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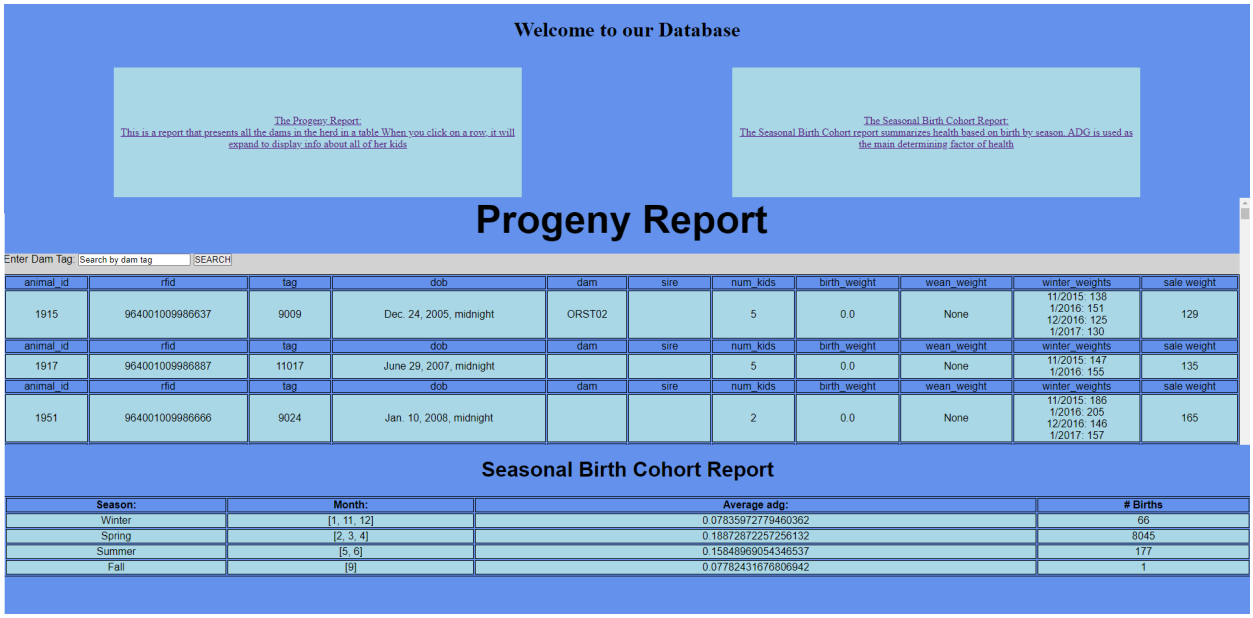
Final Project Report, Group 3
The Progeny / Birth season cohort reports



Welcome to our Database

The Progeny Report:
This is a report that presents all the dams in the herd in a table When you click on a row, it will expand to display info about all of her kids

The Seasonal Birth Cohort Report:
The Seasonal Birth Cohort report summarizes health based on birth by season. ADG is used as the main determining factor of health

Progeny Report

Enter Dam Tag: Search by dam tag SEARCH

animal_id	rfid	tag	dob	dam	sire	num_kids	birth_weight	wean_weight	winter_weights	sale weight
1915	964001009986637	9009	Dec. 24, 2005, midnight	ORST02		5	0.0	None	11/2015: 138 1/2016: 151 12/2016: 125 1/2017: 130	129
animal_id	rfid	tag	dob	dam	sire	num_kids	birth_weight	wean_weight	winter_weights	sale weight
1917	964001009986887	11017	June 29, 2007, midnight			5	0.0	None	11/2015: 147 1/2016: 155	135
animal_id	rfid	tag	dob	dam	sire	num_kids	birth_weight	wean_weight	winter_weights	sale weight
1951	964001009986666	9024	Jan. 10, 2008, midnight			2	0.0	None	11/2015: 186 1/2016: 205 12/2016: 146 1/2017: 157	165

Seasonal Birth Cohort Report

Season:	Month:	Average adg:	# Births
Winter	[1, 11, 12]	0.07835972779460362	66
Spring	[2, 3, 4]	0.1887287225725613 2	8045
Summer	[5, 6]	0.15848969054346537	177
Fall	[9]	0.07782431676806942	1

Our Problem:

We worked with Silvie's Goat farm, who is a goat breeder who has spent a fair amount of time developing their own breed of goats, the American Range Goat. The purpose of breeding this goat is to have an impact on sustainability, and to breed a strong and healthy goat breed that will help to achieve those goals. There are several different ways in which goats can contribute to sustainability, the two that we focused on were alternative and less environmentally damaging meat production, and wildfire management through brush control. Our logic is quite simple: A healthy and hearty goat will present a higher average daily gain until maturity. A higher average daily gain means that the goat consumes more roughage, which in turn helps (when used in areas prone to wildfire) to reduce the possibility of wildfire, as well as increasing the meat yield on that goat. As a side note, because the goats eat roughage, they require far less water to grow and maintain their weight. According to to LA Times, 1 pound of beef requires just under eighteen hundred gallons of water, whereas a pound of goat meat requires a mere one hundred twenty seven gallons, or 7% the water required for beef!

Our Approach:

As a team of computer scientists, our approach was to look to the data, and try to find connections between lineage and strength / health, as well as birth season and strength / health. As previously stated, we found the average daily gain from birth to maturity to be the best signal of overall quality of the goat, both genetically and from a production/wildfire management standpoint.

Therefore, we designed a database using Postgres, and a web application to view the sorted and compiled data. Our stakeholder, Silvie's, had a previous database, and was able to provide us with a series of CSV files from which we were able to design and populate our own database. First we stripped any unnecessary data from the original files, and then went about organizing the data in a way that was more conducive to the task at hand.

We used Python with the Django Framework to create and manage our full stack web application.

Our Impact:

Through our research we were able to make a few findings which will help with the furtherance of the American Range Goat breed, and help focus the efforts of the stakeholder on sustainability and viability of her breed. We have found that the best season in which to birth a goat is spring by a wide margin, and that within

spring, april is the best month. Armed with this information, the rancher can make more informed decisions about when to begin and end mating season.

Furthermore, with a clear way to view the lineage of a dam (mother goat), it becomes much simpler to evaluate a bloodline for strength and health, which can again have a large impact on breeding decision making.

By using these two reports together, the farmer can make the best decisions for their herd, and can fine tune the genetics of their breed for strength and health. By choosing to breed the best dams at the best times, and cease breeding weak bloodlines and restrict breeding during the seasons with the poorest results, the breeder can ensure that the best genes get passed down, and have the best chance of delivering strong healthy kids, who will have a bigger impact on brush management, until ultimately they are sold or slaughtered, providing a higher meat yield.