

A Guide To Alvar and
Grassland Species of the
Napanee Plain

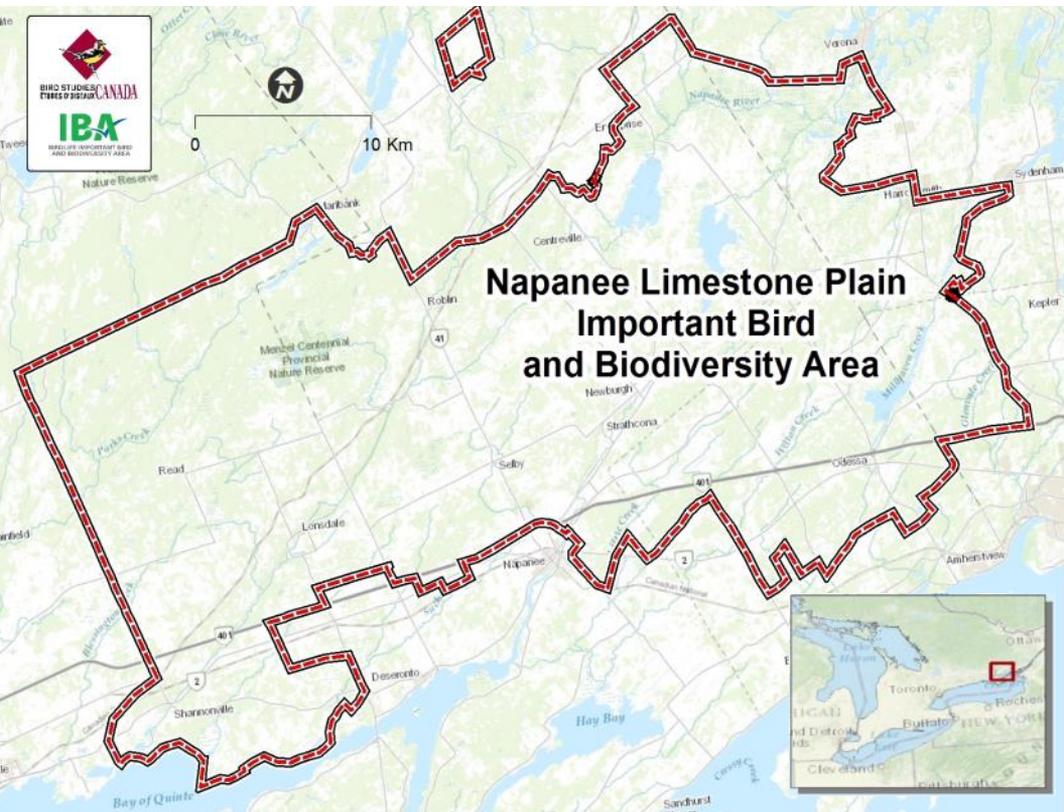
The **Napanee Plain Joint Initiative** is a

collaboration of organizations working to preserve the unique diversity of the area, particularly the alvar and grassland environments.



The **Napanee Limestone Plain Important Bird and Biodiversity Area** (IBA) is situated in eastern Ontario, between

(and north of) Belleville and Kingston. The area consists of a mosaic of shallow soil habitats such as savanna grasslands with scattered red cedar or hawthorn and small woodlots. Land uses in the area include cattle grazing, mixed farming, rural residential, and limestone and aggregate quarries.



Alvar Communities may look different from one community to the next due to local influences (such as fire, grazing or historical land use) though they share key characteristics:

- Flat areas of thin mineral soil over calcareous (limestone or dolostone) bedrock.
- Naturally open landscapes, with little to no tree cover.
- Subject to seasonal drought and flooding in the summer and exposed to deep frost (heave) in the winter.
- A distinctive set of plant species.
- Contain plant species that have adapted to fire and drought.
- May contain many species that are rare elsewhere in the Great Lakes basin.



Types of Alvar

Almost all of North America's alvars are found within the Great Lakes basin. There are several types of alvar, most of which are globally imperiled and under stress.

