11-4-2020

COVID-19_UMaine News_Animal and veterinary sciences seniors: Capstone stories

University of Maine Division of Marketing and Communications

Recent Posts

Mitchell Center hosts talk on rapid Arctic change
Published: February 23, 2021

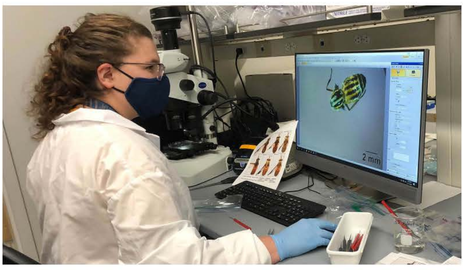
Karina Iskandarova: aspiring global policy maker broadens horizons at UMaine
Published: February 22, 2021

Cassandra Quintal: Professional land surveyor and online graduate student
Published: February 22, 2021

BDN reports Pendse is 2021 Distinguished Maine Professor
Published: February 22, 2021

Maine Monitor cites Fernandez, Hunter in report about tax breaks for wood pellet industry
Published: February 22, 2021

UMaine Today



University of Maine animal and veterinary sciences senior Catherine Fabel of Eden Prairie, Minnesota, is conducting research for her capstone project in the laboratory of Pauline Kamath, assistant professor of animal health. Fabel is testing flies that may be potential carriers of Anaplasma bacteria, a blood parasite infecting a large proportion (~50%) of Maine's moose population.

Animal and veterinary sciences seniors: Capstone stories

November 4, 2020

In the University of Maine animal and veterinary sciences capstone course AVS 401, students have the opportunity to combine their knowledge and skills with ongoing research of UMaine faculty. Some work in the laboratory or field, some assimilate decades of research literature into a review, and some fashion research into industry best practices or evidence-based white papers. All the students synthesize what they have learned and apply it to real-world situations.

This fall, in the course led by assistant professor Sue Ishaq, the students are taking the principles of research and developed a project in collaboration with a research mentor. They proposed a question and a course of investigation to pursue, developing their skills in experimental design conceptualization, and project planning and management. In the spring semester, they will proceed with their independent study and synthesize their findings.

Their projects encompass research in animal health and zoonosis, animal nutrition, physiology and technology, and the interplay between animal production and ecology. Collectively, the work of these seniors and their faculty research mentors is relevant to various industries in Maine, including livestock, equine, aquaculture and fishing, and health.

A month into their projects, some of the students shared summaries of their capstone research projects.

Case study on the morbidity, mortality and diagnostics of scours in a dairy calf facility
AVS senior Alex Eisner
Adviser: Dave Marcinkowski, associate professor, University of Maine Cooperative Extension dairy specialist

A case study will be run in a calf barn with about 60 pre-weaned calves in an environment with a 98% morbidity rate of scours. Scours affects all animals at around the seventh day, and lasts anywhere from four to 10 days. These animals are treated with supportive therapies such as oral electrolytes, subq, or iv fluids, and penicillin/norocillin when presenting with bloody scours. I plan to run fecal samples to identify the pathogen that is causing the illness. I also plan to run blood protein panels on calves to determine whether or not there is successful antibody transfer from colostrum. From this information, we can determine if we need to make adjustments to dry cow vaccination protocols, or general management or sanitation practices. I would like to also take this information and see the financial benefits that would result from improving the rate of scours. Calves rarely die from this due to the amount of treatment that we give them, but again they are still getting 1–2 L of fluids every day for up to 10 days, and the price of that adds up very quickly.

Meningeal worm risk reduction using sustainable techniques
AVS senior Laura Freudenberger
Adviser: Anne Lichtenwalner, associate professor, Extension veterinarian and director of the UMaine Animal Health Laboratory

In this project, the researchers are testing the hypothesis that incorporation of aromatic plants in pasture land would act as a deterrent for snails which are the carriers of brain worm. This will be tested using trials within the lab to determine if snails display tropism in response to the presence of said aromatic plants. Ideally, field application would occur in the spring to determine ideal placement of these plants in pastures. The presence of the meningeal brain worm in herds would hypothetically be reduced if the snail's aversion is palpable.

