

University of Oregon

# Willamette River Natural Area Action Plan



***Implementing the Vision of the Willamette River Natural Area Management Plan over the next  
5 years***

## Executive Summary

The Willamette River Natural Area (WRNA) is a designated open space showcasing the University of Oregon's ability to enhance relationships between the natural environment, students, faculty, and community members. The following action plan was created using the priorities determined by the WRNA Landscape Management Plan (June 2022) and was consolidated into a three-pronged mission designed to improve all aspects of the WRNA includes Habitat Restoration, Engagement, and Research. We will support these goals by building capacity and creating a safe and welcoming environment. These goals are intertwined and rely heavily on each other to create synergistic positive effects for the Willamette River Natural Area and its visitors.

### The next five years are divided into two phases:

#### *Phase 1 (Short Term Targets): Project Initiation and short term goals to build capacity*

To create a positive, forward-thinking environment, we will initially prioritize building capacity to address restoration, engagement and research goals including planning and fundraising for large-scale projects (2024-2025).

#### *Phase 2 (Long Term Goals): Use Gained Experience and Capacity to inform large-scale projects*

To maximize impact and kickstart restoration, techniques experimented with in the initial two years will be reevaluated within an adaptive management framework to inform future restoration work on the WRNA. Maintenance of existing restoration sites and continued initiation of projects is essential to the success of Phase 2 (2026-2029).

## Guiding principles

- Preserve and improve habitat values while accommodating compatible education, research and recreation uses as defined by the campus plan
  - Engage students, faculty and visitors to increase sense of stewardship and impact
  - Create an inclusive, accessible space for visitors to use and learn from
  - Continue to search for innovative research, management and ideas to continue to advance restoration, engagement and research on the WRNA

# Core Projects

The core projects represent the three-pronged mission to enhance the Willamette River Natural Area including Restoration, Engagement and Research.

## Restoration

Initial habitat enhancement focuses on removal of landscape-altering invasive species followed by immediate treatments and native species plantings to reduce regrowth. There will be extensive overlap between restoration and research goals. Most notably the creation of Experimental Restoration Plots that will be used for experimental treatments to inform future restoration.

### Short Term Targets

- **Prepare Experimental Restoration Plots (ERPs; Appendix 1)**
  - Identify restoration locations across different invasive habitat types
    - Determine experimental restoration techniques to be used
  - Plots will vary in size and restoration method implemented to identify the best practices for the WRNA
- **Reconvene the Habitat Advisory Team (HAT)**
  - This Working Group was essential to providing scientific guidance for the original WRNA Management Plan. Once reconvened, the HAT will provide feedback on select plans and restoration techniques related to the WRNA. Committee members may include representatives from the original HAT and other restoration specialists as needed.
- **Initiate Restoration Tuesdays** – Dedicate 2 hours biweekly on a regular schedule when participants can volunteer with projects. The regular schedule will increase ease of engagement for participants.
- **Commence tree planting** - plant trees starting Fall 2024 to increase shade for future native plant restoration expansions
- **Remove disused resources**, including old goalie posts and bleachers
- **Increase recycling and trash facilities** to reduce littering
- **Target emerging or highly-invasive weeds** – addressing invasive species issues early saves significant resources (time and funds)

### Potential Student Volunteer Group Collaborations

- Student Sustainability Center Habitat Restoration Program
- Society for Ecological Restoration
- Outdoor Program Service Projects
- Environmental Leadership Program
- Academic Residential Communities
- Native American Student Union

### Long Term Goals

- **Remove Millrace Outfall culvert to increase fish passage** - Develop design and improve riparian habitat
- **Develop Early Detection and Rapid Response (EDRR) Program for invasive species**
  - More cost- and time- effective to address newly introduced invasive species before they are established

- **Maintain systematic English ivy and Armenian blackberry removal** in targeted areas followed in quick succession by native species plantings or mulching to reduce invasive regrowth as needed
- **Collect native seed** to be used in future projects
- **Ensure funding for student workers** to continue management of restoration areas
- **Replace invasive trees** with native trees
- **Ensure ongoing maintenance is supported including:**
  - Funding for adequate staffing
  - Developing community and UO volunteer opportunities
  - Mowing invasive species annually (July 15 to March 15)
  - Removing trash with contractor assistance as needed
  - Watering of newly planted native habitats
- **Increase roosting and breeding opportunities** including:
  - Bird, pollinator, and bat nesting boxes
  - Downed woody debris for salamanders and reptiles
  - Osprey nesting platform

## Engagement

Our goal is to be inclusive of all interests on the WRNA and use a variety of engagement opportunities to include education and recreation projects. Initially, we will focus on creating student projects to increase involvement in the WRNA while engaging the public by developing trails, signage, and activities. Long-term goals (requiring significant capital to complete) include developing outdoor classrooms, site small-craft boat ramp, and embedding functional art.