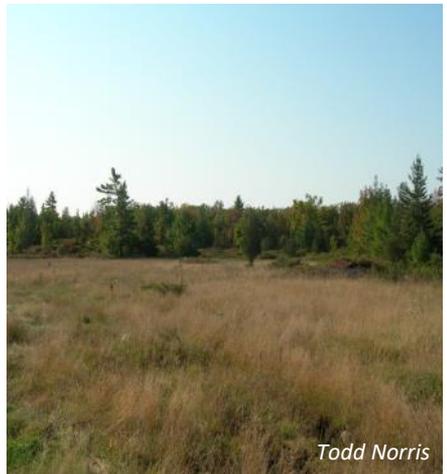
Alvar Pavement and Grassland

- Less than 10% tree cover and less than 25% shrub cover
- High abundance of herbaceous plants or exposed bedrock (may be covered with lichens and mosses)



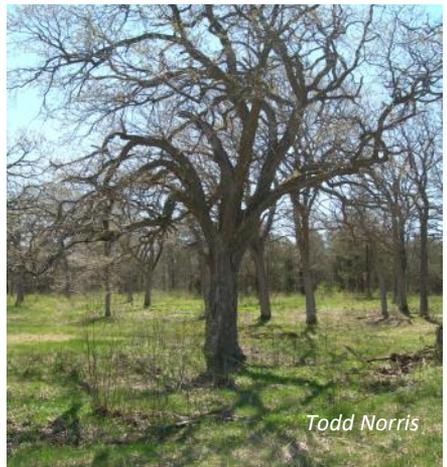
Alvar Shrubland

- Less than 10% tree cover with moderate to high cover of shrubs
- Variable amounts of herbaceous, moss, and lichen cover



Alvar Woodland and Savanna

- Partial canopy of trees; savannas: 10 - 25% cover and woodlands: 25 - 60%
- High cover of shrubs, with some trees, and some herbaceous, moss and lichen cover



Cultural Grasslands (grazed farm fields) are home to an incredible diversity of life, including hundreds of native plant and animal species. However, grasslands in Ontario are diminishing. Today, many of the species that inhabit these areas are under significant threat.

Timing of harvest can help protect species, such as Bobolink and Eastern Meadowlark birds, that commonly nest in cultural grasslands.

Threats to alvars and grasslands include:

- Urban expansion and development
- Changes in agricultural practices
- Encroaching forests
- Invasive species

Large-scale solar farms are becoming quite numerous and could represent an emerging threat to lesser known alvars and species at risk. Members of the Napanee Plain Joint Initiative are working with the industry and the Ministry of Natural Resources and Forestry to mitigate the impact of such projects on sensitive habitats and species.



Protecting Alvar and Grasslands

The majority of alvar found in the Napanee Plain is privately owned. This means private property stewardship is essential to conserving these habitats. Landowners can easily help to protect and conserve these special areas.

Conservation Methods Include:

- Avoid overgrazing these areas
- Restrict recreational vehicles
- Minimize disturbances
- Participate in research projects that focus on alvar ecology and management questions
- Consider inviting naturalists and scientists to gather field data, or collect your own and submit it to the Natural Heritage Information Centre
- Contact Conservation Agencies or local land trusts about Land Conservation projects

For more information, landowner resources, and available funding opportunities, please visit our website:

www.napaneeplain.org



Conservation Status Ranks

Ontario Conservation Status Ranks (Subnational)	
Ranks	Definition
S1 – Critically Imperiled	Extremely rare (often 5 or fewer occurrences) or steep declines making it especially vulnerable to extirpation.
S2 – Imperiled	Rare due to very restricted range, very few populations (often 20 or fewer). In steep declines and very vulnerable to extirpation.
S3 – Vulnerable	Restricted range, relatively few populations (often 80 or fewer). Recent and widespread declines make them vulnerable to extirpation.
S4 – Apparently Secure	Uncommon but not rare. There is some cause for long-term concern due to declines or other factors.
S5 – Secure	Common, widespread, and abundant in the province.
Breeding Status Qualifiers	
B	Breeding population of the species in the province.
N	Non-breeding population of the species in the province.
Status In Canada (COSEWIC Rankings)	
Endangered	Lives in the wild in Ontario but is facing imminent extinction or extirpation.
Threatened	Lives in the wild in Ontario, and is likely to <i>become</i> endangered if steps are not taken to address threatening factors.
Special Concern	Lives in the wild in Ontario, and may <i>become</i> endangered or threatened, due to a combination of biological characteristics and identified threats.

