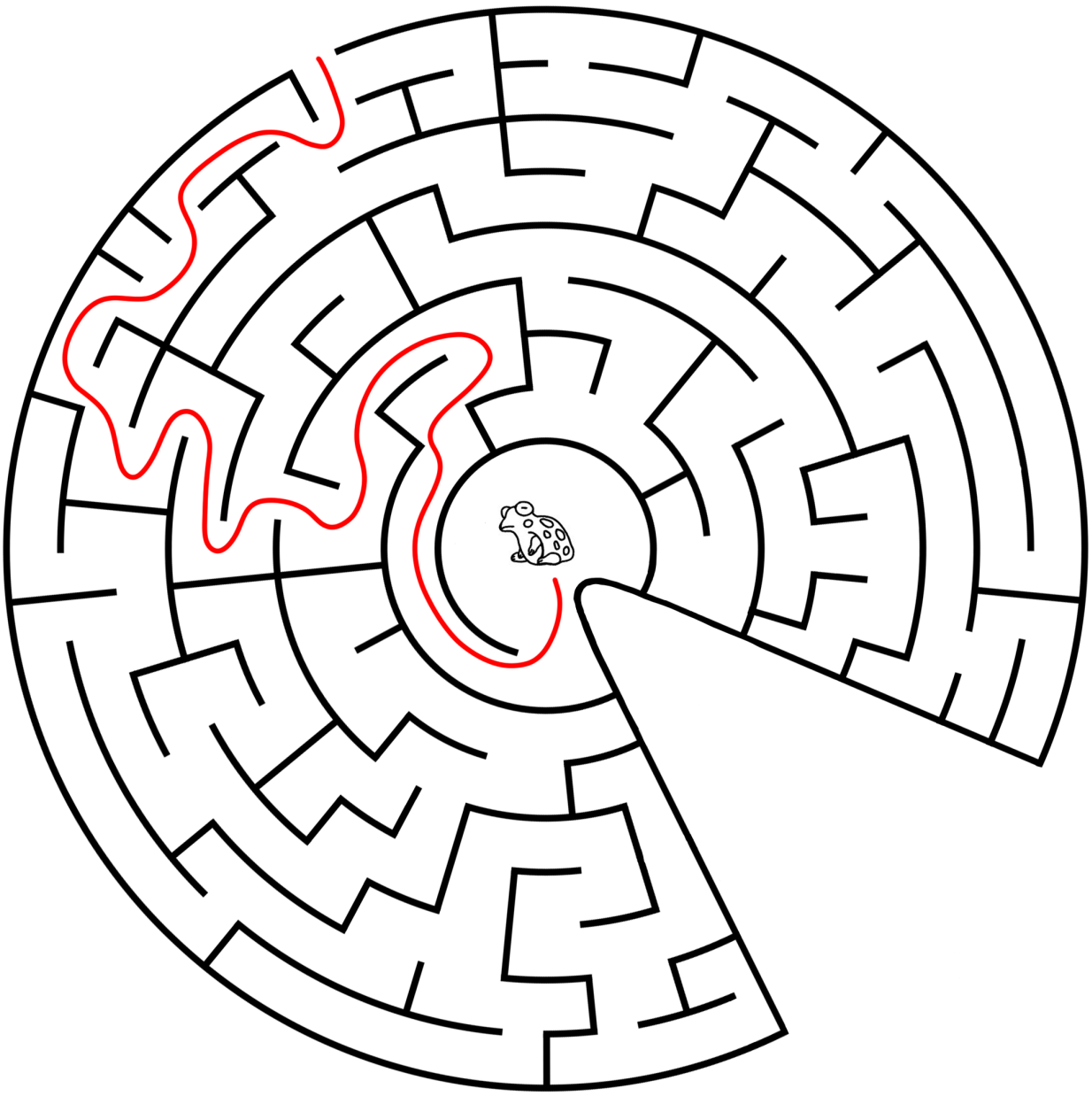
Word Search

. . . . . B U L L F R O G S . N . .
. B I O L O G I S T A D P O L E . L
W A T E R Q U A L I T Y . . F T . A
. . . . O M N I V O R E . . R P E R
. . . . . A M P H I B I A N O E G V
. E N D A N G E R E D . . . G N G A
A M E T A M O R P H O S I S L S M E
L . . . . . M A R S H . . E . A .
G . R E A R I N G . . . . . T . S .
A . . . . A C C L I M A T I O N S .
E . . . . C R I C K E T S . . . . .
. . . . . R E C O V E R Y . . .

Word directions and start points are formatted: (Direction, X, Y)

ACCLIMATION (E,6,10)
ALGAE (S,1,7)
AMPHIBIAN (E,6,5)
BIOLOGIST (E,2,2)
BULLFROGS (E,6,1)
CRICKETS (E,6,11)
EGG MASS (S,17,4)
ENDANGERED (E,2,6)
FROGLET (S,15,3)
LARVAE (S,18,2)
MARSH (E,8,8)
METAMORPHOSIS (E,2,7)
NET PENS (S,16,1)
OMNIVORE (E,5,4)
REARING (E,3,9)
RECOVERY (E,8,12)
TADPOLE (E,10,2)
WATER QUALITY (E,1,3)





To learn more about Northern leopard frog recovery, visit the following websites:

Northwest Trek Wildlife Park:
https://www.nwtrek.org/frogs-jump-into-the-wild/

The Oregon Zoo:
https://www.oregonzoo.org/news/2022/08/endangered-frogs-hop-Oregon-zoo-back-wild

Columbia National Wildlife Refuge:
https://www.fws.gov/refuge/columbia

Don’t Let It Loose:

Washington Department of Fish and Wildlife:

Washington Department of FISH and WILDLIFE

Northwest Trek Wildlife Park

METRO PARKS TACOMA

OREGON ZOO

This coloring book was produced by Washington Department of Fish and Wildlife with assistance from Northwest Trek Wildlife Park and The Oregon Zoo. It was designed and complied by Ridgefield High School students in the Graphic Design Career in Technical Education class. It is part of the Wild Washington Education program for K-12 students. For more information: www.wdfw.wa.gov/wild-wa

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