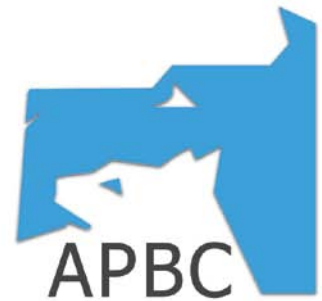


# Association of Pet Behaviour Counsellors

Promoting the Best in Pet Behaviour



## *The advantages and disadvantages of keeping captive-bred and wild-caught exotic pets*

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In the past few years, keeping exotic animals as pets has become much more popular, as a range of species is now available and, with technological advances, the means for keeping them has become easier. There are several ethical issues involved with keeping exotic pets, not least of which is how to meet their complex health and welfare needs in our homes. Nevertheless, if these needs are met, exotic pet keeping can in fact benefit many, at the ecological, societal, and individual level.

### *What are exotic pets?*

Exotic pets are any species not originally from the country where they are kept as pets. These aren't just unusual animals, like corn snakes, or capuchin monkeys, but they also include: different aquarium fish like goldfish; various rodents, such as hamsters or guinea pigs; and birds, like budgies or canaries. Some say exotic pets are basically anything that is not a dog, cat, or horse, i.e. any species not domesticated. However, it is hard to distinguish between species that are 'wild' and those that are "domesticated", as there are several animals somewhere in between the two (Bays, Lightfoot, & Mayer, 2006; Tynes, 2010). Although cats are thought of as domesticated, there are many cats that are feral.

Let's consider two contrasting examples: the pet dog and the pet parrot. For thousands of years, we have been selectively breeding dogs, so much so that today these animals look, think, and behave very differently from their wild ancestors. Whereas parrots have been kept as pets in the UK for only the last couple of hundred years, until relatively recently many were still being imported from their native countries. This means captive parrots behave much



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like their wild counterparts, with most of their instincts, such as those geared towards avoiding predators, very much at the forefront of their minds (Demery, 2013).

### ***Where does the APBC stand on keeping exotic pets?***



The APBC is primarily concerned with counselling owners about their pets' behaviour problems, which also includes promoting the psychological well being of exotic species in captivity. There are a variety of avenues for acquiring an exotic animal as a pet, both legal and illegal, which impacts upon the individual, the species, the environment, and the local community. Nonetheless, the APBC believes that once in captivity, by whatever route, every pet has a right to the best possible welfare and understanding. APBC members are here to listen to your concerns in a completely confidential and non-judgemental manner. Their aim is to help you and your pet.

### ***Where do exotic pets come from?***

The key to success for keeping an exotic animal as a pet is to consider not only the environment they're kept in, but also their individual temperament, species, where they came from, and how they found their way to you, the pet owner ('caregiver'). Exotic pets have usually either been caught directly from the wild and then imported to the country of purchase, or they are bred in captivity.

While more and more exotic pets are coming from captive-bred sources, the UK in 2010 for instance imported over 36,500 CITES reptiles, 42% of which were wild-caught or kept in very large fenced-in areas, known as "ranches" (de Volder, 2013). There are international treaties in place to regulate world trade of threatened species, such as CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora). Movements are underway to further address any legal gaps in conservation, disease control, and animal welfare (Engler & Parry-Jones, 2007).



"Captive-bred" animals can in fact come from a wide range of sources (Diamond, 2002). Two terms coined of late are "captive-farmed" and "captive-hatched" pets (Enge, 2005).

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The latter is generally where wild-caught animals, such as lizards or snakes, have laid eggs after capture, then their offspring are raised in captivity. When an animal has been bred on a "farm", generally this is in its native country, but it is born into captivity. Caregivers (pet owners) should be aware that with endangered species like sturgeon fish, deliberate mislabelling on occasion has occurred in an attempt to get around export regulations on CITES-listed species - i.e. "farmed" sturgeons could in fact be wild-caught (Pikitch, Doukakis, Lauck, Chakrabarty, & Erickson, 2005).

Captive-bred exotic pets are increasingly being bred in their country of purchase, including various birds like zebra finches and many reptiles like leopard geckos (Praud & Moutou, 2010). They may still be traded between countries, such as between the UK and the USA. These animals tend to come from smaller-scale breeders, as opposed to farms, but actual numbers and the conditions in each source vary greatly.

