

Teacher Shows Students How to Be Scientists

By Nancy Burkhart

Fourth- through sixth-graders at the Montessori School of Denver are learning more about the earth's marine world and what it means to be a scientist, thanks to their teacher, Chris Imhof.

The Stapleton resident recently returned from a cruise as one of 25 teachers in the National Oceanic and Atmospheric Administration's (NOAA) Teacher at Sea Program.

The Teacher at Sea Program is designed to give kindergarten through college-level teachers an opportunity to work with scientists and crews aboard ships so that they can learn more about maritime work and studies. NOAA pays teachers' expenses.

Imhof served aboard the *Pisces* for two weeks on its first cruise that started in Gulfport, Mississippi and sailed around the keys to North Carolina.

"Every day we got to listen to whales and dolphins because they were testing equipment," Imhof said. "The real mission of NOAA is to bring ocean literacy to the classroom by having teachers work with scientists using state-of-the-art equipment. We did a lot of interviewing of the scientists."

Although Imhof teaches science, history, geography and math to fourth- through sixth-graders, teachers don't have to have a scientific background in order to be selected for the program. "I think it helps to be a science teacher, but you could be any kind of teacher. I think ocean literacy expands across any program," he said.

The lessons taught on board the ship that carries about 40 people are not strictly science-related.

"You learn about communication skills and team skills," Imhof said. "We went up the coast to North Carolina, looking at marine-protected areas. We looked at areas closed off to fishing. Studies had to do with the grouper fish. We were using a remotely operated vehicle, a robot run by somebody on the ship with monitors. We had fish and mammal specialists on board. They were looking at comparisons of grouper fish and lionfish that originally came from the Indian Ocean and were spilled out by Hurricane Andrew. The lionfish is an invasive



Montessori School of Denver teacher Christopher Imhof talks to some of his students about his recent trip on a NOAA (National Oceanic and Atmospheric Administration) research ship as was part of their Teacher at Sea Program. In his hand is a working model of a remote operated vehicle (ROV) the students plan to place on the bottom of a local creek to emulate, on a small scale, the workings of a NOAA ROV.

species of fish competing against the commercially fished grouper fish."

The scientific studies being made would go to Congress where decisions would be made dealing with fishing and the environment. Besides the scientific studies, Imhof said his students will benefit from his knowledge about the individual scientists.

"A lot of these scientists have diverse backgrounds," he said. "Some have computer backgrounds. It makes them stronger scientists. If you're going to love doing this as-



Lionfish



Above: Chris Imhof drives the Remote Operated Vehicle. Right: The crew recovers the ROV.

pect of science, you have to do other things, too. You have to write well, have a computer background and be well-rounded." Imhof also is pulling the marine knowledge he attained on the *Pisces* into Colorado's history.

"Kids going to the mountains are looking at sandstone and limestone and are looking at dinosaur footprints," he said. "A lot of the fossils we have are marine fossils. It gives them a different appreciation of that stuff." Discussion in Imhof's classes also includes protected areas and certain

View a 5-minute video of Chris Imhof talking about his time aboard the *Pisces*.
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species, he said.

"A lot of nets got hung up on rocks. A lot of that becomes home to new species, wreck areas become habitats. If you see an absence of a species, it throws off the whole habitat. You can apply that in Colorado," he said. "We talk about when something becomes invasive and when something just becomes part of the existing habitat."

"I feel like this was a way of getting our students to get closer to the oceans and see how science is done, not just here but there," Imhof said. "I think they're getting an idea of what it takes to be a scientist. They might read more and become a scientist. I have kids who are real mathematicians. A lot of what these scientists are doing is math. This gives the kids ideas for what they can become in their lives. It's expanding their ideas of what they can do to apply it. They are seeing what this can be in the real world."

For information about NOAA's Teacher at Sea Program, gvisit: www.teacheratsea.noaa.gov.

For more information about Chris Imhof's experiences in the Teacher at Sea Program, e-mail him at: cimhof@msd-co.org.