Devil facial tumour disease affecting the endangered Tasmanian devil population
AVS seniors Kendra Huth and Julia Powers
Adviser: Jim Weber, associate professor of animal and veterinary sciences

Devil facial tumour disease affects the endangered Tasmanian devil population. This research project focuses on the biological components of the disease, as well as the different methods currently being researched to prevent and treat it.

Deer ked and moose flies as potential vectors of Anaplasma infections in moose
AVS senior Catherine Fabel
Adviser: Pauline Kamath, assistant professor of animal health

Several moose populations in the Northeastern United States have decreased over the past decade, with states like New Hampshire losing around 40% of the population. The main cause of this decline has been high calf mortality due to high parasite loads, which is hypothesized to be driven by a longer tick season and an expanding parasite range due to climate change. Upon analyzing blood moose samples, it was discovered that many moose (~54%) in Maine are infected with *Anaplasma* bacteria, a blood parasite that has been extensively researched in Norwegian moose populations where it is spread via Ixodes ricinus ticks, a tick species that is not in the U.S. The Kamath laboratory tested for *Anaplasma* in the winter tick *(Dermacentor albipictus)*, which commonly parasitizes moose in North America. While some winter ticks tested positive for *Anaplasma*, none were infected with the same strain identified in moose. This project focuses on testing flies as a potential *Anaplasma* vector.

Effectiveness of sodium lignosulfonate as a hay preservative
AVS senior Kaycee Ames
Adviser: Juan Romero, assistant professor of animal nutrition

This project focuses on testing the effectiveness of sodium lignosulfonate (a low-cost paper mill by-product) as a hay preservative. It will be compared to a negative control (untreated) and propionic acid (positive control), the preservative most commonly used on hay and the most effective so far. Mini-bales in insulation boxes (designed to mimic field bales) will be incubated in a controlled environment to analyze the differences in nutritive value, microbial communities, the temperature during storage (bales heat when they spoil), and dry matter losses.

Pastured Poultry Project
AVS senior Maddy Philbrick
Adviser: Colt Knight, assistant Extension professor, state livestock specialist

The focus of this pastured poultry project is an extension of a project that Colt Knight and Josh Hatley completed in 2017. Data was collected over the summer. This project involved raising two strains of broilers on pasture that the supplying company previously didn't have growth data for. A total of 140 birds in two breeds were purchased for this project — two different strains of Cornish crosses, one of the most popular breeds of broilers. The birds were raised in four pens and evaluated for their feed, water and grass consumption, and average growth rate over eight weeks.

The effect of dietary salt on the rumen bacteria of beef cattle
AVS senior Enya Childs and co-student researcher
Adviser: Sue Ishaq, assistant professor of animal and veterinary sciences, in collaboration with a team led by Tim DelCurto and Carl Yeoman of Montana State University

The project focuses on salt and its interaction with the rumen microbes. It is specifically looking at beef cattle intake, digestion and rumen fermentation while on a low-quality diet. I will be working with the bacterial DNA sequences from inside the rumen to analyze any changes that might be occurring due to varied salt intakes.

Quantifying Equine Grazing Behavior Characteristics Utilizing GPS Tracking Collars
AVS senior Cody Marlin
Adviser: Colt Knight, assistant Extension professor, state livestock specialist

The focus of this research is to develop long-lasting battery GPS collars for horses to quantify equine behavior and grazing patterns. The GPS sensor data will be correlated with observed behaviors of the horses. The goal is to create a program that reads the GPS data and recognizes the behavior associated to determine resting, sleeping, exercising and traveling behavior. Through this knowledge of equine behavior, an individual could identify a horse that is getting sick or has been injured, and use the collars to maximize pasture distribution.

Contact: Margaret Nagle, 207.581.3745

Share this:

Division of Marketing and Communications
5703 Alumni Hall
Orono, ME 04469-5703

Tel: 207.581.3743
Fax: 207.581.3776