### ***Are concerns about wild-caught exotic pets justified?***

Regardless of the individual animal or species, concerns have been raised about collecting animals from the wild. The practice for some exotic pet species is known to have had an impact not only upon the biodiversity of that particular species, but also on other species living in the same habitat and those that depend upon them. Tropical reef fish are often caught by first stunning them with cyanide (Rubec et al., 2001). This can also kill non-target fish, shellfish, and larvae, thus causing knock-on effects for entire food chains. Another practice with similar effects involves blasting coral reefs with dynamite, but nowadays many locals can actually make more money from hand-capture (Raymundo, Maypa, Gomez, & Cadiz, 2007). This limits the effects on the wider habitat at large.

Wild-caught pets can sometimes further impact on the natural environment of the country they are being transported to (Genovesi, Carnevali, Alonzi, & Scalera, 2012). The house



finch is found in the wild throughout North America, coming originally from the release of caged birds back in the 1940s. It is responsible for damaging several native fruit trees, as well as various crops (Temple, 1992). However, the ecological impact of the pet trade is not limited to exotic pets - the domestic cat has

had a detrimental effect on flora and fauna the world over. Native animals caught from the wild local to the caregiver may make more appropriate pets. If early settlers to Australia took to keeping the local feline equivalent, a marsupial called a quoll, instead of importing the cat, many now extinct native species may still be alive today. While the

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keeping of cats is now highly regulated in Australia, the quoll is reported to be easy to keep, not very demanding on caregivers' time and rarely stressed in captivity, as well as being without the cat's adverse effects on the local environment (Oakwood & Hopwood, 2014).



If certain exotic species are caught sustainably, their pet trade can actually help conserve threatened habitats. This is in the economic interest of an otherwise poor local community. Exotic bird trade brings great economic stability as the *sole* trade for hundreds of impoverished communities in Amazonian South America (Gonzalez, 2003). Moreover, zoo conservation projects are essential to preserving numerous endangered species. Wild-caught animals can widen the gene pool of these captive zoo groups (Snyder, Derrickson, & Beissinger, 1996). Some species, such as the crested gecko, have even been saved from near extinction by the pet trade and captive breeders (Bauer, Jackman, Sadlier, & Whitaker, 2012).

From an individual animal's perspective, the stress that they go through during capture and transport to their new country can affect their health to varying degrees, depending on the species, how long the whole process is and the methods used (Smith et al., 2009). Iguanas are very sensitive to environment changes and find most forms of transport stressful, whereas wild-caught tarantula spiders are known to breed not long after arriving in their country of purchase (De Vosjoli, Donoghue, Klingenberg, & Blair, 2012; S. A. Schultz & Schultz, 2009). Wild-caught individuals can sometimes find it hard to adjust to their new environment. If their needs are not met, they can exhibit behaviour problems, on occasion, even years after they have arrived with their caregivers (Bays et al., 2006). They are used to foraging or hunting in a very different way and often with very different prey or food types from what they're given in captivity. With certain species, such as nectar-feeding lorikeet parrots, it can take a lot of effort and anxiety for both caregiver and pet to get the animal used to a more captive-appropriate food (McDonald, 2003). Then, again, other individuals adapt remarkably well to their new captive environment. Exotic pets can further be greatly educational, both raising public awareness of the creatures and their native habitats, as well as enabling us to study them in greater detail (Companion Animal Welfare Council, 2003).

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### ***Are captive-bred sources all they're cracked up to be?***

Farming exotic animals in their native country has a number of positive effects. A lower strain is put on the natural environment; it aids conservation of the species, and the local community benefits financially. Yet, captive breeding does not remove all of the ethical concerns with wild-caught animals. Those that are bred in their native country still experience the same transport stress, and some believe that farm breeders tend to have lower welfare standards than smaller-scale breeders (Tlusty, 2002). Then, again, breeding in the country of purchase does not necessarily avoid all of these issues. In the UK alone, there are many wholesale breeders that turnover numbers at a similar level to farms (de Volder, 2013). No matter the size and location of the breeder, conditions vary greatly with the facilities, resources, and knowledge available.

Exotic pets bred in their country of purchase, like sugar gliders, are often only one or two generations removed from their wild-caught ancestors (Sobie, 2010). Such exotic pets can sometimes be more expensive than pets bought directly from their country of origin, as the breeders have invested more in each individual in terms of time, care and veterinary bills. So, it could be argued that they are generally better acclimatised, parasite-free, and a lot more is known about their background (Bays et al., 2006). Care must nonetheless always be taken when choosing a breeder, to ensure the animals are kept in the highest standards possible.

