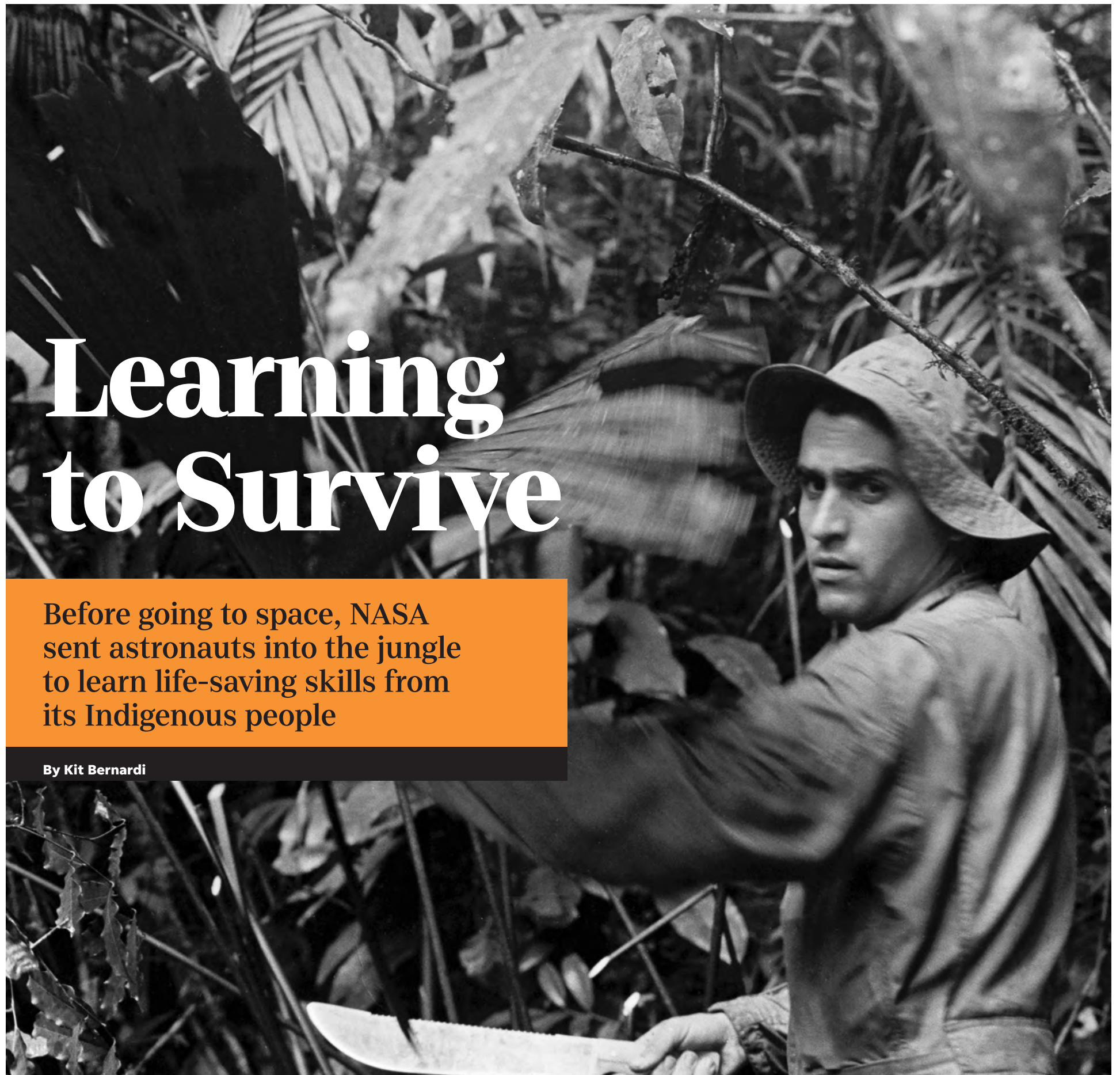




Learning to Survive

Before going to space, NASA sent astronauts into the jungle to learn life-saving skills from its Indigenous people

By Kit Bernardi

Scientist-astronaut Harrison H. Schmitt collects palm fronds to create a shelter during a 1967 jungle survival training exercise in Panama. ACCUSOFT INC./NASA



Astronauts John Bull, left, Charles M. Duke Jr. and Harrison H. Schmitt discuss their finds during jungle survival training in 1967. ACCUSOFT INC./NASA

Hacking a path through dense jungle with a machete. Capturing and eating iguanas. Sleeping in hammocks above the jungle floor to avoid venomous insect bites. It may sound like an episode of “Survivor” but this scenario is from jungle survival training that began in 1963 conducted in Panama for the NASA space flight crews of Projects Mercury, Gemini and Apollo.

