O.K., so some hurdles are easier for a human being than for an Australian bearded dragon.

LEAPIN' LIZARDS! (AND FROGS)

BY NICHOLAS DAWIDOFF

And now the sports news. The word from the Olympic long jump trials in Berkeley, Calif., is that records are falling daily, perhaps because of the slimy tactics employed by the athletes. This is also true of the sprint trials being held in Irvine, Calif., and Seattle. And at the diving trials in Salt Lake City, previously unknown competitors have jumped to the top of the leader board.

You thought the Olympics were over? Well, it's true that most athletes will have to wait three more years for the Summer Games in Barcelona, but around the world the Lizard, Frog and Other Scaly, Slimy Critters' Olympics have already begun. And while none of the top finishers will receive medals (a few flies or crickets is all they can hope for), their participation in events created for them by scientists may bring a far greater reward: By understanding these reptiles better, researchers may one day be able to save some species from extinction.

The Juan Antonio Samaranch of the reptile Olympics is Raymond Huey, a soft-spoken zoology professor at the University of Washington. Huey first became intrigued by the notion of animals as athletes during his days as a graduate student at Harvard in the mid-1970s. Scientists were looking into whether frogs with unusually large leg muscles could jump farther than frogs with slimmer gams. Huey wasn't as concerned with why one animal might perform better than another as he was interested in the ecological consequences of an animal's athletic ability: Would the frog with larger leg muscles have a better chance of survival in the wild?

"We're interested in how animals evolve, what natural pressures have led to their physical differences, because understanding these differences might help us protect both the animals and their environment," Huey says. "For example, the widely foraging lizards of the Kalahari Desert in southern Africa spend much of their time tracking widely scattered termites. They have more stamina—are better marathoners—than their close relatives the ambush lizards, great sprinters who rely on bursts of speed to capture passing flies."

Huey began conducting a series of experiments testing the effect of body temperature on the ability of frogs to long-jump. He measured his frogs' leaps on the floor of a laboratory at a variety of body temperatures and found that, over a fairly broad

This Florida green anole lizard appears to have time on his feet.

PHOTOGRAPHS BY HARLEY SOLTES

Testing has shown that the Kalahari ground gecko is only a middling marathoner.

range, the frog's temperature didn't make a difference in the length of the leap. But not all reptiles are oblivious to body temperature. "In warm weather some Israeli lizards will notice you and run away at high speed, but if it's cold, they don't run," he says. "Instead they become aggressive, standing upright, peeling back their jaws—and viciously biting your hand if they get the chance."

Through the years, Huey and a number of other biologists and zoologists have traveled the world, recruiting new athletes and developing increasingly sophisticated training facilities. They have designed lizard and snake racetracks and treadmills as well as computerized timing devices whose accuracy rivals that of the ones used in Seoul.

Huey has been surprised and impressed by the diversity of reptilian athleticism. "It's been most astounding for us to see how much variation there is," he says. "Some lizards run for hours on a treadmill, others are exhausted after a minute or two." Among other findings is that "on a level racecourse, big lizards always win. But if the race takes place up a steep incline, then the speed of the big lizard is greatly reduced. Big still wins, but not by as much." Some reptiles don't have to train; they seem to maintain a static level of fitness whether they are active or have been passive for long stretches. Such discoveries are the result of painstaking work, not least because lizards, snakes and frogs don't exactly volunteer their services to training centers. Instead scientists must track them down—which is often a sport in itself.

Jonathan Losos, a graduate student in zoology at Berkeley, is studying the running, jumping and clinging abilities of the lizards most commonly found in the West Indies. When Losos leaves on a research trip to the tropics, he packs a seven-foot lizard racetrack, a collapsible fishing rod and plenty of dental floss. Upon arrival in a place like Kingston, Jamaica, Losos's first order of business is to round up some scaly competitors. "Trying to catch lizards has helped me to admire them as athletes," he says. "They are very fast and can jump a long way, and they are also quite agile."

Losos has developed his own system for capturing his prey. Unfolding his fishing rod, he attaches a dental floss noose to the end, sneaks up on the lizards and lassos them. For particularly elusive lizards, however, stealthier measures are needed. "For the tough little guys I've developed a technique where I'll touch them with the end of the fishing rod—nudge them ever so slightly off their branch. This makes them leap into the air, and then I catch them in my bare hand," he says. "Those natives who think the lizards are poisonous see me doing this and are extremely impressed."

A lariat of dental floss comes in handy when you're lassoing a lizard with a fishing rod.

Once Losos has enough lizards, he sets up his track and puts them through their paces. The track incorporates light beams placed at intervals of nearly 10 inches. As the lizards dash down the runway, they break the light beams, which feeds the times into a small computer. Says Losos, "It does take some time to get the patterns, but after a while you can tell when they're really going all out," says Losos.