### ***How do you choose your pet?***



As with any pet, when thinking about getting an exotic pet, you will have to decide whether it is appropriate. This will depend on the individual's welfare and the ideas discussed above. The rarity of the species may be important and you could consider the environment and local community both in terms of where it came from and where you will be caring for it. You could think about whether that specific individual would suit captivity given its history. You should ask searching questions, such as: how long the pet could live; how big it could grow; whether it would be easy and affordable to keep; if it is dangerous in any way; whether it could easily become ill, or make others ill; and what specialised veterinary care there is in your local area. Unfortunately, the expertise for providing such answers is often only sought from the seller once the pet has been bought (Schuppli & Fraser, 2000). Advice should also be sought in advance through species clubs and vets.

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Exotic pets often have complex needs, such as with nutrition, housing, temperature, exercise, and social factors. These needs do not become easier when certain pets can sometimes outlive their caregivers, such as with various tortoise or parrot species. You should consider whether you can and, specifically, *how* you will provide for the exotic pet within captivity throughout its lifetime.



At a minimum, the UK Farm Animal Welfare Council recommends anyone who cares for any animal should meet the “Five Freedoms”, which are:

- Freedom from thirst, hunger, or malnutrition;
- Freedom from discomfort;
- Freedom from pain, injury and disease;
- Freedom to express normal behaviour;
- Freedom from fear and distress.

How these freedoms can be met varies between species. Many are poorly understood in the scientific literature, making their suitability for captivity difficult to know. Wild prairie dogs have been extensively studied, but almost exclusively above ground (Flath & Paulick, 1979). As they live much of their lives in large communities in complex underground burrows, spanning hundreds of miles, there are still many parts of their lives that are unknown. There are other species that we know more about, but we are still uncertain about how well they adapt to captivity. The common marmoset also lives in complex social groups and is known to range up to 5 hectares (Hubrecht, 1985). Creating these natural environments in captivity is challenging (Keeble, 2003).

Then, again, the Companion Animal Welfare Council has reported that meeting the needs of a small, hardy reptile is often much easier than many breeds of dogs (Companion



Animal Welfare Council, 2003). You don't need to worry about leaving your royal python by itself while you go out to work all day, but you would with your border collie, and the collie requires much more daily exercise than the

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python. At a basic level at least, it is useful to think about whether the pet is normally predator or prey. In the wild, it is unlikely that a rabbit would choose to co-habit with humans, as they are potential predators in the rabbit's eyes (McBride, 2009). So, how can we best address this issue? Wherever a pet rabbit spends its days, we should carefully consider the design and the number of available hides and shelters (e.g. drain-pipes). These same hides could also act as look-out spots as long as the rabbit could climb on top of them. Any interaction with your rabbit should be built up gradually to grow their confidence around humans and handling. You could first quietly sit next to their cage/run and scatter some treats nearby.

We should also consider the impact upon the community in which the exotic pet resides. It can be a hugely positive one for the whole community, as we have already considered in terms of education. On the other hand, exotic pets can be carriers of diseases that are transmittable to other animals and to people (Jones et al., 2008). African pygmy hedgehogs have become popular exotic pets of late; yet, if no sensible preventative measures are taken, they are known to carry both rabies and salmonella (Riley & Chomel, 2005). You are also faced with the concern about whether your pet could be a danger to others in other ways like bites, especially if your animal is large, such as a Burmese python (Reed, 2005).

Once these considerations have been made and planned for, keeping an exotic pet can be an extraordinarily rewarding and eye-opening experience. Pet keeping remains one of the closest forms of human-animal interaction in Western society. Given a hypothetical choice of whom to be stranded with on a deserted island, 54% of people in an USA survey said they would prefer their pet to another human (Avanzino, 1996). Pets have been shown to have a huge impact on the recovery of hospital patients, including exotic pets like bearded dragons (Bernard, 1988).



### ***How can we maintain psychological well being in captivity?***

Many exotic pet species can now survive and breed very well in captivity, behaving amenably towards us humans and choosing to actively interact with the artificial environment around them. However, some of these same species are particularly prone to

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developing behaviour problems in captivity (Meehan, Garner, & Mench, 2003). Parrots are hugely intelligent and sociable animals; but, if we leave them alone for several hours without much to keep them busy, they sometimes resort to plucking out their own feathers in an attempt to cope with their feelings of isolation and stress (van Zeeland et al., 2009).

