

WORKING TO
PROMOTE



BIODIVERSITY



About ALUS



We support conservation & regenerative agriculture

ALUS supports restoration and farming practices that improve the water cycle, reduce GHG emissions and sequester carbon while enhancing soil health and biodiversity.



We partner with local scientists

ALUS partners with academic researchers across the country to study how our projects are restoring and improving biodiversity.



We build links between farmers & researchers

ALUS brings together our participants and researchers to share and grow expertise around biodiversity and ecosystem services.



We foster community resilience

ALUS helps farmers and ranchers build nature-based solutions on their land to sustain agriculture and biodiversity for the benefit of communities and future generations.



We're community-developed & farmer-delivered

ALUS empowers community leaders and producers to address local and regional environmental priorities on working landscapes.



We have robust guiding principles, which are tried and tested

Now with more than a thousand farms and ranches in the program, ALUS has proven our approach is successful, adaptable and sustainable.

Turning Problems into Paradise: How farmers are fostering biodiversity

When Chris and Vivian Crump began to raise cattle and farm the land in Ilderton, Ontario two decades ago, it was a mucky mess. Built on hill, runoff washed manure off the Crumps' land, directly into the headwaters of the Sydenham River.

After digging a pit to hold runoff, Chris and Vivian started looking for a permanent solution. Together with the ALUS Middlesex program, the St. Clair Region Conservation Authority and Ontario Soil and Crop Improvement Association, the Crumps installed a grassed waterway, a windbreak, a clean water diversion project, and reconstructed their largest water control pond to capture manure runoff.

PROJECT RESULTS & BENEFITS:

- Created habitat for pollinators and wildlife
- Stabilized banks and preventing erosion of topsoil
- Provided clean water for livestock and downstream users
- Improved pastureland for cattle

"I want people to come and see what farming is really about. I want them to see the cows, the pasture and how it's in harmony with the river land, to hike through our land and see what grows here." ~Vivian Crump



Top: Chris & Vivian Crump. Above: The headwaters for the Sydenham River, below the Crumps' property. Photo credits: Huff Media.



Marc Bercier next to his wetland project after receiving the 2020 Dave Reid Award for producer innovation. Photo credit: Jan Amell Photography.

Marc Bercier is an ALUS Ontario East participant and PAC member who owns and operates La Ferme Agriber along with his family, Chantal and Guillaume Bercier.

Bercier implemented an extensive ALUS wetland project with four interconnected settling ponds and a riparian buffer planted with native trees, berry shrubs and flowering plants. Plant species for the buffer were informed by local First Nations' traditional knowledge of native species.

The ALUS project is already producing better fish, bird and pollinator habitat, while helping to control gully erosion and produce cleaner water for the nearby Scotch River.

"We can be very quick to destroy nature, but take my pond: a year after it was dug, I could see nature change, and it's very, very rewarding," he says. "Two years after that pond was built, we could see muskrats and birds [returning]."
~ Marc Bercier, to TVO journalist, Marsha McLeod



Muskrat swimming. Photo credit: Pixabay.

Building bridges between communities, farmers, and scientists for **BIODIVERSITY**

The 2020 Weston Family Research Innovation Award

The award was presented to Dr. Amy Newman, Associate Professor in the Department of Integrative Biology at the University of Guelph. The award recognizes researchers or ALUS Canada partners for excellence and innovation in scientific research on ecosystem services produced on farmland for the broader public good.

What Dr. Newman studies:

- How changes in the natural world put stress on the physiology and behaviour of various butterfly, bird and small mammal species
- Dr. Newman uses lab and field techniques to understand how agricultural practices affect these biodiverse populations and the intricate web of life in the natural world.



Dr. Newman with her award. Photo credit:ALUS.

"It is an honour to be recognized with the Weston Family Ecosystem Innovation Award . . . it is fundamentally important to increase and protect biodiversity as an ecosystem service. I love being out in the field and actually chatting with producers who are excited about the interface between restoration, preservation and agricultural production."

