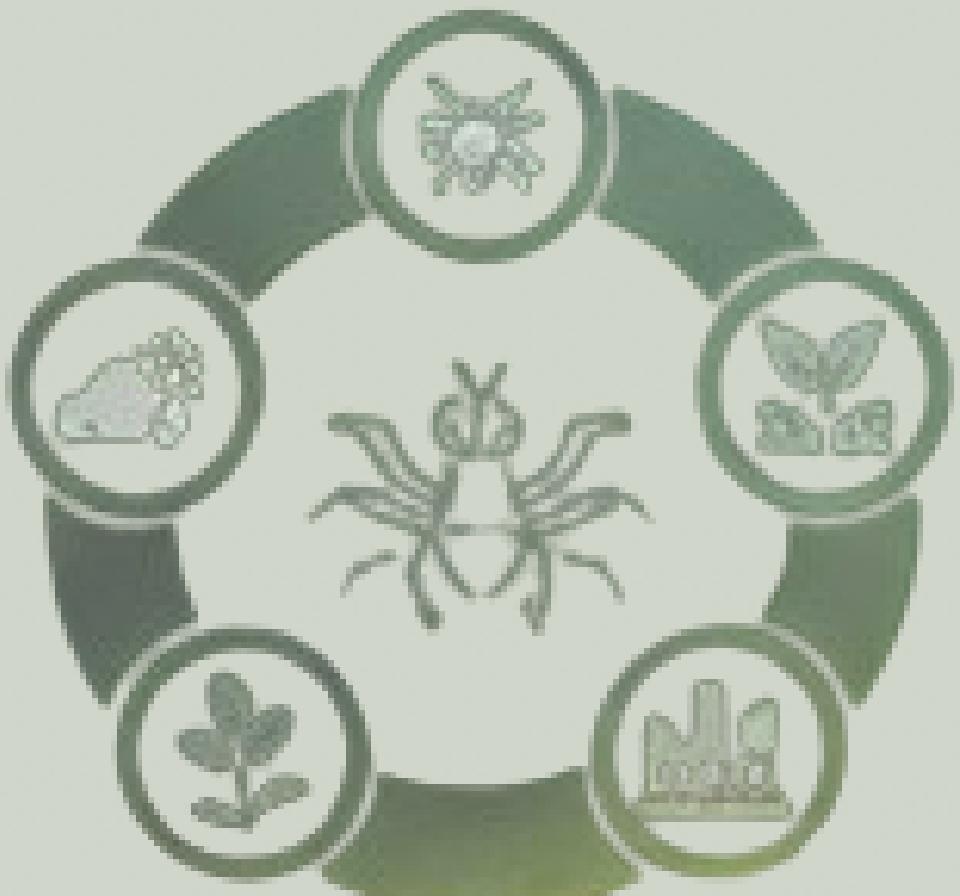


# EcoPredict

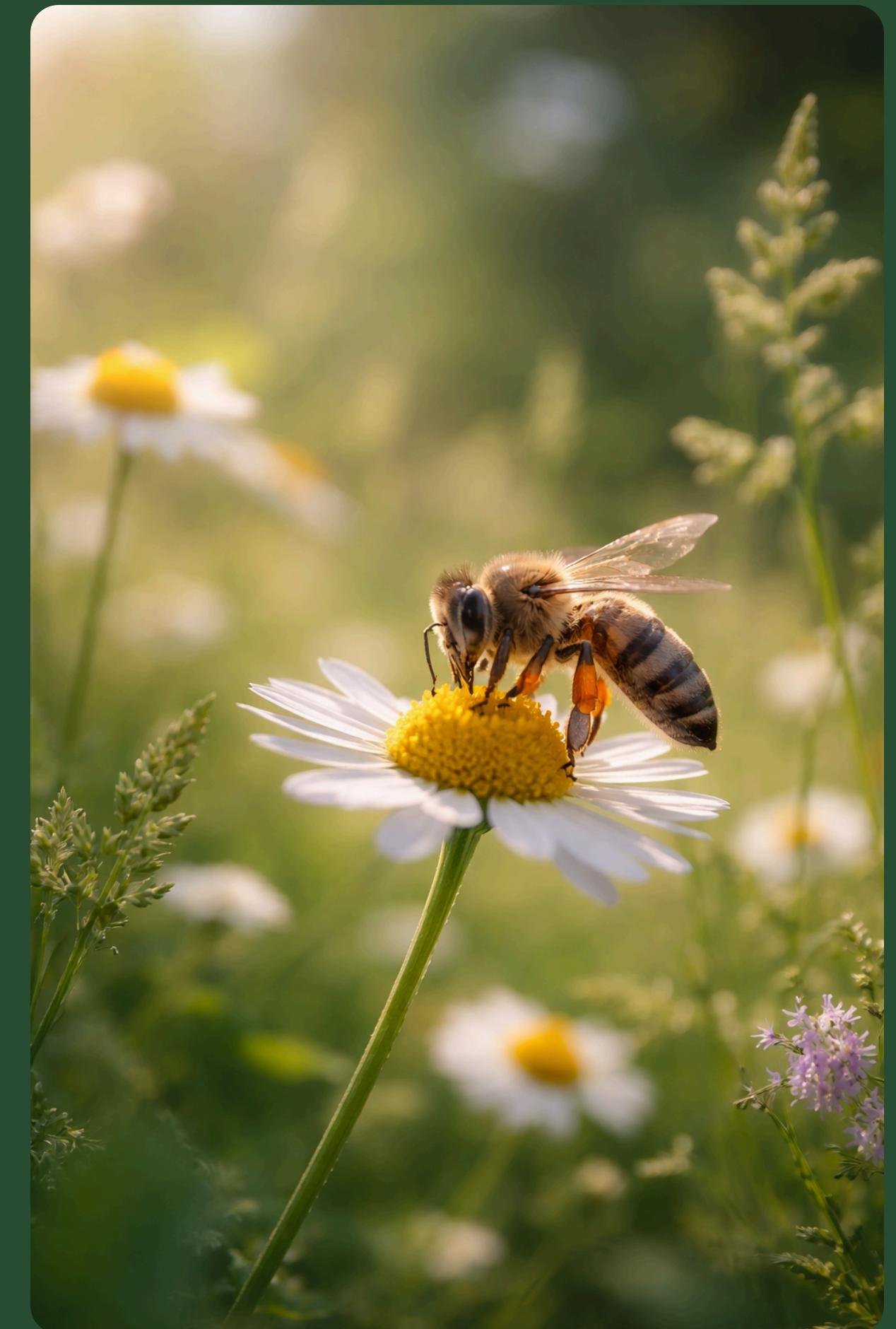
:AI-Driven Insect Biodiversity Loss Forecasting

“Using Artificial Intelligence to Protect Nature’s Smallest Guardians”



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# The Crucial Role of Insects

Insects are vital for **ecosystem health**, serving as pollinators, decomposers, and a food source for other species. Their decline poses a threat to ecological balance and human livelihoods globally.



# Urgent Crisis: Insect Biodiversity Loss

Insect populations are declining due to habitat loss, pesticides, and climate change. This **alarming trend** poses threats to food security and ecosystem balance, underscoring the need for predictive systems to address these challenges.



# Project Objectives

## Goals for Insect Biodiversity Forecasting

### Predict Trends

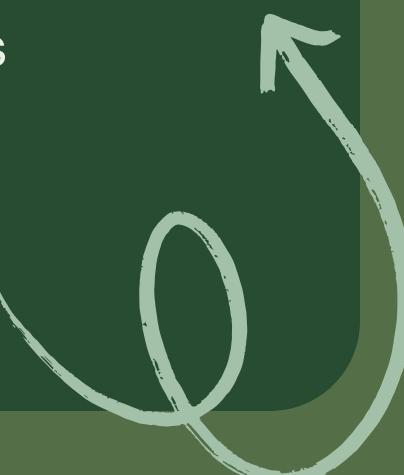
Our primary objective is to accurately predict insect biodiversity loss trends using advanced AI algorithms, enabling a proactive approach to conservation and ecosystem management.

### Identify Drivers

We aim to identify key environmental drivers that influence insect population declines, providing vital insights for targeted conservation efforts and policy development to protect biodiversity.

### Support Conservation

EcoPredict will support conservation planning by offering actionable insights and recommendations, empowering stakeholders to implement effective strategies for preserving essential insect species and their habitats.



# Proposed Solution: EcoPredict Overview

EcoPredict harnesses **advanced AI technologies** to forecast insect biodiversity loss, providing crucial insights that empower conservation efforts and drive proactive measures to protect our ecosystems from impending threats.



