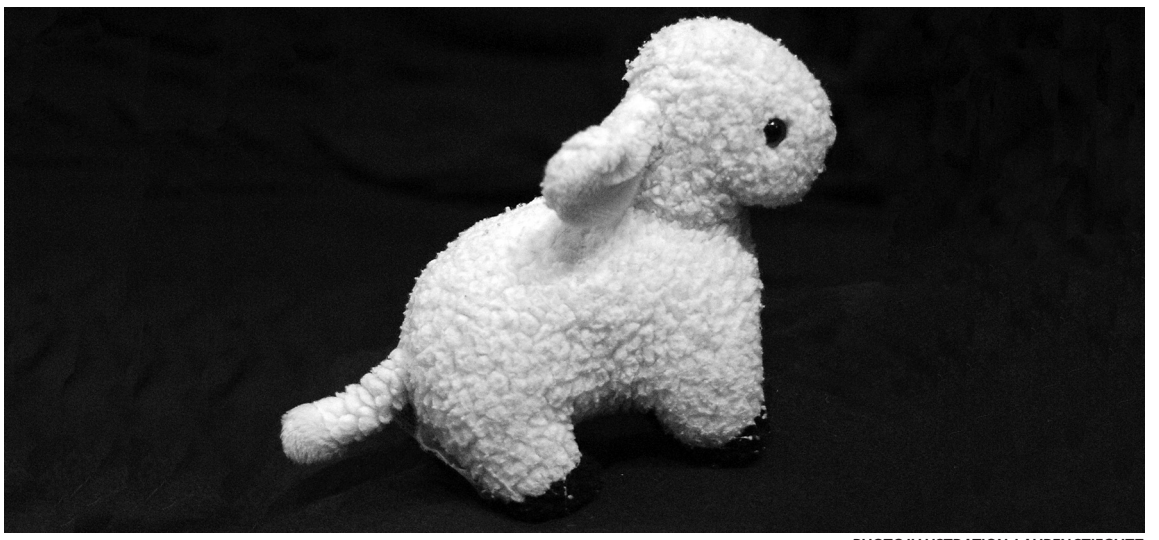

PHOTO ILLUSTRATION: LAUREN STIEGLITZ

WHEN A MAN SHEEP REALLY LOVES A LADY SHEEP ... The rules of nature can sometimes throw top experts off.

Incestuous sheep surprise scientists

U of A researcher says genetic diversity of the animals still jives with evolution

THOMAS WAGNER
News Staff

Starting from just two individuals, a flock of Mouflon sheep on the sub-antarctic Haute Island has grown to nearly 700, while at the same time astonishing genetic scientists.

The animals, which resemble small bighorn sheep, were introduced to the tiny, six-square-kilometre island in 1957 by the French who have a scientific and military station there. With little to do on the windswept, barren island, the French brought the sheep from Vincennes Zoo in Paris for some thing to shoot at, said David Coltman, an associate professor of Biology at the University of Alberta.

However, the sheep have now become much more valuable to genetic scientists—as objects of study, instead of target practice. Despite the high level of inbreeding and isolation, the population has maintained almost the same level of genetic diversity for 50 years.

"[There was] a lot more variation than we expected," Coltman explained. "We were all kind of surprised that there was that much genetic variation even after 50 years in total isolation."

This sentiment was echoed by Coltman's colleague, Dr Denis Reale, a Canada Research Chair in behavioural ecology at *Université du Québec à Montréal*, who lived on Haute Island for almost two years while studying the sheep population there. The genetic study, which is continuing under Coltman's graduate student Renaud Kaeuffer, began because the sheep were so robust, instead of weak as would be expected due to inbreeding.

"Given the potential for inbreeding in this population, the sheep are not degenerated," Reale said. "We couldn't really find any evidence of degenerate effects, at least at the [physical] level."

However, both scientists agree that while this discovery was surprising, it in no way implies that earlier work on evolutionary theory was wrong, instead proving that nature is often more complex than we may expect it to be. In fact, both Coltman and Reale explained unexpected variation in terms of existing scientific theory.

The problem with earlier assumptions about evolution, said Coltman, is that they often only include genetic drift and the Founder Effect. This theorizes that when a small group breaks off from a larger population, such as the two sheep, the resulting population would be expected to be genetically representative of the founders, and have increasingly less variation from generation to generation.

"If you were to assume no selection and no mutation, or any of these other things, and then just assume the effects of drift and the Founder Effect, you'd have no variation left," Coltman said. "But ignoring those other things and making those assumptions can give you a misleading prediction."

So, although variation decreased to a small degree, it was maintained in large part due to natural selection. What Coltman and Reale found was that due to the harsh conditions of the island, including parasites and the boom and bust population cycle, there was a strong selection in favour of genetically diverse individuals.

"In human terms, the sheep have maintained diversity because selection has kept them on their toes," Coltman said.

NEWS BRIEF

Written by Ryan Heise

HOMELESSNESS FUNDRAISER SURGES PAST GOAL, NETS OVER $24 000

After five nights sleeping outside of the Education building with no showers, no money and only donated food, three business students and their professor have managed to raise over $24 000 for the Youth Emergency Shelter (YESS).

James Matsuba, Kendal Harazny and Casey Paulhus, along with Dr Sandy Hilton, participated in the third annual 5 Days for the Homeless campaign by foregoing amenities and living on campus from 18–23 March.

"Our mission was simply to raise awareness [of Edmonton's homeless problem] and to raise a monetary donation," said Matsuba, project manger for the event. "I'm ecstatic about the amount of generosity random students have been giving us."

After raising over $5000 last year, the group set a goal of $15 000 for this year's event. But, after reaching that amount by mid-week, they decided to increase their target to $24 000.

"When we moved from five grand last year to 15 this year, I was bit nervous about breaking 15, because that's a big jump," Hilton explained, adding how surprised he was with the amount of support for the campaign.

Aiding their cause this year was a partnership with a corporate sponsor, National Bank Financial, who matched the donations raised up to $10 000. Dr Michael Percy, Dean of the School of Business, also contributed by matching the amount 400 students in an introductory finance class were able to come up with when he unexpectedly showed up and proposed the challenge. He ultimately signed a cheque for $1335.

"I can't explain the feeling of raising $4000 for a local charity in a matter of 15 or 20 minutes," Matsuba said. "It was really overwhelming."

But their total may still rise, as the group continues to accept donations for YESS via their website.

"We're going to keep 5days.ca and online donations up for at least a couple more weeks," Matsuba said. "We thought $15 000 was a high goal, but when we met that in three days we thought, 'Why stop now?'"

Next year, the event organizers hope to take 5 Days Canada-wide, with other universities across the country expressing interest in holding similar events and approaching the students for guidance in getting started.

However, Hilton was quick to point out that they still want to increase the size and awareness of 5 Days at the U of A.

"This isn't meant to be a business student fundraiser, so next year we're hoping to involve some of the other faculties and get them involved. Engineers, Arts, Education, whatever; let's make this thing big."

RYAN HEISE

HAPPY TO BE HOBOS Business students raise funds by living on the streets.