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## Iraq's Garden of Eden

### Restoring the Paradise that Saddam Destroyed

*By Samiha Shafy*

**Saddam Hussein drained the unique wetlands of southern Iraq as a punishment to the region's Marsh Arabs who had backed an uprising. Two decades later, one courageous US Iraqi is leading efforts to restore the marshes. Not even exploding bombs can deter him from his dream.**

Azzam Alwash is an anomaly in Iraq, a country devastated by war and terrorism. As he punts through the war zone in a wooden boat, his biggest concerns are a missing otter, poisoned water and endangered birds. Who thinks about the environment in southern Iraq, and who is willing to risk his life to save a marsh?

"Isn't this wonderful?" Alwash asks as his boat, accompanied by armed guards, glides through a channel lined with reeds. Flocks of birds fly through a reddish evening sky above the marshland, where the air temperature has dropped to 35 degrees Celsius (95 degrees Fahrenheit) -- cool by local standards. Basra, a city devastated by war, is only 60 kilometers (37 miles) away, and yet it might as well be on another planet.

Water buffalo snort as they swim past the boat. Alwash, a broad-shouldered man with bushy gray hair and a moustache, is beaming as he sits upright on the rowing bench. "Just look at this," he says. "There was a desert here just a few months ago."

#### The Cradle of Civilization

Alwash, 52, a citizen of Iraq and the United States, is a hydraulic engineer and the director of Nature Iraq, the country's first and only environmental organization. He founded the organization in 2004 together with his wife Suzanne, an American geologist, with financial support from the United States, Canada, Japan and Italy. His goal is to save a largely dried-up marsh in southern Iraq. In return for giving up his job in California, Alwash is now putting his safety and health at risk.

Nowadays he spends a lot of time flying from one continent to another. Four days ago, he traveled from Fullerton, California, where his family lives, to Amman, Jordan to meet with former Iraqi Prime Minister Ayad Allawi. Then he flew to Basra to attend a conference, and now he is back in the marsh. His next stop is Baghdad, where he has an appointment at the Environment Ministry. After that, he will travel to Sulaymaniyah in northern Iraq, where, for security reasons, Nature Iraq has its headquarters. After that, he has meetings scheduled with donors and advisers in the Italian cities of Padua and Venice. Other men have a mistress, says Alwash -- he has the marshes.

Of course, this isn't just any old marsh. Alwash is fighting for a marsh which Biblical scholars believe is the site of the Garden of Eden, and which some describe as the cradle of civilization. The Mesopotamians settled in the fertile region in the fifth century B.C., and within a few centuries it had become the site of an advanced Sumerian civilization. Scholars believe that cuneiform was invented in the region, as were literature, mathematics, metallurgy, ceramics and the sailboat.

Only 20 years ago, an amazing aquatic world thrived in the area, which is in the middle of the desert. Larger than the Everglades, it extended across the southern end of Iraq, where the Tigris and Euphrates rivers divide into hundreds of channels before they come together again near Basra and flow into the Persian Gulf. For environmentalists, this marshland was a unique oasis of life, until the Iraqi dictator Saddam Hussein, a Sunni, had it drained in the early 1990s after a Shiite uprising.

## **Turning the Garden of Eden into Hell**

The official explanation was that the land was being reclaimed for agriculture. The military was sent in to excavate canals and build dikes to conduct the water directly into the Gulf. The despot, proud of his work of destruction, gave the canals names like Saddam River and Loyalty to the Leader Canal.

In truth, Saddam was not interested in the farmers. His real goal was to harm the Madan, also known as the Marsh Arabs. For thousands of years, the marshes had been the homeland of this ethnic group and their cows and water buffalo. They lived in floating huts made of woven reeds and spent much of their time in wooden boats, which they guided with sticks along channels the buffalo had trampled through the reeds. They harvested reeds, hunted birds and caught fish.

When the fishermen backed a Shiite uprising against the dictator, the vindictive Saddam turned their "Garden of Eden" into a hell. He had thousands of the Marsh Arabs murdered and their livestock killed. Any remaining water sources were poisoned and reed huts burned to the ground. Many people fled across the border into Iran to live in refugee camps, while others went to the north and tried to survive as day laborers. By the end of the operation, up to half a million people had been displaced.

Within a few years, the marshland had shrunk to less than 10 percent of its original size. In a place that was once teeming with wildlife -- wild boar, hyenas, foxes, otters, water snakes and even lions -- the former reed beds had been turned into barren salt flats, poisoned and full of land mines. In a 2001 report, the United Nations characterized the destruction of the marshes as one of the world's greatest environmental disasters.

### **'Wait Until You See the Marshes'**

On June 18, 2003, only three months after the American invasion, Alwash flew from Los Angeles to his native Iraq. He knew what to expect. "Nevertheless, it was a shock," he says. "I remembered water and green vegetation as far as the eye could see, but what I saw was nothing but desert, dust and the ruins of settlements."

