

## ECO:SENSE VEGETATION INSIGHTS TOOL



### ABOUT FIRETAIL ENVIRONMENTS

With a focus on environmental and ecological drone surveys, aerial treatment solutions and digital ecology, Firetail Environments specialises in custom and often difficult projects, drawing on skills and knowledge from environment, agriculture, ecology and reflective science industries to deliver effective outcomes through detailed planning and a deep understanding of technical requirements for project specific outcomes. Firetail uses precision positioning & mapping paired with experienced Digital Ecology methods to deliver projects appropriately and efficiently.



### CREATED BY LAND MANAGERS, FOR LAND MANAGERS

Made by land managers, for land managers, ECO:SENSE is a GIS plugin tool that assists land managers to identify, annotate, train, and predict the presence of target species at a landscape scale. It provides a complete pipeline for creating custom species models and applying deep learning to produce high resolution data metrics with integrity. Users can use the tool themselves, or engage Firetail to undertake end to end project works on their behalf.

- **Collect UAV Imagery**
- **Identify your target species**
- **Train and Develop Model**
- **Run Predictions**
- **Extract Results**
  - Count individual plants
  - Output GPS locations
  - Calculate covered area and average plant size
  - Spatialise abundance and distribution across landscapes
- **Report Findings**





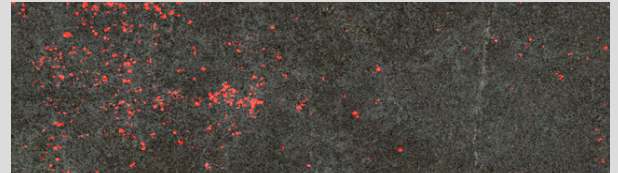
## OUTCOME DRIVEN DATA WITH INTEGRITY

The ECO:SENSE classification tool is designed to turn high-resolution drone imagery into actionable insights. It streamlines large-scale vegetation and weed monitoring, helping land managers identify, quantify, and respond to situations efficiently.

Our ECO:SENSE tool assists land managers to:

- **Automate weed and plant detection and classification** across large landscapes
- **Produce detailed maps for rapid identification and analysis.**
- **Reduce manual survey efforts, increase accuracy in data metrics,** provide greater decision-making assistance and allow more resources to flow into ground works with greater efficiency
- **Support vegetation management decisions** with spatial outputs and metrics in abundance, distribution and surface cover
- Enable researchers, ecologists, and land managers to **build, refine, and deploy trained models** tailored to specific species and environments
- **Provide accurate data for reporting and assessment** of metrics such as attrition, treatment efficacy and progression over time

### SNAPSHOT CASE STUDY



ECO:SENSE has been deployed to detect Artichoke Thistle across 400 ha of mixed-use land being managed for restoration as part of Victoria's Western Grassland Reserve project.

High-resolution drone imagery (1 cm GSD) was processed to map infestations, identifying weed burden with 90% accuracy.

The outputs informed targeted control measures, cutting survey time by 60% and improving response speed for on-ground crews.



## BENEFITS OF ECO:SENSE

**ECO:SENSE transforms aerial imagery into powerful spatial insights** that help land managers make informed decisions and take targeted action. By automating the detection and mapping of weed species or vegetation targets, the tool provides high-resolution data that is ready for reporting, planning, or treatment.

**Built for real-world applications,** ECO:SENSE simplifies complex workflows—users can quickly generate annotated maps, spatial files, and distribution reports that guide field crews and resource allocation. Whether it's invasive weed control, native planting, or restoration monitoring, the tool supports fast, repeatable, and data-driven management.

With flexible deployment, precision accuracy, and a high level of data integrity **ECO:SENSE empowers** land managers with the clarity and precision needed to manage large or complex landscapes with confidence.

**For more information about Firetail Environments contact Dan Pettingill on 0492 823 191**