The Antarctic Sun

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November 14, 2004

Photos by Emily Stone / *The Antarctic Sun*

Emperor penguins line up to dive into the water through a hole at Penguin Ranch on the sea ice near McMurdo Station. Below, a penguin swims through the water beneath the sea ice.

Scientists test new tools to study emperor penguins

By Emily Stone
Sun staff

Studying emperor penguins in the winter is no easy task. It's the kind of work that inspires memoirs with inauspicious titles like, "The Worst Journey in the World."

Paul Ponganis is hoping for better luck than than the memoir's author Apsley Cherry-Garrard had in 1911. He's running a pilot project this summer that could eventually let his team monitor penguins at Cape Washington over the winter.

Ponganis, of the Scripps Institution of Oceanography, is testing a custom-built camera that takes panoramic shots of the birds at Penguin Ranch four times a day. If the camera works this summer, he plans to try it at Cape Washington next summer, with the ultimate goal being a winter project, possibly the following year.

See Penguins on page 9

With new gear, traverse sets sights on Pole

Story and photos by
by Kristan Hutchison
Sun staff

The South Pole traverse team drove five tractors away from the ice runway Nov. 11, with re-engineered gear, revamped plans and a better understanding of the terrain they hope to cross.

The route, indicated by a red line on planning maps, crosses the Ross Ice Shelf, climbs the Leverett Glacier to pass over the Transantarctic Mountains, and then continues across the plateau to Amundsen-Scott South Pole Station. It's a total of 1,600km and 3,000m elevation gain.

"The red lines go over places nobody has ever stood before," said project manager John Wright. "The only thing we know about it is it's white and cold."

The last successful traverse from the Ross Ice Shelf to the South Pole was Edmund Hillary's historic journey in 1958, when his team became the first to drive to the Pole. Hillary's team was frequently slowed by deep snow, large sastrugi and tractors falling into crevasses.

Despite all the challenges, the traverse holds great potential for the Antarctic program. If the trial run shows it's feasible, surface transport could carry enough fuel to the Pole each season to replace a number of LC130 flights, making those flights available to take scientists into the field

See Traverse on page 7

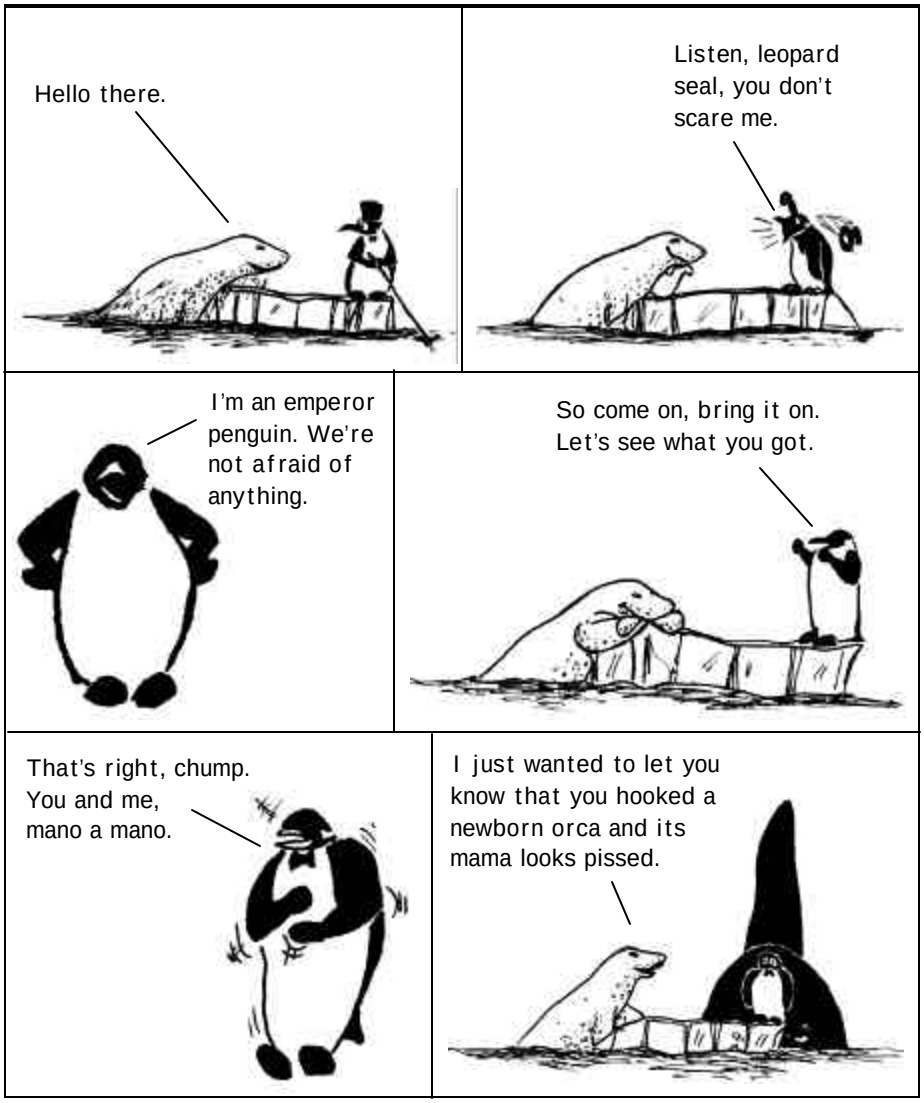
INSIDE

Quote of the Week

"It's cold down there. Are they going to give you furs?"

- South Pole resident's grandfather on hearing his grandson was headed to Antarctica

Ross Island Chronicles By Chico



Cold, hard facts

Palmer Station

Sits: On Anvers Island
Original site: Built in 1965
Present site: Moved there in 1968
Named for: American sealer Nathaniel B. Palmer who was, by some accounts, the first to see Antarctica, in 1820
Rainfall: avg. 76cm a year
Latitude: 64.5 degrees S., two degrees north of the Antarctic Circle
Daylight: Year-round, ranging from five hours in winter to 19 hours in summer
Getting there: Only by ship
Accessible: Year-round, unlike Pole and McMurdo
Where to watch the glacier calve: From the fish tank-turned-hot tub
Worst environmental disaster: When the *Bahia Paraiso* ran into a reef near Palmer in 1989, ripping open its hull and spilling 645,000 liters of fuel that created a slick over 30 sq. km.