~ Dr. Amy Newman



ALUS Coordinators participate in a bat box building workshop.
Photo credit: Christine Campbell.

ALUS is community-developed and farmer delivered:

ALUS Coordinators play an invaluable role in creating partnerships, hosting events, and mobilizing projects

ALUS Coordinators support landowners in the maintenance & management of projects. They are on the front lines:

- Empowering landowners to improve management practices & to increase ecological and economic sustainability
- Assessing & monitoring sites, planning and designing projects
- Supporting Partnership Advisory Committees (PACs)

AND SO MUCH MORE!



ALUS Coordinator at Northern Sunrise, Becky Devaleriola, discusses a project with ALUS participant, Annette Rosendahl. Photo credit: ALUS.

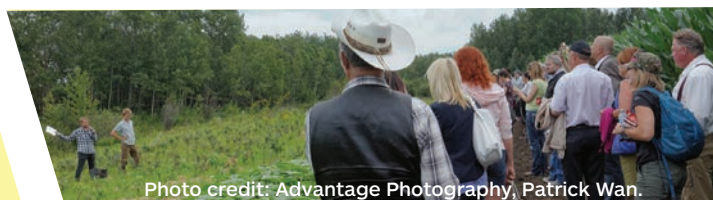


Photo credit: Advantage Photography, Patrick Wan.

An ALUS eco-buffer project next to the Edmonton Corn Maze brought together municipal leaders, agricultural producers, and various partners. AWES technician, Luke Wonneck, and ALUS Coordinator, Darren Haarsma, explained how the eco-buffer protects nearby Wedgewood Creek, improves water quality downstream, and produces habitat for pollinators, birds, & beneficial insects.

Prairie Hub Manager, Paige Englot, ALUS WUQWATR Coordinator, Folly Baugh, and ALUS participant and PAC member, Bob Wilson, install a duck nesting tunnel in a wetland.

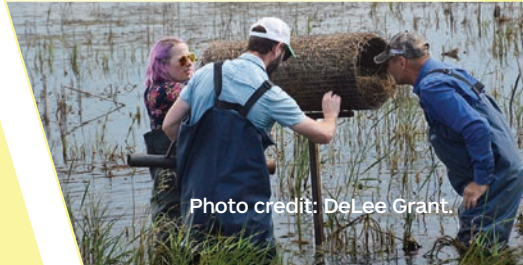


Photo credit: DeLee Grant.

MACDOUGALL ECOLOGY LAB

Partnering with ALUS to study the biodiversity of Tallgrass Prairie

The MacDougall Ecology Lab collaborates with ALUS to study how restoring farmland reduces environmental impacts through ecosystem services, such as biodiversity, carbon sequestration, and nutrient retention.



"If 2% of a farm's acres are able to return to Tallgrass Prairie habitat, this can cause an explosion of diversity – from plants to insects and birds."
~ Dr. Andrew MacDougall

Tallgrass Prairie

is in the **TOP 10** ecoregions for reptiles birds, butterflies, and tree species

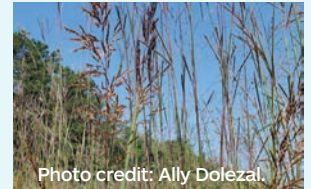


Photo credit: Ally Dolezal.

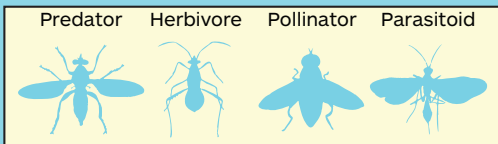


Above: Annalisa Mazzorato, Sam Kloke, Brianna Maher, & Brock Roth at an ALUS farm in southern Ontario. Photo credit: Ally Dolezal. Top left: Dr. Andrew MacDougall. Photo credit: ALUS.

ALEKSANDRA DOLEZAL'S MASTER'S PROJECT

Issue: The global decline of insects due to chemicals inputs & habitat loss

Project: Looked at the quantity and diversity of **4 categories of insects** within an agricultural context



The four categories of insects being studied.