At that point, Alwash had not stepped on Iraqi soil in exactly 24 years and 341 days. He had gone to the United States to study and eventually became an American through and through. He had an American wife, two young daughters with whom he did not speak Arabic, a house in Long Beach and a well-paid job as a hydraulic engineer. "It was the perfect American dream," he says today.

But he couldn't forget the marshland, his childhood paradise. His father, who had worked in Iraq's Water Ministry until the early 1980s, had often taken him along when he was traveling in the marshes for work or hunting geese in the reeds. Sometimes his mother and his two sisters came along on their extended outings in the boat. Alwash had promised himself that one day he would show his wife and his daughters the "Garden of Eden" of his childhood. "This is nothing," he would often say when they were hiking or canoeing in California. "Just wait until you see the marshes!"

### **'This Marshland Is the Holy Grail'**

It was this promise that prompted Alwash to return to Iraq and raise funds for his plan, which involved the controlled flooding of former marshland. He and his collaborators called their ambitious plan the "Eden Again" project.

Curtis Richardson, an ecologist at Duke University in Durham, North Carolina, was part of the project from the very beginning, making research trips to the region between 2003 and 2007. "I've studied wetlands for my entire professional life," says Richardson, "but this marshland is the Holy Grail -- the Garden of Eden."

Soon, however, Richardson was forced to realize how naïve his enthusiasm had been. He spent many a sleepless night on the floor of his hotel room in Basra listening to the sound of gunshots outside. Heavily armed guards had to escort him during his field work. "You do feel a little strange when you're holding a pH monitor in your hand while everyone else is carrying a machine gun," he says.

Once, when Richardson went into the water near the Iranian border to take some samples, his translator, who was standing on the shore, suddenly began shouting and waving his arms wildly. "I had walked into a minefield," he recalls. That was the moment that Richardson decided to abandon his field work.

"Azzam is fighting a courageous battle, but he needs help," says Richardson. The United States has cancelled its financial support for the project, and now most of its funding and scientific advice comes from Italy. Richardson estimates that no more than 30 to 40 percent of the former marshland can be transformed into a functioning ecosystem in the long term. But even that would represent an enormous improvement, not just for nature but also for Iraq's future.

### **Influencing the Climate**

Because they retain the water from the rivers, the marshes could prove to be an important water source for the south. They also influence the climate. The region became hotter after the marshland was destroyed, says Richardson. When temperatures went over 50 degrees Celsius (112 degrees Fahrenheit), the crops dried up in the fields. The fishermen and shrimp growers also saw a sharp decline in their catch, because the marshes were no longer there to filter dirt and pollutants out of the rivers.

Now, about a third of the original river marshes are covered with water once again. Teams of international experts, Nature Iraq employees and representatives of three Iraqi ministries are demolishing dams, channeling water from the canals back into parched areas, sowing native plants and studying the composition of species and the development of plant and animal populations.

Before they flood a new area, the scientists measure salt and sulfur concentrations in the soil. Levels are so high in some places that neither reeds nor indigenous fish species can survive. A constant flow of fresh water is needed to flush out the salt and allow the soil to recover.

Alwash and his collaborators are developing a plan for the country's first national park: a protected zone of about 1,000 square kilometers (386 square miles) where the water supply will be regulated with a large number of floodgates. "We are in the process of drafting guidelines for nature reserves," says Giorgio Galli of Studio Galli Ingegneria Spa, an engineering firm in Padua, Italy. "This sort of thing has not existed in Iraq until now." The scientists hope that if the project materializes, it could be declared a UNESCO World Heritage site.

### **Bombs 'Just Part of Daily Life'**

But all of this is happening in the midst of a conflict zone. Dozens of employees of the project have died in terrorist attacks in the last seven years. Others, fearing for their lives, have left. Experts with the United Nations Environment Program (UNEP) can only provide advice from afar. For safety reasons, they have been barred from entering Iraq since 22 people died in an attack on the UN headquarters building in Baghdad in August 2003.

The situation seems to have calmed down somewhat recently. Basra is not as safe as Sulaymaniyah, but neither is it as dangerous as Baghdad. But security is a relative concept. Is the risk worth it? Can conservation even function in a country like this?

Alwash is used to bombs going off. "As long as you are at least 100 meters (about 330 feet) away, it's just part of daily life." He tries to explain how he feels: "For the first time in my life, I have the feeling that my work really helps people, and that I'm not just working to make money for my family and myself. That's fulfilling."

