

## Amazon Parrots Go To School

**Researchers at major U.S. universities share with BIRD TALK readers their discoveries about Amazon behavior and health.**

*By Elise Kaplan*

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It's no surprise that groups of scientists have been busy studying Amazon parrots. With their talkative, social nature and expressive body language, these birds are likely to attract attention. Fortunately, recent research related to Amazons provides insights into their intelligence and communication skills — some of the traits that make these parrots so compelling — and supplies solid information about how we can help keep them happier, either in a breeding or in a household setting.

### Are You Talking To Me?

When we think of Amazons, many of us picture them talking, singing, whistling. Making lots of noise is something that they seem to do quite well. Their vocalization habits and abilities in the wild have been a focus of much recent research. One of the most intriguing aspects of the ways that wild Amazons vocalize is that communities develop distinctive dialects and oral traditions, an unusual if not unique trait among birds and other animals.

Michael Schindlinger, a Harvard biologist, found that the vocalizations of two groups of yellow-headed Amazons only about 80 miles distant were so dissimilar that they virtually constituted completely different languages. Other groups who were somewhat closer geographically spoke varying but familiar dialects.

The unique characteristics of each group's vocalizations make it possible to identify the origins of a wild-caught Amazon based on the sounds that it makes. Schindlinger's findings indicate that babies start learning their community's particular lingo soon after leaving the nest. Not too long ago, Schindlinger obtained a recording of a particular group of Amazons from 1961. After comparing it with the current vocalizations from this group, he could identify common vocalizations still in use by the community decades later.

Many of us live with birds that seem to enjoy the sounds of their own voices, appearing as happy to imitate the squeak of a rolling desk chair or the rush of the shower as a greeting from a favorite human. In fact, research has shown that certain psittacine species (such as African greys and budgerigars) often imitate the sounds of other species, while Amazons in the wild seem to prefer to focus their imitation skills on other Amazons.

"To my ears, they have much more complicated vocalizations than other parrot species and they seem to spend more time singing," Schindlinger noted. "They have a highly embellished song," that almost sounds like jazz saxophone, he added.

With all this energy focused on vocalizations, what is it that Amazons are trying to say? It's a fascinating question for further research. Schindlinger speculated that the purpose of all the complex Amazon talk is not purely communication (i.e., to indicate location, emotion or intent). Schindlinger recalled the nightly symphony of wild Amazons: "Three different species of Amazons, in numbers rising into the hundreds, would congregate in one area for an evening chorus of joyful noise."

Other researchers have discovered that yellow-headed Amazons are not the only birds with a rich oral tradition. Groups of yellow-naped Amazons also develop unique dialects, and Wright and Dorin (2001) tested the responses of mated yellow-naped pairs to playback of calls in their local dialect and in unfamiliar dialects. The recordings were of "pair duets," which are the vocalizations between a mated pair of Amazons. The birds' reactions were most pronounced when the recordings were in their local dialect. When they heard the familiar dialect, the Amazons moved toward the speakers and sometimes squealed, a sound associated with aggression.

The data suggests that Amazons recognize that a familiar song can indicate a threat to their territory, which evokes a desire to defend their turf. A possible explanation for that response is that if the vocalizing individual is familiar with the local dialect, it is likely familiar with the local environment and thus in a better position to take over territory — like a nesting spot.

Living The Legend

Much like human babies, Amazons seem programmed to learn the language and dialect in use wherever they grow up. Rachel Berwick and Sue Farlow used the birds' tendency to recreate an historical legend.

The story tells how the 18th-century explorer Alexander von Humboldt discovered a Carib Indian tribe whose pet parrots spoke a different dialect than their owners. The explanation that the Caribs offered was that the birds had belonged to the Maypure tribe, which had been wiped out. The parrots were the last surviving speakers of their language.

Berwick and Farlow purchased a young blue-fronted Amazon and an orange-winged Amazon and kept them in an environment where only Maypure was spoken. Farlow used the same model/rival method that Dr. Irene Pepperberg employs in her work with Alex and other African greys. The birds were provided with opportunities to observe a human trainer rewarding a human "student" for using the Maypure words correctly, encouraging the birds to use the same vocabulary and receive similar rewards. Eventually, the birds began speaking in Maypure. The team developed an aviary with semi-transparent walls that they used to display the parrots in various cities, so that audiences could hear the birds speaking Maypure but see them only in silhouette.

#### Busy Equals Happy

An experienced Amazon owner might not be surprised by the results of recent studies that focused on how the best environment can benefit their psittacine friends. Essentially, it bears out the contention of many loving bird owners. An interesting environment, meaningful activity, the company of others, and a home that feels secure are important for their parrots' quality of life, while a lack of these components can be quite damaging. An interesting side note is that many of the insights provided by these studies are just as true of humans.

Several studies attempted to determine what factors reduce or increase stereotypies, which is meaningless and repetitive behavior. Examples of stereotypies in humans include rocking, pacing and the waving of hands and other actions observed in autistic adults and children.

