

On Tour *in the* Sahtu

A team of wildlife specialists — including veterinarians from the Western College of Veterinary Medicine — are creating more awareness of wildlife health among residents of the Sahtu Region, one tour at a time.

When this year's tour of the Sahtu Region was about to hit the road in mid-January, Alasdair Veitch was feeling the stress of organizing the enormous, two-week venture. There were last-minute problems with accommodations, schedules and personnel, and the weather forecast was calling for overnight temperatures of -48° Celsius. It wasn't exactly the start that Veitch — the Government of the Northwest Territories' supervisor for wildlife management in the Sahtu — had wished for the tour's third year.

Despite the setbacks, four of the seven-member team left Norman Wells, N.W.T., on January 17, and headed out on the winter "road" toward their first destination: Colville Lake — a small, traditional Dene community north of the Arctic Circle. Forty-eight hours later, Veitch had forgotten his troubles. The students' enthusiasm during the tour's school presentations had been overwhelming. Two local hunters were now trained as wildlife health monitors. And during the first evening spent with experienced harvesters, Dr. Susan Kutz of the Western College of Veterinary Medicine (WCVM '92) had received a tremendous tribute.

"I'll never forget when one of the Colville Lake elders said to Susan, 'You must be a very good hunter — you know so much about the animals,'" says Veitch, who has worked nearly 11 years in the region. "For him to call Susan 'a good hunter' because of the depth of her knowledge about caribou — this was as high a compliment as I've ever heard in the Sahtu."

Wildlife Health? Cool! Dr. Emily Jenkins was nervous as she walked into a classroom full of high school students at Fort Good Hope in January. "They were a tough crowd: they were sitting back in their chairs with skepticism on their faces," recalls the WCVM graduate student.

Then Jenkins pulled out *CSI: Marten* — a presentation she had built on the forensic investigation concept used in the *CSI* television series. The students were soon working their way through a whole case: determining why the marten died, collecting its history, looking for evidence of trauma, and best of all — conducting a post-mortem examination.

"It was amazing to see those same kids tune in and stop worrying about what was cool," says Jenkins.

Each year, the students' enthusiasm encourages the team's wildlife veterinarians, biologists and technicians to be creative in developing interactive presentations and hands-on activities for

Tours a success story

For Veitch and Kutz, it's the kind of success they dreamed about when they first brought the concept of annual northern community tours to life in 2003. *Monitoring Wildlife Populations and Health in the Sahtu: Developing Community Expertise* is a project between the Northwest Territories' Environment and Natural Resources (Sahtu Region), the Research Group of Arctic Parasitology and Canadian Cooperative Wildlife Health Centre at WCVM, and the Sahtu Renewable Resources Board (SRRB). The project's components focus on interactive activities that increase awareness of wildlife health issues and encourage local participation in wildlife research.

For the past three years, the federal Northwest Territories Cumulative Impacts Monitoring program has provided core funding for the community tours while the project's partners have supplied financial or in-kind support.

TOP RIGHT: A frosty day in Colville Lake. **LEFT:** Students line up for a peek at jars of worms and parasites. **RIGHT:** Dr. Brett Elkin visits with young students.

children of all ages. Throughout the presentations, team members highlight the roles of veterinarians, biologists and other science-based careers related to natural resources and wildlife health. They also talk to students about the importance of wildlife health, about wildlife diseases and zoonotic diseases.

During the tour's first year, Kutz remembers when several students described a veterinarian as "someone who doesn't eat meat." This year, the wildlife veterinarian noticed a greater interest in wildlife health and animal health among students: "For example, the same two girls keep telling me they want to be veterinarians. Another student talked about starting up an animal shelter, and many kids are more aware of the need for vaccinations."

A few months after the team's visit, the value of vaccination awareness hit home in Colville Lake where a red fox and two dogs tested positive for rabies in April 2005, adds Kutz.

Shaping Scientists of the North

When Dr. Susan Kutz was writing the 2005 project's grant proposal last fall, it suddenly hit her. "We're maintaining continuity for our team in the North, but what I realized is that we weren't doing anything to maintain that continuity in the south," says Kutz. "It was time to get others involved in this experience and build on that capacity so it's not dependent on one person."