This Guide features some of the common, endangered, and rare species concentrated on the Napanee Plain of the Great Lakes region. These plants and animals contribute to the rich biodiversity of this unique alvar habitat.

ONTARIO CONSERVATION STATUS: S4B

BROWN THRASHER

Toxostoma rufum

Size: Slightly larger than a robin, 29 cm

Description: They have rufous wings and back, and whitish streaked underparts, yellow eyes, and a downturned bill.

Song: A seemingly random double phrases often mimicked from other birds.

Fact: A repertoire of over 1000 songs!



FIELD SPARROW

Spizella pusilla

Size: Slightly bigger than a chickadee, 12 - 15 cm in length

Description: It has brown upperparts and greyish, unstreaked underparts. It has a rusty cap, pink bill and white eye ring.

Song: A series of whistled notes that speed up like a ping pong ball bouncing.

Fact: They have multiple nests in the breeding season; early on, they are on the ground, later, up in trees.



ONTARIO CONSERVATION STATUS: S4B

UPLAND SANDPIPER

Bartramia longicauda

Size: Like a long-legged mourning dove,
28 - 32 cm

Description: Long yellow legs, upperparts are brown and dark spotted, underparts are pale. It has a white chin, neck and throat, with dark cap and very large dark eyes.

Song: Call is known as a wolf whistle, a long ascending whistle followed by a second descending call.

Fact: They scrape out multiple nests in the ground, but only use one.



ONTARIO CONSERVATION STATUS: S4B STATUS IN CANADA (COSEWIC): Special Concern

GRASSHOPPER SPARROW

Ammodramus savannarum

Size: Slightly smaller than a chickadee, 11 cm

Description: It has brown upperparts and paler, unstreaked underparts. It has a striped crown with a “flat” head and an orange patch in front of the eye.

Song: Buzzy sounding “tik tuk zeeeeeee” similar to a grasshopper.

Fact: Grasshopper Sparrows sound like, and eat grasshoppers!



ONTARIO CONSERVATION STATUS: S4B
STATUS IN CANADA (COSEWIC): Threatened

BOBOLINK

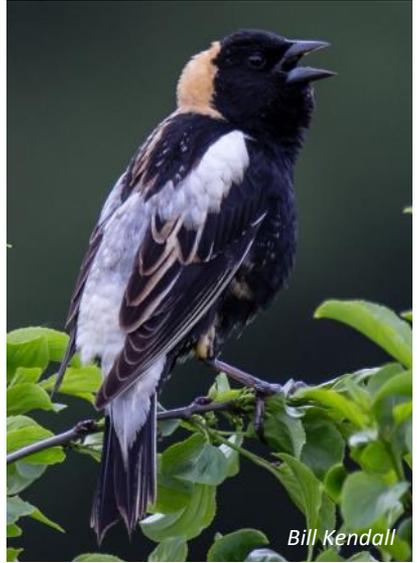
Dolichonyx oryzivorus

Size: Slightly smaller than a robin,
15 - 21 cm

Description: Males are mostly black with a creamy to yellow hood. They have white shoulders and streaks on their back. Females are mostly light brown in colour with black streaks on back of their head.

Song: A metallic, bubbly, rambling song, "bob-o-link pink pank pink."

Fact: Bobolinks nest on the ground. An adults weighs the same as 8 quarters!



Bill Kendall

EASTERN MEADOWLARK

Sturnella magna

Size: Similar to a robin in size, 19 - 28 cm

Description: It has a yellow throat, chest, and belly, black "V" across chest. Head has a black crown and eye stripes, yellow in front of eye.

Song: A pure, melancholic whistle (3 to 5 notes that drop in pitch); "see you see yer," "spring is here."

Fact: Meadowlarks are not larks at all, but blackbirds!



Larry Kirtley

ONTARIO CONSERVATION STATUS: S2B
STATUS IN CANADA (COSEWIC): Endangered

LOGGERHEAD SHRIKE

Lanius ludovicianus

Size: Slightly smaller than a robin,
20 - 23 cm

Description: It has grey upperparts with black wings, tail and mask. Underparts are white. It has a large head with a heavy, hooked bill.

Song: The song is rarely heard. Simple one or two mechanical calls.