The key for any pet caregiver is to keep an eye on their pet's psychological well being. Not all natural behaviours are desirable, but pets should be given the opportunity to express as many of them as possible (Honest & Marin, 2006). Your ferret eyeing up your bird table in the garden is a completely natural, but not desirable behaviour. Its predatory focus could be redirected onto an appropriate outlet like a Ping-Pong ball on a string, while access to the windows overlooking the bird table could be obstructed with heavy ornaments (Bulloch & Tynes, 2010).

What constitutes natural behaviour not only for the species, but also for the pet's age and sex, is a subject of much scientific debate (Bays et al., 2006). Animal welfare science is an exciting field that has expanded vastly recently. New, sophisticated techniques for properly assessing different animals' psychological well-being are being developed all the time (Salmeto et al., 2011). This again emphasises how important it is for expert advice to be sought before and during care of an exotic pet.

Caregivers can enrich their pets' environment with things for them to do to prevent them from feeling boredom, fear, and aggression, all of which can lead to problem behaviours. Providing choice for your pet is essential, such as different forms of soils to dig into, different obstacles to hide behind, or different locations in which to forage. Enrichment should be targeted at the particular species and individual, then assessed carefully for success (Honest & Wolfensohn, 2010). A hamster ball may well provide exercise, but if it collides with a lot of furniture, or is in the presence of other animals that the hamster would think of as predators (like dogs), the ball will have a detrimental effect on the hamster's psychological well-being.

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Environmental enrichment is not the only answer for preventing behaviour problems in exotic pets. Different species have evolved different sensory, anatomical, and psychological adaptations for learning about the world around them (Demery, Chappell, & Martin, 2011). In other words,



no matter what environment an animal finds itself in, it wants to find out more about it (Chappell, Demery, Arriola-Rios, & Sloman, 2012). You can take advantage of this and provide your pet with all sorts of new things and actions to learn. Snakes use their tongues



to “taste” the air and explore their environment, thus gaining knowledge about novel things nearby (Chiszar, Carter, Knight, Simonsen, & Taylor, 1976). If you have a snake, you could consider a range of branches, substrates, hidey-holes, pools, and rocks

- do ensure that they are safe and suitable for your particular species first (Hellmuth, Augustine, Watkins, & Hope, 2012). Also, keep in mind that snakes use territorial markers around their home; and, if these disappear with things being changed round, they can become stressed. So, only change one small thing every few weeks or so.

Working through species-specific, reward-based training programmes can be hugely enjoyable for both you and your pet. They provide alternative outlets for stress and frustration, build up confidence and trust, and help alleviate the unavoidable stresses found in captivity, such as regular veterinary check-ups (Young & Cipreste, 2004). Providing exploration opportunities and training can also increase an animal's problem-solving skills (Auersperg, Kacelnik, & Bayern, 2013). The training approach taken should be adapted to the individual pet's nature and circumstances. For example, clicker-training may not be appropriate to a fennec fox that is sensitive to certain noises.

Extensive research and careful planning are needed to ensure the specific physical and behavioural needs are met for any exotic pet species. Whether you are thinking about becoming an exotic pet caregiver, or are one already, seek expert advice from your local exotic vet. They will be able to refer you to an appropriate APBC member. They can then assess your particular situation and provide objective, up-to-date information on how best

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to keep your exotic pet and help resolve any behaviour issues you're both experiencing.