Sources: The Idiot's Guide to the Arctic and Antarctic, *Palmer Station guide,* Lonely Planet guide to Antarctica

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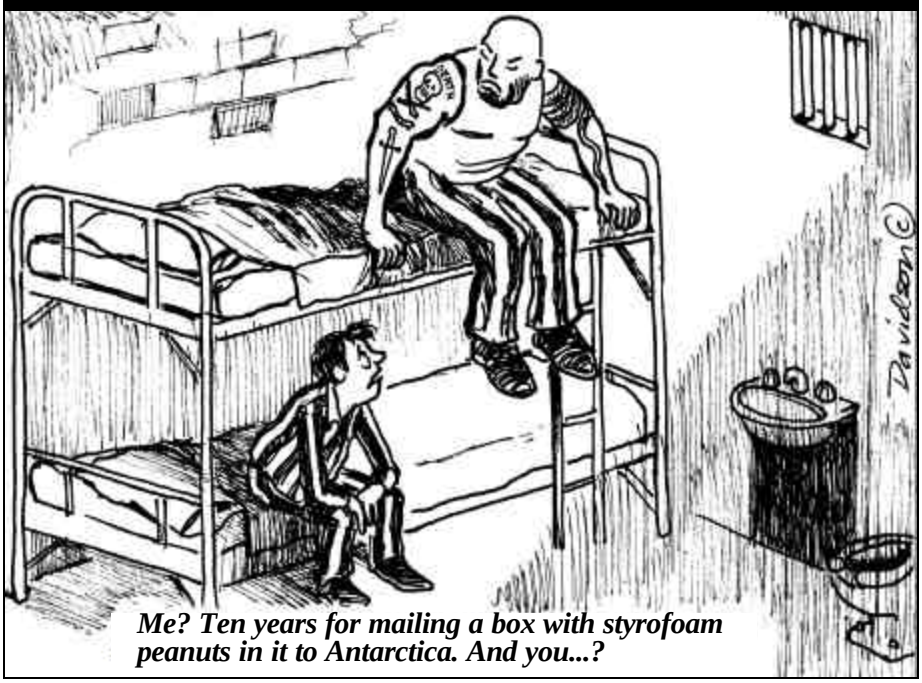
It's a harsh cartoon **Matt Davidson**



Me? Ten years for mailing a box with styrofoam peanuts in it to Antarctica. And you...?

Personal web sites share Ice with world

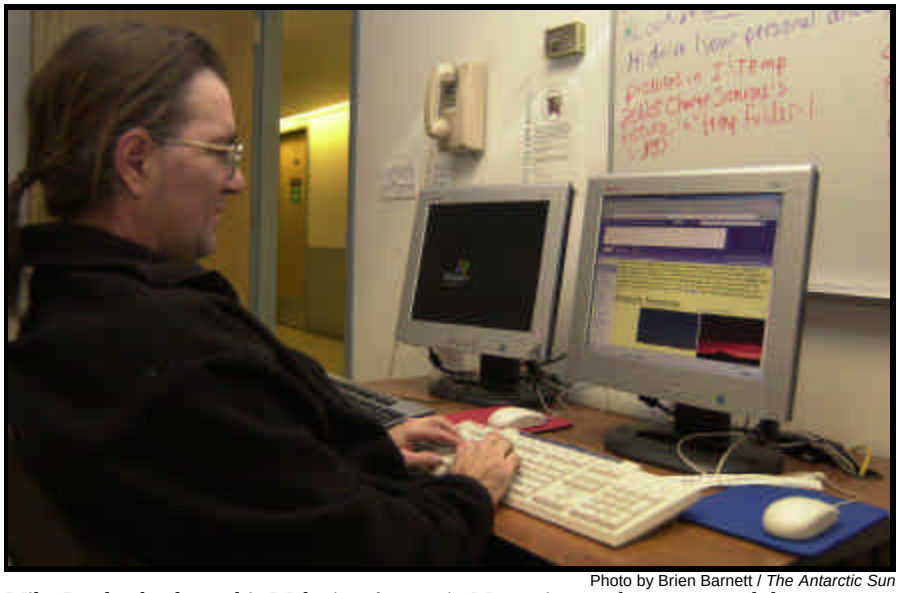


Photo by Brien Barnett / *The Antarctic Sun*

Mike Poole checks on his Web site, Antarctic Memories, at the computer lab at McMurdo Station. Poole hosts a bulletin board on his site and frequently answers questions about life on the Ice for many first-time U.S. Antarctic Program participants.

By Brien Barnett
Sun staff

The international traveling sensation Flat Stanley can get no flatter than a bunch of electrons, but at Glen Kinoshita's South Pole Web site, Stanley may be at his coolest.

Flat Stanley is a children's book character who found he could travel the world through the mail if he was as flat as a sheet of paper. The winter season had already started and flights discontinued when Kinoshita heard that a kid had sent him a Flat Stanley. With the original stuck somewhere in the mail, Kinoshita downloaded and printed off Flat Stanley, then created a fun and extensive site about Flat Stanley's adventure at the South Pole.

As a wintering research scientist working with weather and climate monitoring, Kinoshita had access to much of the station. He used his access to create a fun site featuring photos of Flat Stanley working all over the station. Stanley even sported extreme cold weather gear similar to Antarctic participants. It was a Flat Stanley follower's dream come true and showed off some of the station resident's creativity during the long, cold winter.

Kinoshita is one of many people who maintain Web sites and online journals dedicated to their experiences in Antarctica. Using the keyword "Antarctica," Google, MSN and other search sites reveal tens of thousands of sites. The Ice can be explored online.

USAP.org is the official United States Antarctic Program Web site. That site and the Office of Polar Programs site at NSF.gov contain useful information about Antarctica, from quick facts to a photo library of images from around the continent. There are dozens of unofficial Web sites spawned each season by Antarctic program participants. These sites typically include journals with daily entries and photo galleries. Some feature poetry and music inspired by their creators' experiences on the Ice.

Like the Flat Stanley page, nearly all the sites have some level of quirky Ice behavior. For example, the opening page of dining attendant Allison Barden's site features a photo of her standing by the McMurdo Station sign during a snowstorm in beach attire. It's a far cry from San Francisco where she lives when not in Antarctica. Her nickname, Sandwich, was earned by her custom of toting a sandwich-shaped lunchbox everywhere she went. It carries over to the name of the site: sandwichgirl.com.

A few strokes of the keyboard will get surfers to computer tech Holly Troy's Web site, southpoledudes.com. There, visitors can review dozens of photos from several seasons spent in Antarctica.

"It's basically so people can live vicariously through my pictures," Troy said.

During the week, Troy collects his photographs and creates his Web pages. On Sundays, he spends about 15 minutes at the Coffee House updating his site from his personal laptop.

