



# Composite Rowboat Faces Stern Test

*Erden Eruç to push limits while paddling across the Pacific for good causes*

By Robert Grace

**E**rden Eruç is taking this “social distancing” thing a bit far. But then, the 59-year-old Turkish-American adventurer has spent his entire adult life going to extremes.

The holder of 14 Guinness World Records, and the first person to circumnavigate the entire globe solo by human power, Eruç has secured his grip on the claim as one of the world’s most experienced and accomplished ocean rowers.

Based in Gig Harbor, Wash., near Seattle, Erden Eruç (pronounced AIR-den AIR-rooch) is now busy preparing for his next big adventure—becoming the first human ever to row nonstop across the northern Pacific Ocean, from the North American mainland to the mainland of eastern China. He’s allowing roughly 11 months for the journey.

He is not simply a thrill-seeking daredevil. Eruç has greater reasons for his exploits. He says he has raised and applied more than \$100,000 toward charitable and educational causes. And that mission continues.

He is devoting his next planned trip—tentatively scheduled to depart in May, weather and financing allowing—to the goals of conservation, clean oceans and clean water. He says he wants to raise awareness about plastics pollution in the ocean, support organizations that bring clean water to poor communities, and promote the theme of friendship and collaboration between nations through extreme sports. He also leverages his experiences to help educate young people about perseverance and pursuing dreams to improve the world.

Further, he wishes to create scientific, educational and



**In 2002, at 41, Erden Eruç devoted himself to extreme adventuring, to promote charity and education, and as a tribute to his late friend Göran Kropp.** All photos courtesy of Erden Eruç

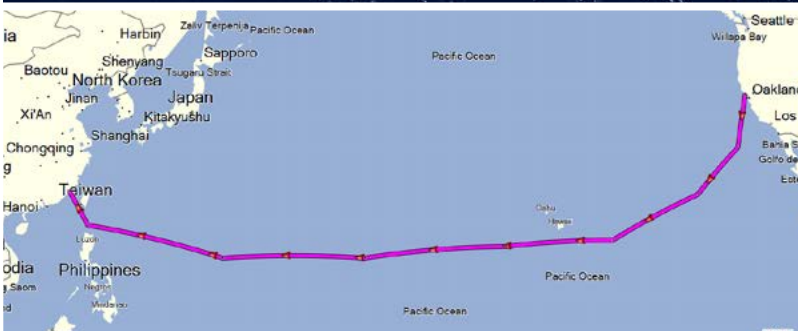
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promotional value through his efforts by:

- » Collaborating with scientists in need of data
- » Creating an educational platform with a global reach
- » Inspiring his audience to be physically active and giving them a voice in the health of the planet
- » Establishing new records and historic firsts in ocean rowing and
- » Leveraging these achievements for media visibility,



Eruç rowed across three oceans in circumnavigating the globe. This photo (above), from October 2010, was taken northwest of Madagascar from a helicopter put up by the international naval fleet to protect him from Somali pirates. The planned route of Eruç's next journey, from California to China's east coast, covers 7,600 nautical miles and is estimated to take 11 months. It would be the first nonstop mainland-to-mainland Pacific crossing by rowboat. (left)



creating promotional value for conservation partners and sponsors.

Among his early partners on this project are the Hong Kong-based non-governmental organization called the Ocean Recovery Alliance ([www.oceanrecov.org](http://www.oceanrecov.org)), for which Eruç is an ambassador. ORA was founded by San Francisco native Doug Woodring (who brought his Plasticity Forum plastics sustainability conference to SPE's ANTEC conference in Anaheim, Calif., in 2017). Another early partner is the Elliott Bay Design Group ([www.ebdg.com](http://www.ebdg.com)), a Seattle-based naval architecture and marine engineering firm.

Woodring stated: "We look forward to helping support Erden's adventure through education and awareness that he will bring while bridging the important intersection of sports and the environment for our communities. We plan to have educational content focused on ocean appreciation and plastics pollution in both English and Chinese, linking the two edges of the Pacific which Erden will bring together via his extraordinary journey."

