WIRED

Blown Away

In Hawaii, they're beta testing an extreme sport called kitesurfing - one broken bone at a time.

By Jeffrey M. O'Brien

Just upwind of a wastewater treatment plant on Maui's North Shore there's a small cove of golden sand and low surf officially called Ka'a Point. With little to offer the average visitor beyond a few picnic tables and a Porta Potti overgrown by weeds, it barely warrants a mention in the tourist guidebooks. But for thrill seekers, Ka'a Point - better known as Kite Beach - has become a premier destination, the beating heart of the hottest new extreme sport on the planet. An intense combination of wakeboarding and windsurfing, kitesurfing uses a souped-up version of a 3,000-year-old technology to deliver the ultimate ride.

Thanks to the perfect weather and a steady crosswind, Kite Beach is the home port for some of the best kitesurfers in the world. This is where Julie Prochaska, one of the top female professionals, comes to test the latest tricked-out rigs and work on her favorite move, the one-handed triple back - jumping 25 feet into the air and doing a triple backspin while holding the control bar with one hand. A former windsurfing racer, Prochaska says she'll never go back to lugging a huge board and sail. "Windsurfing doesn't even compare," she says. "From the second you launch, there's an insane amount of power. It's like bungee jumping, but the rush lasts the whole time."

Kitesurfers ride on a plank that resembles a snowboard, with foot straps on top and small fins on the bottom. They steer the kite's 100-foot lines with a control bar, which they hold about chest-high. A waist harness allows riders to hook onto the control bar as a way to conserve arm strength or perform tricks. But the sport is really about the kites, which measure anywhere from 32 to 215 square feet or more and can pull a rider across flat water at speeds of up to 35 miles per hour. With a flick of the wrist, a rider can boost 40 feet in the air. Over the past five years, designers from around the world have harnessed the power of the wind in a way never thought possible. "The whole thing is really still at the ground floor," says Pete Cabrinha, a world champion windsurfer, extreme sports pioneer, and founder of Cabrinha Kites. "We've cracked open the possibilities. Amazing things are going to happen."

Throughout history, kites have been used for everything from passing the hours on a spring day to Ben Franklin's famous electricity experiment. The Wright brothers even flew them as a way to gain a better understanding of aerodynamics before building their first airplane. But it's taken a fair amount of engineering to make kitesurfing possible.

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A kite flies in much the same way as an airplane wing - thanks to what's known as Bernoulli's law. By redirecting fast-moving air, the kite increases the pressure below its body, decreases the pressure above, and achieves lift. The greater the kite's span relative to its entire area - known as aspect ratio - the greater its power. Given a stable construction, a strong wind, and a high aspect ratio, a kite can pull all sorts of things.

In 1894, Australian aviation pioneer Lawrence Hargrave hooked up a seat to four box kites and hovered 16 feet from the ground. A decade later, Samuel Franklin Cody sailed the English Channel in a small

vessel dragged by kites.

The most powerful type of kite - called a traction or a foil - consists of hundreds of cells that fill with air; once aloft it resembles a large flying mattress. Foil kites generate so much power that they've been known to drag cars. But they're not great for kitesurfing because they're difficult to control, and they collapse when they come down in water. In 1984, French sailing instructor Bruno Legaignoux patented a design for a kite that maintains a rigid inverted-U structure thanks to an air-filled tube in its leading edge. Because Legaignoux's model has sides, it offers less raw power than a same-sized foil kite, but it's easier to control. And when an inflatable crashes, it floats and sits up on the water, sort of like a rickshaw canopy, making relaunch much easier. Unlike foil kites, inflatables hate being grounded; they want to fly.

Still, it took a dozen more years, and the attention of a few windsurfing sail designers, before kitesurfing really arrived. Former World Cup windsurfer Don Montague was among the first devotees. In 1996, he started body-dragging off the end of a foil kite but couldn't get up on a board. Then he tried the inflatable, which gave him enough control to stand up. "Even so, there was no way to go upwind," he says from the offices of Maui's Naish Sails, the largest kite manufacturer, where he works as a designer. He'd travel downwind, get off on the beach to walk back to launch point, and start over. "All my peers were laughing their heads off."

