

Diet and Behavior in Companion Parrots
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When we discuss nutrition, we usually focus on its impact on physical health. However, brain health is just as important. Science has proven that an animal's diet must include all essential nutrients or both physical and brain health may suffer. If a balanced, complete diet is necessary for excellent physical health, it follows that it is also essential for good brain health, which becomes reflected in functional behavior.

If diet can be implicated in some of the behavior problems that parrots manifest, then we have one more tool to add to our tool kit as consultants. Behavior modification efforts, coupled with improvements in enrichment, may not be enough.

Vitamin Supplementation and Eclectus Parrots

The idea that foods and their ingredients can affect behavior gained validity in the 1970s when California allergist Benjamin Feingold claimed that the behavior of many of his young patients improved when their diets were changed to eliminate presumed allergens. Since then, a great many studies have been performed, some of which seem to confirm his conclusions while others do not. Even the claim that food dyes are implicated in hyperactive behavior in children has not been established conclusively, although strong opinions exist on both sides of the argument.

A similar connection has been explored regarding prisoners who have been convicted of violent behavior. While some evidence does exist to support the conjecture, the National Council against Health Fraud states, "Valid evidence is lacking to support the claim that diet is an important determinant in the development of violence and criminal behavior." (NCAHF, 1983) Nevertheless, the general public continues to entertain the possibility of such connections.

It is not surprising then that similar concerns have been voiced regarding the presence of chemical dyes and supplemental vitamins in our parrot foods. A good example is the on-going discussion about whether formulated diets (pellets) and vitamin supplementation cause toe-tapping and wing-flipping in Eclectus parrots. Many websites claim this to be true and offer strong advice not to feed these foods. However, Eclectus authority Laurella Desborough cites a number of potential causes, including infection, concluding a period of drug therapy, molting, stress, hypervitaminosis, coming into reproductive mode for hens, and others. (Desborough, L. 2014)

While other factors can be implicated in this phenomenon, Desborough and Dr. Brian Speer do recommend as a first step in these cases: "Remove from the diet ALL pellets, vitamin powders, vitaminized seed mixes, vitaminized treats, spirulina and other herbal mixtures, processed human foods such as commercial bread mixes, pasta, processed cheese, pizza, TV dinners, and any other food item which contains man-made vitamins, preservatives or chemicals of any kind." (Desborough, L. and Speer, B. 2002) Dr. Brian Speer confirms that the condition seemed to be alleviated in many cases when these foods are eliminated from the diet. However, he indicates ongoing exploration of the causes for this problem by saying, "The differential diagnosis for toe-tapping Eclectus many need to be broadened to include PDD, chronic lead toxicosis and some atypical forms of renal disease." (Speer, B. 2002)

It should be noted that finding peer reviewed journal articles about topics like this is extremely difficult and in some cases impossible. Many “laymen’s websites” continue to report the connection between diet and toe-tapping as certainty. However, in no cases that I found were references cited and many lacked an author’s name. In my personal experience as a consultant and veterinary technician, many Eclectus parrots eat formulated diets with no ill effects.

Identification of Links between Diet and Behavior

In fact, the link between diet and behavior can be confused and obscured by many things. If an Eclectus owner believes because of what she has read that formulated diets do cause such symptoms, they may not also consider other factors that could be contributing to the problem. Thus, if asked to help in such a case, the behavior consultant would be well advised to take a complete history. We cannot afford to entertain any prejudices of our own regarding this possible link. I suspect in many cases that a combination of many factors, diet being just one, cause these behaviors to manifest.

For example, an Eclectus parrot who stays with me when my friend travels did spend an entire night toe-tapping and wing flipping after eating both eggs and cheese in one meal. In his case, it’s likely that an overload of protein and fat, coupled with the stress of being away from home and among so many other parrots was the likely combination. (The episode has never been repeated and I received a good lesson in poor judgment and being overly generous when it comes to food.)

