

Contra Costa Times

Walnut Creek, CA
January 16, 2009
Circulation: 180,605
Online Circulation: 561,392 visitors/month

CONTRA COSTA TIMES
ContraCostaTimes.com

Physics teacher to journey from Belmont to the bottom of the world

By Neil Gonzales

San Mateo County Times

BELMONT — Two years ago, Casey O'Hara took a ride on an elephant, lumbering through the subtropical lowlands of south-central Nepal.

He was on a safari in the Chitwan National Park with his brother, hoping to spot the single-horned Indian rhinoceros and Bengal tiger.

"Alas, we didn't see any rhinos or tigers," he said, "but we saw a lot of other wildlife."

O'Hara doesn't expect to see much wildlife on his next adventure. But it will likely pack more thrills than the far-flung locales he's visited so far.

About this time next year, the Carlmont High School physics teacher will experience extreme subzero temperatures, 24 hours of intense sunlight and 10,000 feet of elevation.

He'll travel to desolate Antarctica as a member of the largest research project of its kind — the construction of IceCube, the world's biggest telescope for detecting subatomic particles.

The international project, funded by the National Science Foundation, may lead to an improved understanding of black holes, supernovas and other phenomena.

"I'm pretty excited about it," said O'Hara, 36, who has a ruggedly fit appearance but low-key demeanor. "Most people don't have the opportunity to go to an exciting, extreme place like the South Pole."

He is among just several teachers nationwide who are Knowles Science Teaching Foundation fellows chosen for the project.

"He's perfect for this," said Nicole Gillespie, senior program officer for New Jersey-based Knowles, whose fellowship program seeks to nurture and encourage beginning science and math teachers so they improve on their craft and remain in the field. "He's adventurous and likes to travel. He has exceptional science content and knowledge. He is also dedicated to teaching."

O'Hara already had a strong science and math background before he became a physics teacher. He was a mechanical engineer in the semiconductor industry for nine years and holds three patents involving an implantable defibrillator developed when he worked in the medical field.

As a teacher, he has helped lead Carlmont students on ecology missions in Costa Rica to save endangered sea turtles and their hatchlings.

For the IceCube project, O'Hara and the other teachers will start their training in Alaska next month, followed by additional instruction at the University of Wisconsin.

They then will travel to Antarctica for the 2009-2010 winter, which is the South Pole's summer.

IceCube is being built deep in the Antarctic ice and is expected to be finished in about two years. It will feature thousands of spherical optical sensors. At the surface, the telescope would reach a height more than six times that of the Empire State Building.

IceCube is designed to detect neutrinos, other subatomic particles and high-energy cosmic rays. It will help scientists determine the neutrinos' direction and energy level and ultimately learn about their source, such as an exploding star or a black hole.

"I'll be installing sensors on the surface," O'Hara said. "Most of the time, I'll be outside, digging in the trenches."

He and his fellow teacher researchers also will use blogging, Webcasting and photography to bring their work to their students as it happens.

In addition, they will develop new classroom curriculum and activities based on the science of IceCube. That curriculum could cover such topics as environmental changes and explore ways to apply the concept of neutrinos, O'Hara said.

"The wonders of the universe is a hook that I can use to interest students (in) something that can be so abstract and daunting," he added.

O'Hara's students plan to check his blog to keep up with his icy expedition.

"I think it's pretty cool he's going to the South Pole," said junior Kyle Zink, 16. "I just hope to learn about his experience and hope he shares anything that's interesting."

Katherine Whyte, a 17-year-old senior, always enjoys learning about different parts of the world.

"It'll be interesting to hear how he'll be living over there for an extended period of time," she said.