Nowadays, when Alwash is traveling in the marsh of hope, he sometimes encounters images of his childhood. In Al-Hammar, a labyrinth of waterways leads through dense, meter-high reeds and comes together to form larger lakes. Dewdrops glisten on the reeds, rustling as they recede alongside the passing boat. A crescent moon fades away as the sun grows stronger. Tiny fish dash through the

water, fleeing a water snake. And the birds are back: night herons, pied kingfishers, purple herons, little grebes, black-tailed godwits and marbled ducks.

Reed huts surrounded by sleepy water buffalo stand on small islands. Men and women with sunburned faces and long robes glide through the water in boats, cutting reeds, occasionally raising their hands in greeting.

### **The Return of the Madan**

The water has brought back the Madan, whose numbers are already believed to have climbed to about 80,000. Their stories are like the story of Naim Aatai, a small, hunched-over man with a white beard, a furrowed face and deep-set eyes. "Saddam's soldiers came to our village and accused us of hiding terrorists," says Aatai. "They shot at us and killed my brother. Then they burned down our huts."

After the attack, Aatai fled to the north and found work on a farm near Baghdad. "It wasn't a good life," he says. "It's better here. This is our home."

Dhwia Jift is just returning from her first reed-cutting trip of the day, her boat filled with reeds. A few men load the bundles onto a truck. Jift is paid the equivalent of \$4 (about €3) for a full load. The slight woman, dressed in black, says that she gets up every morning before sunrise, bakes flatbread and feeds the children. Then she spends the rest of the day harvesting reeds.

The skin on her hands and feet is cracked and covered with calluses. She says that she is tired and sick, but that she doesn't want to complain. Her time as a day laborer in the north was much worse, she says, because she was treated like a slave there. "I'm free here," she says with a smile, exposing the gaps in her teeth. "At least I don't have to beg, as long as I have water and reeds."

### **Wasting Water**

But it is far from certain that the water will remain in the marshes. Turkey, where the Tigris and the Euphrates originate, is building dams and gradually reducing the flow of water southward. There are no agreements between the two countries over joint use of the rivers. And Turkey is only one of three countries, along with China and Burundi, that have not signed the 1997 UN Convention on the Law of the Non-Navigational Uses of International Watercourses.

Much would be gained if Iraq's farmers would learn to be economical with their use of water. They are not familiar with the principle of drip irrigation. Instead, they still flood their fields, a method that was practiced in times when there was a surplus of water.

There are also other ways to save water. Iraq treats hardly any of its sewage, and recycling water is practically unheard of. As a result, the water that is being fed out of the canals and back into the marshes contains high concentrations of fertilizer, environmental toxins and pathogens. The Environment Ministry and Nature Iraq are jointly monitoring the situation to gauge the effects on the ecosystem and the health of human beings and animals.

### **The Hazards of Oil**

Broder Merkel of the Freiberg University of Mining and Technology sits between muscular bodyguards in the lobby of the newly opened Mnawi Basha Hotel in Basra. The German hydrogeologist has identified another hazard: oil. "The oil companies can't wait to start drilling for oil in the marshes," he says. "And when that gets going, without regulations, research and monitoring, you can forget about the marshes once and for all."

Iraq has the world's third-largest oil reserves, and there are plans to triple production in the next five years. A number of oil fields are located in the marshlands. Merkel, who has a white ponytail and many laugh lines, has come to Basra on behalf of the German Academic Exchange Service to develop two new courses of study together with representatives of Iraqi universities: "Sustainable Oil

Production" and "Hydrogeology and Water Management in Arid Regions."

This time, Merkel wants to take home a few water samples from the Basra canals. His trip takes him past slums the color of brown mud, mountains of garbage and checkpoints. The streets of Basra are filled with the stench of garbage and gasoline. Rickety cars squeeze past donkey carts and beggars. Combat vehicles are parked next to corrugated metal huts where vendors sell fruit and vegetables. Shiite mourning flags flutter in the wind. Wherever the scientists stop, police officers join them and wait politely until the guest from Germany has filled his test tubes.

### **Hotels and Hikers**

Alwash knows the geologist from Freiberg, and the two men greet each other in the Arabic fashion, by kissing each other on both cheeks. But the US Iraqi doesn't share his German colleague's pessimism. In fact, he sees the oil boom as an opportunity. "Maybe we can create incentives for the oil companies to contribute to the establishment of a nature reserve in return," says Alwash.

Alwash isn't afraid of dreaming. And when he glides through his beloved marshlands in a boat during the evening, his dream seems within reach. "I see floating reed hotels and camping sites," he says. "I see glass-bottomed kayaks, hikers, paragliders and hot-air balloons." His minders listen to him, their weapons lowered.

"The first people to come will be the ornithologists," Alwash continues. "Then the people who are interested in archaeology, in the ancient cities of Ur and Uruk. And then the eco-tourists." Eco-tourists? Alwash grins, and then he says: "One of my strengths is that I don't let myself be constrained by reality."

*Translated from the German by Christopher Sultan*

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