

BIG RIVER CONNECTIVITY: Rewilding Iowa by Reconnecting the Mississippi-Missouri Basin

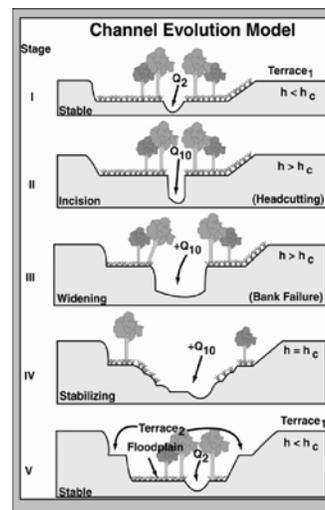
FUNDED BY THE BEWILDREWILD FUND,
IOWA NATURAL HERITAGE FOUNDATION



BeWild
ReWild

BWRW GUIDING VISION

- The land and the life in it can heal itself, with and without human help: a sense of TRUST in natural processes
 - Nature works despite us and without us
 - Adapting to climate change
 - The long term: centuries & millennia



BWRW GUIDING VISION

- Human land uses can be compatible with a functioning natural landscape
 - Rethinking stormwater management
 - Redesigning agriculture: regenerative & sustainable practices
 - Reduced consumption of energy & raw materials



BRC: THE CONCEPT & ITS IMPLICATIONS

- Reconnecting land and life across large distances
 - **CORES and CORRIDORS**
 - **APEX PREDATORS**

 - **SLOPE CLASSES & LAND USES:**
 - *>9% erodible and highly erodible surfaces: corridors*
 - **>20% ANNUAL RISK ("5-YEAR") FLOODPLAINS:**
 - *High risk of crop loss*
 - *Subject to erosion & deposits*
- **"Priority Rewilding Land"**





REWILDING: WHAT & WHY?

WHAT IS REWILDING?

- Wikipedia: *“large-scale conservation aimed at restoring and protecting natural processes and core wilderness areas, providing connectivity between such areas, and protecting or reintroducing apex predators and keystone species.”*
- Rewilding Europe: *“a progressive approach to conservation.... letting nature take care of itself, enabling natural processes to shape land and sea, repair damaged ecosystems and restore degraded landscapes.”*



- “Wildness, a quality, and wilderness, a place, are not the same thing.” HDT
 - It is NOT about protecting “wilderness” as a “pristine” place, untouched by humans
 - It IS about letting go of the need to control and dominate the natural world: TRUST

LEFT: Rainfall on a beach spontaneously sets up all the major features of a stream channel.
RIGHT: No one planted the spores of this Firedot Lichen on the fencepost.



- “...restoring a habitat, no matter how well intentioned, produces casualties. We set ourselves up as arbiters of what is good when often our standards of goodness are driven by narrow interests, by what we want.”
 - Robin Wall Kimmerer, *Braiding Sweetgrass*

LEFT: Rainfall on a beach spontaneously sets up all the major features of a stream channel.
RIGHT: No one planted the spores of this Firedot Lichen on the fencepost.



WHY REWILDING?

- Policy-driven conservation has weaknesses:
 - Lack of political will, public support, and/or funding
 - Varying execution of often great designs and plans
- The scale of need exceeds our capacity for
 - Human labor
 - Financing
 - Political foresight
 - Overcoming self-interest
- “Nature is not only more complex than you think, it is more complex than you can think.”
 - Frank E. Egler, plant ecologist



CORES: THE BASICS

- At least **10,000 acres** of adjacent land (in the Midwest)
 - Semicircular shape preferable
 - Buffer or edge protects the biodiverse core
 - Large predators: around 40,000 acres (female *Felis concolor*)
- PURPOSES
 - Biodiversity of all life forms: soil microbes, lichens, vascular plants, birds, herps, mammals, fish, mussels, arthropods....
 - Listed-species and declining species protections: recent studies on birds, insects
 - Endangered ecosystem conservation: prairie, savannah, wetland, forest types
 - Breeding & wintering territories
 - Ecosystem diversity



- **EXISTING PUBLIC LANDS:** where one or more tracts comprise 10,000 or more acres
 - Suitable as biodiversity cores: largely sheltered interiors
 - Chichauqua Greenbelt, Iowa River Corridor Wildlife Management Area, Shimek and Stephens State Forests, Union Slough, others
- **LARGE PRIVATE TRACTS**
 - Broken Kettle Grasslands, Whiterock Conservancy
- **LANDFORMS**
 - Loess Hills & Missouri River Valley



Low density residential development


Biodiversity hotspot

Agriculture


Biodiversity hotspot

Biodiversity hotspot

Buffer Zone
 (forestry, recreational activities)

Conservation Core

Buffer zone
 (forestry, recreational activities)

