

Biologically inspired design inspires a new strategy for Zoo Atlanta

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Owls are mostly nocturnal animals that depend on stealth to catch their prey. With the help of their wing structure, they also helped create the world's most famous high-speed train by making it less noisy.

Flamingos are famous because of their pink color, which comes from the tiny creatures they filter from the water and eat. But it's their fast-moving, mysterious beaks that may provide practical uses for people as they contemplate the kitchen faucets of the future.

Highlighting these unexpected similarities between what animals do and what people are trying to do is a new strategy Georgia Institute of Technology researchers are using to hopefully increase public awareness about animals and encourage conservation. They've created an iPhone app based on biologically inspired design, highlighting two dozen species that have helped engineers solve problems or invent new solutions.

"Learning that owls eat rodents is interesting, but explaining how they've helped us invent new technologies is a more effective way of getting us interested in the natural world," said Marc Weissburg. The Georgia Tech professor led the app project and is co-director of the Institute's Center for Biologically Inspired Design.

Owl wings are built to disperse air pressure, which allows them to fly silently to sneak up on their watchful prey. Engineers used the same principle to design the super-fast, and super-quiet, Shinkansen bullet train. Flamingos pump water in and out of their mouths at a speed of

four pumps a second while eating. They use their beaks to strain water and trap their food. Researchers are studying their bills to construct water filters of the future.

The app also features zebras (keeping ships cool), elephants (transforming floors and walls into speaker systems) and rattlesnakes (all-terrain robots).

The [ZooScape app](#), which also includes a game that tests a user's knowledge of the animals and their contributions, can be used by anyone, anywhere. It becomes interactive at Zoo Atlanta. The app uses GPS to send notifications to the guests' smartphones whenever they visit an exhibit of an animal that has contributed a biologically inspired design.

"There's so much we have learned and still have to learn about animals. They're experts at navigating their environments successfully, and it turns out that sometimes all we have to do to improve our own systems and efficiency is to sit back and watch them do what they already do so well," said Joe Mendelson, a Georgia Tech adjunct professor and Zoo Atlanta's director of herpetological research. "Zoo Atlanta is proud to partner with Georgia Tech on groundbreaking studies that elevate the profile of wildlife while also helping people."

Zoo Atlanta is the first facility to use ZooScape, although creators built it with other zoos and aquariums in mind. The [app](#) was developed and designed by Weissburg, Leanne West and Brian Parise from the Georgia Tech Research Institute, with funds from the Smithgall Watts endowment to the School of Biology. Proceeds will fund further development of similar materials for outreach and public education.

Provided by Georgia Institute of Technology

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