### *Short Term Targets*

- **Initiate Education Thursdays** – Dedicate 2 hours biweekly to participate in research or identify species on WRNA. A regular schedule will increase ease of engagement for participants.
- **Establish photo point stands** – photos from point stands and drone photos will be taken annually to increase engagement and document restoration impact to WRNA
- **Determine feasibility of universal access trails** focused on
  - connecting Fuller Land Lab to recreation field
  - connecting Frohnmayer Bridge to east side near proposed Urban Farm Riverside
- **Design rotating signage and/or online tour to identify:**
  - Wildlife and pollinator friendly plants
  - Culturally-important plants to local Native Americans
  - Edible/medicinal plants
  - Wildlife signs
- **Conduct biannual Bioblitz** –Community event in fall and spring to identify as many species as possible in 24 hours
- **Design and establish interpretive trails** – Develop collaborative relationships with students and faculty to design trails and ensure universal access when possible. Possible trail themes could include:

Plants Important to Indigenous Groups  
Native Plants  
Medicinal & Edible Plants

Pollinator Garden  
Wildlife-Plant Interactions

### *Long Term Goals*

- **Determine feasibility of outdoor classroom and small-craft boat ramp** and determine funding opportunities
- **Solidify more accessible route to Fossil Beach**
- **Create Natural Area appreciation sites** (benches and tables for studying and reading)
- **Create cultural and educational events** aimed at increasing understanding of the WRNA ecosystem and visitors
- **Establish native vegetation near entrances to the WRNA**
  - Work with site neighbors (Union Pacific, City of Eugene, College of Design, and EWEB) to approve plantings
- **Create functional art**
  - In addition to beautifying the WRNA, functional art has a utilitarian value. Examples include benches, water cisterns, etc. Using competitions or collaborations with students and/or local artists we will create art that aligns with the goals of the WRNA

## Research

To ensure research has the greatest positive impact on the WRNA, we will determine research priorities to assist researchers, faculty and students to hone their project ideas. The development of biodiversity stations to monitor a wide variety of flora and fauna across restoration areas and the use of Experimental Restoration Plots (ERPs; Appendix 1) will determine which restoration techniques are most suitable for the WRNA. Research priorities will be reviewed annually as understanding of the ecosystem and management options increases.

### *Short Term Targets*

- **Establish WRNA research priorities list** to facilitate collaborations including efficacy studies to determine impact of different restoration methods on:
  - Biodiversity
  - Water and soil quality
  - Visitor use
- **Develop mobile biodiversity monitoring stations** - design mobile stations to monitor a wide variety of wildlife and habitat features to determine impact of restoration projects (Appendix 4)
- **Engage University of Oregon researchers**- include their ideas and strengths to conduct research and enhance the WRNA

### Long Term Goals

- **Expand impact of current research sites** by creating replicate test plots across the WRNA.
- **Ensure funding and opportunities for student workers** to continue to evaluate impacts of restoration. Work with faculty to design MSc and PhD opportunities.

### Potential External Research Collaborators

- Urban Ecology Research Consortium
- Urban Wildlife Information Network
- Lane County Audubon Society
- City of Eugene
- Mount Pisgah Arboretum
- Rivers to Ridges
- Upper Willamette Soil and Water District

## Supporting Goals

Ancillary goals are needed to accomplish the three-pronged mission to enhance the Willamette River Natural Area.

### Build Capacity

Increased participation expands the positive impact that we can have on the WRNA. To build the capacity necessary to initiate large-scale projects, we will:

#### Short Term Targets

- **Create Willamette River Natural Area working group**
  - The working group will be comprised of UO staff that overlap often with the Natural Areas program. They will provide feedback on select WRNA plans and how they relate to programs already in existence at the University of Oregon. Committee members may include representative from Campus Planning, Landscape and Grounds Maintenance, Faculty, Students, and UOPD.
- **Create student Assistant Natural Area Steward position**
  - Students will help lead restoration, engagement, and research projects under the guidance of the Natural Areas Steward
- **Identify and support collaborators**
  - Implementation of the WRNA requires extensive collaborations between faculty, students, volunteers, and outside partners
    - Create incentives to keep collaborators engaged and excited
    - Initiate research publications
    - Create Stewardship Award for people who have contributed substantially
    - Provide MSc and PhD opportunities to encourage students to continue long-term research on WRNA
- **Purchase supplies and equipment**
- **Increase visibility and create consistent branding**