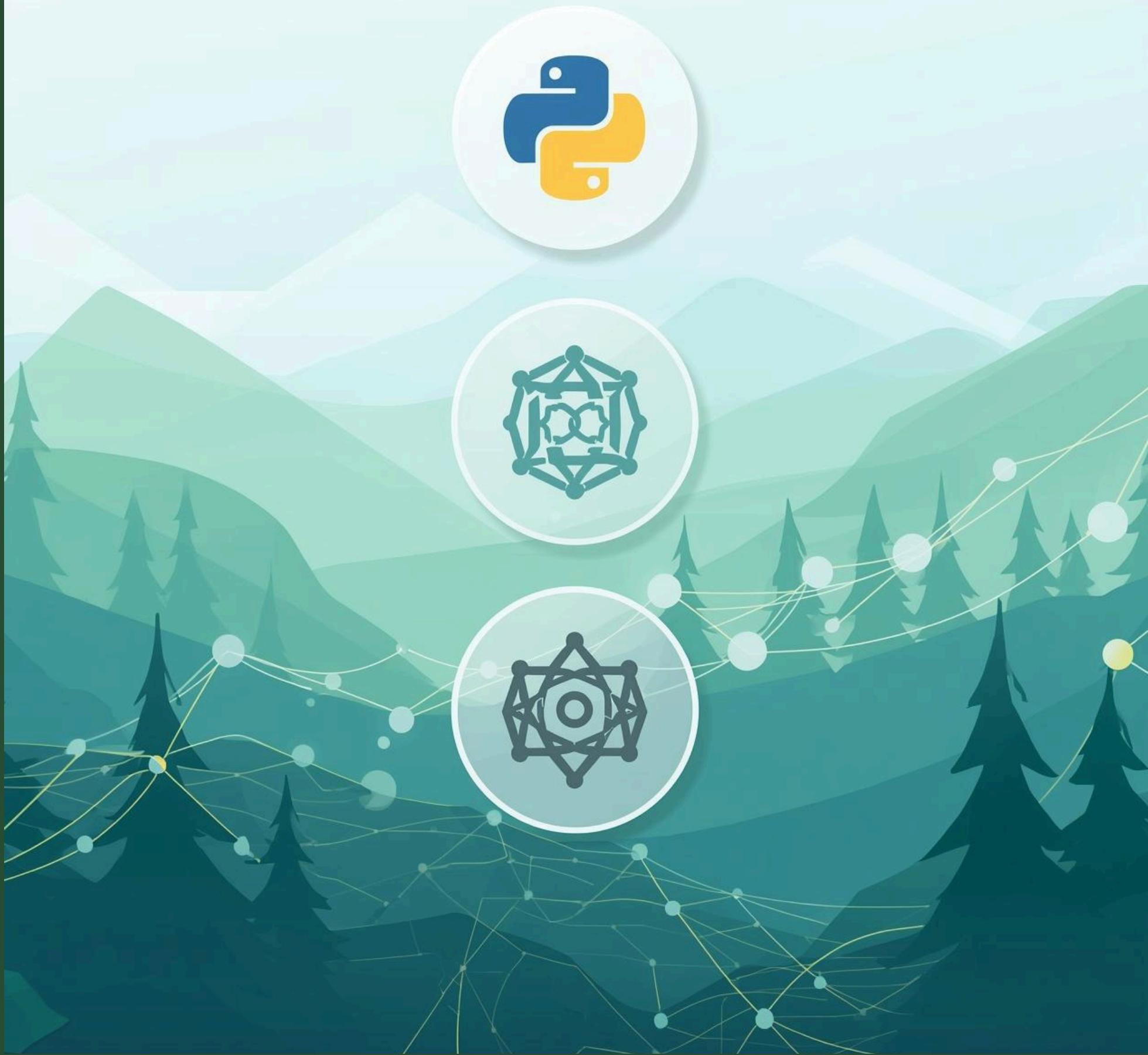
# Essential Data Sources for EcoPredict

EcoPredict relies on diverse data sources, including **climate data**, land-use statistics, and species occurrence records. This foundation enables accurate predictions and targeted conservation efforts to combat biodiversity loss.



