

ASU student works to protect African penguins at local aquarium

Neuroscience major Makaela Ross applies her studies in learning and behavior to conservation work at OdySea in Scottsdale

By Laura Fields, ASU News
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When Arizona State University student Makaela Ross reports to work each day, 35 pairs of wide, black eyes are waiting.

“It’s like working with 35 toddlers,” Ross said, laughing as she describes her days at [OdySea Aquarium](#) in Scottsdale, Arizona. But these “toddlers” have feathers, waddle across the floor and one in particular brays like a donkey when she crouches to greet her.

Ross, an undergraduate transfer student studying neuroscience with a minor in psychology in ASU’s [Department of Psychology](#), part of [The College of Liberal Arts and Sciences](#), began an animal care internship at OdySea in summer 2024. Before her internship ended, she was offered and accepted a full-time position as an animal care specialist for the aquarium’s colony of African penguins — a species now classified as critically endangered by the International Union for Conservation of Nature.

With fewer than [20,000 mature adults left](#) to repopulate, African penguins are just one step away from extinction. Climate change, overfishing and habitat loss are all driving their decline, said Jessica Peranteau, OdySea’s director of animal care and education. The aquarium participates in the African Penguin Species Survival Plan with the Association of Zoos and Aquariums, or AZA, which works with other AZA-accredited institutions worldwide to conserve the species.

Through careful observation and positive reinforcement training, Ross and the care team keep the colony healthy.

A chance encounter becomes a career

Ross switched majors several times before finding her fit in neuroscience. And while she had always loved penguins, she never imagined working with them.

She and her husband frequently visited OdySea, where her enthusiasm for the animals caught the attention of the aquarium's education team. They encouraged her to apply for the internship program. Although she worried her neuroscience background might not measure up to applicants from biology or pre-vet programs, two professors wrote her letters of recommendation and she earned the position.

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[Shannon Eaton](#), assistant teaching professor in the Department of Psychology, said Ross stands out for her drive to connect coursework to a deeper understanding.

“She always wants to understand the bigger picture,” Eaton said. “In her mind, she doesn’t need to get the best grade — she just needs to understand, and that’s a joy to have in class.”

Her supervisors at OdySea noticed the same qualities. Peranteau said Ross was the first neuroscience student accepted into the program and praised her ability to connect small observations to larger patterns of behavior.

Curator of animal care and education Mary Mills Seader added that Ross quickly set herself apart by “asking the right questions” and stepping outside her comfort zone to learn more.

The science behind saving penguins

At OdySea, Ross uses concepts from her neuroscience of learning coursework, including operant conditioning, to train and monitor the penguins. Operant conditioning — rewarding a specific behavior so it’s more likely to happen again — is a core part of how the team keeps the colony engaged and thriving.

She collaborates with other OdySea animal care specialists and the aquarium's animal health team to track changes in the penguins' health and behavior, from eating patterns to how they walk.

Ross said each penguin has a unique personality and motivators — some prefer food, others thrive on social interactions with their fellow penguins. Her neuroscience training helps her identify these reinforcers and adjust care accordingly.

Eaton noted that neuroscience is inherently interdisciplinary, asking wide-ranging questions about memory, attention, motivation and emotion. That perspective, she said, gives Ross an advantage in understanding the colony at a deeper level.

“Neuroscience provides a biological foundation for animal behavior and for the psychological phenomena that is learning and motivation,” Peranteau said. “That’s where her background plays into it really well.”

Ross said her journey shows how neuroscience can be applied in unexpected ways, even to caring for an endangered species.

She is set to graduate in spring 2026, but for now she hopes her work contributes to the survival of African penguins. Beyond animal care, she also educates aquarium guests on the species' decline and the role people can play in protecting them.

"Our work matters because African penguins and all of the animals on the planet play a critical role in our environment," Ross said.

Learn at OdySea Aquarium

The [internship program](#) at OdySea Aquarium runs during the fall, spring and summer semesters. Positions range from animal care to guest relations to human resources. Applicants must be currently enrolled in school or within one year of graduation. The spring 2026 program will begin accepting applications on Nov. 1.

This story originally appeared on [ASU News](#).

Main image



Makaela Ross, a fourth-year ASU neuroscience major with a minor in psychology, works with the African penguin colony at OdySea Aquarium. After starting as a summer intern in the bird and

mammal area, she now serves as a full-time animal care specialist while completing her degree, applying classroom knowledge to her daily work. Photo by Charlie Leight/ASU News

Gallery



Ross holds "Sprite," an African penguin. She uses her neuroscience background to guide behavioral conditioning, identifying what the birds respond to and reinforcing positive behaviors.



Pebbles, part of OdySea Aquarium's African penguin colony, belongs to a species now critically endangered. The aquarium partners globally on conservation and breeding programs to protect the population.



During a training session, Ross offers a penguin a fish, using operant conditioning techniques that reward desired behaviors to build positive reinforcement.



Ross greets Sedona, an African penguin she has developed a close bond with through consistent training and care.