### Engagement Opportunities

- Restoration Tuesdays: 1x/month
- Education Thursdays: 1x/month
- Biannual Bioblitz (Fall & Spring)
  - Late April 2025 (Overlaps with City Nature Challenge)
- Student Sustainability Center monthly Restoration work party
- Fall kick-off work party- large restoration event at the beginning of Fall term

- Consistent branding (logo and vision statement) clarifies the mission of the WRNA and draws participants in to collaborate on common goals. In addition, branding increases project exposure.
- For UO Map stations in the WRNA create information specific to WRNA on side opposite campus map
- Update WRNA website with upcoming events and recently observed flora and fauna
- Publicize WRNA to increase internal and external momentum
- Create CPFM newsletter column about WRNA topics
- Develop Instagram and/or Facebook feeds to publicize WRNA events, interesting facts, and successes
- Improve signage and virtual maps and tours that will be educational and establish the transition to actively-managed and used University of Oregon property

#### *Long Term Goals*

- **Increase funding through grants and donors**
  - Collaborate with relevant campus departments to source grant and donor funding for WRNA restorations, research, and programs
  - Seek, vet, and apply for targeted grants or other funding

## Create a Safe and Welcoming Environment

One goal of the WRNA is to increase accessibility for the whole community. If visitors/community-members feel safe, visitation will likely increase. To facilitate this process, we will work in conjunction with University of Oregon Police Department (UOPD) and Landscape and Grounds Maintenance to:

#### *Short Term Targets*

- **Guide unauthorized campers and users** to areas where they can access appropriate resources and facilities
- **Restore highly-impacted areas** through litter removal to increase safety for all visitors

#### *Long term Goals*

- **Remove tall non-native vegetation** to reduce hiding spots
- **Continue frequent use and patrols** to discourage return of unauthorized campers

## Summary

Through our three-pronged mission of addressing restoration, engagement, and research goals we will accelerate improvements to the Willamette River Natural Area for wildlife and humans. The success of long-term, large-scale restoration projects is dependent on building the capacity (both monetary and labor) needed to restore the Willamette River Natural Area.

## Appendix 1: Timeline

Detailed timeline of Action Plan targets and goals. This timeline will be updated annually to incorporate new opportunities.

[WRNA 5-Year Action Plan Timeline](#)



## Appendix 2: Budget

### Start-up Piloting Fund (\$75,000)

Piloting Systems	Budgeted Total Costs
Polaris ATV and Upgrades	\$60,414
Electric Landscaping Tools	\$4,173
HD Pull Behind Brush Mower	\$4,200
Data Collection Tablets	\$1,408
Storage Container (20')	\$4,200
<b>Total</b>	<b>\$74,395</b>

### Operating Budget, 2024-25 (\$58,000)

	Budgeted Total Cost
<b>Restoration</b>	<b>\$36,847</b>
Supplies	\$14,590
Contractors	\$10,000
Prototypes	\$500
Rental	\$4,620
Tools	\$7,137
<b>Engagement</b>	<b>\$11,326</b>
Supplies	\$4,128
Equipment	\$1,018
Fees	\$2,380
Prototypes	\$2,300
Travel Expense	\$1,500
<b>Research</b>	<b>\$8,583</b>
Supplies	\$34
Equipment	\$4,849
Fees	\$500
Prototypes	\$3,200
<b>Supplies</b>	<b>\$1,183</b>
Supplies	\$1,183
<b>Grand Total</b>	<b>\$57,940</b>

# Appendix 3: Research and Restoration Opportunities and Priorities

Research and restoration priorities will change as new data informs management decisions and goals are accomplished. Occasionally projects are listed in more than one topic based on the scale of the project. Highest priority projects are listed first for each category. Detailed matrix of project priorities and is located at: [2024 WRNA Priority Project Opportunities.xlsx](#)

## Restoration opportunities for student groups and staff

- Create “Habitat Islands” in cottonwoods
  - Remove English Ivy and blackberries
  - Experiment with sheet mulching
  - Plant native species
  - Create trail for student use
- Adopt-a-Plot
  - Commit to restoration of an ERP including replacing invasives with native plant
- Design bird, pollinator, and bat nesting boxes
- Collect native seed