Photo provided.

Ally Dolezal out collecting in the field. Having completed her MSc in Ecology, she is continuing her PhD studies with Dr. MacDougall.

Results:

Abundance and richness and activity of beneficial insects is greatest in Tallgrass Prairie margins = more beneficial insects and less plant damage

Conclusion:

Small habitat improvements, ie. addition of Tallgrass Prairie, can benefit insect populations and ecosystem services (e.g. herbivore suppression and pollination) across the landscape

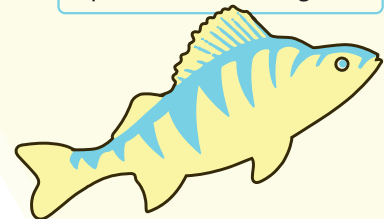
DR. KEVIN MCCANN + HIS TEAM STUDY AQUATIC INSECTS & FISH

Riparian buffers provide two waves of insects that impact fish & other animals



2nd WAVE = AUTUMN
land insects fall into water

1st WAVE = SPRING
aquatic insects emerge first



2x

MORE BIODIVERSITY
of insects on
ALUS FARMS
than non-ALUS farms

This research was undertaken thanks in part to funding from the Canada First Research Excellence Fund.

Stories of landowner stewardship from Alberta's Modeste watershed

"Theresa and I like to go for nature walks along the creek, and we can see that moose and deer have been coming back to the area, as well as two new beaver dams. The water is cleaner, too."

~ Charlie Maltais

Charlie and Theresa Maltais raise mixed breed cattle in central Alberta. A large, branched waterway that flows into Modeste Creek runs through their scenic property, but creek banks were eroded and compacted due to cattle use. This uneven terrain can break down soil aggregates and cause topsoil to run off into the water.

Since installing riparian fencing through ALUS Brazeau, the Maltais family have noticed better plant cover in these fenced areas. As grasses, shrubs, and trees recover, an increasingly diverse and healthy ecosystem will offer habitat for pollinators, birds, and a wide array of wildlife.



Above and above left: Duane Movald and Charlie Maltais stand next to their riparian fencing projects. Photo credits: Keith Ahlstrom, Ken MacInnis.

Duane Movald runs a fifth-generation mixed family farm with his parents near Breton, Alberta. In 2017, he joined the Partnership Advisory Committee (he was elected the ALUS Brazeau PAC Chair) and became a landowner partner.

The Movalds have installed riparian fencing along their wetland, encouraging riparian grasses and sedges to re-establish along the wetland's edge, preventing erosion, and regulating water flow. Movald says of ALUS, "I like that the program calls on those who know the land better than anyone else to work with nature and produce ecosystem services that truly have an impact."

**>1,000
LANDOWNERS**
are promoting
biodiversity
through ALUS.
The results are
tangible and
sustainable.

"We can already see a difference, with more birds and pollinators, less erosion, cleaner water and just a healthier environment all around" ~ Duane Movald

EDGE EFFECTS AND ECOTONES:

WHERE AGRICULTURE & NATURE MEET

The transition area between two ecosystems is called an ECOTONE. It is often more diverse than the sum of the two separate ecosystems. Some species rely on these transition areas for raising their young (e.g. waterfowl, amphibians)

WATER

RIPARIAN BUFFER OR
MARGINAL LAND

PRAIRIES
or CROPS

FARMERS NURTURE NATURE'S ECOTONES

Happiness by the Acre is a mixed farming operation, operated by Sarah and Marcus Riedner. Located in Alberta's Red Deer watershed, the Riedners joined ALUS Mountain View County to plant ecobuffers and shelterbelts in 2020.

RESULTS:

- Soil samples show that organic matter across the farm has increased by an average of 7%.
- The Riedner's ALUS projects have captured 7.500 metric tons of CO₂eq
- An increase in the amphibian populations in the protected wetland areas, including Boreal chorus frogs, wood frogs and a strong tiger salamander population.