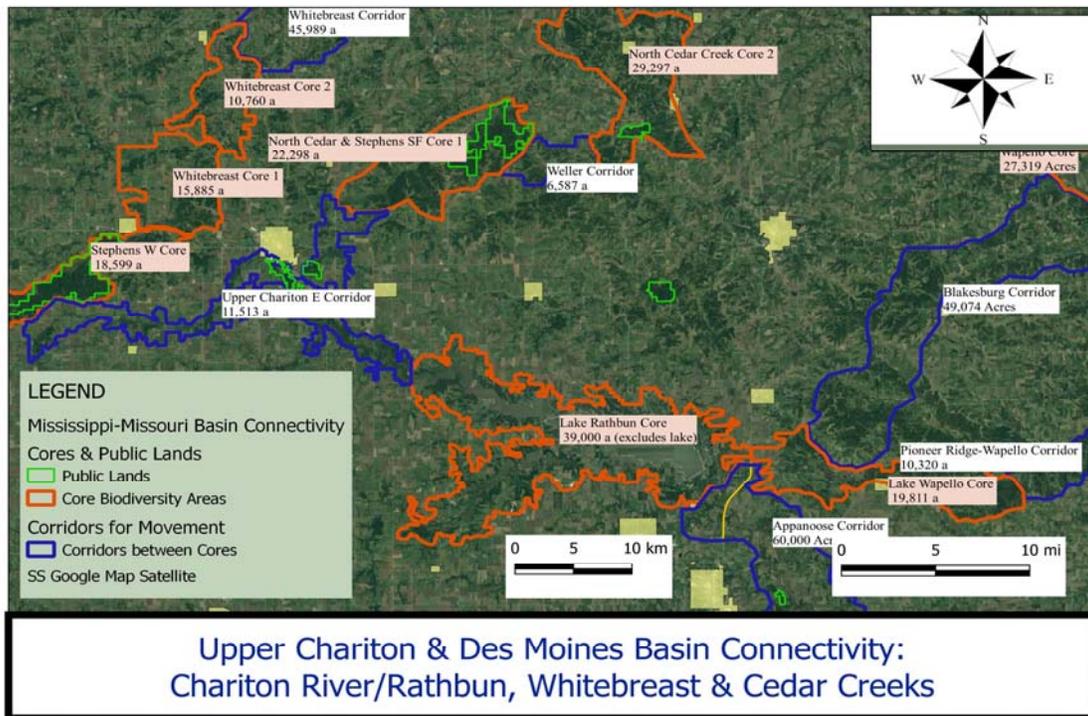
Corridor

Corridor

Urban area, roads

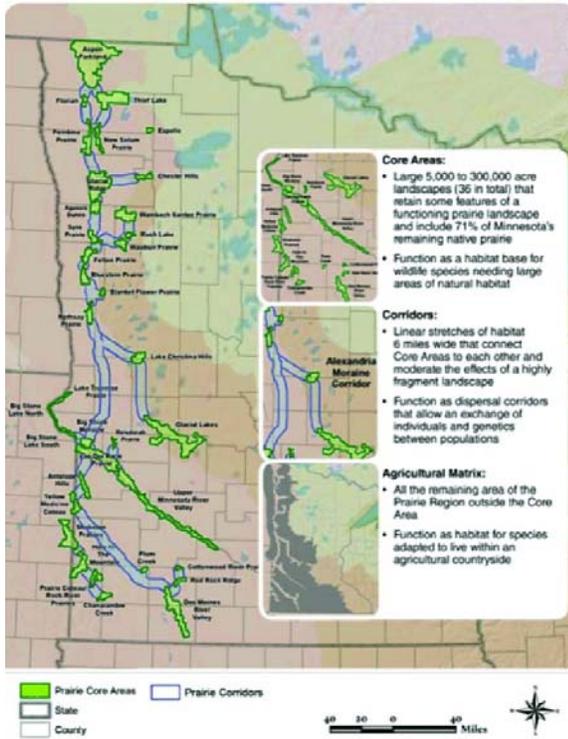

SOURCE: Corridor appalachien Appalachian Corridor
<http://www.corridorappalachien.ca/en/what-we-care-about/>



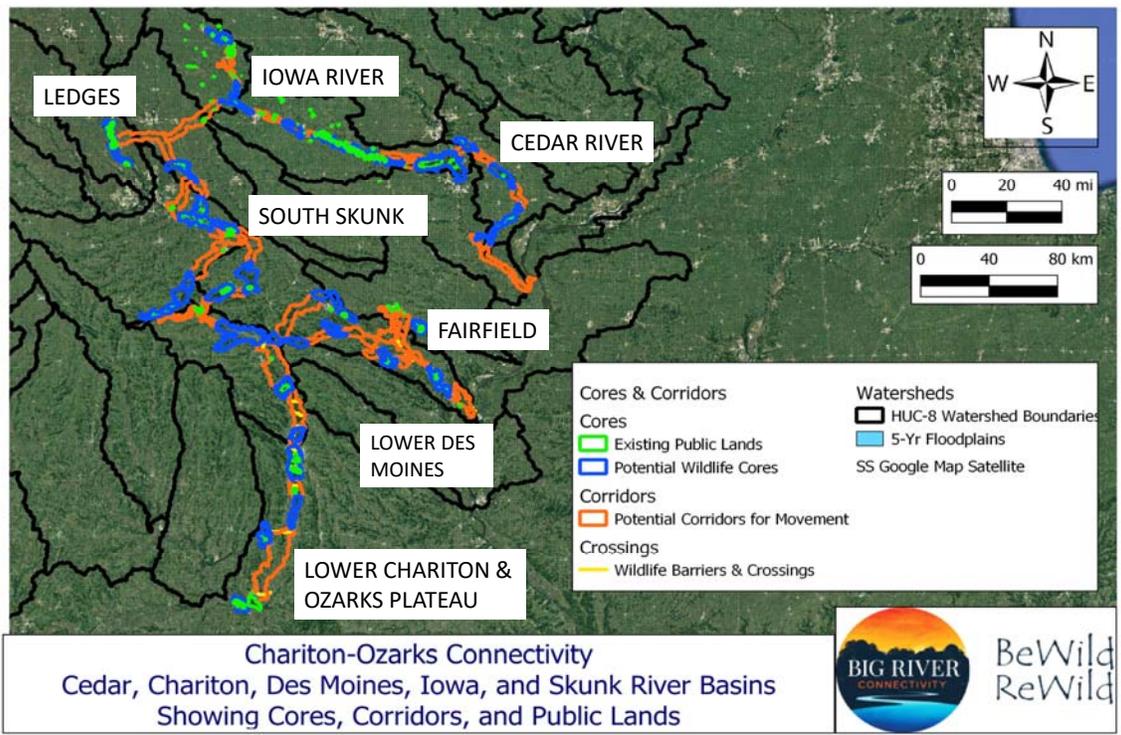


CORRIDORS

- Connections between cores
 - Using **priority rewilding land**, e.g., high slopes, frequent flooding, degraded surfaces (coal reclamation sites, old quarries)
 - Minimum 1,000-foot width, but wider is better:
 - 1,000 ft. on each side of a stream
- **PURPOSES:**
 - Climate resilience
 - Dispersal of animal young
 - Migration
 - Population reestablishment
 - Seed & spore dispersal (mammal fur, animal scat, winds aloft, running water)
 - Linking ecosystems/ecoregions/biomes