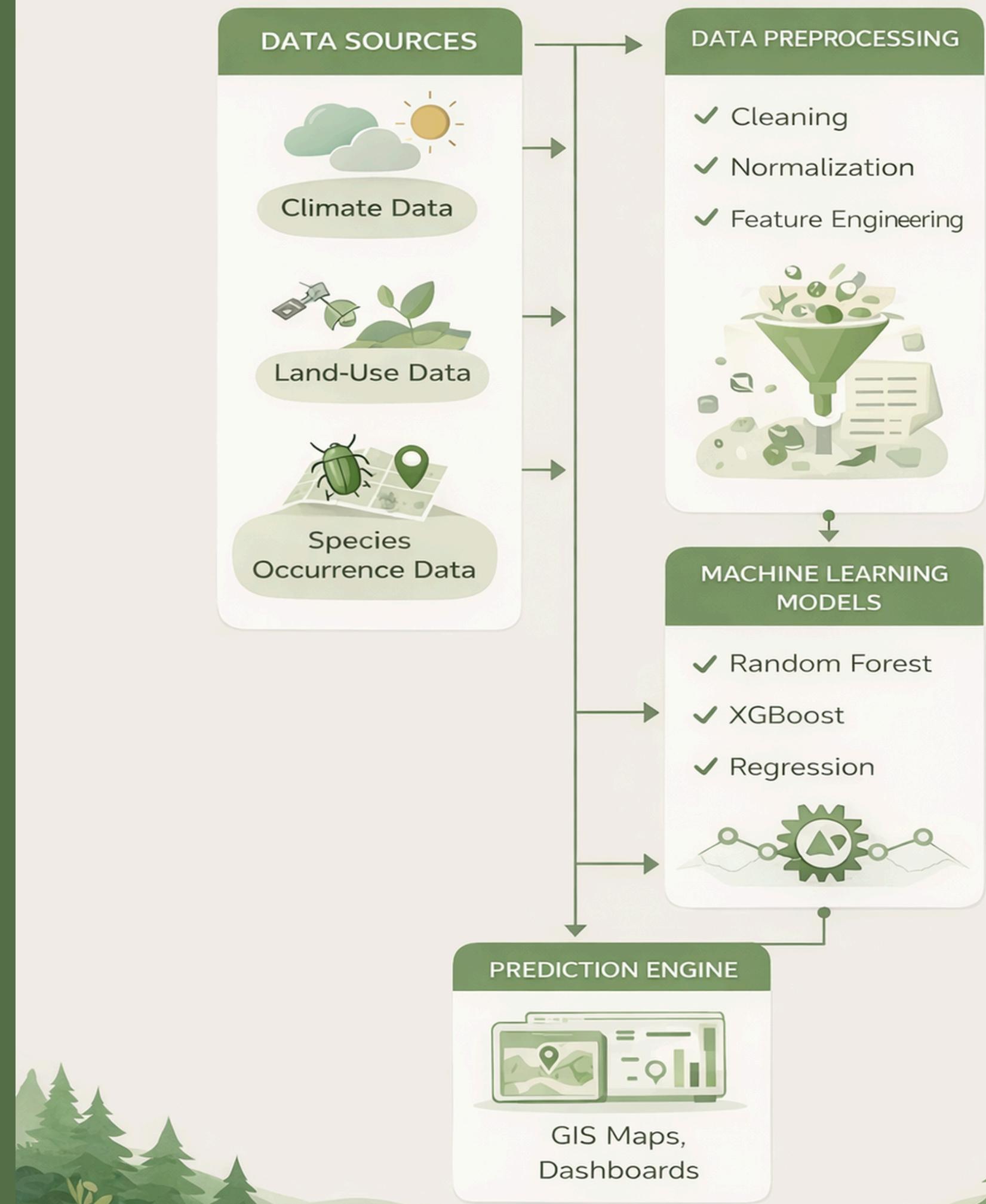
# Technologies Powering EcoPredict

EcoPredict utilizes **Python** for programming, advanced **Machine Learning** models for accurate predictions, and **GIS** tools for spatial analytics, ensuring comprehensive data analysis and effective forecasting of insect biodiversity loss.