To measure jumping, Losos sets the lizards on a platform about 11 inches high, pokes them gently and then notes how far they leap. To rate a lizard's clinging ability—lizards have small clinging pads on the bottoms of their toes, enabling them to walk across smooth surfaces—Losos gently ties a noose of dental floss around the creature's middle, places the reptile on a smooth surface, then pulls at the noose with a scale, measuring the force it takes to dislodge the lizard. "When a lizard breaks a record," he says, "my assistants and I jump up and down, yell and scream. We've been known to toast our champions, like Dwight—he was a great jumper we named after Dwight Stones—at the Indies Pub in Kingston, a favorite herpetological watering hole."

Huey and Albert Bennett, a biologist at UC Irvine, have spent a good deal of time together tracking lizards through the Kalahari Desert. Bennett, who invented the very first lizard racetrack, had a theory that all lizards have limited stamina. One day in the Kalahari, Huey had an unexpected opportunity to cast some doubt on the theory. "I saw a monitor lizard—a good three or four feet long—creeping along the road and chased after it," says Huey. "It wasn't long before I was exhausted and the lizard was still doing quite well. We got to a gully where the lizard ran into this cave. I knew I had him trapped. I jogged up to the cave and then just as I was about to reach in and grab the lizard, I saw an unusual, coiled shape right in front of it. It was a four-foot-long deadly puff adder. I let the lizard be." Maybe that's the reason Bennett has switched his atten-

In his Berkeley lab, Losos uses a special racetrack to test an athlete.

tion from desert lizards to the more locally available California garter snake.

Bennett says, "One of the things I like about this research is that it doesn't harm the animals we are working with." Which isn't necessarily true for the scientists. Losos points out that a scientist died in New Caledonia when, while upside down chasing a lizard through a tree at night, he fell 30 feet to the ground. In 1973 Huey broke his back when he fell from a tree, hitting a branch on the way down. "But I didn't drop the lizard," he says proudly.

Huey feels that the results of his tests make the tribulations of recruiting athletes worthwhile. "Some lizards can accelerate to 95 percent maximum speed within a quarter of a second," he says, "and when you have a really good lizard flying down the track at more than eight feet per second, it's remarkable. On the other hand, a champion lizard who can run for three hours on a treadmill is rather dull."

For the record, the fastest lizard tested thus far is the spiny-tailed iguana from Costa Rica who can go 21.7 mph. And a West Indian common lizard holds the very unofficial long jump mark with a leap of 3′ 5″. "Everyone respects a remarkable athlete, whether it be a racehorse, a greyhound, Rickey Henderson, Carl Lewis or a lizard, " says Huey. "Understand, though, most lizards are not Carl Lewises."

Nor are most frogs Greg Louganises, as Sharon Emerson can testify. A few months a year, Emerson, a biologist at the University of Utah, can be found on the island of Borneo, investigating flying frogs. The frogs live in the treetops but descend to the ground to breed in the pools created by wallowing rhinoceroses and other large animals. To get to the water, these flying frogs parachute from the trees by spreading their webbed arms and legs. Says Emerson, "They launch themselves into the air by jumping, lifting their bodies into a ballistic sort of trajectory. As they descend, their arms and legs are extended at hip and shoulder level. Some of them can glide, which means they can tilt their bodies, do bank turns of as much as 180 degrees, spiraling down to the water holes. It's impressive."

Emerson hires local residents to help her catch frogs at night. After she has enough frogs, the workers shinny up wet, slippery 40-foot tree trunks to place the frogs on specific perches. Then Emerson holds a diving exhibition. "These trials have become a focal point of local activity," Emerson says. "The whole field station, everybody from the cooks to the other research scientists to the locals, turns out to cheer on the frogs. People gasp in unison at a spectacular glide." Back in Utah, Emerson got her dentist, Dr. Ken King, to help her make precise models of her island frogs using orthodontic resins. With the models, she tests the effects of different aerodynamic conditions on the frogs' flying abilities.

Emerson's project doesn't give her much leisure time. She didn't, for example, get to watch the Seoul Olympics but says, "I'd rather watch my frogs dive than Greg Louganis." ■

Huey measures a bullfrog's jump on the artificial turf at Husky Stadium.

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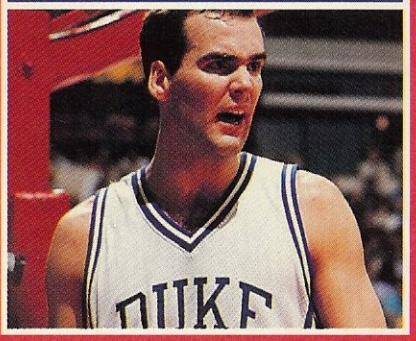

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