Two WCVM graduate students — Drs. Aleksija Neimanis and Emily Jenkins — joined the tour and added their skills to this year's team. It was the chance that Neimanis had been waiting for: the Master's student had participated in other wildlife projects through the Canadian Cooperative Wildlife Health Centre, but this was her first visit to the North.

Neimanis' role was to review the wildlife health monitor program, gather feedback from the monitors and to train new monitors. Her pathology training also came in handy during the high school dissection labs, plus she helped to record the interviews with veteran hunters.

By meeting with the northern people and learning firsthand about the wildlife health program, Neimanis says she became more aware of the challenges of working in such a harsh environment: "If I had put together a sampling kit without knowing the conditions up there, I'd ask them for things that wouldn't make sense. Whereas if you go up there, you learn the limits or limitations, but you're also more aware of the possibilities."

Jenkins spent more than six months conducting field research on parasites of Dall's sheep in the MacKenzie Mountains during the summers of 2002 and 2003. The research experience was invaluable, but the PhD student didn't have the opportunity to meet Sahtu Dene and Metis in their home communities. "Plus I had never been up there in the winter, so it was exciting to experience the darkness and -45 degree Celsius temperatures."

Jenkins developed this year's educational presentations: a combination of slides and props for the younger children, plus the CSI-style presentation for the older students. "What helped was when Susan told me that I wasn't up there to ensure that kids come away knowing x, y and z. It's more important that they go away learning something and have a good time doing it," says Jenkins, who also pitched in during the information exchanges with local harvesters.

What did Jenkins learn from the experience? That northerners are an invaluable source of wildlife health information. She adds that her future research projects will include methods for two-way communication so local people can share information about the health of local wildlife populations, and she can report back to the communities about her research findings.

"You can get caught up in your lab work and your papers, and forget about the big picture," admits the graduate student. "You have to remember what's important to wildlife and what's important to the local people — I think we all need a reminder about that once in awhile."



This year, the tour received additional support from Enbridge Pipelines Ltd. to provide much-needed lab equipment for the

Sahtu's five schools. The team also received funding from Natural Resources Canada's Climate Change Action Fund to support the elder interviews, and \$16,300 from the Natural Sciences and Engineering Research Canada "PromoScience" program to support the tour's youth education component.

Community-based knowledge

Kutz and Veitch developed the tour idea after attending a workshop in October 2002 to identify knowledge gaps in the Sahtu. Community participants had emphasized the need to involve local harvesters in wildlife research, to include traditional knowledge in research projects and to educate northern students about local wildlife issues.

"Attitudes are changing compared to 30 years ago when scientists would go up north, do their research and come back down with little or no interaction with local people," says Kutz, a researcher in WCVM's Veterinary Microbiology department with more than a decade of northern research experience. "Communities want to have an active role in designing research, they want their youth to be involved and educated about the role of wildlife in the North."

As the northern community tours began taking shape, so did a core team of experienced resource people including two of Veitch's colleagues in the territorial government: Dr. Brett Elkin (WCVM '88), disease and contaminant specialist, and wildlife technician Richard Popko. Glen Guthrie, SRRB communications officer, also brought his enthusiasm and valuable connections in local Sahtu communities to the team.

"It's the dedication of the key players that makes this program work," says Kutz. "We're all determined to make this happen so with that in mind, we've learned to be flexible and to adapt to new plans at the last minute."

Northern perennials

In March 2003, the team visited five communities: Colville Lake, Fort Good Hope, Tulita, Deline and Norman Wells. While the initial focus was on public information seminars, the group's success in local schools quickly changed plans. "In that first year, we did some impromptu school presentations, and that really went over well. The children were very receptive, and the teachers were thrilled with it," says Kutz.

Besides expanding their school presentations in 2004, the team also introduced the Wildlife Health Monitor program to one community. This year, four more hunters in two additional communities received wildlife health monitor training and the tour included the focus-group interviews with experienced harvesters. Another addition was the inclusion of two WCVM graduate students — Drs. Aleksija Neimanis and Emily Jenkins — to the tour's team. By involving young researchers, Kutz hopes to spark more interest in northern

LEFT: Dr. Emily Jenkins fills up at a gas bar in Tulita. **RIGHT:** Dr. Aleksija Neimanis meets with Bruce Kenny, one of two wildlife health monitors in the community of Deline.