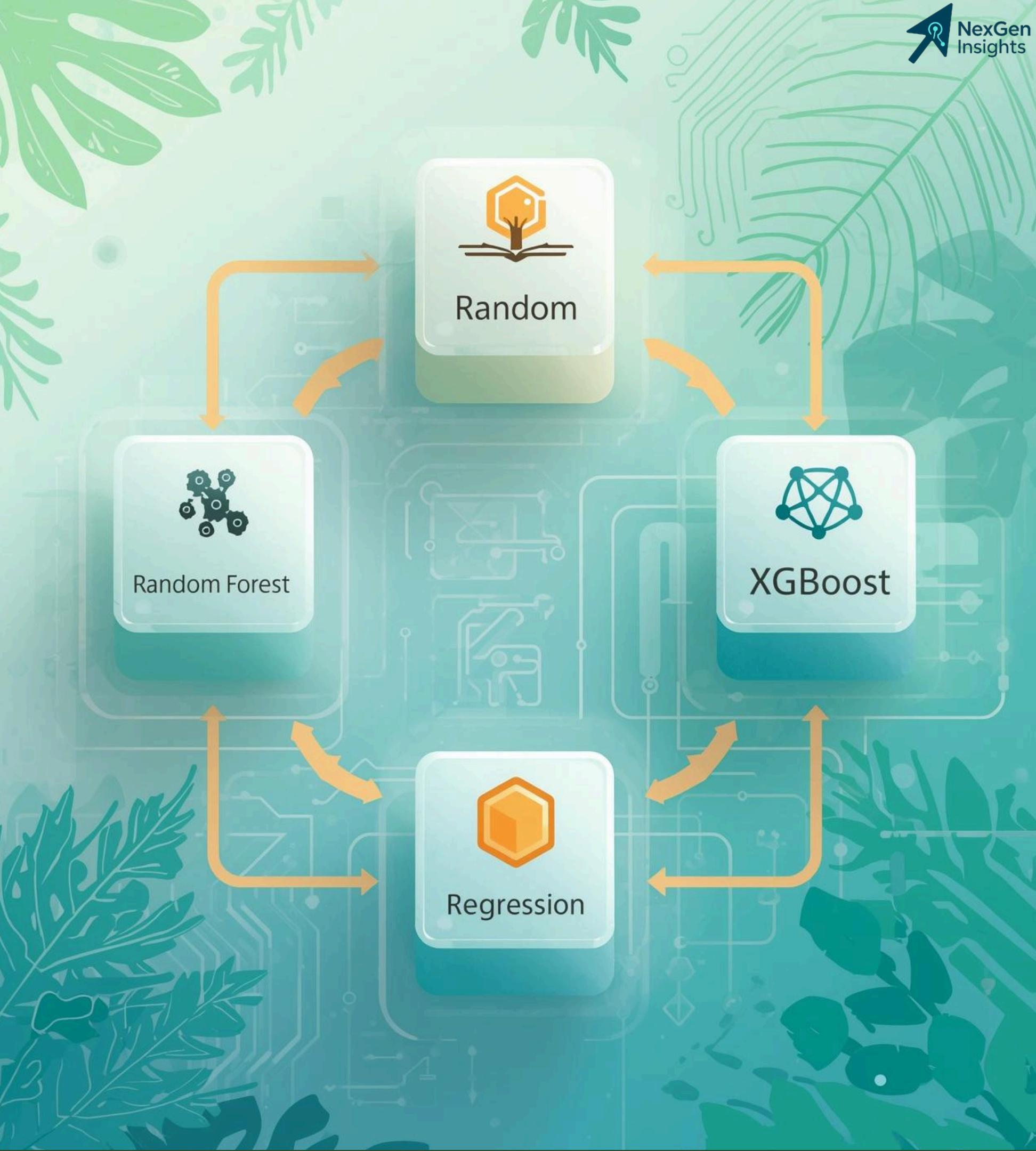
# Data Flow in EcoPredict

The EcoPredict system architecture illustrates the seamless transition of raw data through machine learning processing, culminating in predictive outputs displayed via a user-friendly visualization interface, enhancing biodiversity forecasting accuracy.