"Biodiversity has expanded, particularly with an explosion in the amphibian populations in the protected wetland areas." ~ Marcus Riedner

ALUS recognizes the important role farmers and ranchers play as stewards of the land and empowers them to deliver nature's benefits on the working landscape.



Marcus and Samuel Riedner walk beside their native eco-buffer planted through the ALUS Mountain View County program. Photo Credit: Noel West.



Central Alberta is the furthest part of the range for the western tiger salamander. This amphibian relies on both land and water as it breeds in ponds and overwinters in small mammal (e.g. gophers) burrows. Photo Credit: Kris Kendell, ACA.

BIODIVERSITY SUSTAINS AGRICULTURE, WILDLIFE AND NATURAL SPACES

Essential for agriculture

Biodiversity is the foundation that supports all life on land and below water. It is the multidimensional interactions within ecosystems and among species.

Biodiversity supports ecosystem services, which are essential benefits that support human and natural communities.

ALUS Farms and Non-ALUS Farms

Number of distinct bird species



76

on
ALUS farms



48

on
non-ALUS farms

Surveys by the Newman Lab in 2020 detected higher biodiversity on ALUS farms.

ALUS Farms and Non-ALUS Farms

Soil microorganism diversity



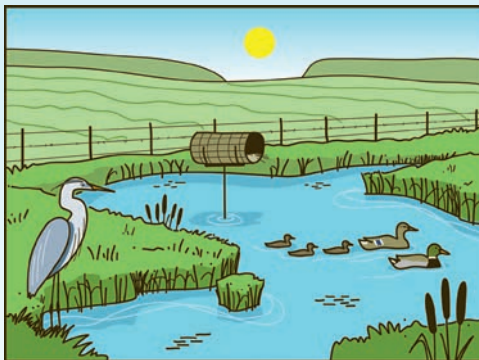
Farm with Restored
Prairie
(e.g. ALUS farm)



Farm with only
conventional
agriculture

Soil microorganisms have higher diversity in restored prairies compared to conventional agricultural systems.

TYPES OF PROJECTS



RESTORED AND
CONSTRUCTED WETLANDS



RESTORED NATIVE
ECOSYSTEMS



ECOBUFFERS

SOWING THE SEEDS OF CONSERVATION

COLLECTING NATIVE SEEDS TO ESTABLISH DEEP-ROOTED DIVERSITY

STEWARDSHIP STUDENTS TEAM UP WITH ALUS

Environmental Stewardship students from Norfolk and Elgin Counties took part in seed collection field days at local ALUS farms. Two local naturalists, Leanne Gauthier-Helmer (Norfolk) and Mary Gartshore (Elgin) instructed the students about how to collect and process seeds from native wildflowers.

ALUS Norfolk participants Steve and Anita Buehner welcomed students and other PAC members to collect seeds from brown-eyed Susan and showy tick trefoil at their Bonnieheath Estate Lavender and winery, where more than 12 acres has been restored to Tallgrass Prairie. milkweed seed pods were also collected from a nearby ALUS project at Colourful Gardens Ltd, a greenhouse owned by Glen and Angelle Van Kleef.

In Elgin County, ALUS participant Stephen Hotchkiss welcomed students to his 300-acre farm, where he has 40 acres of ALUS projects. The students collected seed from a range of native prairie and wildflower plants, such as big bluestem grass, Indian grass, brown-eyed Susan, hoary vervain and milkweed.

"Native plants provide almost everything wildlife needs—good-quality food, forage, nesting, bedding and shelter." ~ ALUS Elgin Program Coordinator, Alyssa Cousineau



ALUS Norfolk participant Angelle Van Kleef (left), helps workshop participants collect seed from her 12 acre native Tallgrass Prairie site.



Showy tick trefoil's sticky seed clings to clothing, as local students discovered while collecting native wildflower seed at ALUS Norfolk participants Steve and Anita Buehner's property. *All photos were taken by Leanne Gauthier-Helmer.*

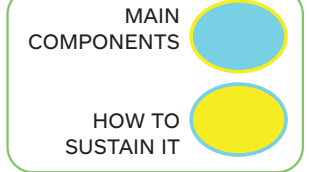


Seeds such as the milkweed collected above will be used by ALUS Elgin and ALUS Norfolk to maintain species diversity throughout their ALUS projects.