SOURCE: Neil Mundahl, Department of Biology, Winona State University
https://www.researchgate.net/figure/Prairie-core-areas-Corridors-and-agricultural-matrix-as-identified-by-the-Minnesota_fig1_260794410



APEX PREDATORS: Lions & Tigers & Bears, Oh No!

- We already have them: mountain lion sightings, black bears.
 - Come in all sizes and all major animal groups (and a few plants!)
 - **TROPHIC RESTORATION:** wolves, bears, mountain lions
 - Mixed results from studies for ecosystem restoration, population controls
 - Territories large enough to accommodate them & minimize threats to people



Left to right: Long-Legged Fly (*Condylostylus*), Goldenrod Crab Spider with prey, Red-Tailed Hawk with prey, Yellow-Throated Warbler, Snapping Turtle, Common Bladderwort.



RECIPROCITY

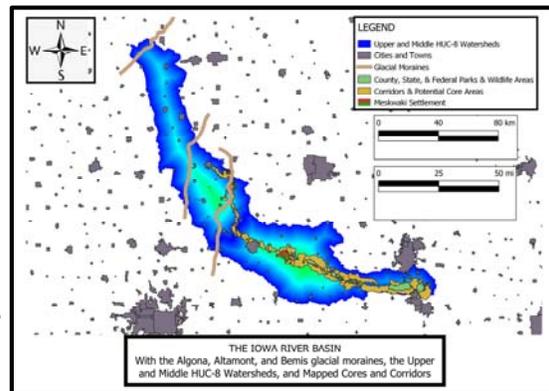
- TAKE, BUT GIVE BACK
 - ALLOW NATURAL RECOVERY
- REDUCE THE EXTRACTIVE ECONOMY & CONSUMPTION
 - TOPSOIL, FORESTS, ENERGY RESOURCES
 - CONSUMER WASTE: plastics, restaurant food

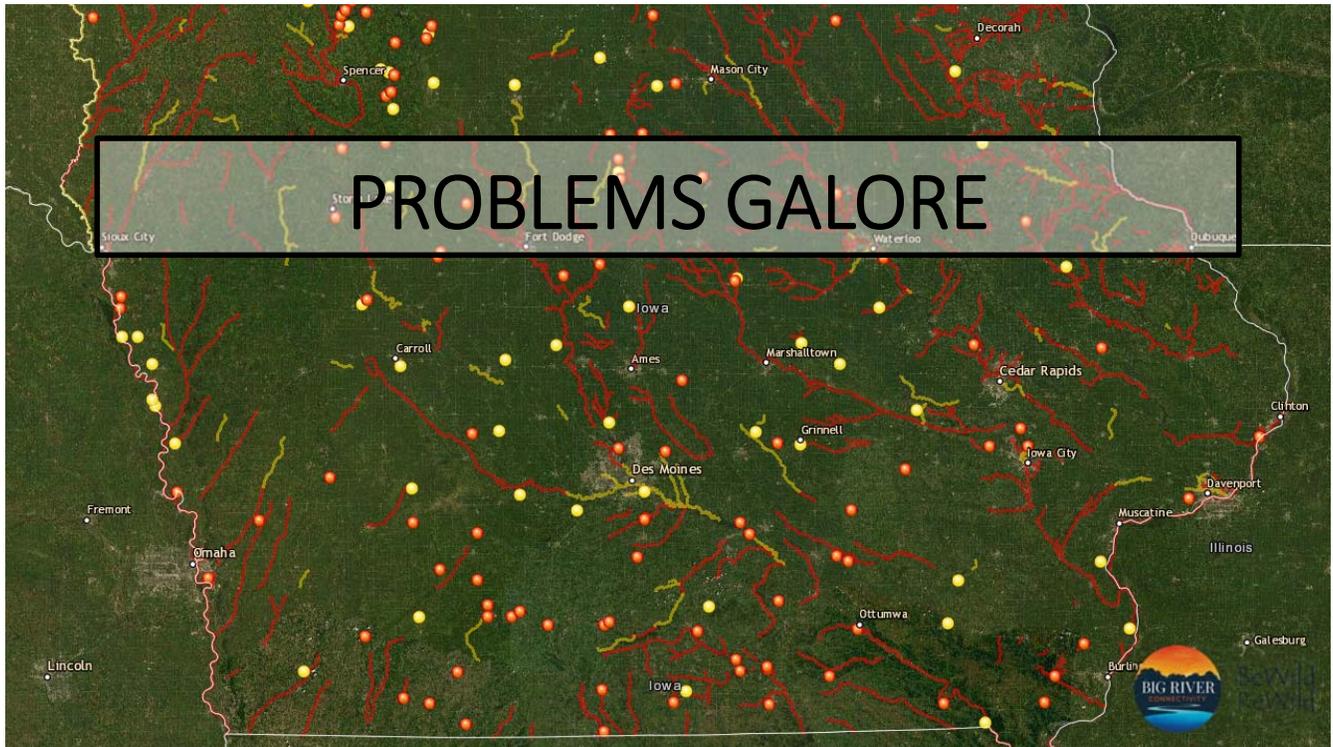


- RECEIVING AS A GIFT
 - Wendell Berry: *The Gift of Good Land*
 - Robin Wall Kimmerer:
 - “A gift comes to you through no action of your own... having moved toward you without your beckoning.”
 - “A gift creates an ongoing relationship.... In a gift economy, property has a ‘bundle of responsibilities’ attached.”
 - “...when everything became a gift, I felt self-restraint. I didn’t want to take too much.”