Fact: *They can kill prey as large as themselves.*



ONTARIO CONSERVATION STATUS: S2N
STATUS IN CANADA (COSEWIC): Special Concern

SHORT-EARED OWL

Asio flammeus

Size: Medium to large bird of prey,
34 - 43 cm

Description: It is mottled tawny to brown, barred tail and wings with significantly streaked breast, round buff facial disk, and yellow eyes with a black colouring around them.

Song: It has several calls including a scratchy bark and raspy "waowk waowk" and "toot toot toot toot."

Fact: *They nest on the ground and line their nest with downy feathers.*



ONTARIO CONSERVATION STATUS: S5



POVERTY OATGRASS

Danthonia spicata

Size: Up to 30 cm in height

Description: Clump-forming, cool-season grass. Basal leaves are curly.

Habitat: Dry and open fields.



CREeping JUNIPER

Juniperus horizontalis

Size: Less than 30 cm in height

Description: Evergreen with opposite leaves: small, scale-like and overlapping. Cones (6 – 10 mm) are round, berry-like and become fleshy as they mature from brown scales to a blue berry.

Habitat: Moderate confinement to alvars (50 - 70%) and can be found in open alvar habitats including alvar pavements.



EASTERN RED CEDAR

Juniperus virginiana

Size: Up to 10 m in height

Description: Bluish-green leaves, sharply pointed needles and softer, more rounded scale leaves. Even though its common name is Eastern Red Cedar, it is a juniper, not a true cedar.

Habitat: Open areas and field edges.

ONTARIO CONSERVATION STATUS: S5



UPLAND WHITE GOLDENROD

Also known as: Upland White Aster

Solidago ptarmicoides

Size: Up to 60 cm in height

Description: Showy white flowers. Blooms July to September.

Habitat: Dry and open fields. Extremely confined to alvars with 86 – 100% of occurrences in the Great Lakes region.



EARLY SAXIFRAGE

Micranthes virginiensis

Size: 10 - 25 cm in height

Description: Flowers are white; symmetrical with 5 petals. Blooms April to May.

Habitat: Open shallow soils and pavement edges; also occurs on granite. 50 - 70% of occurrences are in the Great Lakes region on alvars.



WILD BERGAMOT

Monarda fistulosa

Size: 60 - 90 cm in height

Description: Flowers are pink to purple, irregular, and bloom in solitary clusters at the end of a branching stem. Blooms July to August.

Habitat: Commonly found on alvars, meadows with dry conditions, prairies, woodlands and savannas.

ONTARIO CONSERVATION STATUS: S5



Todd Norris

BICKNELL'S GERANIUM

Geranium bicknellii

Size: Up to 10 - 50 cm in height

Description: Flowers have 5 petals, are symmetrical and magenta-pink to whitish-pink. Petals are notched at their tips. Flowers are usually found in pairs on a long flower stalk. Blooms are from May to September.

Habitat: Open, rocky areas, dry meadows, rock outcrops, and open woods.



Todd Norris

BALSAM GROUNDSEL

Packera paupercula

Size: 10 - 45 cm in height

Description: Flowers are yellow, symmetrical, with 7 or more petals. Flowers are in clusters and daisy-like. Blooms from June to August.

Habitat: Rocky areas and meadows. Moderate confinement to alvars; 50 - 70% of occurrences are in the Great Lakes region on alvars.



Todd Norris

CANADA BLUETS

Houstonia canadensis

Size: 10 - 25 cm in height

Description: Perennial, thin narrow short basal leaves, opposite arrangement with a finer soft hair covering. White, four petalled flowers, lilac or purple.

Habitat: Found on rocky areas, limestone, in open areas. Can be found in fields, savannas.

ONTARIO CONSERVATION STATUS: S4



HAIRY BEARDTONGUE

Penstemon hirsutus

Size: 30 - 92 cm in height

Description: Flowers are light violet to violet in colour, trumpet-shaped and with 5 petals. Blooms from June to July.

Habitat: Found in shrub and tree alvars, and commonly found on the alvar habitat of the Napanee Plain and the Prince Edward Plain of the Great Lakes region.



NARROW-LEAVED VERVAIN

Verbena simplex

Size: 30 - 60 cm in height

Description: Flowers are tube shaped, purple or lavender with 5 petals and arranged on a spike. Blooms from May to September.

Habitat: Open dry conditions. High confinement to alvars, 71 - 85% of occurrences in the Great Lakes region on alvars.



