

LEAPFROG!

STRATEGY GAME
CHALLENGING
1 PLAYER

OBJECT

Remove all the cards by jumping one card over the other. When done, the Northern Cricket Frog card should be back in its original position.

WILDCARDS

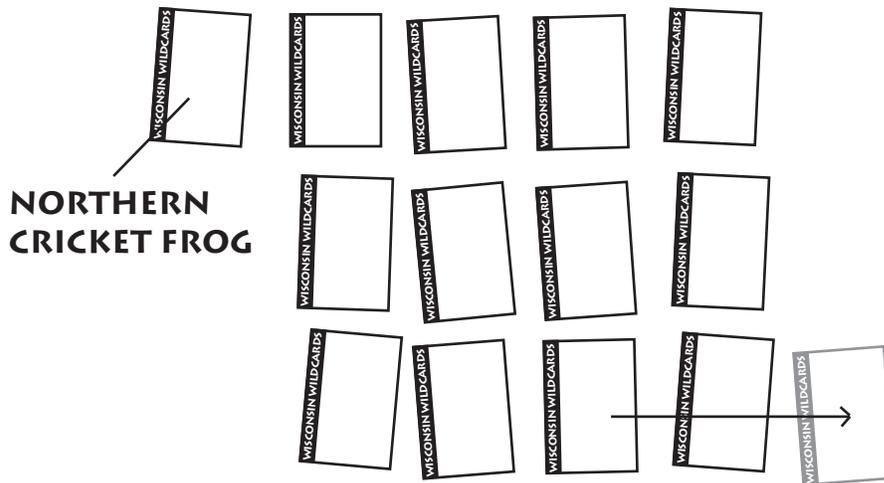
13 cards (Use Northern Cricket Frog and 12 **Aquatic Invertebrates**. The frog probably wouldn't eat the invertebrates as larvae, but it would eat several of them when they become adults.) You could also play this game with 12 fish cards and the Great Blue Heron card or other predator/prey combinations.

DEAL

Place 12 cards on the table in three rows of four cards each. Put the cricket frog at the left-hand end of the top row. See diagram.

PLAY

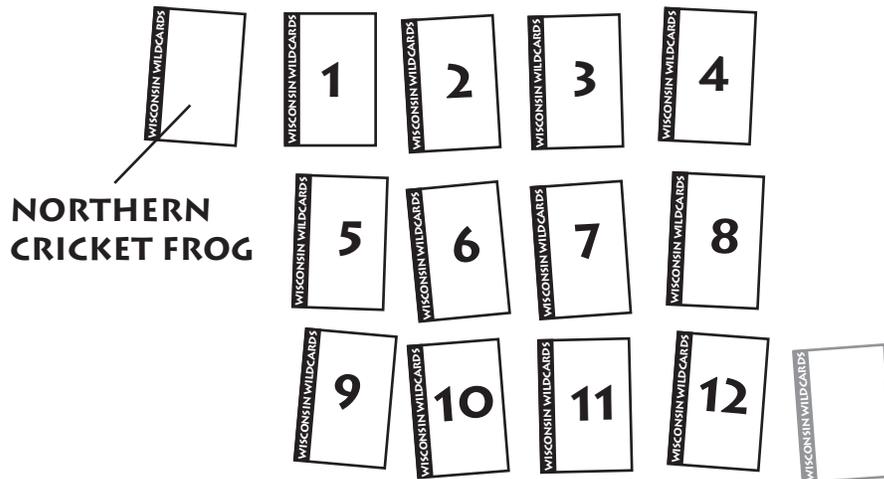
Start jumping! You are going to try to remove all the cards from the playing field, except the cricket frog, by jumping one card over the other as in checkers and removing the jumped-over cards. At the end of the game, the cricket frog should be back in its original position. The outlined card shows where you can make your first jump. This is the only place outside of the puzzle that you can move cards.



SOLUTION

Don't read this unless you have given up! If you are just ready for a hint, follow the directions for the first couple of moves and then try again on your own. Here are the moves that you must make to solve this puzzle:

- Jump 11 over 12 to the outlined card position.
- Remove 12.
- Jump 9 over 10 to 11.
- Remove 10.
- Jump 2 over 6 to 10.
- Remove 6.
- Jump 4 over 8 to 12.
- Remove 8.
- Jump the cricket frog over 1 to 2, then over 3 to 4.
- Remove 1 and 3.
- Jump 11 over 7 to 3.
- Remove 7.
- Jump the outside card over 12 to 11, then over 10 to 9, then over 5 to 1.
- Remove 12, 10, and 5.
- Jump 4 (the cricket frog) over 3 to 2, and then over 1 to its original position.
- Remove 3 and 1.
- Cool, huh?