## Research opportunities for student groups and staff

- Create weed map
  - determine methodology and delineate edge of different habitat types and invasive species to be used to monitor restoration progress
- Design Experimental Restoration Plots (ERPs)
- Design invertebrate sampling
- Design soil quality sampling
- Design visitor use study
- Create wildlife monitoring stations

## Independent Projects and Internships

- Design tree planting (Fall 2024)
- Design Experimental Restoration Plots (ERPs)
- Design rotating educational signage
- Create functional art

## Professional Development Skills

- Acoustic bat identification
- Acoustic avian identification
- Remote camera picture identification

## Appendix 4: Experimental Restoration Plot Design

Experimental Restoration Plots (ERPs) will be created to combine habitat restoration and research goals. This grid of ERPs is designed to be concrete enough to provide guidance, but flexible enough to take advantage of new opportunities and research ideas as they develop. Following an adaptive management approach, each plot will be evaluated on an annual basis to determine efficacy of research and restoration techniques.

### Plot Designation

- The WRNA will be divided into a grid of ~50 x50 ft Experimental Restoration Plots. Each plot can be merged or divided depending on space necessary to accomplish restoration goals
- Depending on study design, plots will be selected randomly or purposefully to accomplish additional WRNA goals (ex: choosing plots near areas visible to the public or to improve visibility on social trails).
- Use of plots is determined by the Natural Area Steward and decisions will be based on the goals of the WRNA. Two types of plots are likely:
  - Natural Area Steward plots: divided into 2-4 sections each using a different invasive removal technique (see figure below)
  - University plots: designed by faculty and student groups to initiate new restoration and research projects as they arise. Selection of site will be determined by habitat/environmental qualities needed for projects
- When available, established removal methods for specific species will be used from the following sources:
  - City of Eugene Integrated Pest Management Policy and Operations Manual
  - Pacific Northwest Pest Management Handbook
  - Oregon Department of Agriculture Oregon Noxious Weed Profiles
- Restoration of steep slopes adjacent to the Willamette River will start Summer 2025 to allow for the time to ensure all City Code and Erosion Control measures are in place

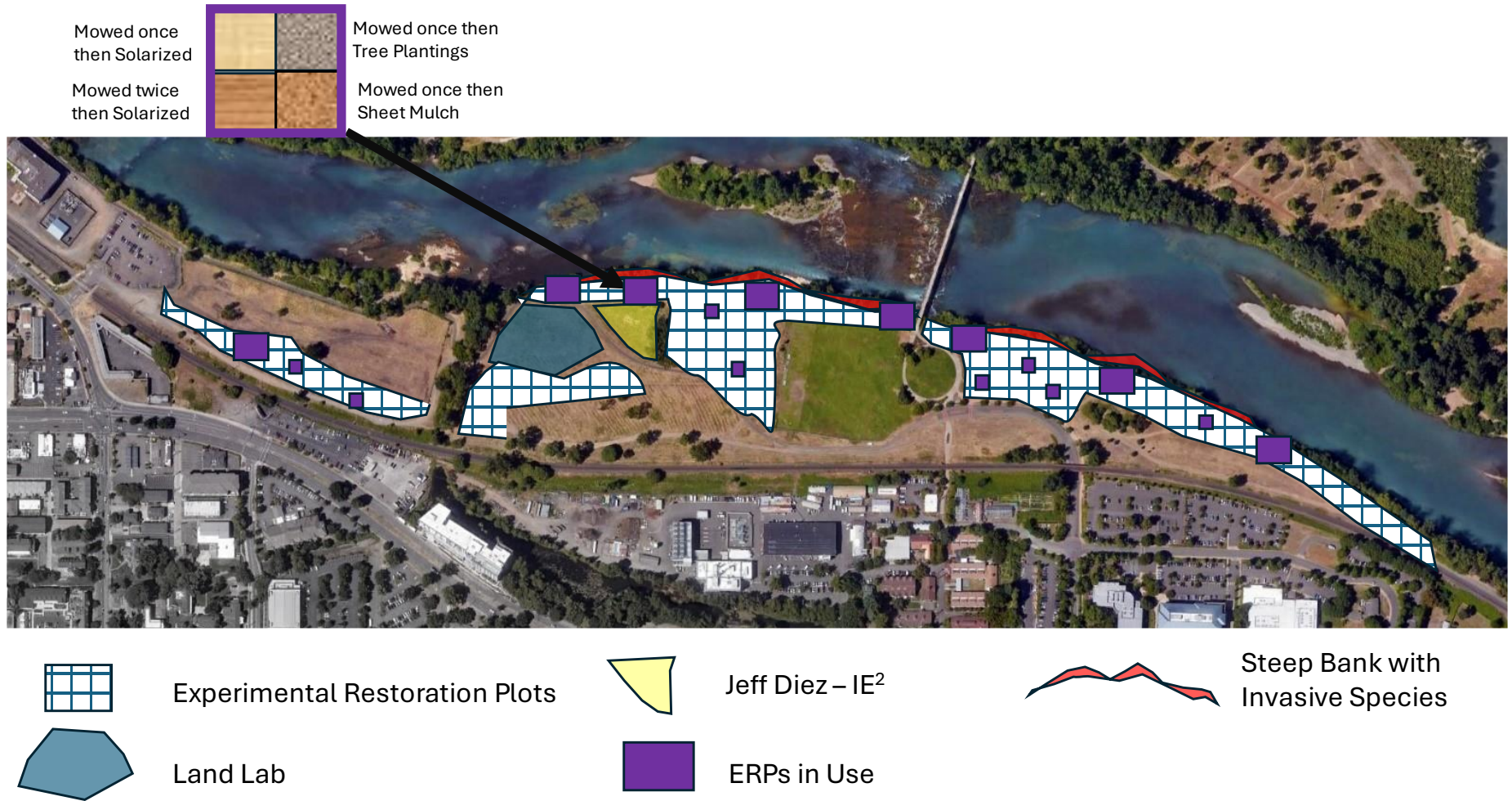
#### Invasive Removal Techniques to be tested by Natural Area Steward