But Montague was dead serious about getting it right. He added two lines to Legaignoux's original design, giving it a total of four, which increased his ability to sheet the kite. Suddenly he could hold the rig steady at various angles, converting the wind's lift into more of a pull. Before long, Montague was traveling upwind in much the same way a sailboat does - and generating more power than he could have imagined. That's when people took notice. "In the beginning," he says, "we were getting lifted down the beach, thrown into rocks. It was pure death."

Not that it's totally safe now. The 100-foot lines running from the control bar to the kite are treacherous; they can trip up other riders, wrap around canoers, and slice into arms and fingers. But the biggest danger, by far, is the wind. In an offshore gust, a rider who is hooked to the control bar can get lifted into the air and blown out to sea. In an onshore wind, look out for power lines, parked cars, and beachfront cottages. Busted noses, shattered knees, and broken ribs are commonplace. "The kite has so much more force than your body weight. If you don't understand that, it's going to slam you on your face and drag you," says Martin Kirk, president of the Maui chapter of the Hawaii Kiteboarding Association and owner of the Kiteboarding School of Maui.

Everyone seems to have a "kitemare." Kirk tells of a friend who got caught in a thermal off Oahu that lifted him 200 feet in the air. He held on for about 40 seconds but lost control as he was blown onshore. "At about 40 feet," Kirk remembers, "he became dead weight and dropped to the concrete." Kirk's friend is OK, but not everyone is so lucky. In one legendary incident, a German woman was lifted off the water and thrust through the sixth-floor window of an office building.

Despite the peril, the sport is taking off. From the Columbia River Gorge in Oregon to Tarifa, Spain, to the coast of New Zealand, daredevils are testing the waters. One reason is that unlike windsurfing, kitesurfing doesn't require much wind. It's also cheaper. The kite, a board, a control bar, a harness, and a backpack to carry it all costs a little more than $1,000 - no transport van or garage necessary. Add in a few lessons and many beginners are soaring 20 feet off flat water and flying 75 feet downwind in a matter of weeks. In a couple of months, they're doing flips and hanging in the air for five seconds. "We joke that windsurfing has become like bowling," says Kirk. "Kiteboarding is a lot easier to learn and a lot more extreme. How good you become is only a matter of how much insurance you have."

Kite sales have doubled each of the past four years to approximately 75,000 in 2001, according to Naish Sails, which projects another doubling in 2002. Three years ago, there were only a few manufacturers. Now there are almost 20. "One company is doing 'buy two, get one free' deals," says Naish's Montague. "It's all about grabbing market share." This same phenomenon hit the snowboarding industry not long ago - scores of companies sprouted up, waged a crippling price war, and disappeared.

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The leading kite makers hope to avoid that fate by innovating. If they can continually push their designs, they'll leave the knockoff artists to compete on price. Naish and Cabrinha both turn out more than a hundred prototypes per year. Naish designs on a 3-D program written in C++; Cabrinha has modified AutoCAD. Both send their designs to manufacturing facilities in China and are testing the goods within a week. Each year, they've managed to increase the efficiency and power of their kites. "It's become a lot more than a guy sitting on the beach with bendable sticks and rulers," says Naish Sails presidentRobby Naish, a 24-time windsurfing world champion who has become obsessed with kitesurfing.

Meanwhile, safety is a huge concern. Naish and Cabrinha are both looking to create reliable release mechanisms and shorten the lines so they're less likely to tangle around other riders. Naish is also breaking into other markets. The company just launched a kayak kite and has big hopes for sailing. "I think the boat market is going to go crazy," Montague says. "I can put a kite up a thousand feet and get a whole different wind." He has landlubbers covered, too. "Kiteskiing blows kitesurfing away. You can go straight up a hill faster than you come down."

Back at Kite Beach, snow is the last thing on Julie Prochaska's mind. Once upon a time, she had dedicated her life to windsurfing. Now, she's a full-on kitesurfing ambassador. "I haven't been windsurfing in years. Kitesurfing is much more dynamic. The kite is always moving," she says between runs while soaking up the Maui sun. "And it's great for women, because it's actually a finesse sport."

Just watch out for that sixth-story window.

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