Brian Odom, NASA chief historian, says that “because this was all so new, NASA astronauts were required to train for every possible situation, from splashing down in the Pacific Ocean, as planned, to contingency plans if something goes wrong on re-entry landing in Earth’s extreme environments, such as desert or jungle.” This meant Panama’s jungle was the best place for astronauts in NASA’s first crewed spacecraft missions to the moon to train.

A June 6, 1963, NASA press release announced that four spacecraft center personnel and 16 astronauts chosen for projects Mercury, Gemini and Apollo would attend the United States Air Force (USAF) Tropic Survival School at the former Albrook Air Force Base in Panama’s Canal Zone. Anthropologist, botanist and World War II veteran H. Morgan Smith was the school’s director. This would be the first time that the astronauts received tropical survival training in a course that also included “instruction of Indigenous people in the tropic areas, native customs, native foods and the proper method of approaching these people, enlisting their aid, and communication with them.”

FAR-FLUNG PARTNERS

Panama’s Indigenous Emberá people’s ancestral knowledge was accumulated over hundreds of years of living in the jungle, which was fundamental to the USAF school’s survival field training program, the only one of its kind operated by a United States agency.

Emberá Chief Manuel Antonio Zarco and his team of Emberá instructors conducted the training. Historically, the Emberá people were called Chocó because they originally came from Colombia’s Chocó region bordering Panama (Panama was part of Colombia until 1903).

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"My father felt an immediate connection with the astronauts because our ancestors and older Emberá people today believe that when our souls leave the Earth, they go to the moon ..."

— Natalia Sarco,
daughter of Emberá Chief
Manuel Antonio Zarco

Astronauts Stuart Roosa, Bruce McCandless and Al Worden explore their surroundings in a Panama jungle in 1967. ACCUSOFT INC./NASA

In the NASA Johnson Space Center Oral History Project transcript of a 2022 interview with Director H. Morgan Smith, he talks about first meeting Zarco in Panama in 1952.

Smith was an anthropology graduate student when Zarco "adopted" him: "I didn't know (it) at the time, he is the senior elder of the entire tribe of some 30,000 people (in Panama and Colombia). I hunted, fished, swam, did all those things that they do, with them, to learn about ethnobotany from their standpoint."

The Emberá-led jungle survival training for NASA mirrored Smith's educational experience under Zarco's tutelage. Following several days of intense classroom instruction at USAF Albrook Base, the astronauts underwent rigorous field training spending two nights and three days in Panama's jungle.

Exercises focused on how to find and purify water, fish and hunt for animals, forage for edible plants, find

dry wood to build a fire and construct palm leaf-sapling lean-to shelters.

To authentically simulate a spacecraft's emergency jungle landing, the astronauts were dressed in only their boots and the long underwear they wore under their space pressure suits, which would have to be discarded upon landing.

Apollo astronauts Don Lind and Bill Pogue's anecdotal accounts of the arduous training appear in "The Last of NASA's Original Pilot Astronauts, Expanding the Space Frontier in the Late 1960s," published in 2017.

Lind recounted how while tromping in the jungle they "... suddenly came across a huge, 7-foot fer-de-lance, an extremely venomous reptile that could easily paralyze a man. The snake was captured and placed in a burlap bag. The guide assured the astronauts it would only strike things it could see, so stuffed inside the sack where it was dark, the deadly snake would remain calm." While Pogue

joked about the challenges of foraging for food, "... we speculated whether the energy we consumed from eating the heart of the palm was as great as the energy expended in harvesting it."

Smith praises the Emberá instructors for their inclusive, team-building training approach: "These men ... would work eight days a week and 26 hours a day for the United States, and they were dedicated, absolutely. (I can't) say enough for them. ... The success of the school and why NASA was interested was because of (the professionalism of) those men."

A MUTUAL BELIEF IN THE MOON

Zarco's daughter Natalia Sarco works as an ecologist and bird-watching guide in Panama City's Metropolitan National Park.

The former Canal Zone's 573-acre park was a site of the Albrook survival school camps, which included one on the Panama-Colombia border in remote Darién National Park, also a

UNESCO Biosphere Reserve.