- Frequency of
  - Mowing
  - Solarization
  - Sheet mulching
  - Manual removal
  - Herbicide use
- Depth of mulch
- Variation of replanting to compete with invasives
  - Perennials
  - Trees
- Native pollinator presence

### Restoration Progress Surveys

- Once restoration methods are assigned to plots, initial surveys will be conducted to determine habitat value and species present before restoration activities occur. These surveys will use systematic and consistent methods so that ERP progress can be compared across the WRNA landscape. These surveys will continue after restoration is complete to determine impacts of restoration on biodiversity
- Depending on availability, survey methods will include mobile biodiversity monitoring stations (Appendix 5)

**Figure 1.** Example of Experimental Restoration Plot design



## Appendix 5: Mobile Biodiversity Monitoring Stations

Mobile biodiversity monitoring stations will be placed at 1) randomly selected locations across Willamette River Natural Area and 2) in Experimental Restoration Plots (ERPs) to monitor changes in biodiversity due to restoration. The station will be moved every 3-5 days with the goal of covering as much of the WRNA as possible. Before placement of the station, surveys that must be collected in real time will be conducted first. These include:

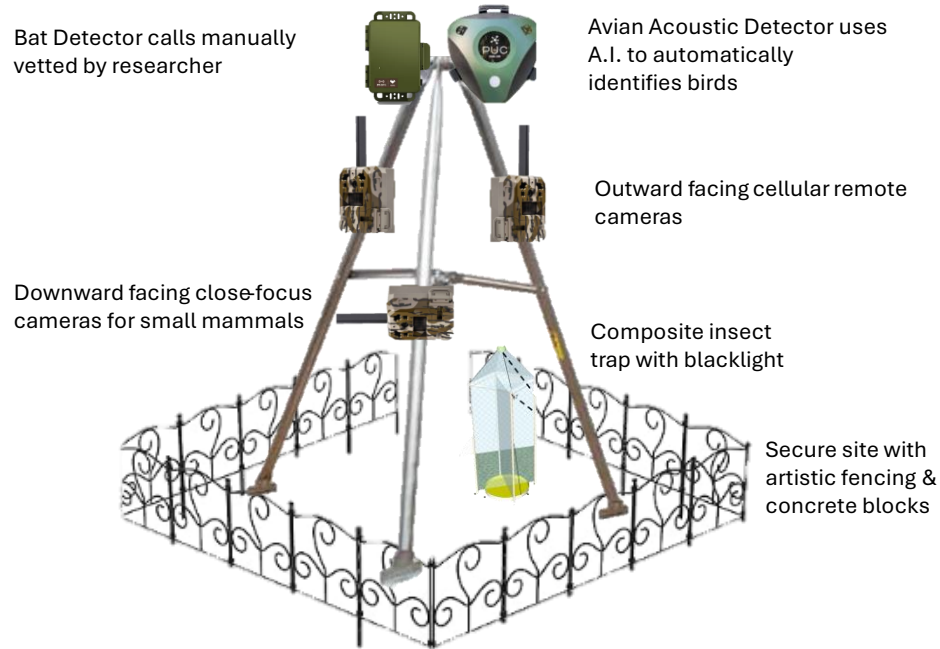
- habitat measurements
- soil microbes
- water quality
- soil nutrients