Caged animals often engage in stereotypies, such as the restless patrol of a lion in a zoo's too-small enclosure. Common stereotypies in caged birds include seemingly harmless or playful activities: pacing on the perch or repetitive play with a certain toy.

What about feather-picking or screaming? Researcher Cheryl Meehan explained that feather-picking, while it is an abnormal repetitive behavior, is not a true stereotypy: "It is not rigid in its form or performance. Feather-picking is more akin to hair-pulling in humans."

The question of whether screaming qualifies as a stereotypy is not as clear-cut. "I think that the jury is still out on screaming," Meehan said, since a certain amount of loud vocalization is a normal part of parrot behavior. "More research is needed," she concluded.

Any of these repetitive behaviors can be reactions to confinement, stress, boredom or loneliness. The challenge that many owners face is that it is often difficult to break the cycle of stereotypic behavior once it has begun. Fortunately, the scientists who are researching the factors that affect stereotypies in Amazons — and the Amazons participating in their studies — are helping to demonstrate that there are many opportunities to improve these birds' mental health.

Last year, researchers from Purdue and the University of California at Davis (Garner, Famula and Mench) took a look at factors that affect self-destructive behavior, such as screaming and feather-picking, as well as less disturbing stereotypies in a group of orange-winged Amazons. Not surprisingly, they found that a lack of neighbors to interact with can trigger stereotypic activity. Cage placement seemed to play a key role in feather-picking; birds that could see a doorway where people would enter and leave were more likely to feather pick the closer their cages were situated to the door. The researchers also found that female birds were more likely to feather-pick. They compared feather picking to trichotillomania, or hair-pulling, in humans.

The study's results indicate that there may very well be a genetic component to the propensity to feather-picking. This might be encouraging news, because it then it could be possible to breed parrots without this tendency.

#### Peer Pressure

A study at UC Davis (Meehan, Garner and Mench, 2003) also used orange-winged Amazons to examine whether housing birds in pairs helped reduce stereotypies, aggression, fearfulness and feather-picking. The results seemed to clearly demonstrate the benefits of companionship on the birds' mental state. Parrots housed in pairs spent more time playing, walking, climbing and flying, while the singly-housed parrots were less active, spending more time preening.

More than half of the singly-housed parrots developed stereotypies after a year had passed, but none of the paired parrots did. The paired parrots also showed less fear of, and aggression toward, unfamiliar handlers and were less fearful of unfamiliar objects.

#### Will Work For Food

For every parrot owner who has ever claimed that environmental enrichment reduces feather-picking, proof was provided by another recent UC Davis study (Meehan, Millam and Mench, 2002). The study found reduced feather-picking in orange-winged Amazons that had ample opportunity to forage for food (for example, retrieving treats from a basket rather than picking them from a dish) and enjoyed a complex and entertaining cage arrangement with acrobatic toys. Moreover, introducing an enriched environment to birds who had not previously had the opportunity seemed to help reverse their feather-picking.

No need to feel silly or embarrassed if you have tried to hide an almond in a leaf of kale, spent a little too much on bird toys or taken other steps to make your parrot's environment fun. "I took my cues from the behavior of parrots in the wild," Meehan said of her research. "These behaviors were such an important part of the day of a wild Amazon ... the inability to perform these behaviors can negatively impact development and welfare."

Conventional wisdom encourages parrot owners to keep their birds engaged by rotating toys on a regular basis. UC Davis researchers (Fox and Millam, 2003) backed up this logic. The researchers studied the effects of replacing two objects in the cages of orange-winged Amazons five times a week, and found that the birds who had their toys regularly replaced showed less neophobia (fear of new objects). The birds had to brave proximity to an unfamiliar object in order to enjoy a tempting bowl of nuts and apple.

The results: Parrots who had their toys changed regularly took an average of six minutes to approach the treats versus 10 minutes for the others. (The researchers noted that some objects — a stuffed pink elephant, a shower puff and a black plastic box — were just too scary for any of the birds to approach.)

The study also found that the effect of hand-rearing babies on neophobia was not permanent. Human-reared babies showed less neophobia than parent-reared only up till the age of 6 months, but by the age of 1 year, there was no real difference. This study reinforces the position of researchers such as Meehan. "Creating the right environment for a parrot is probably the most important thing that owners can do for their companions," she noted. "It's as important as proper nutrition and veterinary care."

#### Future Directions

"I think a very interesting line of research would be to look at the effects of flight on the behavioral development of parrots," Meehan said. Schindlinger also was interested in this topic, saying that extensive flight was the most significant difference between the lives of wild and companion parrots. "Wild parrots are getting exercise from flying, and they really seem to enjoy it," he explained. "They fly many miles every day between the home turf and the communal roost area."

Because physical activity is so strongly associated with preventing depression in humans, Schindlinger speculated that exercise, or the lack of it, might play the same role in the emotional health of parrots.

All in all, the research delivers good news to Amazon owners and breeders. Give your birds the companionship, stimulation and security that they need, and they will reward you by thriving.