BIODIVERSITY 101

ABOUT BIOLOGICAL DIVERSITY

BIODIVERSITY FORMS THE BASIS FOR ALL OF THE ECOSYSTEM SERVICES THAT BENEFIT HUMANS AND THE PLANET



"To know how effective you are at restoring biodiversity, you really need to be looking at the full food web and not just sampling any single group. It's not enough to go out and count birds, or just look at pollinators. You want to be looking at the full suite, and by that I mean plant life, microbial life, in addition to vertebrates, and invertebrates."

~ Dr. John Fryxell, Executive Director Biodiversity Institute of Ontario

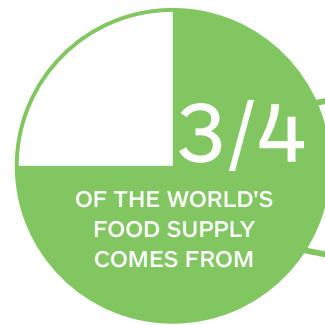
WHY **BIODIVERSITY** MATTERS



WETLANDS
SUPPORT AS
MANY SPECIES AS
RAINFORESTS OR
CORAL REEFS

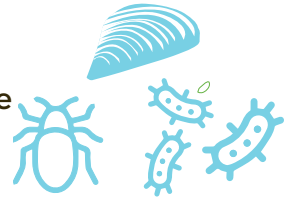
>50%
of the Earth's
wetlands have
been removed

ALUS targets areas with significant wetland loss. By working proactively with agricultural producers, ALUS is turning the clock back for many species by rebuilding habitat on working land in significantly altered landscapes.