The stations will monitor the same locations each year to determine population trends over time. If we know in advance where a management action will be occurring a larger number of stations will be placed near the location to ensure more accurate data pre- and post- management action. Ideally, we will monitor at least 1 year before the management action occurs to ensure any changes in species composition are not due to seasonal or yearly variation. Artistic mobile fences will be used to minimize vandalism and movable concrete blocks will anchor the station to the ground.

Each station will include the following:

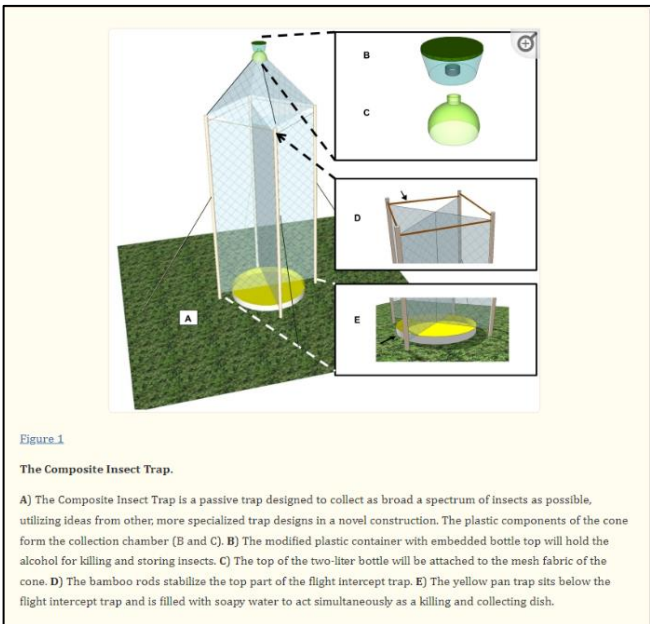
Sampling Device	Species Surveyed	Notes
Composite insect traps with blacklight	Flying insects, night flying insects, grasshoppers	Combines 4 common insect collecting techniques to capture different guilds
Reconyx remote camera (close focus)	Small mammals, reptiles, amphibian, large insects (beetles and snails)	Pointed towards ground
Acoustic detector with A.I. capabilities (SM2 or Petterson)	Bats, birds and amphibians	BirdNet automatically uploads and identifies all acoustic recordings to be viewed online
Standard cellular remote camera	Fox, feral cat, coyote, deer, nutria, quail, squirrels, among others	Cameras placed horizontal to the ground. Cellular cameras transmit images immediately and prevent vandalism

**Figure 2.** Example of research devices that may be included in the mobile biodiversity monitoring stations featuring acoustic detectors (bats, birds, & frogs), remote cameras (mammals and herpetofauna) and composite insect trap



Example collection device: invertebrate and pollinator composite insect trap (Russo et al. 2011)

Example of BirdNET data includes species identification, date and location



app.birdweather.com/data

admin Willamette River Na... University of Orego... UO HELP

Check out the BirdWeather PUC - now availa

**BirdWeather**

Displaying 876 of 2,002,172 total detections (1,079 species) found (last 24 hour)

TIMESTAMP	SPECIES	COORDINATES
10th July 2024 5:36:15 PM	Blue Jay ( <i>Cyanocitta cristata</i> )	(40.621, -74.641)
10th July 2024 4:36:13 PM	Northern Cardinal ( <i>Cardinalis cardinalis</i> )	(29.990, -97.306)
10th July 2024 4:36:09 PM	Northern Cardinal ( <i>Cardinalis cardinalis</i> )	(29.990, -97.306)
10th July 2024 4:36:09 PM	Northern Cardinal ( <i>Cardinalis cardinalis</i> )	(29.990, -97.306)
10th July 2024 11:35:14 PM	Little Ringed Plover ( <i>Charadrius dubius</i> )	(51.230, 2.972)
10th July 2024 5:36:21 PM	Eastern Kingbird ( <i>Tyrannus tyrannus</i> )	(40.265, -75.609)