SAHTU continued

research among the next generation of scientists.

Kutz wants to eventually bring on a graduate student in education to help develop school presentations. Another potential: local communities have invited team members to “come out on the land” with school groups in 2006.

What would make the program even better? Long-term funding, says Kutz. Veitch jokes that a four-wheel drive bus equipped to handle winter roads and to sleep eight in -48° weather (plus a kitchen and shower) would also be nice. But even if those wishes don't materialize in the next few years, the two don't plan on leaving the tour anytime soon.

“I always come back on quite a high about being a veterinarian, about working in wildlife health,” says Kutz. “By working with people in the communities, it makes me feel that my work is of real value.”

As for Veitch, he's still inspired by the rush he felt on that cold January morning after the success experienced in Colville Lake. “We stopped near the edge of the community to take some pictures of the woodsmoke curling out the chimneys in the soft blue frozen light. That's when I knew — I think we all knew — that this was going to be a fantastic tour. And it was,” recalls Veitch. “Our spirits were soaring — they never came down, and they still haven't.” **A**

Visit <http://wildlife1.usask.ca/sahtu/> to learn more about the Sahtu Monitoring Project and to meet project team members.

Visit www.wcvm.com/news then click on “The Ark” under newsletters to read more about the Sahtu tour experience.



LEFT: Dr. Susan Kutz. **CENTRE** (left to right): Richard Popko, Alasdair Veitch and Dr. Aleksija Neimanis. **RIGHT:** Experienced hunters pore over an area map during focus group interviews in the community of Fort Good Hope.

Traditional Knowledge + Science

This year, team members met nearly three dozen living legends: elders in the Sahtu communities whose hunting experience spans the past half-century.

“We're using their experiences to identify what diseases have affected animals' health in the past, then we're combining their knowledge with scientific findings to understand what's out there now,” explains Kutz, who is including the interviews in a larger investigation of the impact of climate change on wildlife disease in the North.

“All of this will give us a baseline for the past and present: understanding the occurrence and distribution of different parasites and other pathogens helps us make predictions about what might happen in a future of rapid climate change.”

Glen Guthrie of the Sahtu Renewable Resources Board worked with community wildlife councils to gather the groups of veteran hunters, and most of the sessions included a translator

for the Dene elders. “By speaking in their own language and in a comfortable setting, people opened up and gave us their opinions and experiences,” says Veitch.

While northern harvesters have talked to other research groups about herd availability and herd health, this is the first time that elders and researchers have worked together to extensively review a range of diseases.

“I tried to ask questions about diseases with symptoms that are fairly typical of that condition so there wouldn't be much chance for misinterpretation,” says Kutz. For example, she asked the elders if they had seen signs of brucellosis, foot rot, and hoof and jaw deformities. The groups also talked about moose winter ticks and other parasites since their presence may indicate climate change.

Kutz says the interviews evolved into two-way communication sessions between the elders and wildlife specialists. “I asked a question about a particular disease, they gave me a response,

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and then they asked, 'How does an animal get this disease?' 'Can we eat it?' or 'Is this disease a problem in the region?' I think everyone was generally happy to be there and saw this as a valuable information exchange."

In March and April, Kutz did similar interviews in six communities in the Gwich'in and Inuvialuit regions. Next winter, she hopes to expand the project into the Deh Cho and South Slave regions to develop the "whole picture" for traditional knowledge on wildlife diseases in the Northwest Territories.

"Eyes on the Land" The Wildlife Health Monitor program engages local hunters to collect baseline information for monitoring wildlife population health. "It's one of those programs that's so simple and so good that you wonder why you didn't think of it years before," says wildlife biologist Alasdair Veitch.

Two hunters from Deline became the pilot project's first wildlife health monitors in 2004. In January 2005, WCVM graduate student Dr. Aleksijah Neimanis met with the two monitors as part of her program evaluation, plus she helped to train four more hunters in Colville Lake and Fort Good Hope.