WISCONSIN WILDCARDS

NATIVE AMPHIBIANS

WISCONSIN WILDCARDS

Up to 25 mm

NATIVE SPECIES

WISCONSIN WILDCARDS

13-68 mm

NATIVE SPECIES

WISCONSIN WILDCARDS

2-32 mm

NATIVE SPECIES

WISCONSIN WILDCARDS

13-68 mm

NATIVE SPECIES

WISCONSIN WILDCARDS

2-32 mm

NATIVE SPECIES

WISCONSIN WILDCARDS

larva

less than 4 mm

adult

NATIVE SPECIES

WISCONSIN WILDCARDS

2-20mm

can be red, green, or whitish

NATIVE SPECIES

DAMSELFLY LARVA

Order Odonata (meaning "toothed")
Suborder Zygoptera

These predators may be eaten by birds and other critters as they leave their larval homes in aquatic vegetation, sediments, or rocky riffles to emerge as adults. As larvae, they swim by moving their abdomen and gills ("tails") side to side. Avoid confusing them with dragonfly or mayfly larvae.

Check for these characteristics:

- Head is wider than thorax and abdomen
- Long, thin abdomen
- Three plate-like gills ("tails") on the end of abdomen



WILD! Damselflies hunt by sight and actively stalk their prey, while some other predatory larvae simply lie in wait for their prey to approach.

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Photo: Dr. Stanley Szczytko, Professor of Limnology, UWSP
Art: Illinois Natural History Survey
Partial funding provided by US EPA S. 319 Water Quality Act



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ALDERFLY LARVA

Order Megaloptera (meaning "large wings")
Family Sialidae

These larval predators live in soft substrates in highly-oxygenated waters, such as streams, but can live in temporary waters. Eggs, pupae and adults are terrestrial. There are 7 species in Wisconsin. Avoid confusing them with caddisfly, dobsonfly, or beetle larvae.

Check for these characteristics:

- Two claws on each leg
- Seven pairs of segmented projections along their sides
- One "tail"

WILD! Alderfly larvae obtain oxygen through their skin. The projections along their sides are not legs but respiratory tubes that give them lots of surface area for absorbing oxygen.

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Photo: Missouri Department of Conservation
Art: UWEX
Partial funding provided by US EPA S. 319 Water Quality Act



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NORTHERN CRICKET FROG

Acris crepitans
Endangered

BASIC ID

This .7-1.2" frog is brownish-tan or green with a rust or green colored triangle on its head and has bumpy skin.

HABITS

They eat small insects. They live in lakes, ponds and rivers, preferring mud or sand flats with sparse, low vegetation. Their 6-7-second call is like two ball bearings clicking together.

FUN FACTS

The 1-inch cricket frog can leap 4 feet in a single jump. One of these frogs can eat 4,800 bugs in a single season.

FOR INFORMATION

www.dnr.wi.gov/org/land/er

Photo: A. B. Sheldon
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DOBSONFLY LARVA

Order Megaloptera (meaning "large wings")
Family Corydalidae

Dobsonfly larvae live in soft substrate and woody debris in many aquatic habitats. Eggs, pupae, and adults are terrestrial. These predators need clean water to survive. They primarily eat detritus and leaves that fall or wash into streams. There are 4 dobsonfly species in Wisconsin. Avoid confusing them with caddisfly, beetle, or alderfly larvae.

Check for these characteristics:

- Two claws per leg
- Eight pairs of 2-segmented lateral projections
- Two short prolegs at the tip of the abdomen



WILD! Spiracles (exposed ends of respiratory system tubes used for obtaining oxygen) help them breathe when living in moist areas out of water.

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Photo: Missouri Department of Conservation
Art: UWEX
Partial funding provided by US EPA S. 319 Water Quality Act



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DRAGONFLY LARVA

Order Odonata (meaning "toothed")
Suborder Anisoptera

These voracious predators crawl about in vegetation, sediments, and riffles in many aquatic environments. They swim by forcing a jet of water out of their rectum. Both eggs and larvae of the 154 species of dragonflies and damselflies in Wisconsin are aquatic. Dragonfly larvae might be confused with damselfly larvae.