COMMUNITIES

- Plant & animal communities, of course
 - Ecosystems, biomes, climate, weather
- Human communities, both face-to-face and virtual
 - Discussions about rewilding: goals and opportunities
 - Larger societal conversation about the necessity and the means





WE CONFRONT:

- FLOODING & LOSS OF NATURAL HYDROLOGY
- LOSS OF SOIL DEPTH & HEALTH
- IMPAIRED WATERS: sediment, N, P, coliform bacteria, trace pharmaceuticals, trace ag chemicals
- GULF HYPOXIC ZONE
- CLIMATE CHANGE
 - Midwest derecho storm, August 10
 - West Coast fires
 - Rising sea levels in Florida, Bangladesh, Pacific Oceans
 - Greenland ice is past the tipping point



Farmed prairie pothole, Hardin County, summer 2019. Wetland sedge colony (*Carex atherodes*) in foreground.

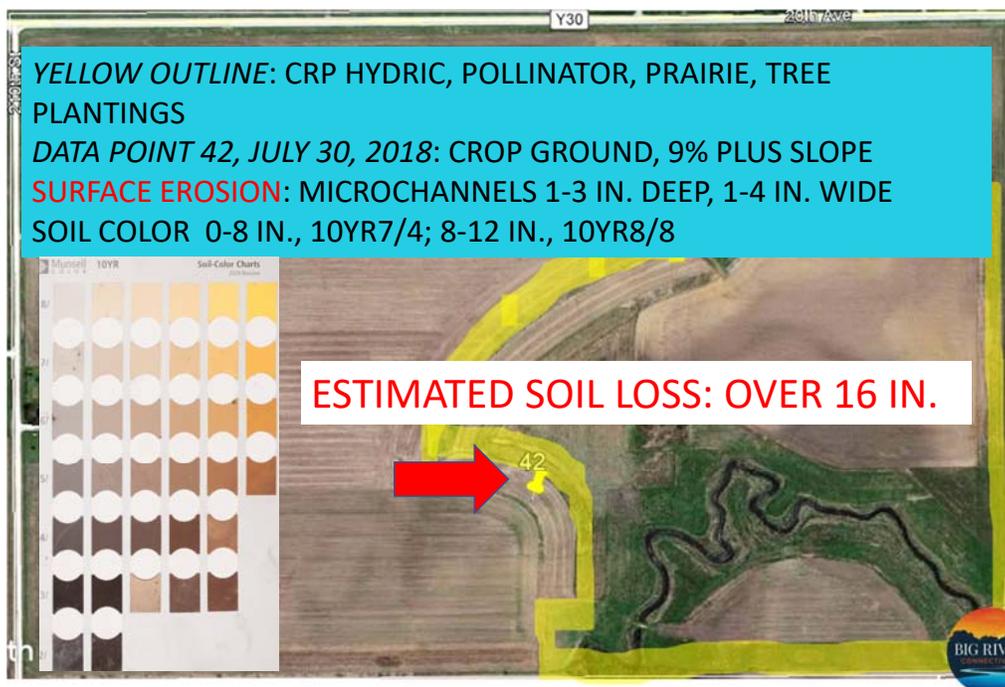
• DOMINATION OF THE PLANET BY ONE SPECIES:

- drastic declines in bird & insect populations
- changes in weather patterns & predictability
- losses of ecosystem functions