EARLY BUTTERCUP

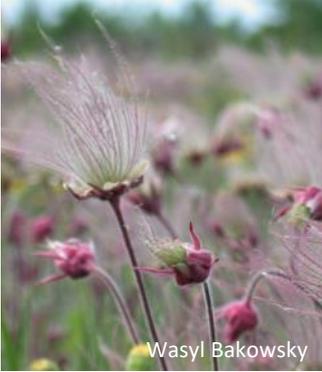
Ranunculus fascicularis

Size: 10 - 25 cm in height

Description: Flowers are single and yellow; 5 petals; symmetrical; shiny above and pale below. Blooms March to May.

Habitat: Found on open alvar grasslands.

ONTARIO CONSERVATION STATUS: S4



THREE-FLOWERED AVENS

Also known as: Prairie Smoke

Geum triflorum

Size: 15 - 45 cm in height

Description: Flowers are reddish-pink or purple, tubular in shape, with 5 petals. Flowers are in groups of 3 and nodding. Blooms May to June.

Habitat: Open rocky areas and grazed fields.



FALSE PENNYROYAL

Trichostema brachiatum

Size: 15 - 50 cm in height

Description: Flowers are pale blue; showy; 5 petals; nearly symmetrical; long, bell-like; occur in leaf axils (between leaf and stem). Blooms July to September.

Habitat: Extreme confinement to alvars; occurrences in the Great Lakes region on alvars.



SMALL SKULLCAP

Scutellaria parvula

Size: Up to 20 cm in height

Description: Flowers are irregular and tubular, purple with dark blue spots on the lower lip. The stem is square and densely haired. Blooms from May to July.

Habitat: Alvar pavement, and temporarily water-filled depressions. High confinement to alvars; 71 - 85% of occurrences in the Great Lakes region.

ONTARIO CONSERVATION STATUS: S2



TINY MOUSETAIL

Myosurus minimus

Size: 5 to 15 cm in height

Description: Narrow, linear, leaves occurring around the base of the plant only. Flowers and seed cones extend vertically. Symmetrical green-yellow flowers with 5 sepals. Seed cone 2 - 5 cm long.

Habitat: Found on limestone in open alvar areas.

ONTARIO CONSERVATION STATUS: S1 COSEWIC (NATIONAL) STATUS: Endangered



JUNIPER SEDGE

Carex juniperorum

Size: Up to 30 cm long

Description: Grows in tufted clumps or on its own. This plant has long thin leaves that are typically matted in the surrounding vegetation. A short few-flowered seed spike is present near the base of the plant.

Habitat: Found growing over limestone in grassy or red cedar dominated areas.

ONTARIO CONSERVATION STATUS: S5



Kurt Hennige

BLACK SWALLOWTAIL (female)

Papilio polyxenes

Size: Large; wingspan 52 - 94 mm

Description: It is black with rows of yellow spots on wing borders. The lower wings have blue spots. The spots are larger in females than males. It has a prominent tail, and orange "eyespot" at the center of the bottom wing.

Caterpillar Host Plant: Parsley family



Kurt Hennige

AMERICAN LADY

Vanessa virginiensis

Size: Medium; wingspan 37 - 56 mm

Description: Their upper parts are tawny brown and orange, the underside is complex brown, with a white and pink pattern with large spots.

Caterpillar Host Plant: Asters



Kurt Hennige

COMMON RINGLET

Coenonympha tullia

Size: Small; wingspan 27 - 39 mm

Description: They are highly variable, usually with brownish-orange upper wings and grey lower wings, with one dark-ringed spot on the upper wing.

Caterpillar Host Plant: Grasses such as bluegrass.

ONTARIO CONSERVATION STATUS: S5



Kurt Hennige

MEADOW FRITILLARY

Boloria bellona

Size: Medium; wingspan 34 - 44 mm

Description: Its upper wings are light orange with black spots. Its underside is a brownish-purple with an irregular white spot.

Caterpillar Host Plant: Violets



Kurt Hennige

TAWNY-EDGED SKIPPER

Polites themistocles

Size: Small; wingspan 19 - 28 mm

Description: Brownish-orange. Males have a brighter orange patch on the outer edge of their wing, females have a small orange patch or no patch at all.

Caterpillar Host Plant: Grasses such as a panic grass and crab grass.