Troy first came down to the Ice with a friend in 2001 and the two were supposed to work together on the site (hence the

See Web on page 11

Here are a few Web sites by Antarctic residents this year:

Beth Bartel, GPS specialist
http://iceblog.puddingbowl.org

Zondra Skertich, VMF supply
www.zondra.org

Glen Kinoshita, 2004 South Pole winterer
http://gcrgweb.sdsu.edu/penguin/index.html

Allison Barden, prep cook - sandwiches
www.sandwichgirl.com

Perspectives

Ex-DA is done with the dishes

But he can't escape the pull of Antarctica

By Phil Jacobsen

"I'll be back." That's what Arnold Schwarzenegger said in "The Terminator" and he meant it.

"I'll never be back." That's what I said about Antarctica and I meant it.

When I finished my 2002-2003, 14-month stint as a dishwasher in McMurdo, I burnt my blue shirt, pureed my Chefwear pants and flung my non-latex gloves into construction debris. With more absolute determination than that girlie man Arnold, I'm here to tell you, I meant it when I said, "I'll never be back."

Guess what Mr. Governor—I'm back. What are you going to do? Impeach me?

Never. Not in my lifetime. Or in the lifetime of any item lost, petrified or frozen on this continent or in Mapcon did I plan to return to Antarctica. And that my friends, is the problem — I said, "Never."

It's as though if you look up the word "Never" in the nearest Antarctic dictionary the definition would say: 1. Certainly 2. You bet. 3. Can't wait.

If there were an English-to-Antarctica/ Antarctica-to-English phrase book, the sentence "I'LL NEVER BE BACK," would translate to, "See you next season!" The clichéd phrase, "I'll only come back when Hell freezes over" would mean the Devil was dressed in thermal insulated Carhartts and his heat-burnt red skin was replaced with a Raytheon-issued Big Red Parka.

One minute I'm landing in Christchurch, New Zealand, onboard a C-17 after spending about 13 months too long as Madge the Dishboy saying "Never again," and the next minute it's as though the New York Air Guard did a touch-and-go and brought me right back for another season.

"I'll never see you again, Antarctica" was quickly replaced with "I'll C-17 you soon."

After landing on the ice runway, I was whisked to the National Science Foundation Chalet for the "Welcome To Antarctica" speech: "Here's a Thousand Ways for You to Die." Since the "whisking" took place on Ivan the Terra Bus—the slow-moving, big-wheeled version of mass transit, Antarctic style—I had plenty of time to reflect on why I was never, ever going to return to McMurdo and I drew a blank.

Photo by Phil Jacobsen / Special to *The Antarctic Sun*

Phil Jacobsen holds up the toy given to him by a 5-year-old girl in Salt Lake City.

If there were an English-to-Antarctica/ Antarctica-to-English phrase book, the sentence "I'LL NEVER BE BACK," would translate to, "See you next season!"

I looked at the volcano, Mount Erebus. The lake of lava at the top of Erebus was pluming a long, streaking mist of steam across the sky. She was absolutely beautiful. For this reason alone, I should never have said, "never." The cross on Ob Hill spoke to me of the history and the challenges others have seen in these parts. Soon, I thought, I'll climb to that cross and apologize for prematurely saying goodbye. The Royal Society Mountains were majestic. And McMurdo was McMurdo.

A wintering friend once described this little town of McMurdo in the darkness of noon as looking like "an all-night truck stop in Nebraska." Well, this stop was now going to be home, again.

Even though I'd made the decision to come back to McMurdo many months ago, McMurdo hadn't made peace with my return. Our safety manager saw me and said he thought it was a safe bet I'd never return. The electricians were shocked to see me, the mechanics at the heavy shop dropped their trannies when I passed by, the carpenters were bored with my return, the BFC said, "BFD you're back" and a plumber said, "Oh crap, we're knee deep in it now."

Hey, it's not just me. I'm seeing people whom I thought I'd never see again. Around the station I've run into a couple of friends who, after spending six months in the dark said, "Never again."

We had joy. We had fun. We had seasons in the sun. And then one really long, long winter.

The last time I was here I felt like I was watching the worst reality TV show ever imagined, but it was my life. I washed dishes for 14 months.

The thrill of living at the bottom of the world disappeared after watching the 1,143rd drain spin counter-clockwise in a windowless room 10 hours a day.

I've left dishes in my apartment sink for nearly as long as I worked as a dishwasher because of a hatred for all things Palmolive, dishpan hands, suds and hard work. If I knew then what I know now, when I left Antarctica I would have said, "I'll be back.

"BUT—This time … wash your own dishes."

Phil Jacobsen works in the supply department at McMurdo Station. He has also written for the Salt Lake City Weekly.

around the continent

SOUTH POLE

Polies face cold and flu

By Brenda Everitt
Pole correspondent

They're working around the clock at South Pole Station now that people have become acclimated and settled into their routines, despite a rash of the flu and polar "crud."

Temperatures have remained low. The average temperature for the week ending on South Pole Meteorology reports is about seven degrees lower than the usual temperature for this time of year, based on records going back to 1958. Sundogs and halos have been observed on several occasions since the beginning of November, and the low temperatures have continued to yield impressive contrails on the incoming and outbound airplanes.

Heavy equipment has been running around the clock in order to move snow away from the new station and dome areas, and also to create several snow roads. One of the new snow roads will lead out to the Dark Sector, where the Ice Cube project will be busy setting up and drilling holes in the ice.

Soon after summer season kicked off, an outbreak of influenza-A and cold-like symptoms knocked dozens of workers at South Pole Station off their feet for several days. While the station's population hovered around 220 for the week ending Nov. 7, medical staff reported seeing more than 100 people for various flu-like symptoms. Those who were thought to have the flu were asked to stay away from work, and some had their meals brought to their rooms. With so many sick, the station declared a half-day safety stand-down in order to give people there a chance to rest and get well. The station did not order a quarantine as was rumored.

The outbreak, though, did prompt repeated messages from management and kitchen staff for personnel to wash their hands as often as possible. This led to a new South Pole greeting: an elbow-to-elbow touch that replaced the hesitant handshake. Diners were greeted by two bottles of anti-bacterial hand lotion.

Photo by Brien Barnett / *The Antarctic Sun*

Water vapor condenses into ice crystals, fogging the air behind an LC-130 as it lands at the South Pole.

The situation seemed to be improving slightly as of Wednesday.

In other news, the station plans to offer support to the South Pole GPS reference station for a Chilean-Brazilian expedition in November and December. The planned round-trip tractor traverse from Patriot Hills to Pole will be making a contribution to ITASE, the International Trans-Antarctic Scientific Expedition. They will be collecting core samples and performing GPS and gravity measurements along the route.

Also, opportunities for working out, personal training sessions and swing dance classes are increasing. Basketball, climbing and other activities that take place in the gym are on hold until the stacks of outgoing package mail can be loaded onto planes. That will happen when the temperatures ease and the contrails break.

Sun staffer Brien Barnett contributed to this report.