• Widespread disruption

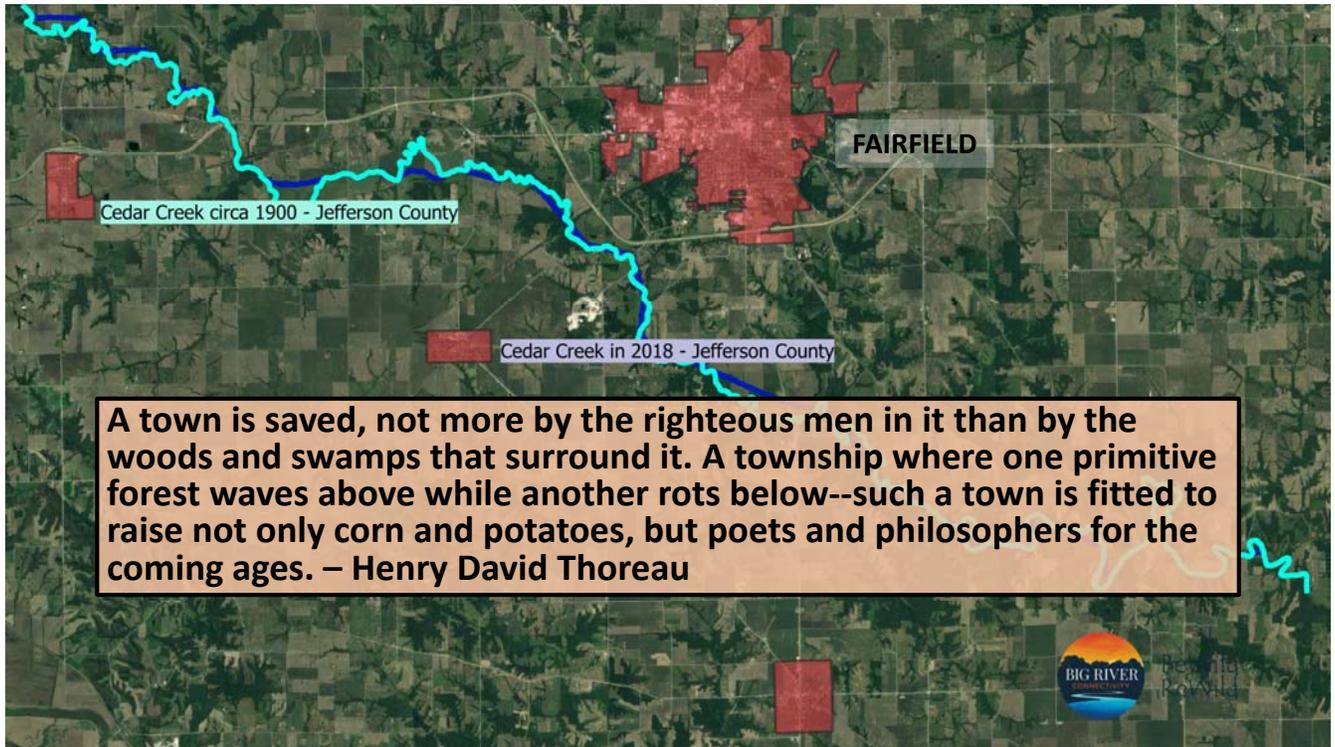


The United States at night, 2012. Composite photograph from NASA Earth Observatory.



- Each of these is a **failure of reciprocity**
- What do reciprocity and gift-receiving mean?
 - Spirituality?
 - Ethical/moral code
 - Recognition of the value of nonhuman life
- Take as little as needed
- Carnivores & hunters:
 - Several failures for each success
 - Don't take the best
 - It's not because of you that the buck grew that 160-point rack
 - Or that the smallmouth grew to 12 lbs.
 - But you get the credit?
 - Humility
- Leave a lot behind
 - The wildcrafter's rule
 - The precautionary principle
 - Respect for other living things
 - Think of future generations
 - Aldo Leopold's land ethic



