



Sea is for science

Hoover High students dive into marine studies via intensive program in Baja

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BAHIA DE LOS ANGELES, Baja California – Before this summer, Tram Nguyen wasn't much of a swimmer – and certainly not in the ocean. And never with sea lions.

But one recent morning, miles off the hardscrabble desert coast here, Tram and a half-dozen schoolmates from Hoover High hopped from a motorboat into the heart of the vast bay and did just that – swam with sea lions.

"I was afraid of the ocean. I was afraid the animals might bite me or were dirty," Tram, 17, said later on shore. "Now, I want to get in the water. You just dive and it seems part of you."

The early morning swim was just one part of the adventure in Bahia de los Angeles for two dozen Hoover students who spent five weeks on the eastern Baja peninsula overlooking the Sea of Cortez at a marine science field station leased by a retired California professor.

They perfected their snorkeling. They lollygagged with angelfish and puffer fish and nearby whales in pristine waters. They slept outdoors on cots under the panoply of the Milky Way and made their way in a new country.

They also studied, learning about marine life and the ecosystem. Alongside scientists, they engaged in detailed studies of the digestion of long-lived loggerhead turtles, trapped desert scorpions for museum exhibits, inventoried marsh plants and explored the life cycle on a desert island, from fish to birds and maggots to spiders and cactus.

"It's summer camp and grad school all in one," said Travis Kemnitz, director of the new, intensive summer educational program.

The program, called BAHIA, was developed by Aquatic Adventures, a San Diego nonprofit organization that also teaches auxiliary marine science programs in public schools to augment science education.

"One of the first things about science is just the excitement of



NANCEE E. LEWIS / Union-Tribune
Martin Sillas Lopez, 15, awoke about 5:30 a.m. to start a new day at the BAHIA summer program he and other Hoover High School students attended in Baja California. The students slept on cots under the stars during their five-week stay on the Sea of Cortez.



NANCEE E. LEWIS / Union-Tribune
Tristan Brand, who will be a 12th-grader this fall, measured the length of a loggerhead turtle at the Campo Archelon facility, which is devoted to turtle conservation and research, in Bahia de los Angeles. BAHIA was developed by Aquatic

exploring," said Shara Fisler, founder and executive director of Aquatic Adventures organization.

The pristine setting is a long way from the City Heights neighborhood where the students live and go to school – in distance and emotional perspective.

That is the intention, too, to take youngsters away from a setting where too few students excel, give them a fresh perspective, build their confidence and whet their appetite for academics and college. The program is rich in individual attention and resources.

On that recent morning, as Tram and classmates swam, others went to a research station operated by the Mexican government at the edge of town. A team of students weighed and measured a loggerhead turtle, which can live to about 80 years. Others sifted through excrement for colored, square biodegradable plastic markers put in food to learn how fast different foods digest to better understand that animal's nutritional needs.

"This is the only place you'll be proud to find poop," said Nizael Rangel, 14. "It's the starting point of understanding the digestive system."

The projects have prodded Jennifer Best, 17, to consider a career in science.

"I never knew science was this interesting," Jennifer said.

Students set nets on buoys in the bay, captured a green turtle, tagged it with a radio transmitter and released it to the sea, so scientists can track its migrations.

And on a small, desiccated island in the bay, they were happy to come upon a dead bird and eager to get University of California Davis scientist Drew Talley to cut it open so they could search for maggots.

"Normally, these kids wouldn't ever have touched a dead bird. Now, I've created monsters," Talley said, relishing in their enthusiasm.

As students measured cactuses and counted spiders in them, Anai Novoa, 14, told of the interlocking food chain from fish to birds to droppings rich in key nutrients and on to beetles, spiders and, yes, maggots.

By inventorying the island over years, Talley is describing how all the ecosystem works and transfers life to shore and the high desert, making all of life in this region possible. The students' field work is part of his research.

"In high school, students perform well to get A's. Here it's their choice to learn, for the excitement.

"They become a master of their subject," Fisler said.

The Baja adventure really began in the spring in a classroom at Hoover High.

Aquatic Adventures has been teaching elementary, middle and high school students around the San Diego Unified School District about marine biology for the past six years by presenting classes once a week and by hosting students in the program's offices at Mission Bay. Fisler, a voluble woman, 32, trained as a marine biologist, started the project out of an interest in encouraging students in science.