PALMER

Sea ice weakens

By Kerry Kells
Palmer correspondent

A substantial calving of the glacier on Anvers Island, behind Palmer Station, broke apart the sea ice and sent cracks in all directions like a spider's web. However, the sea ice has continued to cling around station, halting the efforts of the researchers to take samples from their station sites. Members of Langdon Quetin's Long Term Ecological Research (LTER) project tested their dive gear and were able to punch holes in the thin ice for scuba diving. Enough krill — about 100 — have been collected so that experiments can begin. Krill are plentiful right now as they congregate in groups beneath the sea ice.

On Tuesday, Palmer Station waited for the election results. Some people voted before deployment and some voted by absentee ballots sent from Punta Arenas, Chile. They followed election updates and final results via the Web.

On Wednesday, Brett Pickering, who works with Bill Fraser's LTER Seabird Research group, gave a slide show on "Trekking in Suriname." The photos followed his river journey through Suriname in December 1996 to January 1997 to collect parasites and miscellaneous invertebrates. On the Corantijn and Maratakka Rivers, their guides took him and five other travelers from the capital city of Paramaribo through the roadless wilderness of Suriname. Brett showed slides of their camps, the wilderness and the wildlife of the area.

Photo by Cara Sucher / Special to *The Antarctic Sun*

Members of the Long Term Ecological Research team use the new aluminum boat to cross through brash ice near Palmer Station.

Also this past week, Palmer held another community event, the annual Tag and Bag. Because Palmer Station receives a large number of cruise ship and yacht visitors, we have a well-stocked station store. Tag and Bag is a get-together to fold, tag and store all the merchandise for the summer season. The event becomes a party in which everyone helps out. A barbeque behind the carpenter shop followed on Saturday to celebrate Palmer Station's successful ISO (International Organization for Standardization) certification.

See Palmer on page 6

the week in weather

McMurdo Station
High: 21F / -6C
Low: -3F / -19C
Max. sustained wind: 46mph / 74kph
Windchill: -40F / -40C

Palmer Station
High: 45F / 7C
Low: 22F / -6C
Max. sustained wind: 39mph / 63kph
Precipitation: 14mm

South Pole Station
High: -39F / -40C
Low: -58F / -50C
Peak wind: 25mph / 40kph
Max. Physio-altitude: 3,366m

Palmer From page 5

Over the weekend strong winds brought enough force to break up and soften the sea ice around the station. While the ice remains, it has weakened. On Monday, several researchers borrowed a new aluminum landing craft from marine operations. Hugh Ducklow's group managed to get to Bonaparte Point across from Palmer for plankton and water samples. His group will take samples throughout the summer season from there and a second sampling site which is nearly two miles away. Several of the scientists helped the two seabird researchers and assisted them on the islands of Torgeson, Litchfield, Cormorant and Christine — all sites for penguin and seabird counts. The "birders" measured the snowfall and counted the penguins, skuas and cormorants at the islands. The return proved to be an adventure as they spotted four orca whales near the island of Christine, including one that swam under the boat.

SHIPS

Nathaniel B. Palmer

Compiled from reports by Karl Newyear

After three weeks at sea, the *Nathaniel B. Palmer* arrived in Timaru, New Zealand on Nov. 6, and everyone enjoyed a chance to stretch their legs on dry land. Fueling began the next morning just after 8 a.m. and was completed by mid-afternoon. Meanwhile, the ships crew received a number of cargo items, including spare parts for the inoperable TeraScan satellite receiving system. The electronic technicians were able to make the necessary repairs and the *NBP* is again receiving satellite images aboard ship. Those aboard thanked people in Denver and McMurdo who helped provide satellite images in the interim.

The *NBP* is now at sea again and headed generally south toward the Ross Sea. Whale sightings were a bit more common in the relatively smooth seas, though fog limited visibility at times.

A swell, running from the southwest on Nov. 8, suggested weather was coming, which it did the next day, with winds of 35 to 45 knots and 15- to 20-foot seas. The sea and spray made it nearly impossible to spot marine mammals, though there were a few seabirds around.

"The ship speed is correspondingly slower in these conditions and it sometimes seems like it's taking forever to get back to the ice," wrote marine projects coordinator Karl Newyear.

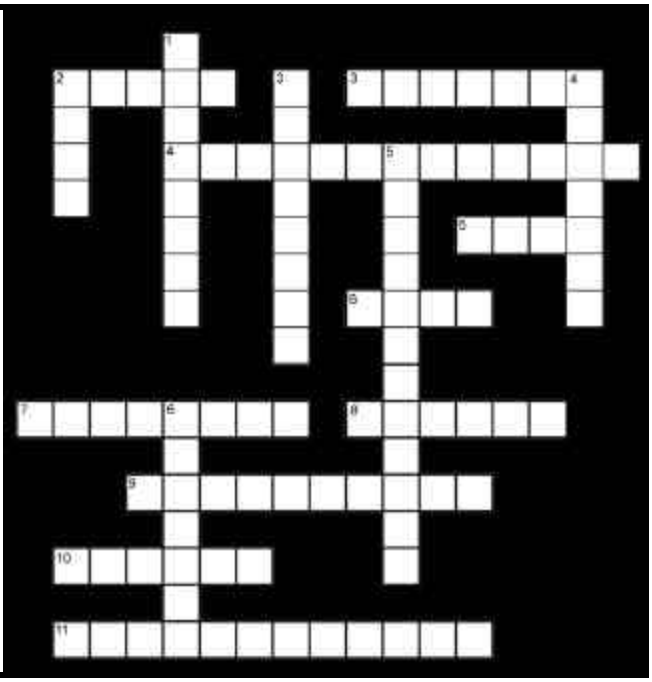
Crossword: Antarctic Life

Across:

2. A red crustacean found in large quantities south of the Antarctic Convergence.
3. This seal is the southernmost ranging marine mammal in the world.
4. Minute free-floating flora that form the base of the food chain in the Southern Ocean.
5. A large, sharp-witted and observant gull-like bird common in McMurdo.
6. A whale of the suborder odontoceti found in Antarctic waters.
7. This whale composes complex vocalizations or "songs" that are repeated year after year.
8. The mysticeti suborder are often referred to as _____ whales
9. This bird sometimes visits McMurdo and has a bat-like flight.
10. This life form demonstrates the symbiosis of algae and fungi.
11. The substance Antarctic fish produce, allowing them to live in cold water.

Down:

1. The largest of the Antarctic seals
2. A subantarctic penguin that has similar markings to the emperor penguin
3. This taxonomic order consists of marine mammals that spend their lives entirely in the water.
4. This seal ranges far out to sea and is a notorious predator.
5. Fossils of this 230 million year old mammal-like herbivore are found in Antarctica.
6. Organisms living on or in the sea floor belong to the _____ environment/community.