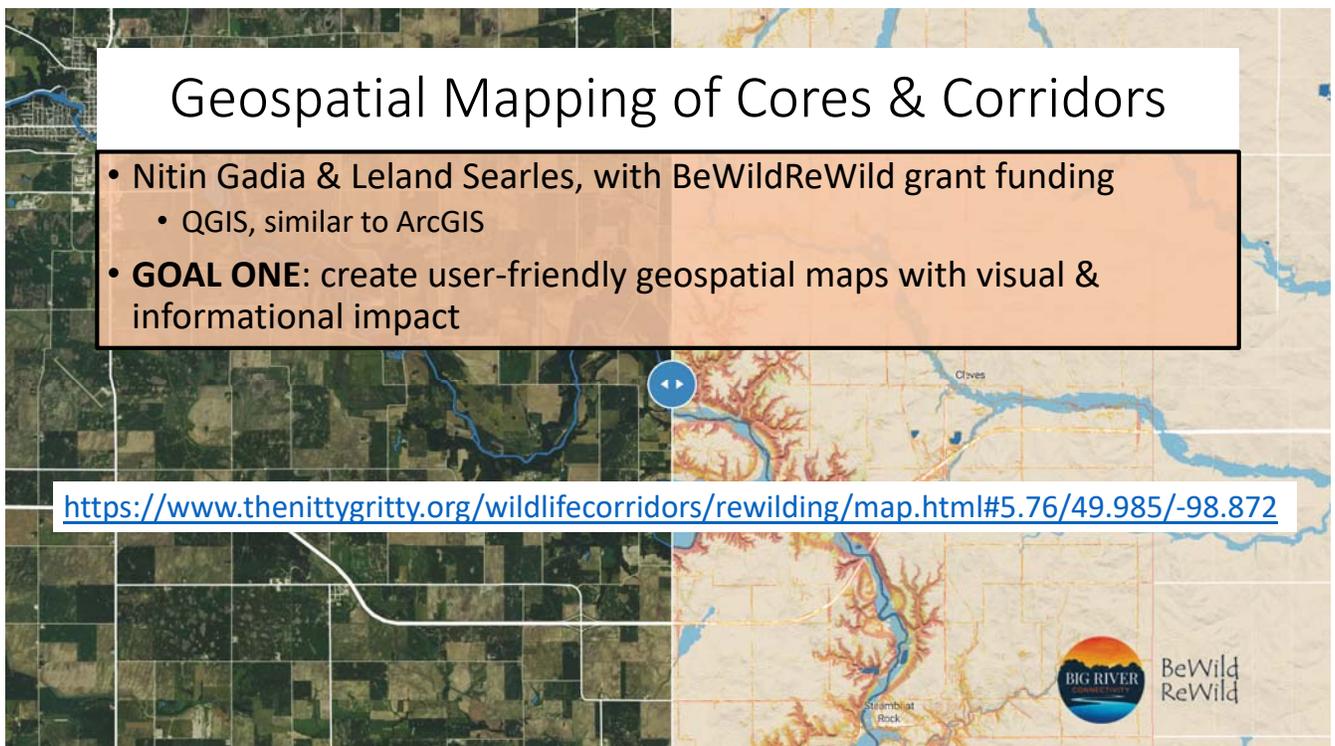


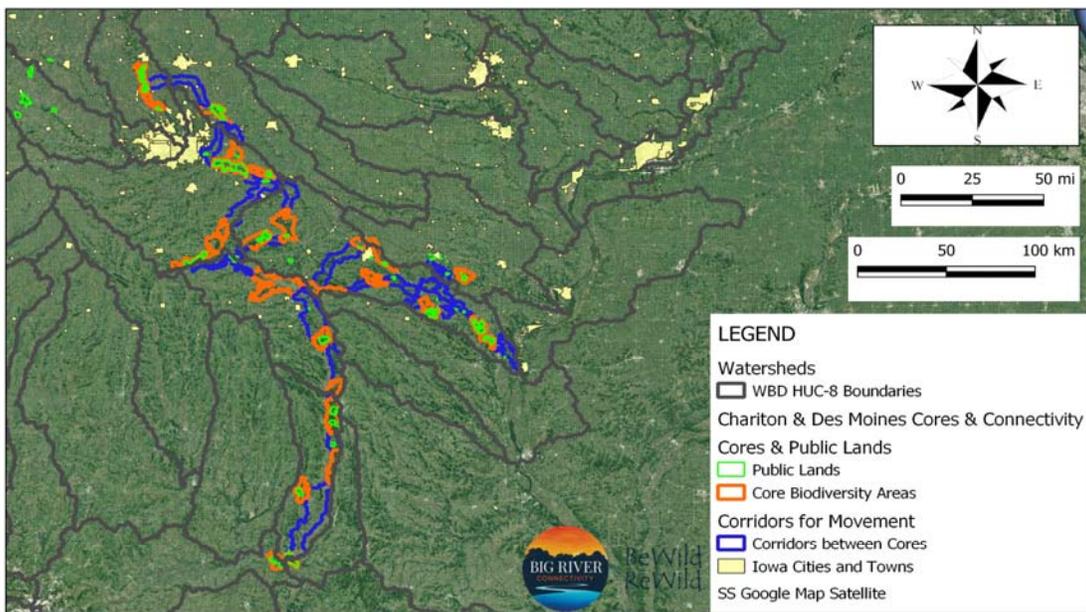
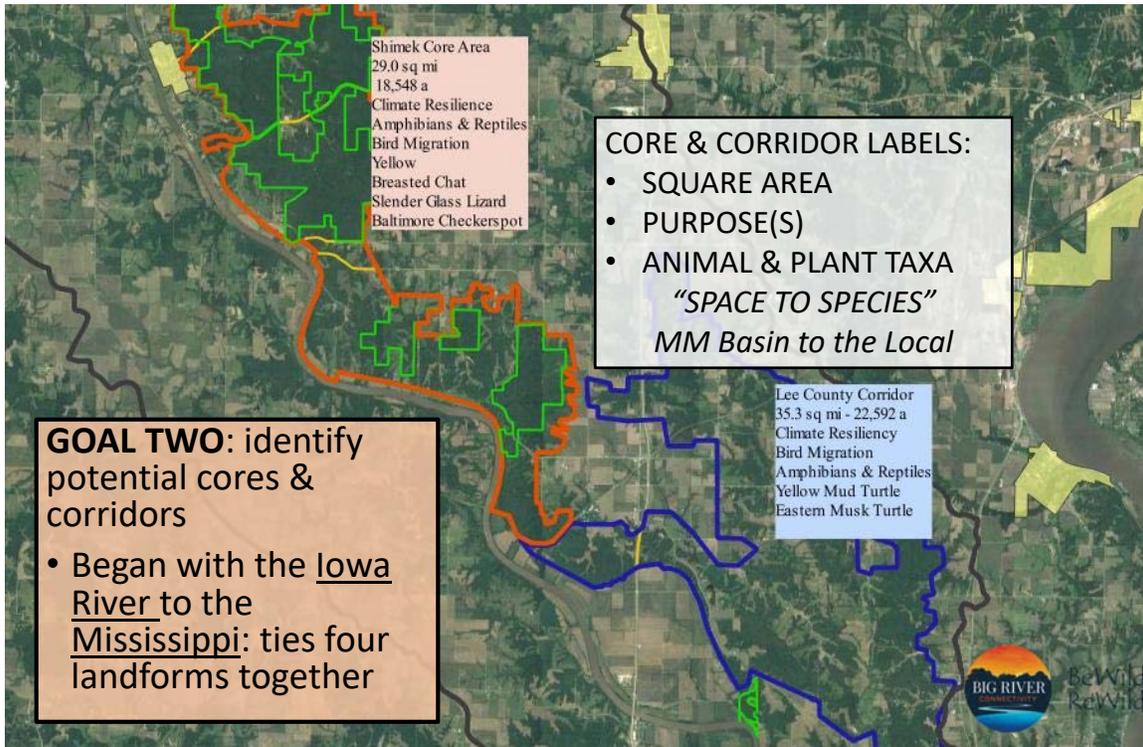
A town is saved, not more by the righteous men in it than by the woods and swamps that surround it. A township where one primitive forest waves above while another rots below--such a town is fitted to raise not only corn and potatoes, but poets and philosophers for the coming ages. – Henry David Thoreau