ONTARIO CONSERVATION STATUS: S4



Kurt Hennige

ACADIAN HAIRSTREAK

Satyrrium acadica

Size: Small; wingspan 24 - 32 mm

Description: It has a grey underside with a row of black dots, as well as an incomplete row of orange spots, and one long tail.

Caterpillar Host Plant: Willows

ONTARIO CONSERVATION STATUS: S4



GIANT SWALLOWTAIL

Papilio cresphontes

Size: Largest butterfly in Canada;
wingspan 83 - 113 mm

Description: Their upper parts are dark brown to black with bands of yellow spots and underside is yellowish. It has a prominent tail with a spot. The larvae resemble a large bird dropping.

Caterpillar Host Plant: Prickly Ash

ONTARIO CONSERVATION STATUS: S3



JUNIPER HAIRSTREAK

Callophrys gryneus

Size: Small; wingspan 20 - 25 mm

Description: Underside of the wing is distinct apple green marked with white streaks. Its upperside is brownish-orange. It is unique to this area.

Caterpillar Host Plant: Eastern Red Cedar

ONTARIO CONSERVATION STATUS: S5



HAIRY SCREW MOSS

Syntrichia ruralis

Description: Tuft and mat forming with 4 - 6mm long, wide leaves that end in a rounded or blunt tip. Extending from the leaf tip is a white hair. When dry, the leaves fold up but when moist, they unfold and resemble a star.

Habitat: Found on limestone in open areas amongst lichen and vegetation.



FRIZZLED TWISTED MOSS

Tortella tortuosa

Description: Colonies with 4 - 6 mm thin, long leaves and pointy tips. When dry, the leaves are contorted and spirally, curled upwards. When moist, they unravel but still display a spiral orientation like a tornado.

Habitat: Found on limestone in open areas amongst lichen and vegetation.



GREEN-TONGUE LIVERWORT

Marchantia polymorpha

Description: Moss. Green, flat, 8 - 10 mm wide, growing directly on soil. Cup shaped "receptacles" located on the upper surface. Sometimes having an extending stalk and umbrella (male and female "flowers").

Habitat: Found on limestone soil in open areas amongst vegetation.

ONTARIO CONSERVATION STATUS: S4S5



ROSETTE PIXIE-CUP

Cladonia pocillum

Description: Lichen. Primary body forming ruffled circular patches 2 - 5 cm around with short vertical cups/goblets 1 - 2 cm tall. Cups have granular green patches on the surface inside the cup and on the stem.

Habitat: Found on calcareous soil in exposed areas amongst mosses and vegetation.



SMOOTH PIXIE-CUP

Cladonia magyarica

Description: Lichen. Primary body forming scattered lobed patches on the soil with short vertical cups/goblets 1 - 3 cm tall. Cups have smooth green patches on the surface inside the cup and on the stem.

Habitat: Found on calcareous soil in exposed areas amongst mosses and vegetation.

ONTARIO CONSERVATION STATUS: S3



BLUSHING SCALE

Psora decipiens

Description: Lichen. Small, scattered, round 3 - 6 mm, smooth, pinkish-green patches on soil with a white margin and marginal black fruiting bodies.

Habitat: Found on bare calcareous soil in exposed areas amongst mosses and vegetation.

ONTARIO CONSERVATION STATUS: S2



Chris Lewis

JELLY-STRAP

Thyrea confusa

Description: Lichen. Star-shaped, black (gelatinous when wet), branching and lobed body growing attached or loose over rock. Bluish black in colour when dry resulting from a white powdering along lobe margins.

Habitat: Found directly on calcareous rock in vernal wet areas.

ONTARIO CONSERVATION STATUS: S1S2



Chris Lewis

SOIL RUBY

Heppia adglutinata

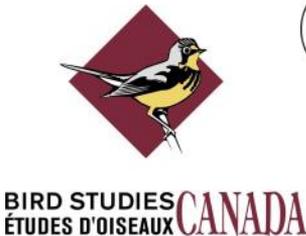
Description: Lichen. Small, scattered, flat, olive patches on soil, with a cracked upper surface and a central red smooth circular patch. 1 - 7 mm in size.

Habitat: Found on bare calcareous soil in exposed areas amongst mosses and vegetation.

NAPANEE PLAIN

JOINT INITIATIVE

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