Continental Drift — What do you miss from home?

Nicole Huck, McMurdo janitor from Girdwood, Alaska, first season

"The smell of rain in the Alaskan rainforest."

Tony Black, *Pole meteorologist from San Diego, Calif., third season*

"Going out for a drive."

Ken Navarro, Palmer asst. supervisor of logistics from Connifer, Colo., 16 seasons

"I miss my wife because she works at McMurdo and I live at Palmer."

A Y-shaped tongue attaches fuel sleds to the tractor that will pull them on the traverse, allowing the sleds to glide on either side of the tractor tracks.

Traverse

From page 1

or bring other supplies to the Pole. The French, Russian, Chinese, Japanese and German Antarctic programs all use traverses to bring supplies from the coast to inland stations or camps.

The goal of the three-year U.S. project is to determine whether it is practical to haul supplies to the South Pole over the ice. The original plan was to arrive at the South Pole this year. At the annual planning conference in May, Wright announced they probably won't make it that far. How far they do go will depend on how far they can get with 90,850 liters of fuel.

"They're going to go as far as half their fuel or half their time will allow them to go safely," said David Bresnahan, the National Science Foundation representative currently at McMurdo Station.

The first year went well, but last year soft snow bogged down the traverse. Instead of reaching their goal at the top of the Leverret Glacier, the tractors turned around 320km short of the glacier's base.

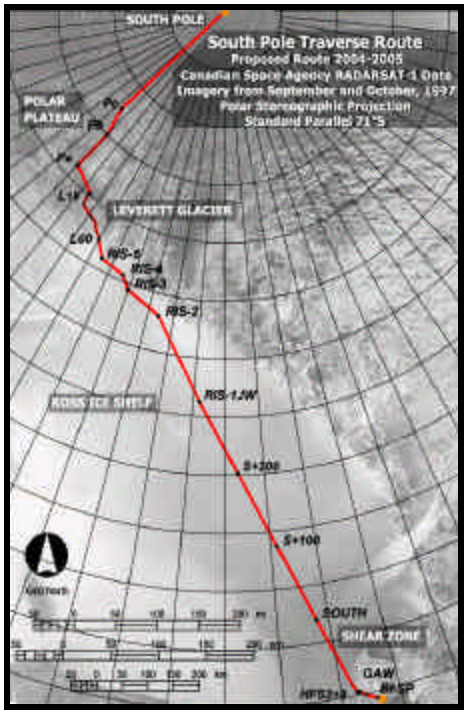


Image courtesy of the South Pole traverse

The planned route of the traverse team crosses crevasses, the Ross Ice Shelf, the Leverett Glacier and the polar plateau.

> "They're going to go as far as half their fuel or half their time will allow them to go safely."
>
> - **David Bresnahan,**
> *McMurdo Station National Science Foundation representative*

However, the traverse took less than half the time to make the 680km return trip to McMurdo than it had taken on the way out, demonstrating that the plan to break a trail that will be easier to travel could work, Wright said.

The first two years

The traverse team exceeded their goals the first year, finding and filling crevasses in the treacherous shear zone to create a safe crossing. The shear zone is the section from Minna Bluff to Cape Crozier where the Ross Ice Shelf comes roaring past the McMurdo Ice Shelf "like a freight train," Wright said.

"If there were heroes in crossing the shear zone, they were surely the dozer operators who took an 86,000 (pound) D8 right up to the edge of the crevasses as they filled them full of snow and made them safe for crossing," Wright said.

That first year, the traverse made it 160km beyond their goal in two and a half days, but it was not far enough to prepare them for what was to come in year two.

In the second year, two days out of the shear zone, the sleds were caught in soft snow and several were knocked off their carriages. The team remounted the sleds and continued, but from then on much of their time was spent pulling vehicles out of the snow and making repairs. The team worked outside in pits dug in the snow to fix and replace parts.

"Last year our heroes were surely our mechanics, who saw us through day after day of planned and unplanned repairs and maintenance," Wright said.

The soft snow continued for 400km, making them think it was caused by a weather pattern particular to that area.

"When we encountered soft snow, we knew that all our load planning tools and all our best efforts and thought about how we were going to go out were just not going to work," Wright said. "One hundred miles down the road we said 'that's enough of that. If we're going to make any progress at all we're going to have to start shuttling our load.' "

For every mile they went forward with half the load, the tractors had to go another mile back and do it again with the second half of the load. The traffic did help compact the route and the return trip was twice as fast.

Lessons learned

In the intervening months, the traverse team has taken the lessons from last season and turned them into improvements. Each member of the crew contributed ideas to improve the fleet, Wright said.

One of the problems last year was with the sleds being pulled behind the tractors. The skis on the sleds followed the tracks left by the tractors pulling them and plowed into softened snow stirred up by the tractor's passage. This produced inordinate drag on the tractor. Initial field tests by traverse crews showed that on turns, when the sleds rode out of the tractor tracks, they floated lightly on the untracked, virgin surface. Later tests by engineers from the Cold Regions Research and Engineering Laboratory, CRREL, verified that the towing resistance with the skis outside the tractor tracks was roughly half that of the skis inside the tracks.

"Did that affect our design for the coming year? You bet it did," Wright said.

Traverse crews also noted that the front tip of the skis acted like a plow, creating ridges that increased the problems further down the sled train. The crew determined the problem was with the curve of the ski tip, which would work better with a more gradual "decreasing radius curve" rather than the constant radius curve in use.

See Traverse on page 8

Traverse From page 7

In March, the project crews met with CRREL engineers and NSF representatives to consider design improvements. CRREL engineers Jason Weale and Lever provided a description of the desired curve for the ski tips, and master sled-maker Herb Setz from Alberta, Canada, designed the ski to implement that curve.

Some of the plastic-lined skis also were widened and lengthened. On some of the sleds the skis were moved farther apart so they will run to the outside of the tractor tracks. The fuel sleds, which originally ran one behind the other like train cars, have been attached to a Y-shaped tongue so two fuel tanks can glide side by side, each on one side of the tractor tracks.

In all, four of the sleds have the new skis. The others still have the old skis. The traverse will use both this year to determine which truly work better, and if the cost of getting all new skis is worthwhile. Another Challenger tractor was added to the lineup of vehicles, bringing the total to five tractors pulling 13 sleds.

New challenges continue to appear. The ice the traverse crosses is always moving and changing. A 15cm-wide crack they found the first year, dubbed "Baby," has grown to 76cm wide since then. Last year, five new crevasses had opened in the shear zone. This year the total is up to nine new ones, along with five older crevasses that show signs of widening.