Geospatial Mapping of Cores & Corridors

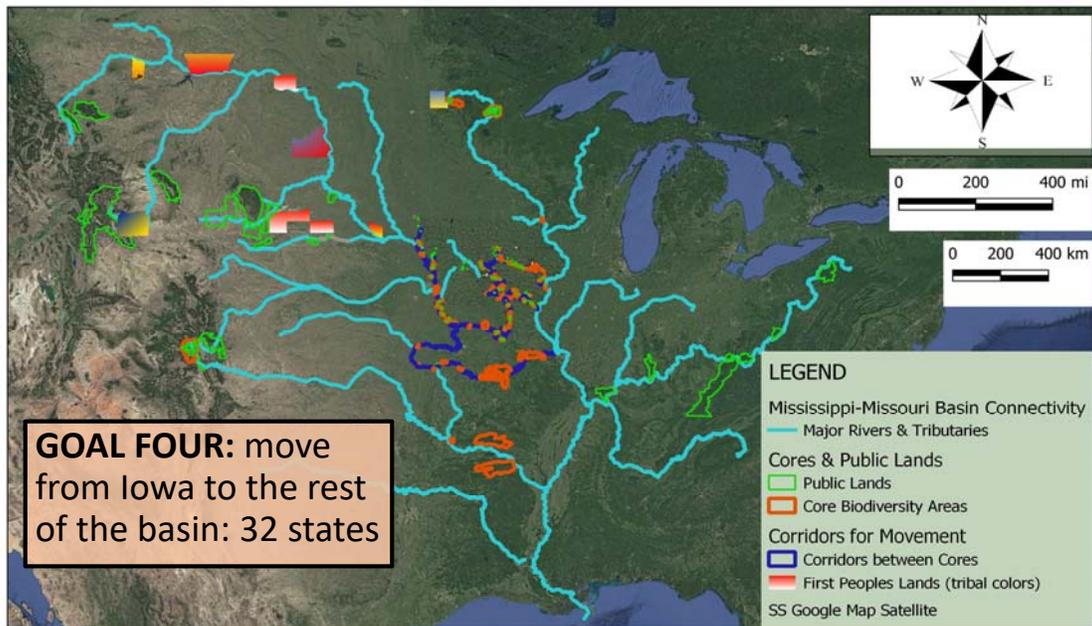
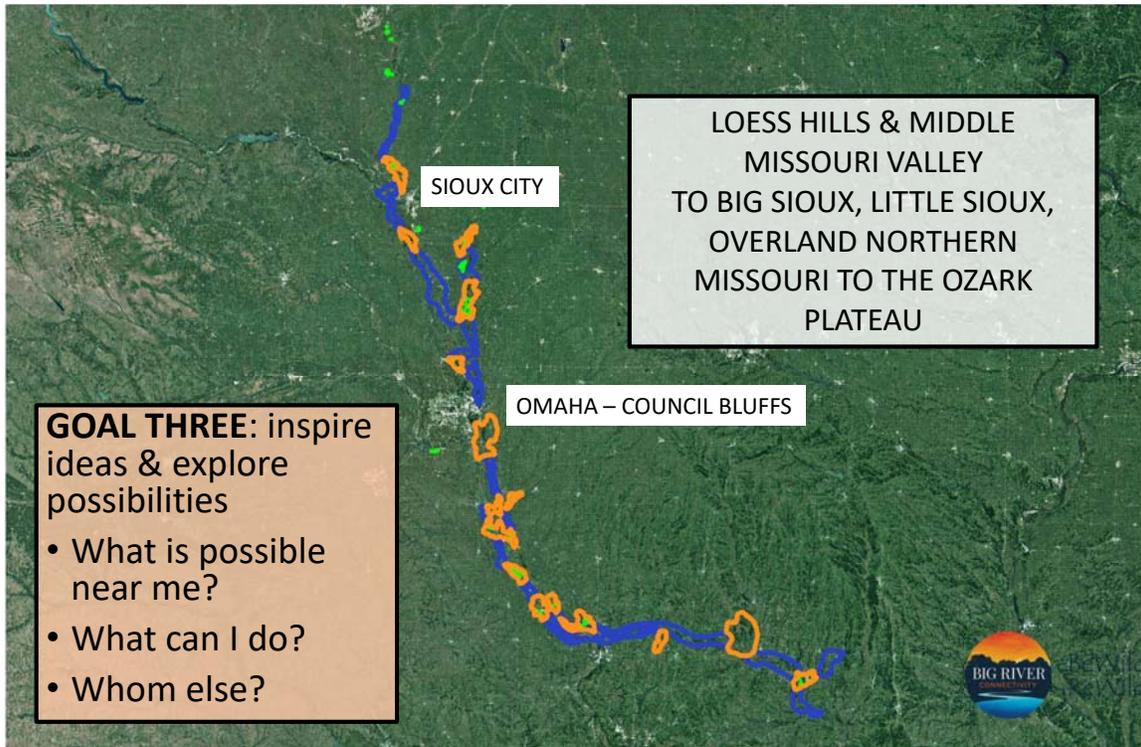
- Nitin Gadia & Leland Searles, with BeWildReWild grant funding
 - QGIS, similar to ArcGIS
- **GOAL ONE:** create user-friendly geospatial maps with visual & informational impact

<https://www.thenittygritty.org/wildlifecorridors/rewilding/map.html#5.76/49.985/-98.872>