Diet and “Hormonal” Behavior

There is, however, one link between diet and behavior in parrots about which experts seem to agree. There is a large body of anecdotal evidence to support the fact that a diet high in simple carbohydrates and fats, or a diet that provides too much food overall, will result in an increase in the production of reproductive hormones and the behaviors that result from this. (Again, research is lacking.) As Dr. Scott Ford explains in his article *Balancing Your Parrot’s Lifestyle*, “An overabundance of food, foods high in fat and calories, and too many food choices can all ‘turn on’ your bird’s reproductive desire.” (Ford, S. 2009)

The behaviors that typically result from this “turned on reproductive desire” include intense bonding with one person in the family, cavity-seeking behavior, paper shredding on the bottom of the cage, loud demanding vocalizations, and fierce territoriality. Parrot owners frequently consider it cute initially when their parrot becomes obsessed with getting into dark drawers or closets, or wants to be with them constantly, but over time these behaviors become problematic. And, while these behaviors may occur only seasonally in the beginning, they can progress in some individuals until they occur year round, often developing into problems such as feather damaging behavior, self-mutilation, regurgitation of food, masturbation, chronic egg-laying, egg binding and cloacal prolapse.

Dr. Hoppes also draws this link between diet and behavior: “Behavioral problems that can be related to reproductive issues include feather picking, mutilation, and excessive screaming. These behaviors can also occur for other reasons, so a full evaluation must be done to determine the cause. Behavioral problems are most common in hand-raised parrots overly bonded to their owners.” She continues: “In captivity, most pet birds are kept all year at stable temperatures and are provided adequate food, which is often high in fat. This can promote breeding behavior year round.”

“Many hand-raised parrots are overly bonded to their owner at sexual maturity, resulting in sexual frustration that may lead to over-grooming behaviors and excessive contact calls (screaming) when the owner leaves the room or house. Some of these over-stimulated (excessively handled and petted) birds begin laying eggs or masturbating early, leading to egg binding or cloacal prolapse along with feather destructive behavior or screaming. Significant behavior modifications may need to be implemented along with conversion to a pelleted diet.” (Hoppes, S. 2018)

Experts also agree that malnutrition is a primary cause of feather damaging behavior, overshadowing medical causes. “Basic seed and table food diets often create multiple nutritional deficiencies. These deficiencies cause abnormal skin and feather development resulting in plucking behavior, as well as a myriad of other medical problems that may occur.” (Hoppes, S. 2018)

Dr. Jamie Lindstrom of the Animal Clinic of Northview sees an additional problem. He explains: “As we provide these high energy, high carb, high lipid diets, we’re also providing these birds with high energy. If the parrot has insufficient opportunities to expend this energy, it leads to some of the aberrant behaviors, such as screaming and biting, that we see in these birds.” Often, eliminating these foods from the diet results in a much calmer parrot. (Lindstrom, J. 2010)

According to Dr. Fern Van Sant, there are two key issues that we have missed when deciding what and how to feed parrots. First, parrots in the wild are normally “turned off” or reproductively inactive when out of breeding season. Second, the “surroundings of abundance” which we provide in captivity often have the effect of keeping companion parrots reproductively active throughout the year. “As pets, the conditions of abundant food, bonded owners, comfortable cages and considerable physical contact seem to initiate breeding behaviors that become long term drives. Without the naturally occurring environmental pressure of dwindling food supplies, changing conditions, and competition for resources that limit breeding behavior in wild populations, breeding behaviors and hormonal drives persist unchecked.” These captive conditions results in the behaviors previously described. (Van Sant, F. 2006)

What are the problem foods specifically? Ironically, they are usually the parrot’s favorites – seed mixes, nuts, bread, pasta, white rice, snack foods, mashed potatoes, cheese, cereals, and dried fruit. All are foods high in either fats or carbohydrates or both. Fats and carbohydrates are the categories of nutrients most often used by the body to produce energy. They offer a source of high energy to the parrot, creating louder, more excitable behavior and triggering an increased production of reproductive hormones. These have no place in a parrot’s diet, although very limited amounts can be offered through foraging or training.

In addition, parrots are often fed an overabundance of food. The date, the accepted tradition has been to keep staple foods available to parrots throughout the day. In addition, many owners offer treats throughout the day and share their family meals as well. These conditions of abundance create a situation in which the parrot selects and eats only his favorite foods.