> "We're building this route across the Ross Ice Shelf, but the Ross Ice shelf is a dynamic piece of ice."
>
> - **John Wright**, *project manager, South Pole traverse*

"We're building this route across the Ross Ice Shelf, but the Ross Ice Shelf is a dynamic piece of ice," Wright said.

The marker they'd set at a point 160km beyond the far side of the shear zone at the end of the first year had moved nearly a kilometer when they returned 10 months later. The Ross Ice Shelf at that point moves almost 2m a day in a northeast direction, while the shear zone moves about 1m daily, mostly north.

Even when they reach the other side of the shear zone, the traverse isn't home free. Satellite imagery and an aerial flight to closely examine the route showed potential crevasse areas on the Ross Ice Shelf, at the base of the Leverett Glacier, and as they climb the glacier, Wright said. The traverse planners moved the red route line they'll follow to avoid some of those crevassed areas. A ground-based radar system extended in front of a PistenBully warns the traverse vehicles of other crevasses in time to stop and assess them.

Heading out

After a month of preparations at McMurdo Station, the traverse team was ready to go. The eight-member traverse crew includes three heavy equipment operators, Richard Vaitonis, Judy Goldsberry and Brad Johnson; two mechanics, Russ Magsig and John Penney; mountaineer Mike Roberts; CRREL engineer Russ Alger and project manager Wright.

They'd written "thuh list," as they call it, and checked it more than twice to make sure they have all the spare parts and supplies needed.

"We have a lot of experience in the repair business from last year," Wright said.

Wright compares the traverse to the mule trains that used to carry supplies to his hometown of Silverton, Colo., back when it was a rough-and-tumble mining town; or, to the caravans of camels carrying goods across the desert.

"All of them have in common not just the distance they're crossing, but the need to take something someplace it's needed," Wright said. "This is what our project's all about."

Heavy equipment operator Judy Goldsberry checks a tractor as the South Pole traverse team prepares to leave Nov. 11.

Heavy equipment operator Brad Johnson secures blocks to the tongue of a sledge. Behind him is John Penney, who is working on a tractor.

Mechanic Russ Magsig sits in the bunkroom, where the eight members of the traverse team sleep.

Photo by Emily Stone / *The Antarctic Sun*

Penguins swim below the sea ice near their dive holes. This view is from the underwater observation tube at Penguin Ranch.

Penguins From page 1

The unmanned camera would let scientists record the birds' behavior when they return to the colony in March and April – something which researchers know little about. The camera also would allow scientists to understand how sea ice conditions relate to the date the penguins return to the colony site, and to the overall success of the colony in a given year. It could also provide continuous observations of the movement and huddling patterns of the colony during the winter and spring.

The camera is one of four devices being tested at Penguin Ranch this season. The second is a sensor that will show how the birds regulate oxygen during long dives. The study could shed light on how humans handle oxygen depletion. The scientists also are testing a new recorder that will give a three-dimensional account of a penguin's dive instead of the current sensors that only record depth, not direction. And they're experimenting with a camera that will show what the penguins eat underwater.

Penguin Ranch is a corral on the McMurdo Sound sea ice that holds about a dozen emperor penguins. The birds waddle around inside the fence and have two diving holes to slide into when they get hungry. They have to return to those holes when their swim is over because there are no other holes close enough for them to reach. The setup gives the scientists a way to experiment with devices before using them in the field.

"Penguin Ranch is really sort of a testing platform to make sure everything is working so we have the best chance of success when we put them on the birds at Cape Washington," Ponganis said.

Strike a penguin pose

Kathi Ponganis, Paul's wife and fellow researcher, said she is normally skeptical of high-tech science meant to replace human observations.

"I'm hesitant about gee-whiz science," she said. "I think boots on the ground are the way to do it. But the emperor penguin lives in such a harsh environment that it's just not possible."

Winter observations with a camera won't endanger people, who would otherwise have to suffer through the cold and darkness, she said.

The Ponganises asked Tony Hansen of Magee Scientific Company to make the camera. Hansen is principle investigator on another project and an engineer who has made specialized equipment for a number of Antarctic projects, including an underwater camera that is being tested this season.

He said he enjoys asking scientists what their challenges are in the field.

"I'd say, 'I think I could come up with a gadget to do that for you,'" he said.

Hansen and assistant Jeff Blair built the penguin camera, which can pan across an area and take 16 pictures in a cycle. These pictures are either stitched together to create a panoramic view of the penguin colony or used to create a series of close-ups. An example of a panoramic picture is on display at Crary Lab.

The camera is sitting near Penguin Ranch now, snapping away. The pictures are stored on a one-gigabyte flash memory card, which the scientists will retrieve at the end of the camera's anticipated three-month test run. The camera needs to weigh less than 50 pounds so it can be backpacked into a colony, and has to be sturdy enough to withstand a tough hike, which means no fragile solar panels. It runs off battery power, which has to last the full three months. The main batteries are conserved because the camera only "wakes up" every six hours to take its round of pictures, Hansen explained, and then goes back to sleep until it's time for the next set.

If the camera proves itself a success in the summer, Hansen will try to modify it.

"The real test is to set up a camera that could go through a winter," he said. "The technological challenge is much more daunting."

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The camera would have to withstand temperatures down to –57C. That's a hurdle given that batteries tend to shatter below –46C. Hansen said he's working on a strategy to solve that problem. The camera would also likely be set to an astronomical table so it would snap pictures when the moon is out, to provide some illumination in the polar night.

Making due with low O2

While the camera is sitting in the snow doing its job, the researchers at Penguin Ranch are busy working with the birds.

Researchers are interested in penguins in large part because they are such excellent divers. They routinely stay underwater for five to 12 minutes and dive 500m deep. The longest recorded emperor penguin dive was 22 minutes.

The key to diving for any animal, whether a penguin or a human, is how well it uses the oxygen stored inside its body while underwater. Penguins are able to stay underwater when their oxygen levels are so low that it would cause humans to pass out, Ponganis said. The team at Penguin Ranch wants to better understand how the birds accomplish this. They are using sensors to monitor the level of oxygen in the animals' blood as they dive.

Part of the penguins' strategy is to slow down their heart rate underwater. Research in previous years shows that the birds' heart rate starts at 150 to 200 beats per minute just before a dive and then immediately drops to 50 or 60 beats per minute underwater.

"As soon as it hits the surface, boom, it goes back up again," Ponganis said.

This is exactly the opposite of what humans do. Our heart rate goes up as we exercise and falls back down when we're done.

A penguin's heart rate is tied into its use of oxygen during a dive. The birds store more than half their oxygen in their muscles, with the rest split between their blood and lungs. Humans, on the other hand, store most of their oxygen in the lungs. When the birds are underwater, their hearts don't have to race in order to pump oxygen to their swimming muscles.