## Designing for Harsh Conditions

EBDG has a crucial role to play, by applying some of its technology to help Eruç design a composite rowboat

capable of withstanding the typhoons he may encounter in crossing the northern Pacific. In mid-December, he towed his existing plywood rowboat (which he bought in 2004 and has already used to row across three major oceans during his circumnavigation) to Seattle, where EBDG did a 3D scan of it.

Eruç needs to slightly redesign his boat for the next adventure, since he is likely to encounter harsher weather conditions than on his previous journeys.

Via the 3D scanning, "We captured the current boat's hull shape as it is now," he said in a Dec. 19 telephone interview. "Then we can manipulate the 3D shape and make the necessary adjustments. Once done, we can obtain digital cross sections, and I can take those digital files to a CNC outfit that would cut the forms, with which I can then recreate the hull shape." He uses plywood for the basic forms.

He already built a "strongback," a support structure that holds the framework of the boat together until all its structural members, as well as fasteners and epoxy, are in place. The strongback helps to perfectly align the forms as the boat is constructed. He will lay cedar strips over the forms to obtain the hull. Over those he will apply a carbon fiber/aramid fiber



Eruç rowing on Christmas Day 2007—day 168 of 312 that he spent on the Pacific Ocean.

biaxial composite cloth (think DuPont's Kevlar or DSM's Dyneema), using an epoxy adhesive, for added impact strength and puncture resistance on the outside.

Once that's set, the hull can be lifted off the forms and positioned right-side up. The inside needs to be sanded, sealed and a 3-mm layer of foam applied to serve as a sandwich core under a final inside layer of fiber cloth. The foam provides space, like a buffer zone, to separate the fiber layers from one another. It doesn't soak up glue, so the construction remains light. It also aids with the shear and compression performance, to help keep the boat intact under severe loads.

Composites are good under tensile loads, Eruç notes, but not so great at handling compression. He will apply composite cloth inside the boat, most likely a layer of high-modulus, high-tensile-strength S-Fiberglass (also known as S-glass) cloth.

Michael Complita, principal in charge at the 55-employee Elliott Bay Design Group, explains that his firm serves as

consulting engineers; they don't build boats themselves. Most of their business involves designing passenger vessels, tankers, cargo ships and ferries, ranging from 22 to 900 feet long. In one of their more unusual projects, they've just completed converting an old deck barge into a floating data server farm in San Francisco Bay, in what Complita thinks may be a world first. They have never worked on a project involving a rowboat.

### Leveraging 3D Scan Technology

EBDG has been using 3D scanners for the past three or four years. Having Eruç's boat scanned means they can look at it from every angle and make any changes they want to the shape. They can cut digital slices out of the hull and feed that data to a CNC router that will cut precise sections out of plywood for the new boat.

Using the scan data, Complita says, "we can build a 3D computer model, and use software to analyze the stability of the boat. We can model it in all types of weather conditions, wave conditions and see how it reacts in different types of



These tight quarters are the only inside compartment in Eruç's current rowboat.

seas. Will the boat roll over? Will it self-right?"

Eruç said his new boat will measure 24 feet long, be about seven feet wide at the beam and six feet high. It will weigh about 550 pounds when empty and close to 1,650 pounds fully loaded. It will include roughly 330 pounds of water for ballast and for drinking, if needed. He'll use a desalination unit that can transform ocean water into potable water, and rely primarily on freeze-dried foods, as well as nuts and dried fruits. Not only can he not stand up in his living quarters, he noted, but if he sits up straight, his head touches the ceiling.

His existing boat was designed for two people. Since he'll be solo, he plans to shorten the open deck space, and redesign the new cabin to incorporate a second bulkhead inside with a hatch to create a shoulder-wide flood zone, sort of an airlock before opening the main hatch to exit in case the boat is swamped by waves. That will help ensure that buoyancy remains in the cabin, so the boat can right itself should it capsize.

Eruç plans to affix solar panels on the cabin tops and over the gunwales, to help charge two lithium-ion batteries, rated at a minimum of 100 amp-hours each. He'll have various devices, including Garmin instruments such as a chart plotter, VHF radio, depth gauge and an Automatic Identification System transceiver that operates in the VHF maritime band, which allows easy tracking of other vessels. The panels, batteries and electrical system will need to be wired with charge controllers, switch panels and the like. Additionally, he'll be equipped with an Iridium satellite phone and satellite modem phone, cameras and possibly a drone.