"I'm living a passion," Fisler said.

A dozen people, including some graduate students, are employed as full-time or part-time instructors for all the programs.

Fisler decided the new program in Baja might provide the attention and excitement that could push a small group on to college and careers they otherwise might never pursue.

In April, students were immersed in the fundamentals of marine biology during hours-long classes, four days a week for 11 weeks until the trip to Mexico began in the middle of June.

They learned to swim and snorkel. The 11th-graders were chosen because they had good academic records but still might benefit for the intense attention. The dozen ninth-graders chosen were in many cases underachievers who spoke English as a second language and Spanish first. They learn science, but the plan is for them also to teach Spanish to the older students in a transaction organizers hope will build their confidence.

Of Aquatic Adventures' \$425,000 annual budget, \$110,000 is focused on the summer program, Fisler said. It includes state education grants and money from the county Board of Supervisors designated to buy materials for nonprofit community groups.

"It's an investment in these kids," said Fisler, who has seemingly boundless energy, and is rarely not talking or explaining some phenomenon of nature around her.

Fisler chose Baja because she wanted a place outside the United States rich in marine life. She heard of the many scientists who work here, and, though far away, it could be reached by car in a day, about 12 hours.

Part of nature's bounty here includes notorious, rapidly gathering and erratic winds that can topple small boats. Fisler helps defend against them by using experienced, local fishermen as pilots, having everyone always wear life jackets on the water and having beacons that can signal the U.S. Coast Guard if a rescue is needed.

The bay also is at the heart of an ecological debate about development that, interestingly, she said, the students' research could influence. Some developers advocate a marina and tourism in Bahia de los Angeles, a 380-mile drive from the border, while opponents say that could disrupt the very food chain and ecological relationships students and scientists are documenting.

At night, students slept in the open air, on cots, on a porch at the bay shore, where sometimes they heard whales blow as they moved in the bay. At one end of the porch, there was the 50-foot-long skeleton of a whale that years ago had beached itself, its vast architecture of ribs more than 6 feet in girth.

Just being away was liberating for the students, said Donna Ross, a San Diego State University faculty member assessing the program and whether it might be a model for other efforts at improving science education.

Many students at Hoover High have complicated lives, Ross said. SDSU works with Hoover and two other schools with poor academic records looking for ways to improve education. Many of the students are caregivers to siblings or are in violent neighborhoods, she said, adding of the summer in Baja, "It's a chance to be free from a difficult situation for a while."

A local woman who runs a taco stand came three times a day to prepare meals for the group.

Each afternoon, students did chores, such as sweeping floors and cleaning toilets. Toilets flushed into a septic tank. Water is trucked in to the small village, so showers were very short and limited to twice a week. Most bathed in their swimsuits in the bay, using biodegradable soap.

"I never realized how much water we waste and how precious it is," Tram said. "I've gained a lot of respect for nature."

In the afternoons, after a morning of field research, students sorted data in their notebooks and in computers, then wrote reflections on their experiences in journals. Anai reflected on how she wants to become an environmental engineer, mitigating potential environmental problems.

Nights were given to various research enterprises, from searching for scorpions that are easily illuminated lime green under a black light to looking for bats, or a night snorkel near the shore.

The world of City Heights did intrude on the summer when the group learned that a fellow student had been fatally stabbed, in an apparent episode of jealousy, as he walked with two girls. One girl on the Baja trip has a family member who was friends with the slain boy, and the girl also has a family member who is friends with those accused in the attack.

Fisler hopes the new experiences will take root with the teenagers.

"They'll walk away feeling they are completely capable of doing whatever they want to accomplish," Fisler said.

The months ahead may tell much of the story, as the incoming seniors consider graduation and college. Fisler and her team will meet with them this fall to counsel them about their grades and college. The ninth-graders will be encouraged to return to the summer program after their junior year if they maintain their grades.

Lee Mongrue, who coaches teachers at Hoover and attended the Baja program, sees its merit this way:

"They've been exposed to things they've never been exposed to before, and now they have choices. They were afraid to put their hand in the water, and now they turn over rocks and find animals.


"My dream would be they'll all realize they have choices."

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