"There's no need for them to have a high heart rate because they don't need to deliver oxygen (to muscles)," Ponganis said. "It's already there."

The oxygen sensors will help Ponganis and his team better understand this process.

Their results could help doctors with patients whose organs or tissues have been deprived of oxygen, as happens during a heart attack or stroke, or when an organ is transplanted.

Human tissue is damaged if it is deprived of oxygen for a period of time and then has oxygen-rich blood come back into it. This causes biochemical changes that severely harm the tissue by oxidizing it. Antioxidants can prevent this. A researcher is at Penguin Ranch for part of the season specifically to study antioxidants in the birds.

Spying below the surface

The scientists are also hoping to get a bird's eye view of dives this year.

Katsufumi Sato with the University of Tokyo will test a device that gives the scientists a three-dimensional picture of where the penguins go when they leave the surface. Previously, scientists had to settle for a simple measurement of how deep the birds dived.

The researchers will be able to see at what angle the birds are swimming, which will tell them much about the penguins' hunting strategies. The monitors will also record speed, acceleration and stroke frequency to see how much work the birds do while diving.

A separate diving camera will record what the birds are eating underwater. This will give researchers a fuller idea of which species of fish and squid the emperors feast upon and how much of each species they eat. The goal is to put the cameras on birds at Cape Washington next year to see what the birds eat during their deepest, 500m dives, which they only do at sea.

"What they're eating out there, no one knows," Ponganis said.

Understanding the penguins' role in the food chain helps scientists more fully understand the ecology of the Ross Sea, Ponganis said.

NSF-funded research in this story: Paul Ponganis, Scripps Institution of Oceanography, http://antarctic.ucsd.edu/index.htm

Photo courtesy Kathi Ponganis / Special to *The Antarctic Sun*

A camera nicknamed "R2D2" is staked out beside emperor penguin researcher Kathi Ponganis as she observes the colony at Beaufort Island. The camera, which is being tested at Penguin Ranch, is designed to take regular photos in the field for up to three months.

Giant icebergs continue to hamper Ross Sea colonies

By Emily Stone
Sun staff

In addition to their work at the Penguin Ranch this summer, Paul Ponganis' team is monitoring the recovery of the emperor penguin colonies at Cape Crozier and Beaufort Island.

The enormous iceberg known as B-15 ran into Cape Crozier in 2001 and then lodged there, devastating the emperor colony.

"All we found were a few dead chicks and dead adults who had starved to death," Ponganis said of the 2001 season. It's not known if the birds abandoned the colony because they couldn't get to it or if they were smothered in the ice.

The colony is at about 20 percent its normal population this year, Ponganis said, and the penguins finally seem to have found a good piece of flat ice to claim as their own.

"The birds that are there seem to be doing pretty well," he said.

Not so at Beaufort Island as B-15 has effectively blocked the birds' route to open water. The colony is at about 25 percent its normal population, and Ponganis' team found more than 300 dead chicks there last month.

The chicks were somewhat developed, which leads Ponganis to believe that the parents had been able to feed the chicks initially, but then got stuck at sea when the open water around the colony closed up.

"I think they had a difficult time getting back to feed their chicks," Ponganis said.

The team will continue to monitor the effects of the large icebergs on the colonies over the coming seasons.

Web

From page 3

"dudes" part of the name) but it quickly became only his site. Since then, he's added photos from his time at Palmer Station as well. As a father of three children, Troy keeps the photos on his site PG, leaving off some of the most outrageous moments from Halloween and other celebrations.

His site also has helped reconnect old friends. One of Troy's co-workers appeared in several photos last season. Sometime during the year, a man back in the United States was surfing the Web and came across Troy's site. There he recognized one of Troy's co-workers and sent him an e-mail. Troy forwarded it and surprised his co-worker.

"He said he hadn't seen the guy since he was seven," Troy said. "It's amazing that they're finding me, because I haven't made any effort to make southpoledudes known to the world."

Zondra.org is home to Montana resident Zondra Skertich's site. She has written extensively about her 2003-2004 season and has started again this season. She considers herself a better photographer than writer and features many photos from the Ice. She's also tried to head off the inevitable questions from people at home about how cold it is and what time it is by including clocks that also show the temperature for major stations in Antarctica.

Beth Bartel is a GPS specialist at McMurdo. When friends heard she was coming to the Ice, they insisted she keep a Web journal, often called a blog. They were so insistent, they set it up for her.

"I started doing it because friends at home were curious about what Antarctica would be like and they established it for me and made me do it," Bartel said. "Now, I get feedback from people I know and don't know."

Bartel, now in her second season on the Ice, cited a sense of personal satisfaction as the primary reason she's kept it up. As one of the few on station able to visit special science sites, such as the volcano Mount Erebus, Bartel takes photos and writes stories about her trips. Her writings often reveal a comedic side of her work and life in McMurdo.

"It's an outlet for me to share experiences, make fun of what I think is funny, make fun of myself," Bartel said.

That said, Bartel probably can't be found surfing for Antarctic sites.

"I'm not a surfer and don't like reading off the computer. I like reading books and turning pages," she said. "But I do read my own site."

Stefan Pashov, McMurdo's resident philosopher, no longer spends his precious Web surfing time viewing Antarctica-related Web sites. Like others who have returned to McMurdo for many seasons, Pashov said the novelty he once felt about most Antarctic Web sites has worn off. Instead he reads up on world affairs and has other interests including poetry. That latter interest, though, may someday spur him to build a Web site dedicated to Antarctic poetry.

If Pashov has moved on to other things, many others are just beginning to learn about Antarctica. They often start at one of the most-visited personal Antarctic Web sites, nicknamed Antarctic Memories.

The site is maintained by Mike Poole, who works in supply at McMurdo. Poole set up his site as an MSN.com group. It was free, easy to update and is now chock full of information about the program and life at McMurdo Station.

Many of the visitors are people who want to work in Antarctica or who have been hired and now need a calm, guiding hand through the blizzard of paperwork, medical checks and gear preparation.

One of the central features is a message board, which is a repository for a lot of good advice. Poole often replies to questions within hours. Current and former U.S. A participants, both on and off the Ice, help him answer questions.