"The rowboat, once put in motion, will remain in motion at a walking pace," Eruç noted. "Other than the fluid drag on the hull, there is not much else that will slow her down." He studies reams of climatological data related to prevailing winds, currents and swell patterns and then selects a route "such that the seas would carry me generally in the direction that I want to travel."

## An Engineer by Training

Eruç is comfortable with such technology, given his technical grounding. Born in Cyprus and raised in Turkey, he earned bachelor's and master's degrees in mechanical engineering from Bogaziçi University in Istanbul, then moved to the United States, where he received another master's degree in engineering mechanics from Ohio State University. In 1999, he earned an Executive MBA from George Mason University in Virginia.

Always an avid outdoorsman, Eruç says his round-the-world goal began as a simple idea in 1997, then grew into a quiet obsession. After moving to the Seattle area for a work project related to his information technology job, his company was sold, and he got laid off following the dot-com crash of 2000. Then the 9-11 terrorist attacks happened, adding uncertainty and hindering his prospects for sponsorships.

In September 2002, a tragic accident changed his life. He was climbing vertical basalt columns in Vantage, Wash., with friend and Swedish adventurer Göran Kropp when Kropp fell to his death. The accident, Eruç said, proved to be "a swift kick in the derriere, to get on with life. ... I cashed out my retirement savings, and I took a leadership role in my own life."



Rowing solo can be lonely, but visitors do drop in. This Eastern Wood-Pee-wee stopped to catch a breather on Eruç's rowboat in the Gulf of Mexico in May 2012.

After suffering from what he called "paralysis by analysis" since 1997, he said he then fully committed to his future adventures. He quoted a Turkish saying that roughly translates to "the caravan gets sorted on the move," and realized that he knew 80 to 90 percent of what he needed to know and would learn or improvise the rest as he went. "I knew enough to get moving."

In December 2002, in part to honor Kropp, Eruç established a Seattle-based nonprofit called Around-n-Over ([www.around-n-over.org](http://www.around-n-over.org)), with the aim of accomplishing human-powered expeditions that inspire and teach, so that others



Eruç walks or cycles during land journeys. Here he checks his progress on the “90-mile straight” on Eyre Highway in Western Australia in May 2010. Eruç walks his bike through sand in Namibia in July 2011. (below)

may achieve success in their own endeavors.

One of the group’s stated goals is “to inspire and to instill the values of selflessness, sacrifice and perseverance in young people so that they might develop into good citizens and stewards of this Earth.”

“I mention this often, especially when I talk with children. I had such a big dream—circumnavigation by human power—that, to finish it, I knew I had to break records and establish historic firsts. I came home with 14 Guinness World Records at the end of that” circumnavigation journey, which he completed in 2014.

“The goal was so immense that I had to become that person who could establish such records. If I weren’t that person in the beginning, then I had to become that person in the process—and I did become that person. That is where the satisfaction comes from.”

During his five-year, 11-day circumnavigation, Eruç logged 41,196 miles while rowing across three oceans—Pacific, Indian and Atlantic—cycling across three continents—Australia, Africa and North America—and crossing the equator twice.

The total elapsed time of five-plus years included several



long periods of downtime spent away from the route, for a total of about 26 months while dealing with logistics and waiting out storm seasons, with Eruç always continuing again from the exact location where he had last stopped. (Such interruptions are acceptable for such journeys, providing one picks up where he or she left off to continue the journey.) Excluding the downtime periods, he traveled for a total of 1,026 days, or about two years and 10 months. At one point, he spent 312 consecutive days on the Pacific, also a record.

One of his mental keys involves breaking down the huge task ahead of him into manageable chunks, such as having a goal on the ocean of covering 30 miles per day. Once he achieves that, he tastes success, and aims to make it a habit.

“It changes one’s outlook,” he explained. “If I aimed for

3,000 miles away, then I wouldn't be moving fast enough to get encouraged. It could be daunting."