Check for these characteristics:

- Head is nearly equal or narrower than thorax and abdomen
- No "tail"

WILD! Dragonfly larvae have an extendable lip that helps them be successful predators. They're considered the lions of the invertebrate world.

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Photos: Dr. Stanley Szczytko, Professor of Limnology, UWSP
Art: UWEX
Partial funding provided by US EPA S. 319 Water Quality Act



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MAYFLY LARVA

Order Ephemeroptera
(meaning "short lived on the wing")

These "cows" (they graze on plants!) of aquatic environments live in or on rocks, plants, or other large woody debris. They crawl or swim by moving their abdomen up and down. Wisconsin has 115 mayfly species. Avoid confusing them with stonefly or damselfly larvae.

Check for these characteristics:

- Gills on abdomen are feathery and often flutter
- One claw on each leg
- Usually three tails (sometimes two)



WILD! Terrestrial adults emerge from their aquatic larval stage in great numbers (all at once), do not eat, and may live for only a few hours.

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Photos on front:
Main: Family Aeshnidae (Darter dragonflies)
Inset: Family Gomphidae (Clubtail dragonflies)

Photos on back:
Main: Family Heptageniidae (Flatheaded Mayflies)
Inset: Family Isonychidae (Brushlegged Mayflies)

Photo: Dr. Stanley Szczytko, Professor of Limnology, UWSP
Art: Illinois Natural History Survey
Partial funding provided by US EPA S. 319 Water Quality Act



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MIDGE LARVA (NON-BITING)

Order Diptera (meaning "two wings," most other insect adults have four) Family Chironomidae

Midge larvae live in many aquatic habitats. These short, thin, worm-like insects wiggle intensely as they swim. They are an important food for insects, birds and fish. There are 103 aquatic genera in Wisconsin. Avoid confusing midge larvae with tubifex worms and caddisfly larvae.



Check for these characteristics:

- Often C-shaped
- Red, green, or whitish
- Head is round
- Pair of prolegs at each end of body
- Prolegs end with a series of hooks

WILD! Red midge larvae, known as bloodworms, contain oxygen-carrying hemoglobin, which allows them to survive longer in water with low oxygen levels.

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Photo: Jason Neuninger, troutnut.com
Art: UWEX
Partial funding provided by US EPA S. 319 Water Quality Act



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RIFFLE BEETLE

Order Coleoptera (meaning "sheathed wings")
Family Elmidae

These beetles live their entire lives primarily in faster moving water on gravel, wood, and vegetation. There are 24 species in Wisconsin. Both adults and larvae eat plants and scrape algae from rocks.



Check for these characteristics:

- Adults and larvae dark, with thick, leathery skin
- Larvae cylindrical
- Adults and larvae with long claws to hold onto the bottom in fast water
- Adults with threadlike antennae

WILD! After flying to disperse, adults return to the water and go to the surface only once in a lifetime to obtain oxygen. They hold oxygen in a flattened bubble on many tiny hairs on their body, refilling it with oxygen from the water as it is depleted.

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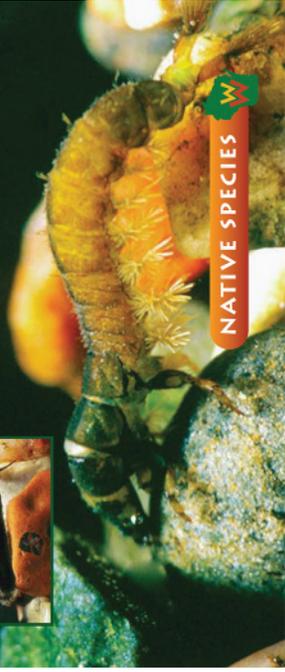


Photos: Missouri Department of Conservation
Art: UWEX
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WISCONSIN WILDCARDS

2-43 mm



NATIVE SPECIES



WISCONSIN WILDCARDS

11-18mm



NATIVE SPECIES



WISCONSIN WILDCARDS

Up to 10 mm



NATIVE SPECIES



WISCONSIN WILDCARDS

adult up to 30 mm



larva 3-15 mm



NATIVE SPECIES



WISCONSIN WILDCARDS

5-70 mm



NATIVE SPECIES



BLACK FLY LARVA

Order Diptera (meaning "two wings")
Family Simuliidae

These fly larvae live in flowing streams, and attach to rocks and other hard surfaces using a sucker on their back ends. Most collect food by opening a fan on top of their heads and catching what floats by in the current. Their 'bowling-pin' shaped bodies help to identify them.