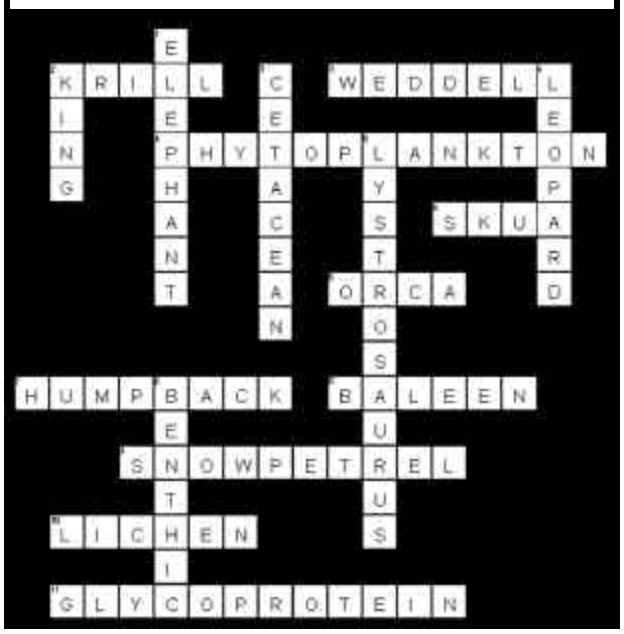
"Myself and a small cadre of helpers keep it going," Poole said. "There's no such thing as a stupid question, assuming they have a genuine interest in coming down."

And come they will, many with Web sites blank and ready to be filled.

There are many Antarctica-related personal sites on the Web. Here are a few from this story. Visit them for links to others or use a search site to find more.

Allison Barden: www.sandwichgirl.com
Beth Bartel: http://iceblog.puddingbowl.org
Glen Kinoshita: http://gcrgweb.sdsu.edu/penguin/index.html
Mike Poole: http://groups.msn.com/antarcticmemories
Zondra Skertich: www.zondra.org
Holly Troy: www.southpoledudes.com
Official site for the U.S. Antarctic Program: www.usap.gov
Office of Polar Programs: www.nsf.gov/od/opp

Crossword Puzzle Answers



The Antarctic Sun Photo Contest

Deadline for entries is Dec. 12

Four photography categories:

Scenic, Wildlife, People and Other
(300 dpi, please)

Four writing categories:

Poetry (up to 30 lines)
Haiku (5-7-5 syllables)
Micro-fiction, non-fiction (up to 300 words)

E-mail entries to *The Sun* at MCM-Antarctic Sun
One entry per person per category

Profile Scouting the seven continents

By Kristan Hutchison
Sun staff

When she was 12, Devon Vail decided to visit all seven continents before she turned 21. Antarctica is number six for the Girl Scout and she's only 19.

As a "military brat, full-bred," Vail had a head start in her travels. She was born in Germany, finished elementary school in Alaska, started high school in Holland and graduated in Japan. The constant moving exposed her to many languages. She can get around in Dutch and Japanese, and understands German, though when asked what languages she's fluent in, she answers "none. I don't even speak English fluently."

With such a nomadic upbringing, she's adapted quickly to Antarctica.

Photo by Henry Kaiser / Special to *The Antarctic Sun*

Girl Scout Devon Vail stands inside the Jamesway at New Harbor, where she spent time with researchers studying one-celled organisms on the seafloor. Vail is in Antarctica as part of the Scout's program.

"My home's where my totes lay," Vail said, referring to two plastic boxes she keeps most of her personal items in.

Most recently her totes have been in Fairbanks, Alaska, where Vail is a sophomore biology student at the University of Alaska, Fairbanks.

"It's actually warmer here than it is at home," Vail said. "(McMurdo) seems like a college campus, where most people are in good moods all the time and you can sit down with anybody."

Vail heard about the program to bring Scouts to Antarctica five years ago. The program itself dates back to 1928, when Admiral Richard Byrd brought Eagle Scout Paul Siple on his expedition to Antarctica. Since then, 17 Boy and Girl Scouts have come to the continent as research team members in cooperation with the National Science Foundation.

"It's to foster interest in science among young people," said Elaine Hood, a Raytheon Polar Services communications specialist who helps prepare the Scouts for their Antarctic experience, "(and) to publicize the U.S. Antarctic program to young people."

The Scouts keep up a Web site, describing their experiences from a young person's perspective.

Vail's introduction to the Antarctic scouting program came through an older girl in her Scout troop, who was runner-up for the Antarctic position five years ago. Vail was a high school freshman at the time and dedicated herself to becoming the best possible candidate for the Antarctic visit by the time she was old enough to be eligible.

"My whole world was science," Vail said.

During high school she worked in the opthamology clinic at the local hospital and took a science research class by telecommunication. She was awarded the Gold Medal for Community Service from Prudential Youth Spirit for her studies of the macroinvertebrates living in the polluted waters near Chugiak, Alaska. She incorporated elementary school students in the hands-on research. By the end, she determined that the only large animals living in the most polluted water were worms.

For her Gold Award, the highest rank a Girl Scout can get and the equivalent of becoming an Eagle Scout, Vail made a 45-minute presentation on water pollution to students at six schools in Belgium, Germany and Holland. The presentation can still be seen on the Web at www.geocities.com/water-pollutionawareness.

"It's important, because we need clean water," Vail said.

Vail's dedication paid off and she was selected to come to Antarctica for three months this season.

The purpose of bringing scouts to Antarctica is to expose them to a broad view of science. Vail started out working with Sam Bowser's group at New Harbor, where they study foraminifera, one-celled organisms on the seafloor. Then she went to the South Pole for four days to work with the Antarctic Submillimeter Telescope and Remote Observatory. She'll spend some time at Lake Hoare working with John Priscu on the Long Term Ecological Research project, then go to Windless Bight in December with Dan Osborne, a researcher from Fairbanks.

"They want her to learn the most about science that she can," said Karla College, supervisor at the Berg Field Center at McMurdo Station, who arranges the trips for Vail.

Skipping from place to place suits Vail.

"I can't live in one place for that long," Vail said.

In New Harbor with Bowser's group, she helped assemble the camp's main temporary structure and learned about foraminifera. Bowser said they particularly appreciated her cooking.

"I only wish she knew how to cook Girl Scout cookies," he joked. More seriously, he noted she was very task-oriented, and lent a hand wherever asked.

Vail said she enjoyed the time at the camp.

"They're a fun group. We had a blast."

She also helped chip dive holes in the sea ice, but had no interest in going into them, even if the water had been well above freezing.

"I will jump out of airplanes. I will walk along cliffs," Vail said. "But as soon as I get to water, I won't do it."

Vail has a project of her own while she's here. She wants to interview women and write a book about the women in Antarctica. She'll stay three months, then head home to an even harsher climate. Fairbanks will be about –30C and dark 20 hours a day when she gets there in January.

"It's warm here, are you kidding?" she said. "I'm loving it."

Vail will make her seven continent goal with 8 months to spare when she travels to Chile in July. After that, she's as uncertain of her future as most people her age. She's considering switching to a linguistics major and going into the foreign service.

"I've got all these goals done," Vail said. "Now I have no idea what's going to happen with the next 20 years of my life."