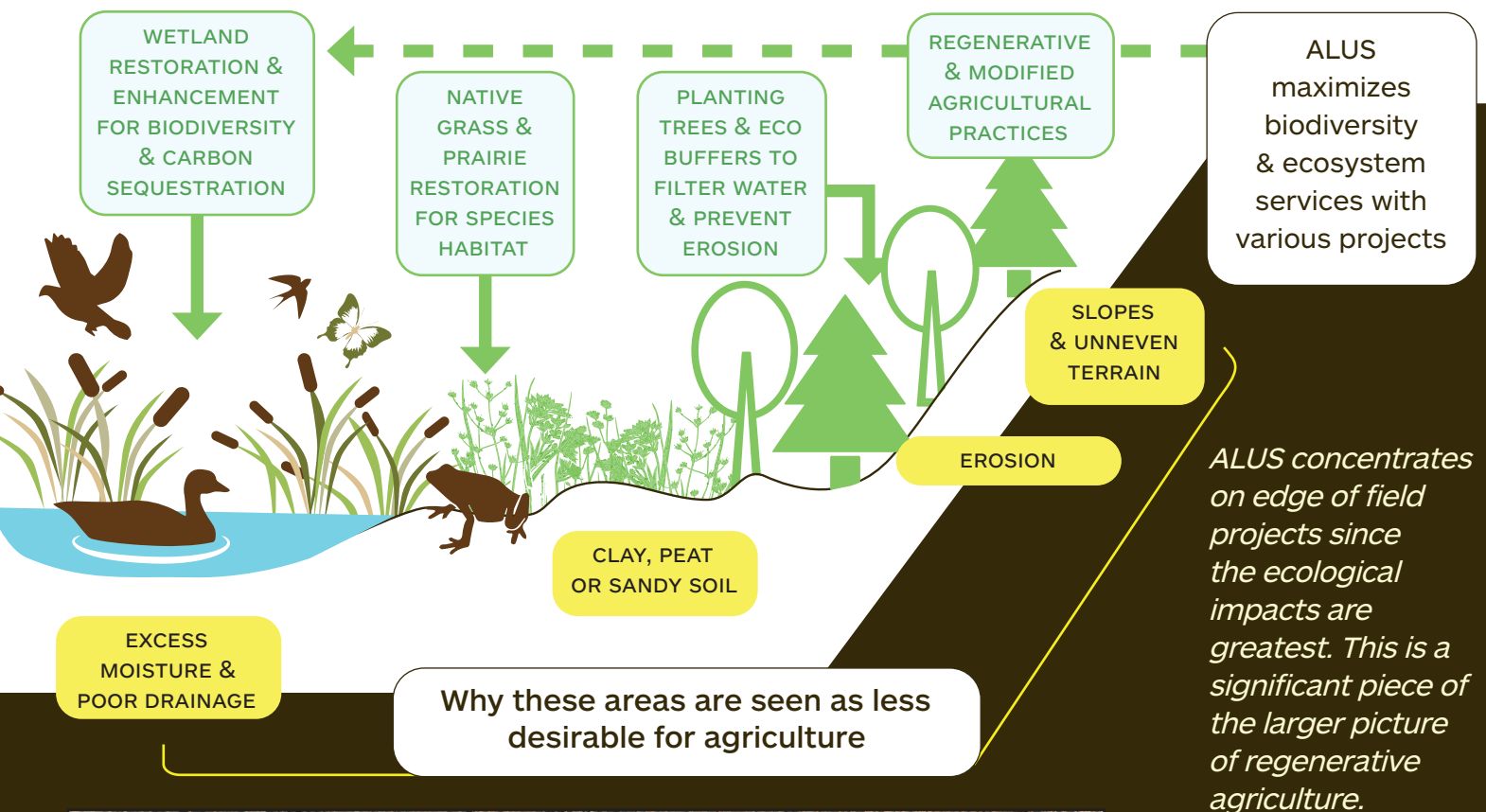
DIVERSITY

makes us less
vulnerable to invasive
species, harmful
insects, and disease



FINDING LIFE ON THE MARGINS:

Restoring marginal lands which are rich in diversity



ALUS' marginal land projects are critical for wetland habitat and biodiversity.
Photo Credit: Bill Trout.

POLLINATORS

How ALUS benefits bee, bird & beetle biodiversity

POLLINATION SERVICES

MEASUREMENT WITH DR. TOM WOODCOCK

The Project:

How pollinator abundance and diversity affects flower pollination on 12 sites, including ALUS native prairie projects

Findings:

**ALUS FARMS
AMONG HIGHEST
REPRODUCTIVE RATE**

supported
pollinators

helped
adjacent
crops

**ALUS' conservation allies &
biodiversity partners across Canada:**

Partnership spotlight:

THE CANADIAN WILDLIFE FEDERATION (CWF)

- o CWF and ALUS are working together to increase monarch butterfly habitat in Ontario. This will likely involve customizing pollinator projects by increasing the number of flowering plants.
- o A founding partner in the new Outaouais, QC program, CWF is helping ALUS to enhance ALUS program criteria to better guide conservation efforts for 13 species-at-risk (SAR) within the Outaouais region.



Photo credit: Ally Dolezal.



3/4

of flowering plants
in Canada need
pollinators



CENTRAL ECOLOGICAL SERVICE

because most
species rely on
plants, and plants
need pollinators



70%

of pollinators in
Canada are bees

ALUS' Restored Tallgrass Prairie lands provide critical habitat zones for many pollinators in southern Ontario, including the Monarch butterfly.



Species of concern

Photo credit: Ally Dolezal.

Together with CWF, ALUS works to provide flowering plants, including the Common milkweed needed by Eastern monarchs to feed and develop.

"We often think of ecological services in terms of what is helpful for humans, but we should be considering the broader ecosystem or communities. Wild plant communities have different requirements and require a large number of pollinators."
~ Dr. Tom Woodcock

BATS, BOBOLINKS, BADGERS & biodiversity

DID YOU KNOW?