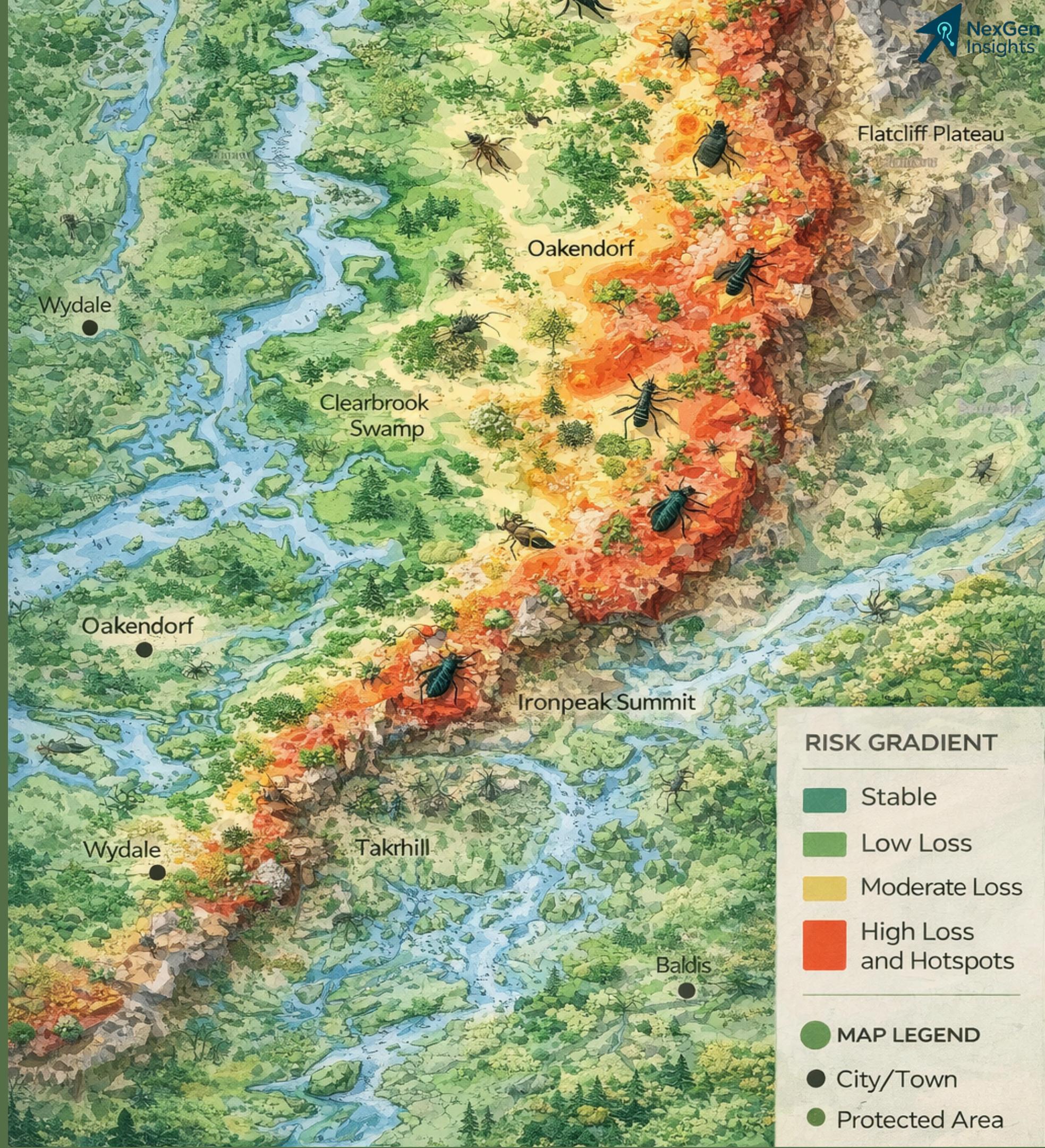
# Machine Learning Models Overview

EcoPredict utilizes advanced models like **Random Forest**, **XGBoost**, and **Regression** to enhance biodiversity loss forecasting, effectively analyzing complex datasets and improving prediction accuracy for conservation efforts.



# Projected Biodiversity Loss Hotspots

The risk maps generated by EcoPredict highlight regions vulnerable to insect biodiversity loss, enabling targeted conservation efforts. These visual tools provide valuable insights for effective **environmental management** and sustainability strategies.



# Applications and Impact on Conservation

EcoPredict supports **effective conservation planning** and informs policy-making decisions to enhance biodiversity management, ensuring a sustainable future for ecosystems and communities reliant on healthy insect populations and environmental balance.