She says, "My father felt an immediate connection with the astronauts because our ancestors and older Emberá people today believe that when our souls leave the Earth, they go to the moon, and from there they watch us and protect us down here."

Zarco trained Abdiel Iván Batista, a master jungle rescue instructor who is the director of the Chagres Survival School, CEO of the Safe Jungles Foundation and member of the Panamanian Red Cross First Aid Corps. He says that living in the Central American jungle requires respect for it. Batista likens the jungle environment to a "brotherhood" because, according to Emberá beliefs, every plant, animal, insect has a spirit and they are all connected. "This is why Emberá people do not view the jungle as dangerous, but see it as a perfect balance where the spirits support one another," Batista says.

In a lecture he gives on the evolu-

tion of jungle survival training, equipment and technology, Batista shares an anecdotal story he was told of the astronauts' first day of jungle field training in 1963. After Zarco and his instructor team heard that the Americans were going to the moon, Zarco said, "When a Chocoe (Chocó) dies, his soul goes to the moon." At that point, John Glenn, moved by the statement, stepped up to Zarco and firmly shook his hand.

Glenn's sincere gesture inspired by their mutual affinity for the moon, "Jedeco" in the Emberá language, established a mutual respect and trust between them. "All the astronauts shared a bond of friendship with Zarco, especially John Glenn and Neil Armstrong," says Batista. "They came back to visit, as did many American soldiers who returned to Panama to tell Zarco that his training was a big reason why they survived in Vietnam."

From 1955 to 1975, Zarco and his team trained over 10,000 members of the U.S. military in jungle survival, including Army Special Forces; pilots for the Navy, Army and Marine Corps; and other federal agencies. He also trained members of Latin American air forces. Batista refers to records citing a total of 17,000 military who were trained by Zarco during his tenure at the USAF Tropic Survival School, which closed in 1975.

Zarco received the Distinguished Public Service Medal, the most prestigious civilian honor awarded by the United States Department of Defense, in 1971. Soon after, NASA's astronauts gave him the prized Silver Snoopy Award for his significant contributions supporting human spaceflight safety and mission success. Later in life, Zarco traveled to the U.S. for speaking engagements at universities, New York City's Explorers Club and the Smithsonian Institution.

In March 2010, Zarco died at the age of 96. Sarco says, "While I am proud of my father's work training astronauts and helping save American soldiers' lives, I am most proud of him because he showed us a long time ago that even with big language barriers and cultural differences, we can find ways to communicate and help each other." Now, to keep her father's legacy alive and preserve Emberá culture for future generations, Sarco works with Panama's Balaena Travel accompanying visitors traveling in long wooden canoes up the Chagres River



Astronauts Bruce McCandless and Al Worden interact with a native guide. ACCUSOFT INC./NASA

to the Emberá village of Parará-Purú. Inside a large thatched-roof pavilion, visitors experience traditional dances, artistry, crafts and food that villagers fish and forage in the jungle. Through Balaena tour guide Mel Sanchez's translation of the villagers' presentations, visitors learn about the Emberá people's role in training NASA astronauts.

PANAMA JOINS THE ARTEMIS ACCORDS

On Dec. 11, 2024, Panama became the 49th country and the first Central American nation to join the Artemis Accords, an international, nonbinding agreement composed of principles to guide civil space exploration and use.

Panama's Ambassador to the United States José Miguel Alemán Healy, who signed the agreement, says, "For Panama, the Artemis Accords are a natural continuation of what we've always stood for: peace, cooperation and the responsible use of what belongs to us all."

In 2020, The U.S. Department of State, NASA and the seven original signatory nations established the Artemis Accords. Ambassador Alemán believes that the Accords strengthen the Outer Space Treaty of 1967, which provided an international legal framework to govern nations' conduct in space. Today, the Artemis Accords' 56 signatory nations share a common vision for peaceful, sustain-

able and transparent cooperation in space.

From a purely historical perspective, Panama's role in NASA astronaut survival training and the cultural engagement it fostered was perhaps a nascent expression of 21st century space diplomacy underpinning the Artemis Accords' principles.

Ambassador Alemán views ongoing international collaboration in space as "essential to human survival" on Earth, saying, "The NASA astronaut jungle training program ... in the 1960s not only prepared astronauts for extreme environments, but also established a historical link between studying our natural environment and exploring space."