Given the anecdotal information that we have, especially the observations of these veterinary experts, it is clear that history taking for the certified parrot behavior consultant should include a detailed review of diet. If it is clear that change is needed, it is best to refer the client to their avian veterinarian for a recommendation. The consultant may then assist the owner in making sure that the diet conversion is successful. Thus, knowledge of diet conversion strategies is advantageous.

Correcting the Diet

Correcting the diet is best done under the guidance of an avian veterinarian. In my experience as both a consultant and technician, the vast majority of avian veterinarians with few exceptions recommend feeding pellets, rather than a seed mix, as the primary dietary staple. Historically, this has been due to the well-established facts that seed mixes lead to malnutrition, as well as health problems like upper respiratory disease, fatty liver disease and atherosclerosis. Thus, a conversion from seed mix to pellets is often in order.

Vets disagree a bit on the percentage of overall consumption that pellets should comprise, but agreement exists that pellets contribute to improved health. Dr. Lindstrom recommends that 70% of the diet be an organic formulated diet and that this is supplemented with organic fruit, vegetables, whole grains and legumes. If seed is provided to some of the smaller species, such as budgerigars and cockatiels, this should be offered in small amounts, such as one teaspoon no more than three times a week. For larger parrots, seeds and nuts can be offered in very limited quantities for foraging and training. (Lindstrom, J. 2010 *Interview*)

Since fruits are a source of naturally-occurring sugars, it's best to focus on those that provide vitamin A, as well as those high in anti-oxidants, such as berries. Fruits and vegetables that are dark green, red, orange or yellow in color are good sources for vitamin A. Dr. Van Sant encourages her clients to focus on feeding berries. Apples are valuable for maintaining intestinal health, due to their pectin content. Bananas and grapes offer high sugar and low nutrition so should be strictly limited.

When feeding vegetables, the greater the variety offered the better the chances that the parrot will enjoy the best nutritional status. Nutritional requirements for different species have not been established and may never be, given the number of parrot species. Parrots come from many different regions of the world, where soils differ in vitamin and mineral content. For example, one hypothesis states that African Greys may have a higher requirement for selenium than other species because soils in Africa tend to have high selenium content.

Meal Feeding

Even on a good diet, however, a parrot may become overweight if too much food is consumed. This is sometimes the case with Amazon parrots, as well as budgies and cockatiels. Not only does excess weight become a health issue, but these overweight birds are more likely to display sexual or "hormonal" behaviors. In these cases, it may be necessary to restrict the overall amount of the formulated diet that is offered. (Van Sant Interview 2010)

Thus, a second key to good nutrition may have to be that of limiting the overall quantity of food offered. This prevents the parrot from self-selecting only his favorite foods. Randal Brue concurs: "This is best accomplished by providing limited portions, or meals, to encourage consumption of everything offered, as opposed to a virtual ad libitum feeding program where the bird can reach satiety by eating only one or two of its favorite ingredients." (Brue, 1997)

Some experts are now recommending "meal feeding" as an additional solution. As Dr. Van Sant explains, "As birds [in the wild] typically feed twice a day, early morning and late afternoon, meal feeding for a finite time (one or two hours) twice a day can have numerous benefits. Meal-feeding avoids a lot of waste and seems to return food to a mode of sustenance instead of entertainment." It is the author's

opinion that any change to a meal-feeding schedule should be left to the veterinarian's recommendation and implementation. (Van Sant Interview 2010)

While it is best to leave specific recommendations for diet changes to the client's veterinarian, consultants can be invaluable in assisting the client to make the changes successfully. Often, there simply isn't time during the standard appointment for the vet staff to cover all possible conversion strategies and then to pursue these with follow-up calls. Most clients fail or do not follow through after receiving the recommendation.