Check for these characteristics:

- Head entirely visible
- Only short prolegs present near head (no true segmented legs)
- Sucker at enlarged end of body



WILD! Most human-biting black flies live in northern United States and Canada. In the South, most black flies feed on birds and mammals.

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Photo: Missouri Department of Conservation
Art: UWEX
Partial funding provided by US EPA S. 319
Water Quality Act

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SNIPE FLY LARVA

Order Diptera (meaning "two wings;" most other insect adults have four) Family Athericidae

These predators live among the rocks of riffle areas in fairly clean streams. Adult females lay their egg mass on plants above streams. There is only one species of snipe fly found in Wisconsin. Avoid confusing them with caddisfly, crane fly, horse fly, or soldier fly larvae, or aquatic worms.

Check for these characteristics:

- Narrow, elongate body
- Seven pairs of short prolegs on abdomen
- Single proleg on last abdominal segment
- Short projections on sides and top of abdomen
- Two feathery-looking tails at end of body



WILD! A female snipe fly will stay with her egg mass until she dies.

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Photo: Jason Neuswanger, troutnut.com
Art: St. Louis River - River Watch
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CADDISFLY LARVA

Order Trichoptera (meaning "hairy wing" – which describes the wings of adult caddisflies)

Caddisfly larvae live on rocks, vegetation and woody debris in many aquatic environments. Adults are terrestrial. There are 245 caddisfly species in Wisconsin, most of which eat plants, animals, or decaying material. Avoid confusing them with dobsonfly, alderfly, or midge larvae.

Check for these characteristics:

- Houses or "cases" made of sand grains, vegetation, or pieces of wood (some are free-living)
- Head and/or thorax have dark, thick, hardened skin
- Caseless net-spinners have two brush-like tails



Photos on front:
Main: Family Hydropsychidae (net-spinning caddisfly)
Inset: Family Brachycentridae (one type of case-building caddisfly)

WILD! A caddisfly uses silk glands in its mouth to build a case or spin a net.

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Photo: Dr. Stanley Szczytko, Professor of Limnology, UWSP
Art: Jens von Sivers
Partial funding provided by US EPA S. 319
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STONEFLY LARVA

Order Plecoptera (meaning "braided wings" – adults position back wings in folds under front wings)

These pollution-intolerant insects eat plants, dead material, and other insects. The eggs and larvae of Wisconsin's 58 stonefly species live in cool, flowing water in gravel, rocks, wood, or leaf packs. The larvae crawl or swim by moving their abdomen side to side. Avoid confusing them with mayfly larvae.

Check for these characteristics:

- Long antennae
- Two claws on each leg
- No gills located along middle of abdomen
- Two tails



WILD! Stonefly larvae have few gills, so they need highly-oxygenated water to survive. To increase oxygen supply to their gills, they do "push-ups" to move oxygen-rich water across them, making it easier to absorb the oxygen.

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Photo: Dr. Stanley Szczytko, Professor of Limnology, UWSP
Art: UWEX
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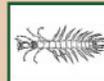
WHIRLIGIG BEETLE

Order Coleoptera (meaning "sheathed wings")
Family Gyrinidae

The predatory larvae are rarely seen, while scavenging adults are usually seen swimming in circles on the water's surface. There are 25 species in Wisconsin. Avoid confusing larvae with caddisfly, dobsonfly, or alderfly larvae.

Check for these characteristics:

- Larvae:
- Long, slender, pale-colored
 - 10 pairs of unsegmented projections on their sides
 - Two pairs of sickle-shaped hooks on end of abdomen
- Adults:
- Stream-lined body
 - Club-shaped antennae
 - Back legs flattened for swimming



WILD! To see above and below the water at the same time, adult whirligig beetles have two pairs of eyes.

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Photos: (adult) Dr. Bart M. Drees, TX A&M University; (larva) John Hawking, Cooperative Research Centre for Freshwater Ecology; Art: (larva) Cairn Nixon, Illinois Natural History Survey; (adult) UWEX.
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WT-814 2005



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