What makes the program so efficient is that the hunters collect the samples from caribou they harvest for subsistence — either for themselves or for others in their communities. Every year, each monitor submits up to 10 collection packages that include samples of blood, feces, liver, kidney, the lower jaw and a lower leg bone.

"From those samples, we can determine the caribou's age and body condition, analyse parasite loads with the collected feces and test for contaminants. We can also do DNA analyses, and we can immediately test the blood samples or archive them for future use. If a disease shows up in caribou in five or 10 years, we can use these archived samples to determine if it's an emerging disease or something that was present in the herds before," says Dr. Susan Kutz of WCVM.

After evaluating the program, Neimanis' main recommendation was to conduct one-on-one interviews with the wildlife health monitors after the end of each hunting season. Besides strengthening communication, the annual interviews will clarify monitors' observations and "capture" important information on hunting effort and animal distribution.

"The bottom line is that this program is a cost-effective way to collect a comprehensive sample set from a key species of the north. If you want to monitor the disease and health of animals, you need to have the community on side — and it's even better when they're involved," says Neimanis.

This Little Protein GOES to MARKET

It's taken four years, but the pace is quickening in Dr. John Gordon's trek toward developing a genetically-engineered protein called *G31P* into a treatment for inflammatory disease.

A major step came in November 2004 when Lombard Life Sciences announced that its Western Life Sciences Venture Fund was investing \$3 million into IL Therapeutics — a University of Saskatchewan spin-off company created to commercialize *G31P* for human and animal health markets.

"There's no doubt that this has been a learning experience for all of us, and I would have loved to see *G31P*'s development happen faster. But it's incredibly rewarding to reach this stage. We're very excited to see it take off," says Gordon, a professor of immunology in WCVM's Department of Veterinary Microbiology.

That journey began in 2000 when Gordon's research team proved *G31P*'s effectiveness in blocking the neutrophil-activating properties of a group of proteins called *ELR-CXC chemokines*. This is crucial in treating cattle diseases like shipping fever and chronic mastitis, but the team's investigations also demonstrated its potential in treating *acute respiratory distress syndrome* (ARDS) and rheumatoid arthritis in humans.

Encouraged, Gordon approached U of S Technologies Inc. (forerunner to today's U of S Industry Liaison Office or ILO) in 2001. Since his research was scheduled for publication, the U of S filed for a provisional patent to protect the technology (it was converted to a full U.S. and international patent application in 2002).

Meanwhile, start-up specialist Rachelle Girard contacted everything from pharmaceutical giants to small development firms to garner interest in the technology. "For one reason or another, they all felt that this wasn't an avenue they wanted to pursue," says Gordon.

Still, it wasn't for lack of trying: Girard contacted nearly 30 international companies over three years. "Without Rachelle and everyone at ILO, I wouldn't have had any idea where to go or what to plan next. I've been very happy to have them involved in this project," says Gordon.

Then came the call from Lombard Life Sciences — the chance to work with a regional organization and to add value to a Saskatchewan-based product, says Girard.

While \$2.5 million of the funding goes toward commercializing *G31P* for human markets, Gordon will receive \$500,000 for more *G31P*-related studies including the process of "humanizing" the protein. "One of the things I like about this deal is that it injects half a million dollars over five years into U of S research," says Doug Gill, ILO's managing director.

ILO usually looks for an existing company to license an invention, but occasionally, a new technology requires a startup company to reach the next step. In this case, Gill says ILO will continue working with IL Therapeutics to manage *G31P*'s patent portfolio and to ensure that the company meets the terms of the license.

While it may take up to eight years before the drug reaches human markets, its development in veterinary medicine should happen quickly. "One of our strengths is that we're situated in a college with a veterinary teaching hospital, alongside people who are interested in testing this product in clinical trials," says Gordon, who recently received multi-year funding from Natural Sciences and Engineering Research Canada (NSERC) to develop *G31P*'s animal health aspects.

Another key strength is Gordon, adds Girard and Gill.

"A major factor in making these deals is the researcher's co-operation, and that was critical in this case," says Girard. "We relied on John's input and his participation through the whole process — and he never let us down." **A**

