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Greening the Gear

Bamboo Bikes and Sustainable Skateboards Put a New Spin on Sports

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From natural cleaning products to hemp clothing, the Green Revolution has transformed the contents of our kitchen cabinets and closets. Now, sporting and fitness goods manufacturers are taking the trend outdoors, marketing upscale products that boast a new sensitivity to the environments in which they are used.

"When you paddle out [into the waves] and you see Styrofoam cups, plastic bags, cigarettes, what enters your mind is what you're buying and . . . what you're riding in the ocean," says Travis Wilkerson, membership director for the Surf Industry Manufacturers Association, a trade association for the suppliers of surfing products, including several that sell surfboards made of materials selected for their eco-friendly composition.

Just as hybrid cars win customers despite the higher prices they command, sporting products that claim to be green can give manufacturers a "marketing edge," says Paul Schmitt, president of PS Stix, a premier manufacturer of skateboard decks.

Is this new spin on the green movement simply a marketing ploy or a reputable effort to improve the environmental impact of outdoor products? That's a question that Frank Scura, co-founder and executive director of the Action Sports Environmental Coalition, hopes to address. The nonprofit, which greened the X Games by encouraging skateboard ramps to be built out of Forest Stewardship Council-certified lumber, is developing guidelines for a "green stamp" that would certify that a product meets ASEC standards. But, Scura understands, there's a lot of mistrust to be overcome before consumers can be confident that these supposedly green products merit their price tags and perform as well or better than traditional goods.

We looked at some products, spoke to some users and asked the opinions of several experts, including Ken Segal, a composite materials engineer at NASA Goddard Space

Flight Center, and Hugh Casey, former head of the materials technology division at Los Alamos National Laboratory.

Surfboards

A finished surfboard, made with an Ice-Nine blank. (Ice-Nine Foam Works)

What's new: The abrupt 2005 closing of Clark Foam, which supplied up to 90 percent of the market's blanks (the uncut and unshaped boards), roiled the surfing industry and caused surfboard prices to double; it also drew attention to problems with the materials used to make the blanks. Clark's blanks were composed of TDI (toluene diisocyanate) and coated with polyester resins, both considered harmful to the environment and to workers who handled them, according to the Environmental Protection Agency and Centers for Disease Control and Prevention.

Some manufacturers, including Patagonia, Surftech, Ice-Nine and Aviso, have since adopted epoxy resins, natural composites or blanks composed of less environmentally toxic MDI (methylene diphenyl diisocyanate).

A user's view: Darryl Hatheway, co-founder of the Washington chapter of the Surfrider Foundation, an environmental protection group, swears by the greener products; he has eight Surftech boards that he brings to worldwide surf expeditions. "Normally your [polyester resin] board would be damaged before you got to the airport," he says. Not so with his epoxy Surftech boards, which stand up to bangs and scrapes. Hatheway also says epoxy resin works well with blanks made of polystyrene, a foam that doesn't absorb water. Although epoxy boards ($450 to $700) cost 10 to 20 percent more than polyester resin boards ($375 to $600), Hatheway says he finds they last 10 times longer. They're lighter, easier to maneuver and float well, too, he says.

Expert take: Segal still considers the new MDI "a hazardous material; the chemical makeup is pretty close [to that of TDI]" and he thinks lightness and maneuverability have more to do with how a board is shaped than its composition. Casey agrees that engineering and design are as important as materials.

Also, from his experience developing NASA spacecraft coated with epoxy resins, Segal finds epoxy "has good mechanical properties that essentially let you get good strength and durability when bonding materials together." Plus, Segal says, epoxy is environmentally friendly: Ultraviolet rays don't cause it to deteriorate, and water doesn't weaken it. But there's a downside, too: Casey says epoxy is "like a glass window; it doesn't break, it shatters. . . . [It's] so hard and brittle that it can't bend or flex." Engineers can fix that flaw by altering a board's design or reinforcing the epoxy with another material.

Rubber Balls

What's new: Most traditional high-end sports balls are made with a polyurethane or synthetic leather outer shell and a rubber air bladder. Aggressive harvesting of rubber can deplete forests.

Fair Trade Sports makes balls that have both an inner bladder and a coating over the synthetic leather made of FSC-certified rubber. FSC certification means the product is from a responsibly managed forest, as dictated by international rules. "Given that about 300 grams out of the typical 420-gram full-size soccer ball is rubber, it was the best place to start building eco-friendliness into the product," says Scott James, founder of the Seattle-based company.

James says his company's professional-quality soccer balls, volleyballs, futsal balls, rugby balls, footballs and soon basketballs are priced competitively with those from the big-name companies; midrange balls for competitive play cost from about $30 to $60.

Rubber harvested from responsibly managed forests and stitched by adult workers paid fair wages is being used to make many high-performing sports balls. But balls made from natural rubber age more quickly. (Fair Trade Sports)

A user's view: Becky Bavinger, club organizer of D.C. Stop Modern Slavery Group, a local advocacy group, recently set up a soccer match with the recreational Washington Soccer Society; the two teams played with a Fair Trade Sports soccer ball. "We couldn't tell the difference. . . . It played just as great with no change in texture or feel," Bavinger says.

Expert take: Performance-wise, natural rubber has pluses and minuses. One plus: It has more friction when it meets an object, such as a kicking foot, Casey says. This lets players put a spin on a ball, creating more sophisticated maneuvers. But there's a trade-off. "Natural rubber has better mechanical properties than synthetic" -- it's stronger and retains its original shape better -- "but ages faster," Casey says.

Skateboards

Loaded's pintail bamboo longboard. (Loaded Boards Inc.)

