Farm Unfixed Teen Science & Art Internship

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2024 Farm Unfixed Avian Studies Group Shot

Top: Regan McGinnis, Lily Autry, Adrianna Shipp

Bottom: Olivia Jenkins (Avian ecologist), Ishaa Khan, Avani Sahoo

Farm Unfixed Background

Farm Unfixed is a teen science and art internship program and native habitat restoration project in the southern Missouri Ozarks. Jess Rath founded the project in 2019 on family land that includes 140 acres of riparian, grassland and woodland, as well as a natural spring with 14 ponds. The internship began in 2022 with two West Plains High School (WPHS) student interns working with environmental designer Jamie Topper on native bamboo harvesting and entomologist Merav Shemesh on a riparian edge effect study using butterfly transects. Each year several more students from the WPHS *Project Lead the Way* science program join the *Farm Unfixed* internship. Currently in its fourth year, interns continue the bird surveys and riparian edge effect and pond water quality studies, while creating related art and design projects. The program director, Jess Rath, is a West Plains native and a restoration ecologist for California State Parks and instructor at UC Irvine's Masters in Conservation and Restoration Science program and ArtCenter College of Design.

2025_2026 Goals

1. Provide female teens and teens of color with ecological science internships
2. Conduct restoration and regenerative systems research for local application
3. Provide scientist and land practitioner residencies to share knowledge in the Ozarks
4. Provide opportunities for peer-to-peer learning and community building among female and marginalized teen scientists

Long-Term Goals

1. Increase students to 10 - 15 science, art, and agricultural students
2. Restore 10 spring fed ponds, riparian areas, grasslands over 140 acres grazeland
3. Generate student sponsorship from local civic organizations and private individuals
4. Create more summer sessions over next five years while maintaining smaller cohort size
5. Diversify our funding stream and establish long term financial model

Revenue Streams

2025 Farm Unfixed programming was partially funded by the Community Foundation of the Ozarks - Springfield, with additional support from The Ozark Society and Barbara Leary. Metabolic Studios fully funded *Farm Unfixed* from its inception in 2022 through 2024. Ongoing fiscal sponsorship is provided by Ozark Resource Center (Denise Vaughn, President)

Mentoring Hours

The director provides mentoring hours to the interns during the program and during the school year. Interns most often return for the following year to continue collaborating with visiting scientists and practitioners and gain professional skills necessary for education and career goals. During the school, the director

- Manages year-round bird surveys with interns
- Facilitates intern collaborations with Mexico City-based designer
- Instructs students on generating science presentations
- Provides college guidance and writes recommendation letters
- Collaborates with interns on data entry, analysis, and reporting

Management

Director provides program oversight, development, project management, and site maintenance.

- Administers funding, insurance, and planning
- Provides site and facilities management
- Maintains contact with high school science and agriculture programs
- Facilitates program logistics, travel, and meals
- Provides projects management and science expertise
- Collaborates with fiscal sponsor

Programs

Eight interns worked with professionals in ecology, land and water management, graphics, and art in the following program areas: Aquatic Studies, Riparian Edge Effect, Avian Studies, Artmaking, and Design.

Aquatic Studies

Interns collaborate with pond remediation specialist Dalayna Williams to study spring-fed ponds and the wildlife they support. They conducted baseline water quality studies (temp, dissolved oxygen, sediment, and depth) and they study and harvest the aquatic plant watershield for potential agricultural uses. After conducting several years of pond data collection, interns hypothesized that the consistent temperature across various depths suggests that the ponds are spring-fed. Dissolved oxygen rates also pointed to increasing health of the pond ecosystem, as well the diversity within the plant community at the riparian edge.

Riparian Edge Effect Study

As part of studying riparian edge effects of passive restoration, interns worked with ecologist Jess Rath and returning intern Lily Autry to conduct native plant and butterfly transect data collection with the objective of monitoring biodiversity and ecosystem services over time (third year). Intern data analysis of consistent butterfly observations from the edge into the regularly hayed (mowed) fields, suggest that leaving a 10 -20 foot uncut edge supports pollinator health.

Avian Studies

Each year interns work with avian ecologists to continue baseline studies using the Merlin (Cornell Univ) audio identification along with visual confirmation. These studies are conducted over three habitat types at 12 sites. Ecologists also help interns attune to habitat and behavior differences among bird families. Intern surveys and observations revealed the presence of a belted kingfisher, a locally rare species that requires high visibility in waters for hunting–a metric we measure as “turbidity” in our studies.

Artmaking

Each year interns create art projects focused on the plants and animals they study in the field. Some of these include:

- Monoprints with watershield material
- Gesture drawing and bird anatomy
- Three-part design of butterflies
- Silkscreen design and printing
- Watercolor studies of butterflies
- Linocut of bird species

Graphics

Interns also met during the school year on zoom with designer Tzasna Perez Espinosa, now in their second year of collaboration with interns. Interns were asked to sketch their favorite program moments. These were then used to inspire program logo ideas and the graphic design for a Farm Unfixed webpage.

Farm Unfixed 2025

Student Diversity

Our group is all female as part of the mission–female scientists, land practitioners, and interns. We are mixed ethnically and as of 2024 have served Caucasian American (white), East Indian American, Middle Eastern American, and Black students. We serve a wide class range from working poor to middle classes.

Evaluation

We evaluate intern success through post-program interviews and by speaking with their high school teachers. These narratives showed deep engagement in environmental knowledge, community skills building, and increasing self-confidence. Some highlights include:

- WPHS science teacher Nathan Fleming reports improved confidence
- Interns continue to program work during school year
- All interns from Cohorts 1 (2022) and 2 (2023) have returned to mentor new Cohort 3 (2024)
- Interns report being more prepared for college and career life

We evaluate restoration success through longitudinal studies of pond health (baseline metrics), native and non-native vegetation in ponds (observational), riparian native flowering plants and butterflies (transect data collection), and quarterly bird surveys.

Regional Impact

The project takes place within sensitive pond, riparian, and grassland habitats as part of a restoration project. The site is dominated by overgrazed pastures with riparian habitats and ponds. The team uses passive restoration techniques, including the removal of weedy non-native plants, allowing the existing native seed bank to reestablish native plant communities. The larger region is positively impacted by the increase in native plant, bird, insect, reptile, and mammal populations as well as ecosystem processes like soil formation and watershed health.

Program Impact

Our lasting impact is both in ecological health, teen education, and community building. We have supported restoration of sensitive pond, riparian, and grassland habitats. We see ecosystem engineers like beavers returning to these ponds and the locally rare belted kingfishers. We build bridges between the high school, environmentalist community, land managers and the interns. In three intense weeks together, youth learn their roles as restoration ecologists, educators, and researchers.

College List

Interns have been accepted or are currently attending the following post-secondary institutions:

Intern	*Farm Unfixed Years*	*College*
Lily Autry	2022-2024	Three Rivers College - Poplar Bluff, MO
Makenzie Rost	2022	Southern Missouri Technical Institute
Avani Sahoo	2023-2024	Missouri Southern State University - Joplin
Elle Shipp	2023-2024	St. Louis University (SLU)
Regan McGinnis	2023-2024	Missouri State University - West Plains

Shared Knowledge and Trust

Our organizational memory, land knowledge, and participant trust continues to grow with the returning teens and collaborators like avian ecologist Olivia Jenkins, regenerative systems practitioner Dalayna Williams, designer Tzasná Perez Espinosa, and director Jess Rath. We, the teachers, lead through our expertise, but the teens, through their curiosity and commitment, model the future of female-led leadership in ethical land management and the life sciences. We are thrilled to continue each year of Farm Unfixed.