Many parrots convert to a formulated diet quite easily, while others do not. However, with consistent guided effort, all parrots can be taught to eat an optimal diet. Changing a parrot's diet requires that (1) the client fully commits to the need for diet change, (2) the client understands that the parrot will likely reject the new foods at first, (3) the correct conversion strategies are used for that specific parrot, and that 4) the client is supported during this process. Last, during any diet changes the parrot must be weighed regularly to make sure that weight loss is not occurring, unless this too has been recommended by the veterinarian.

Sources:

Brue, R. (1997) Nutrition. In: D. Zantop, abridged edition, *Avian Medicine: Principles and Application*. Lake Worth: Wingers Publishing, Pages 23-46.

Desborough, L. (2014) *Toe-tapping in Eclectus Parrots*. [online] Available at: <https://eclectusparrotcentre.com/contact/toe-tapping> [Accessed 24 June 2018]

Desborough, L, and Dr. Brian Speer, DVM, Dipl ABVP, Dipl ECAMS. (2002) *Toe-Tapping from the Combined Perspectives of An Eclectus Owner and an Avian Veterinarian*. *Winged Wisdom Pet Bird Magazine*. March 2002. [online] Available at: <http://www.birdsnways.com/wisdom/ww64eiii.htm>. [Accessed 23 June 2018]

Dr. Scott L. Ford, DVM, Dipl ABVP. (Date uncertain). *Balancing Your Parrot's Lifestyle*. [online] Available at: <http://www.avian-vet.com/sites/site-2271/documents/asvsa-client%20handouts-balancing%20parrot%20lifestyle.pdf>. [Accessed 3 Sept. 2009]

Dr. Sharman M. Hoppes, DVM, Dipl ABVP. (2018) *Reproductive Diseases of Pet Birds*. *Merck Veterinary Manual*. [online] Available at: <https://www.merckvetmanual.com/exotic-and-laboratory-animals/pet-birds/reproductive-diseases-of-pet-birds>. [Accessed 25 June 2018]

Clark, P. Dr. Jamie Lindstrom (2010) Telephone interview: *The Link Between Diet and Behavior*.

National Council Against Health Fraud. (1983) *NCAHF Position Paper on Diet and Criminal Behavior*. [online] Available at: <https://www.ncahf.org/pp/diet.html> [Accessed 27 June 2018]

Nijboer, J. (2018) *Nutrition in Psittacines*. In: *Merck Veterinary Manual*. [online] Available at: <https://www.merckvetmanual.com/management-and-nutrition/nutrition-exotic-and-zoo-animals/nutrition-in-psittacines>. [Accessed 25 June 2018]

Dr. Susan Orosz, DVM, DABVP, DECAMS. (2006) Avian Nutrition Demystified. In: North American Veterinary Conference Proceedings, Volume 20. [online] Orlando: IVIS. Available at: <http://www.avis.org/proceedings/navc/2006/SAE/565.pdf?LA=1>. [Accessed 23 June 2018]

Dr. Tracey Ritzman, DVM, DABVP. (2008) Practical Avian Nutrition (Proceedings). *CVC In San Diego*. [online] Lenexa: UBM Animal Care. Available at: <http://veterinarycalendar.dvm360.com/practical-avian-nutrition-proceedings>. [Accessed: 25 June 2018]

Dr. Brian Speer, DVM, DABVP, Dipl ECAMS. (2002) *Eclectus "Toe-tapping."* HBD's Avian Examiner, Issue 22. [online] Available at: <http://avianmedicine.net/wp-content/uploads/2013/03/ae22.pdf>. [Accessed 24 June 2018]

Dr. Fern Van Sant, DVM. (2011) *Hormones: The Downside of the Good Life*. [Blog] Phoenix Landing Blog. Available at: <https://blog.phoenixlanding.org/2011/04/30/544>. [Accessed 25 June 2018]

Dr. Fern Van Sant, DVM. 2018. *Hormonal Behavior in Pet Birds – Introduction*. [Newsletter] For the Birds DVM. Available at: <https://www.forthebirdsdvm.com/pages/hormonal-behavior-in-pet-birds-pt-1>. [Accessed 25 June 2018]

Clark, P. Dr. Fern Van Sant, DVM. October 2010. Telephone Interview: *The Link Between Diet and Behavior*.