

Docile raccoons are super learners and likely trashcan criminal masterminds

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Bustling with exciting urban opportunities, cities are attractive not only to human residents. Many creatures happily share human settlements, feasting on easy pickings. But what makes some creatures better suited for life in the urban fast lane?

"Several [cognitive abilities](#) have been proposed as particularly important

for urban wildlife," says Lauren Stanton from the University of California, Berkeley, U.S., including learning from situations and adapting to change. But no one had pinned down how one particularly successful urban colonist, the raccoon, has taken North American cities by storm.

While studying for her Ph.D. with Sarah Benson-Amram at the University of Wyoming, U.S., Stanton, with Eli Bridge (University of Oklahoma, U.S.) and Joost Huizinga (OpenAI, U.S.), embarked on an ambitious program to get inside the heads of the urban mammals to find out what makes a great city dweller. The team has published their discovery that the least bold and most docile animals are the best [learners](#) in *Journal of Experimental Biology*, and suggest that targeting the boldest raccoons when there is human conflict could exacerbate the problem, as the most docile animals that remain are probably the true trashcan-raiding criminal masterminds.

"We used live traps baited with cat food to humanely capture raccoons living in the city of Laramie, Wyoming," says Stanton, who then transported the animals to the lab to assess their health and how feisty or docile they were. Then she injected a tiny radio frequency ID tag between the animals' shoulder blades to individually identify them before returning the animals to their home territories, keeping track of their [impulsivity](#) by recording each time an individual ended up in a trap again.

Having tagged 204 raccoons between August 2015 and September 2019, Stanton and the team then tested how well the wild raccoons learned and adapted to change by locating a raccoon-sized cubicle in the animals' neighborhood, equipped with two buttons: one that released a handful of tasty dog food treats when pressed, and a second one that provided nothing.

However, once each raccoon had overcome its misgivings and learned to climb inside the cubicle and obtain its edible reward, the team turned the tables on the animals, switching which button dispensed the dog food reward, to find out how quickly the raccoons figured out the change. However, Stanton admits that she and her colleagues hadn't factored in how popular the raccoon cubicle would be, with several animals often trying to crowd inside simultaneously, bumping and distracting the raccoon at the console as it tried to obtain its dog food treat.

After two patient years, 27 raccoons got the hang of visiting the cubicle, with 19 figuring out how to press the buttons to provide themselves with rewards, and 17 realizing that they had to depress the other button when the team tried to outfox them. Initially, the youngest raccoons seemed the keenest to explore the experimental cubicle; however, the adults were better prepared for adversity when the researchers switched the console buttons. And when they checked the animals' temperaments, the least bold and most docile raccoons seemed best prepared to learn how to operate the console, "which suggests a potential relationship between emotional reactivity and cognitive ability in raccoons," says Stanton.

However, when the researchers compared how the raccoons in the Laramie suburbs coped, compared with the wild raccoons that tried out their paws in a peaceful lab, the captive animals seemed to pick up the test more readily, "likely because there were more distractions and interruptions during testing in the natural conditions," says Stanton.

The team is keen to see wildlife managers dealing with troublesome urban [raccoons](#) learn from their experience, warning that going after more proactive, bold individuals may exacerbate problems, as the calmer, more docile individuals that are left may be the true criminal masterminds.

More information: Environmental, individual and social traits of free-

ranging raccoons influence performance in cognitive testing, *Journal of Experimental Biology* (2022). [DOI: 10.1242/jeb.244806](https://doi.org/10.1242/jeb.244806)

Lauren A. Stanton et al, Environmental, individual and social traits of free-ranging raccoons influence performance in cognitive testing, *Journal of Experimental Biology* (2022). DOI: 10.1242/jeb.243726 , [journals.biologists.com/jeb/ar...ocial-traits-of-free](https://journals.biologists.com/jeb/article/doi/10.1242/jeb.243726)

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