Ben Guerrieri

Zack O'Rourke

5/2/2024

Database Final Report

Phase IIb – Project Proposal and Specifications

Problem Overview:

Identified Problem:

An in-depth understanding of growth trajectories, health trends, and resources among different cohorts is necessary for sustainable goat farming. The inability to visually represent the growth curves of goats and classify them according to different filters like gender or breed makes it more difficult for Silvies Valley Ranch to recognize and effectively solve sustainability challenges. The implementation of a database system that allows users to organize goats by birth cohort, gender, breed, and weight enables the viewing and comparison of growth curves over time, allowing Silvies Valley Ranch to maximize future resource efficiency, improve health management, and boost overall cohort well-being. With the help of this solution, Silvies Valley Ranch can improve breeding programs because our application allows them to make data-driven decisions and carry out focused practices, all of which will contribute to the development of a stronger and more sustainable goat farming business.

Data Needed toSolve:

To effectively monitor the growth and development of goats, several key pieces of data are needed. Firstly, birth weights (BWT) provide crucial insights into each goat's initial size and serve as a foundation for their growth trajectory. Also, the weigh in date and weight for each

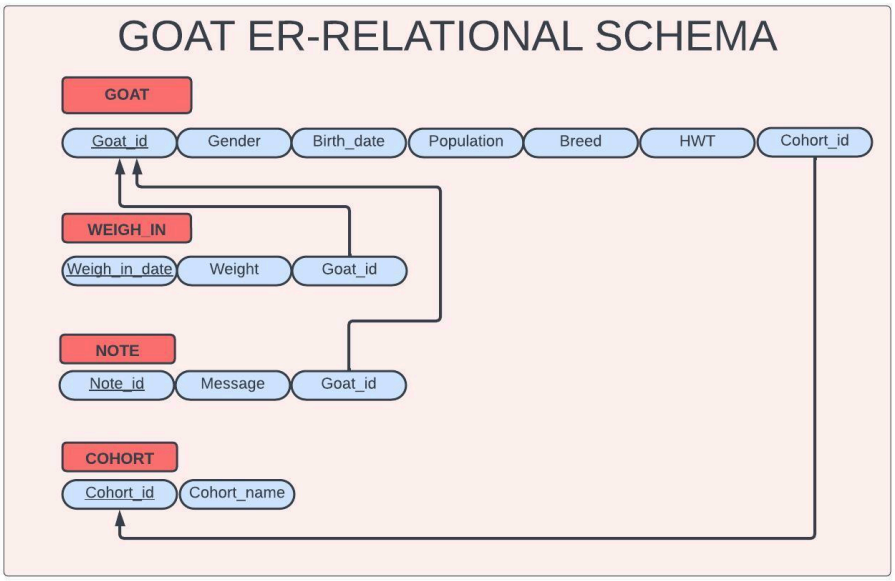
weigh in to calculate dynamic ages and curves. The inclusion of birth weight dates allows for categorizing goats into specific birth cohorts, which helps with comparative analysis. Also, we need GoatIDs so we can identify specific goats and individual growth curves. Along with this we want notes for each goat that the goat ranch managers have written to see reasons for outliers or get more data on goats. We also want the gender and breed of each goat to maybe be able to filter on these attributes to see if anything may contribute to longer lasting goats, heavier, or healthier goats. Together, this dataset forms the basis for informed decision-making and optimization of goat practices.

How The Data Identifies Sustainability Problems:

Comparing the growth curves of cohorts of goats at Silvies Valley Ranch is a useful way to learn more about how seasonality affects the general health and growth of the goat cohort. Through analysis of birth weights within individual cohorts, the ranch is able to identify patterns that could be impacted by seasonal changes in climate, diet, and management techniques. With the use of a comparative method, potential problems relating to particular seasons can be identified, including differences in the quality of the feed, stresses related to the climate, and affects from the breeding season. Silvies Valley Ranch can use this data to put specific plans in place for issues related to seasonality. The ability filter based on different attributes such as gender, breed, age, can help identify what leads to long lasting growth. Additionally, the ability to filter based on different attributes such as gender and breed is crucial for identifying underlying factors contributing to long-lasting growth. By examining growth curves and health trends within specific gender and breed groups, ranch managers can pinpoint any disparities or trends unique to certain demographics, allowing for targeted interventions and optimization of breeding programs.