Bobolinks help crops by feeding on a wide variety of harmful insects



BOBOLINKS

The Project

Farmers delay their hay cut for breeding Bobolink and other grassland birds (e.g. Eastern Meadowlark)

Partners ECCC's Species at Risk Partnerships on Agricultural Lands & the Island Nature Trust in PEI; Species at Risk (ON) & Bird Studies Canada in southern Ontario.

The Issue

Bobolinks are threatened (88% decline over 40 years) due to loss of grassland habitats, early haying, and pesticide use

How the Program Works

- The program enrolls farmers to delay cutting their hay in their long-term hay fields until July 16th, so young can fledge the nest
- Incentives are given to farmers to help cover potential losses as hay quality can decline if left too long

194-231



Estimated fledglings saved annually 2018-2020

BATS: ALUS FARMS BOAST BAT BIODIVERSITY



ALUS & Alberta Community Bat Program partnered with Lakeland College students to rebuild a bat roost on a farm near Vermilion, Alberta. Photo credit: Chris Elder.



8

BAT SPECIES FOUND ON ALL



28

ALUS FARMS

4

ARE ENDANGERED

Of the ALUS farms being studied by the MacDougall Ecology lab, all eight of Ontario's bat species – four of which are endangered – were found on all 28 farms.

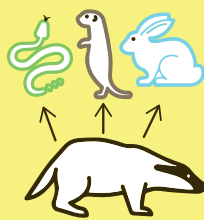
AMERICAN BADGER:

WORKING TO BETTER UNDERSTAND AN ENDANGERED SPECIES



ALUS works with the Badger Recovery Team to re-establish the badger in Ontario. The Badger Recovery Team is currently radio-tracking badgers on 28 ALUS Norfolk farms, to monitor their movements and study their habitat and habits.

HOW BADGERS BOLSTER BIODIVERSITY



Keep species like gophers, rabbits, venomous snakes, & insects in check



Build tunnels which are used by other animals and birds



Disperse seeds for plant growth

RAISING AWARENESS:

Communicating action for Species at Risk

Educational fact sheets on endangered fish

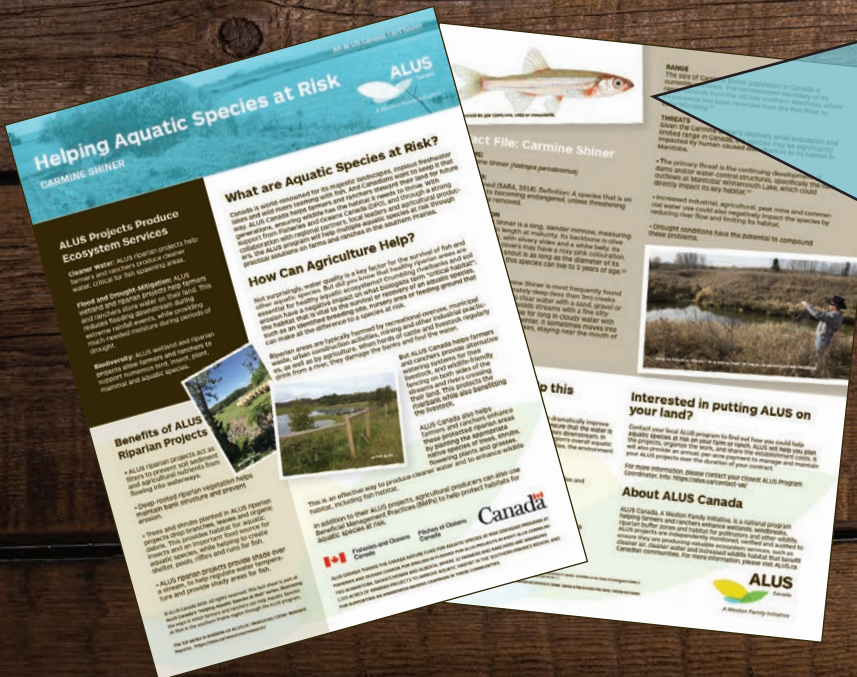
ALUS was
granted
\$983,000

**BY FISHERIES
& OCEANS
CANADA
(DFO)**

to improve
aquatic
habitat in the
Prairies

On the ground riparian
projects in 8 Prairie
communities

Fact sheets on how
landowners can help
endangered fish species

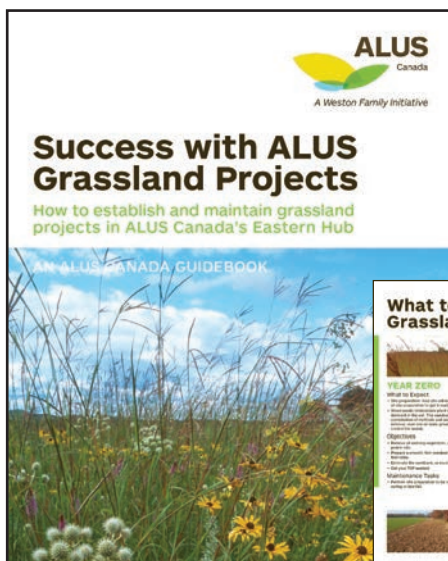


Carmine Shiner illustration by Joe Tomelleri.

**ALUS Species at Risk fact sheets explain
how farmers and ranchers can help
endangered fish species in the Prairies by
highlighting:**

- Species status
- Threats to specific species
- The role of agriculture in promoting species health and diversity

Guidebooks connect endangered habitats to threatened species



Our guidebooks on Grasslands, Wetlands, and other critical habitats are both practical and educational. As plant & water habitats are protected or re-established, many species — some of which are threatened — are given a place to live and thrive.



The dense blazing star is one of
numerous threatened plant species in
the Tallgrass Prairie (Pixabay.com).

ALUS Canada by the numbers

Snapshot of the ALUS impact on the ground

As of March 2021



**ALUS active in
6 provinces**



**31 ALUS
communities**
+4 since last year



**1,103
farmers & ranchers
participate in ALUS**
+244 since last year



**26,318 acres of
wetland-related
ecosystems**
+4,331 since last year



**24,572 acres of
pollinator habitat**
+4,417 since last year



**6,082 acres reforested
with native trees &
shrubs**
+874 since last year



**32,134 acres of
land enrolled in
ALUS**
+5,354 since last year



**Over \$12 M
invested by ALUS
Canada**
+2.3 M since last year



**Farmers, ranchers and
communities multiply
our investment on the
ground**

Total land under ALUS continual management and maintenance (125km²) is equivalent to a small National Park (Bruce Peninsula = 125km², Point Pelee 15 km², Prince Edward County 27km²).

GUIDING PRINCIPLES

The ALUS program rests firmly on eight core principles



Farmer-delivered

Agricultural producers are in a unique position to provide important solutions to some of the most pressing environmental challenges of our time, including climate change and biodiversity loss.



Community-developed

The ALUS program is flexible. It is designed to be customized by local communities to respect local agricultural and environmental priorities, and help create rural resilience.



Integrated

The delivery of the ALUS program is intended to complement existing conservation programs, including federal and provincial government policy frameworks.



Targeted

The ALUS program produces ecosystem services on marginal and ecologically sensitive parcels and on lands that can be managed in a different manner.



Accountable

ALUS projects are independently monitored, verified and audited by trusted farm organizations or credible institutions.



Science-based

Based on sound scientific principles and verification guidelines, ALUS provides valuable support and technical expertise for the design and implementation of green infrastructure projects and nature-based solutions.



Voluntary

Farmers and ranchers who choose to participate in the ALUS program have flexible agreements that suit their operation and offer them financial compensation for their ecosystem management.



Market-driven

The ecological services produced by ALUS projects have economic value on the marketplace, which ALUS is actively developing. Citizens, corporations and philanthropists invest directly in environmental stewardship.

Contact us:
INFO@ALUS.CA

To learn more about ALUS
and our programs, go to **ALUS.CA**

Front cover photo credits: Father and son and aerial shots by Keith Ahlstrom; moth by Ally Dolezal; bluebird by ALUS; bee from stock photo. Back cover: Keith Ahlstrom.