What's new: Considering how popular skateboarding has become in the past 20 years -- "12 million [kids skate] in the U.S., more than [those enrolled] in Little League," says John Bernards, executive director of the International Association of Skateboard Companies -- and the fact that kids can be expected to break at least one board a year, the industry probably has sacrificed a lot of trees for the sport.

Manufacturers such as Comet, Habitat, Loaded Boards and Sector 9 have taken the lead in introducing eco-friendly boards; Habitat boards incorporate bamboo or hemp fiberglass, Loaded Boards use bamboo and Comet uses FSC-certified maple and water-based coatings.

Some manufacturers say the cost of FSC-certified wood or the special processing needed to work with bamboo is excessive. Besides, Comet's Jason Salfi says, the question of sustainability with bamboo "is just like anything else; if you're growing corn in a way that is not sensitive to the environment, sure, you're going to make more food, but how long is it going to last?"

Also, Schmitt of PS Stix, whose company produces the bamboo and hemp fiberglass decks for Habitat, says that because the industry is dealing with a demographic of 10- to 15-year-olds who are spending their allowance on boards, increasing prices is not sound business practice.

Others disagree. "The performance is phenomenal. It's a little pricier, but it blows the other materials away. . . . You can run over a [bamboo] board with a car and it probably won't break," says Don Tashman, founder of Loaded Boards.

A user's view: It can be hard to get old-timers off their traditional boards, but some longboarders who have tried green boards prefer them. Herndon resident Justin Metcalf races and rides to his classes at Virginia Tech on a $250 Loaded Boards Pintail bamboo board. "Because of the bamboo construction, the board is quite springy and flexible, yet

at the same time is surprisingly strong," he says.

Christopher Newport University freshman Brendan Redler is also a fan. "They're lightweight, resilient and have some life to them," he says. "I'd say that I prefer the ride of bamboo to wood almost hands down as a general longboard."

Expert take: NASA uses the same technique as Comet to build carbon fiber-reinforced structures, Segal says. Pressing boards one at a time with heat pulls out air, thus strengthening boards. The bond-strengthening technique also allows companies to use less resilient woods, such as maple.

Bikes

A Cyclocross Calfee bike made of bamboo (Paul Schraub Photography)

What's new: For 20 years, Calfee Design has been building high-end racing bikes out of carbon fiber -- a strong but lightweight material used in everything from sports equipment to aircraft. But after seeing his dog try and fail to gnaw through a stalk of bamboo in 1996, Craig Calfee introduced aline of bike frames made out of bamboo and hemp as a publicity stunt.

Calfee describes bamboo as "tougher than carbon fiber in terms of impact resistance." It's less prone to fracturing than carbon fiber, and the bamboo bike is "about one pound heavier than carbon fiber," Calfee says. Bamboo also absorbs road vibrations well, allowing cyclists to ride longer without tiring. (According to Steve Chang, in charge of Calfee sales and production, one customer rode 500 miles in one day on a Calfee bamboo bike.) Since the stunt, Calfee has produced about 100 bamboo frames, each starting at $2,695 -- in the mid-level cost range for Calfee products.

A user's view: Larry Black, founder of eco-friendly College Park Bicycles, received a bamboo bike from Calfee a year ago. He says, "Eyes closed, it's hard to tell the difference between this and other bicycles. There's a little bit of novelty involved . . . [but] it's quite comfortable."

Expert take: Familiar with carbon fiber from his work at Goddard, Segal says some claims about bamboo's ability to surpass carbon fiber's strength are applicable, "but the manufacturer's stretching it." Strength depends, in part, on what grade of carbon fiber you're working with. If you're using "too little material or material in the wrong direction, you're going to have a different feel" and strength, Segal says.

Further, variations are inherent in bamboo because it is a living thing; some stalks may be weaker than others because they grew in poorer soil or had access to less water. And carbon fiber absorbs vibrations, too -- one reason it is popular.

Snowboards

What's new: Anyone associated with winter sports is particularly aware of global warming's potential impact. "The industry is dependent on snow, dependent on the natural surroundings for its success," says Lisa Branner, who with her husband, Klemens, started


Venture Snowboard

Venture Snowboards eight years ago in Colorado. So it's no wonder snowboards are going green. Companies such as Venture Snowboards and Arbor (which also constructs green skateboards) are using sustainable harvested wood, bamboo and organic cotton and hemp.

Officials at Arbor, which builds boards from bamboo and other sustainable harvested woods, and Venture Snowboards, which uses FSC-certified wood from Pennsylvania with a hemp and organic cotton top sheet, say they're unwilling to sacrifice performance. If boards break or don't perform well and "enter the waste stream that way, you're not doing any good," says Lisa Branner, whose boards start at $495.

Some companies, after testing these new materials, claim they may be even better than traditional components. For example, Arbor's marketing manager, Jessica Ng, says bamboo is "lighter, more responsive and more durable" than wood, plus it offers "more pop . . . [or] liveliness to the board" when making jumps.

A user's view: According to Ryan Jeffries, inventory manager at Fairfax's East Coast Board Company, Arbor boards "are pretty stiff, but they're good boards. . . . Out west, where the snow is deeper, they might be better."

Expert take: Based on his experience with his home's new bamboo floors, Casey describes himself as suspicious of bamboo "unless it has a coating . . . but coatings get dings, so then moisture seeps in," making the board warp, become heavier and more difficult to maneuver. (That's why skis evolved from being made from wood to incorporating better-performing materials.)

On the other hand, Segal is receptive to bamboo since it's a natural, fast-growing alternative, but he doubts it is more responsive or has more pop. Jumps happen so quickly, he says, that it may be hard to detect any supposed improvement.

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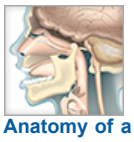

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