This year, the pandemic has complicated his access to certain key material supplies, and he now faces an extremely tight deadline for getting his new boat built, fully equipped and ready to depart from the San Francisco Bay area. The planned journey will cover some 7,600 nautical miles across the North Pacific, from northern California to, preferably, Xiamen or Hong Kong in China.

## Weather Makes Timing Critical

If he misses the May 2021 launch window, Eruç says he would need to delay the trip for a full year, due to expected weather patterns. Despite having already spent a total of 844 solo days at sea, he has yet to encounter a typhoon. The worst conditions he's dealt with so far, he said, were 35-knot (about 40-mph) winds and 15-foot-high seas. Careful planning in advance always allowed him to plan his crossings outside of storm seasons and away from storm tracks. However, the wide expanse of the Pacific and the duration of the crossing dictates a narrow launch window only in May to make landfall in China the following April at the latest.

There will be no support boat shadowing him on the trip. Should he need emergency assistance, he'll have alert beacons and tracking devices that he can use to send a distress signal to those monitoring his progress. "I'll have all the same safety gear as on a yacht, but without an engine or sails," he notes.

Using his satellite phone connection, he plans to blog from his boat, sharing his experiences, observations and messages of conservation throughout the journey.

This is going to be a one-off boat, so he doesn't have a mold for it, which would be needed to make a fully composite hull. Instead, Eruç decided to do a traditional cedar-strip build to get the hull shape, and then reinforce that on both sides with the composite cloth. The resulting boat may be just a bit heavier than an all-composite structure, but it should be just as strong, he says.

Eruç's ambitions are not tied solely to the sea. Inspired by his late friend Göran Kropp, who was known for bicycling from Stockholm to Nepal to climb Mt. Everest in 1996, he dedicated the Six Summits Expedition in his memory. Eruç will travel by human power to climb the highest mountain summit on six continents (all except Antarctica).

## Aiming to Scale New Heights

In 2003 he climbed to the summit of Mt. McKinley in Alaska. During his circumnavigation journey a few years ago, he successfully climbed two more of those mountains—Mt. Kosciuszko in Australia in 2010 and Mt. Kilimanjaro in Africa in 2011.

Still on the list: Mt. Aconcagua in Argentina, Mt. Elbrus in Russia and Mt. Everest on the border of China and Nepal. Eruç has leveraged the Six Summits Expedition to produce educational content and to serve as a co-fundraising program for Around-n-Over.

It is a mission of Around-n-Over to assist poor communities in their struggle toward self-sufficiency by providing basic educational aid and resources, know-how and facilities. The group says on its website: "We will accomplish our charitable mission in partnership with existing organizations on a case-by-case basis."



Following the death of his climbing friend Göran Kropp, Eruç dedicated the Six Summits Expedition to his memory. His goal is to climb the highest summits on six continents. This was taken on Mt. McKinley in Alaska in 2003.

Eruç, who has invested a significant amount of his family's money into past ventures, is seeking additional sponsors to help underwrite the cost of his next ambitious journey. He also would consider licensing naming rights for his new rowboat to help provide much-needed funding. He is always interested in reaching new groups of students and adults via speaking engagements, as a means of spreading his message more broadly.

He will need help to be able to compress all that needs to be done into just a few months. If he can, indeed, launch his newly designed rowboat from northern California in May, he'll spend the better part of the next year navigating the northern Pacific Ocean, with the aim of inspiring others.

Indeed, as an education ambassador, Eruç said: "My message to kids is, 'Don't shortchange yourself. Aim high. You will end up higher than where you are today. You may not get to your goal but aiming high never hurt anyone.'"

### ABOUT THE AUTHOR

Robert Grace is a writer, editor and marketing communications professional who has been active in B2B journalism since 1980. He was founding editor of and worked for 25 years at *Plastics News*, serving as editorial director, associate publisher and conference director. He is now both editor of SPE's *Journal of Blow Molding* and a regular contributor to various outlets. A long-time member of the Industrial Designers Society of America, he runs his own firm, RC Grace LLC, in Daytona Beach, Fla., and can be contacted at [bob@rcgrace.com](mailto:bob@rcgrace.com).