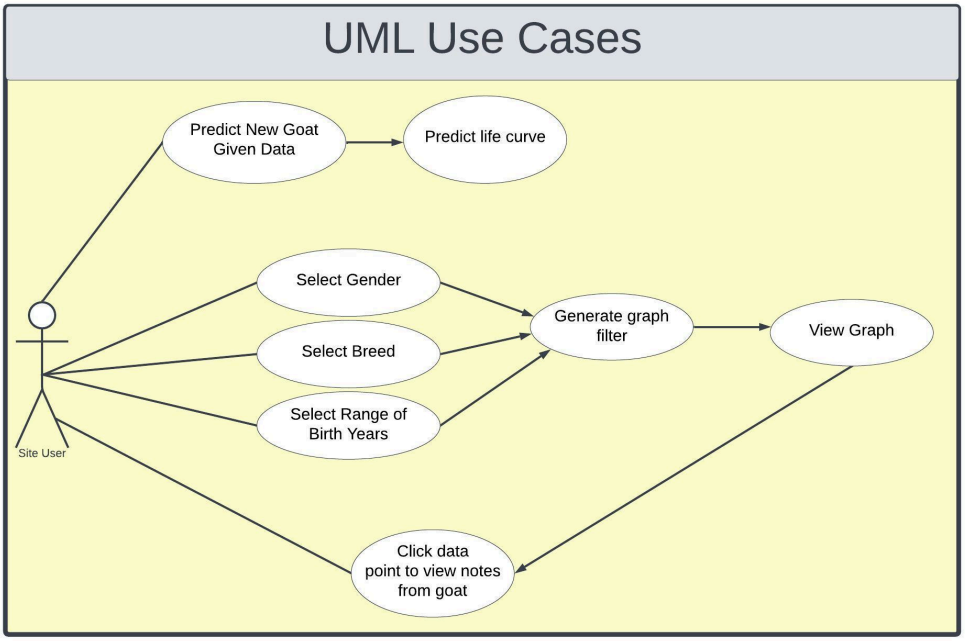
Our Solution:

DB Design:

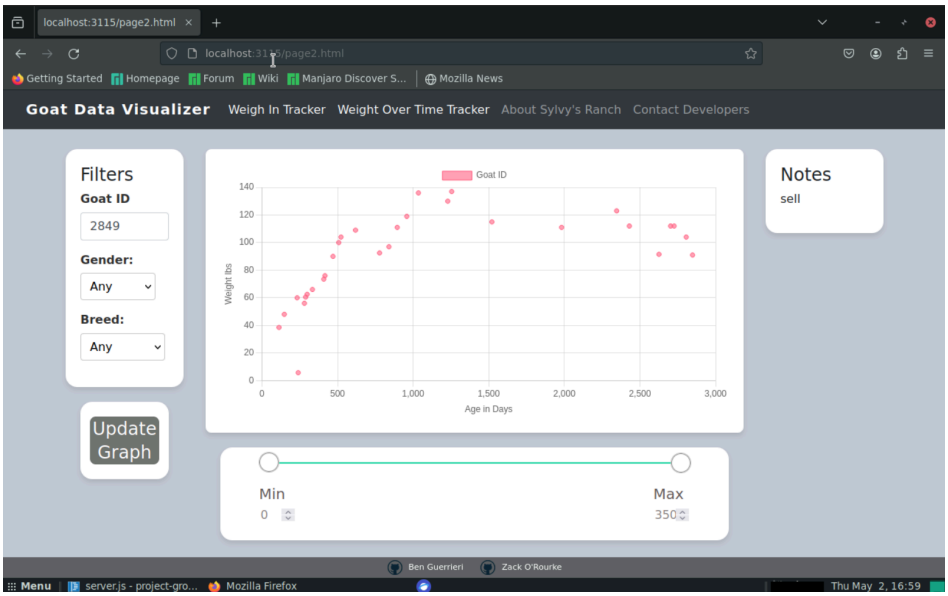


Our db schema used in production

Use Case Preview:



Website Preview:



What is Our Solution:

Our solution is to develop a website for Silvies Valley Ranch for organizing, analyzing, and visualizing goat growth data. Through advanced filtering options, users can dissect data by gender, breed, and other attributes, gaining insights crucial for optimizing breeding programs and resource management. With dynamic visualizations of growth curves and weigh-in data, our solution empowers ranch staff to make informed decisions, ultimately enhancing sustainability and effectiveness in goat farming practices.

Key Features of Our Solution:

Our solution offers advanced filtering capabilities, allowing users to refine their search and analysis based on various criteria such as weight, gender, breed, and age. This functionality enables users to extract specific subsets of goat data for targeted analysis and comparison.

Users can access detailed profiles for specific goats within the system. These profiles include comprehensive information such as growth curves and note records, providing valuable insights into the health and condition of individual goats. This feature supports personalized care and management practices. The application integrates notes related to the health and condition of specific goats directly within the interface. Ranch staff can easily access and review these notes, aiding in monitoring and addressing any health concerns or anomalies in real-time. Visualization allows users to explore growth curves for the entire goat population or specific filtered groups. By visually representing growth trajectories over time, this feature facilitates the identification of trends, patterns, and outliers, enabling proactive management and intervention strategies.

Benefits Of Our Project:

Our project offers many benefits that directly address the sustainability challenges faced by Silvies Valley Ranch. Firstly, by providing advanced filtering options, the ranch can precisely analyze data based on gender, breed, and other attributes, allowing for targeted interventions to enhance the overall health and well-being of the goat population. This targeted approach enables the ranch to identify and address specific issues related to seasonality, such as variations in feed quality or the impact of breeding seasons, thus optimizing resource allocation and lowering potential risks with the environment. Furthermore, the dynamic visualizations of growth curves and weigh-in data let the ranch staff monitor trends and patterns over time, facilitating proactive decision-making and intervention strategies. The ability to compare growth curves of different cohorts of goats allows for insightful analysis, revealing trends and disparities that may inform breeding programs and health management practices. Also the ability to click on outlying points and view the history of the goats helps with identifying outliers and causation behind them. By leveraging data-driven insights, Silvies Valley Ranch can implement new management practices that not only improve the sustainability of goat farming operations but also ensure the long-term sustainability of the business.