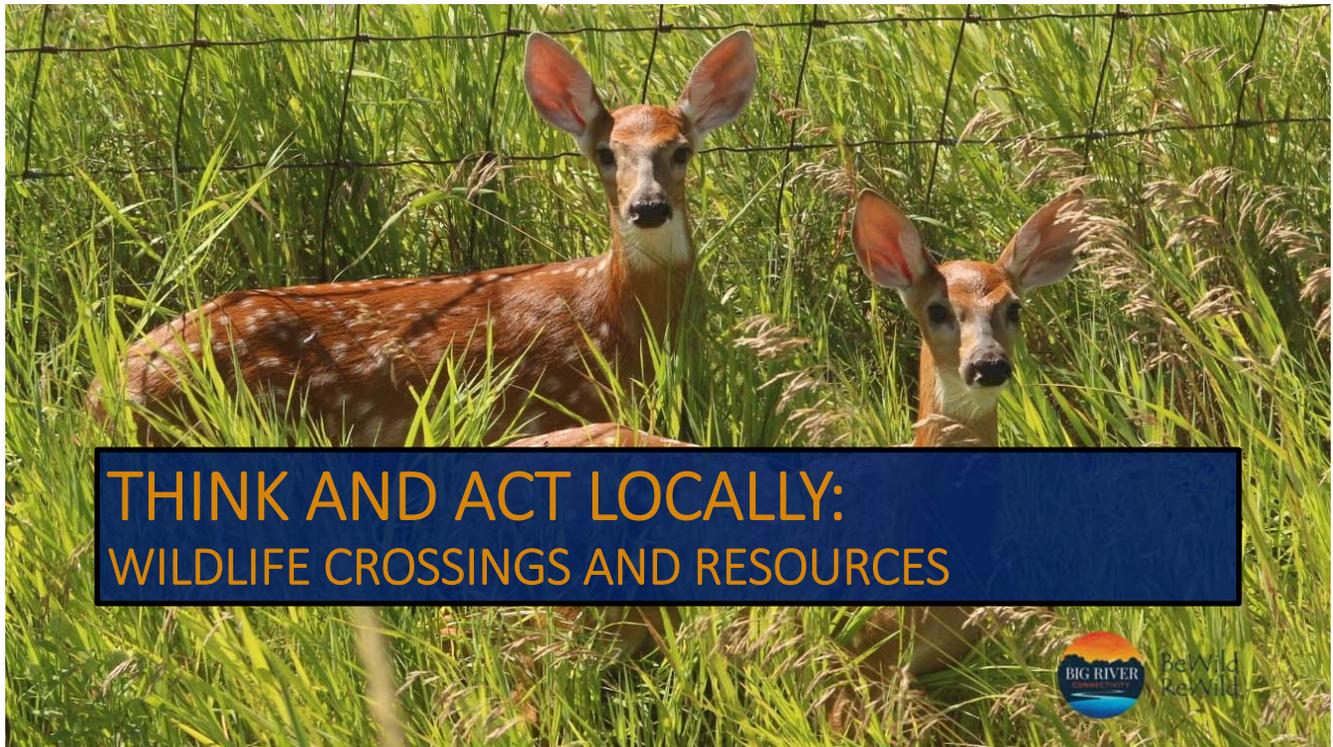




**Core and Corridor Biodiversity Connections:
Chariton River/Ozark Plateau to Central and Southeast Iowa Drift Plains**



**Reconnecting a Continent:
Major Rivers, Public Lands, Potential Wildlife Cores, and Corridors**



THINK AND ACT LOCALLY: WILDLIFE CROSSINGS AND RESOURCES

- Rationales for wildlife crossings:
 - Safe passage for wildlife of many sizes
 - From biofragmentation to bioconnectivity
 - Accident prevention and reduction:
 - Reduced injuries and fatalities
 - Savings to insurance customers and companies, health care systems
 - Beautification: crossing designs
- Placement:
 - Known deer crossings with high collision rates
 - Crossings for smaller mammals, e.g., raccoons, foxes
 - Cores & corridors with listed species present (including plants)

Locations & Sources, clockwise: (1) BANFF NP ALBERTA, S. Dee/Getty Images. (2) TURTLE CROSSING, JAPAN, Sumasui/Bored Panda. (3) ECODUCT, FINLAND, Bored Panda. (4) HIGHWAY 20, NORTH RACCOON RIVER, IOWA.



- Jefferson County Bridgestorming event
 - “Wildlife Crossing Scorecard”
 - Simple rating of ten wildlife categories
 - Designed for online or hard-copy use & data entry through the Internet
 - Preparation: audiovisual resources & data input, with photo upload: <https://bewildrewild.org/scorecard>
 - Volunteers in teams visited every bridge in the county: August 22, 2020

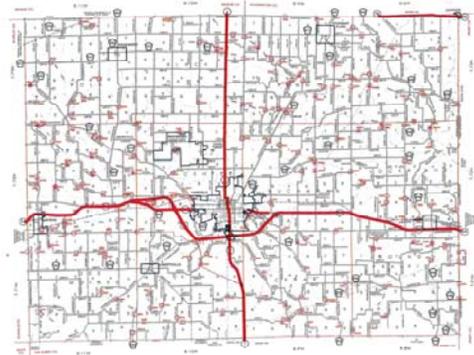


A bridge in Jefferson County, Iowa, evaluated and photographed by Bob Ferguson, Sustainable Living Coalition.



- Jefferson County Bridgestorming event: RESULTS

- Results:
 - Surprisingly high overall score: 2.7 out of 3. (1=Poor, 2=Fair, 3=Good)
 - Fish/mussels: 2.2
 - Large/medium mammals: 2.5
- Southern Iowa Drift Plains
Stream-dissected hills, high pasture and woodland cover



Jefferson County, Iowa, map showing major highways and bridges in red. Volunteers used this map to divide the county among several teams and create routes for the Bridgestorming event.



- Bridgestorming event: data analysis
 - Locations of bridge obstacles
 - Identification of actual & potential crossings
 - Placement of high-risk accident spots (IDNR/IDOT data) & low-scoring bridges in corridors
- Copy this model in every Iowa county
- Transfer it to the entire M-M basin, 32 states
- Expand to locate new corridors & develop crossing infrastructure



For More Information

- BeWildReWild web site: www.bewildrewild.org
 - Projects, events, blog forum, and more
- Contact Leland Searles at:
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Selected Resources

- *Iowa Wildlife Action Plan*, Iowa Dept. of Natural Resources, 2015.
- “Safeguarding ecological corridors in the context of ecological networks for conservation,” IUCN/WCPA/CCSG working draft, 2019.
- “The trouble with Wilderness, or, Getting Back to the Wrong Nature,” William Cronon, excerpt from *Uncommon Ground*, 1995.
- “Learning the Iowa River,” Robert F. Sayre.
- “Ways of Knowing: Acceptable Understandings within Bioregionalism, Deep Ecology, Ecofeminism, and Native American Cultures,” Annie Booth, *The Trumpeter* 2000.
- “Planning & Design Principles,” Ch. 5 in *Conservation Corridor Planning at the Landscape Level*, Craig W. Johnson, USDA NRCS, 1999.
- “Guidelines for Designing Wildlife Corridors,” www.biologydiscussion.com. Accessed 2019-06-24.
- “Resilient Land Mapping Tool,” The Nature Conservancy.
- “Rewilding Knowledge Hub: Bibliography – Version 1.0,” Chris Sandom et al., *Rewilding Britain*, 2016