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## References

- Auersperg, A. M. I., Kacelnik, A., & Bayern, von, A. M. P. (2013). Explorative Learning and Functional Inferences on a Five-Step Means-Means-End Problem in Goffin's Cockatoos (*Cacatua goffini*). *PLoS One*, 8(7), e68979. <http://doi.org/10.1371/journal.pone.0068979>
- Avanzino, R. (1996). Changing attitudes toward companion animals (pp. 1-6). Presented at the UAM: Centre for Companion Animals in the Community.
- Bauer, A. M., Jackman, T. R., Sadlier, R. A., & Whitaker, A. H. (2012). Revision of the giant geckos of New Caledonia (Reptilia: Diplodactylidae: *Rhacodactylus*). *Zootaxa*, 3404, 1-52.
- Bays, T. B., Lightfoot, T., & Mayer, J. (2006). *Exotic Pet Behavior*. Oxford: Elsevier Health Sciences.
- Bernard, S. (1988). The Utilisation of Animals as a Therapeutic Modality. *Occupational Therapy Forum*.
- Bulloch, M. J., & Tynes, V. V. (2010). Ferrets. In V. V. Tynes, *Behavior of Exotic Pets* (pp. 59-68). Singapore: John Wiley & Sons.
- Chappell, J. M., Demery, Z. P., Arriola-Rios, V. E., & Sloman, A. (2012). How to build an information gathering and processing system: Lessons from naturally and artificially intelligent systems. *Behavioural Processes*, 89(2), 179-186. <http://doi.org/10.1016/j.beproc.2011.10.001>
- Chiszar, D., Carter, T., Knight, L., Simonsen, L., & Taylor, S. (1976). Investigatory behavior in the plains garter snake (*Thamnophis radix*) and several additional species. *Animal Learning and Behavior*, 4(3), 273-278. <http://doi.org/10.3758/BF03214049>
- Companion Animal Welfare Council. (2003). *Report on the welfare of non-domesticated animals kept for companionship* (pp. 1-50).
- de Volder, S. (2013). *Analysis of national legislation related to the keeping and sale of exotic pets in Europe*. Eurogroup for Animals.
- De Vosjoli, P., Donoghue, S., Klingenberg, R., & Blair, D. (2012). *The Green Iguana Manual*. Singapore: i5 Publishing.
- Demery, Z. P. (2013). *Comparative sensory and cognitive adaptations for exploratory learning in parrots and humans*. (J. M. Chappell). University of Birmingham.
- Demery, Z. P., Chappell, J. M., & Martin, G. R. (2011). Vision, touch and object manipulation in Senegal parrots *Poicephalus senegalus*. *Proceedings of the Royal Society of London B: Biological Sciences*, 278(1725), 3687-3693. <http://doi.org/10.1098/rspb.2011.0374>
- Diamond, J. (2002). Evolution, consequences and future of plant and animal domestication. *Nature*, 418(6898), 700-707. <http://doi.org/10.1038/nature01019>
- Enge, K. M. (2005). Commercial Harvest of Amphibians and Reptiles in Florida for the Pet Trade. In W. E. Meshaka & K. J. Babbitt, *Amphibians and Reptiles Status and Conservation in Florida* (pp. 198-211). Malabar, FL.
- Engler, M., & Parry-Jones, R. (2007). Opportunity or threat? The role of the European Union in global wildlife trade. (Vol. 52). Presented at the TRAFFIC Europe, Brussels.
- Flath, D. L., & Paulick, R. K. (1979). Mound Characteristics of White-Tailed Prairie Dog Maternity Burrows. *American Midland Naturalist*, 102(2), 395-398. <http://doi.org/10.2307/2424670>
- Genovesi, P., Carnevali, L., Alonzi, A., & Scalera, R. (2012). Alien mammals in Europe: updated numbers and trends, and assessment of the effects on biodiversity. *Integrative Zoology*, 7(3), 247-253. <http://doi.org/10.1111/j.1749->

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- Gonzalez, J. A. (2003). Harvesting, local trade, and conservation of parrots in the Northeastern Peruvian Amazon. *Biological Conservation*, 114(3), 437-446. [http://doi.org/10.1016/S0006-3207\(03\)00071-5](http://doi.org/10.1016/S0006-3207(03)00071-5)
- Hellmuth, H., Augustine, L., Watkins, B., & Hope, K. (2012). Using Operant Conditioning and Desensitization to Facilitate Veterinary Care with Captive Reptiles. *Veterinary Clinics of North America: Exotic Animal Practice*, 15(3), 425-443. <http://doi.org/10.1016/j.cvex.2012.06.003>
- Honess, P. E., & Marin, C. M. (2006). Enrichment and aggression in primates. *Neuroscience and Biobehavioral Reviews*, 30(3), 413-436. <http://doi.org/10.1016/j.neubiorev.2005.05.002>
- Honess, P. E., & Wolfensohn, S. E. (2010). Welfare of exotic animals in captivity. In V. V. Tynes, *Behavior of Exotic Pets* (pp. 215-223). Singapore: John Wiley & Sons.
- Hubrecht, R. C. (1985). Home-range size and use and territorial behavior in the common marmoset, *Callithrix jacchus jacchus*, at the Tapacura field station, Recife, Brazil. *International Journal of Primatology*, 6(5), 533-550. <http://doi.org/10.1007/BF02735575>
- Jones, K. E., Patel, N. G., Levy, M. A., Storeygard, A., Balk, D., Gittleman, J. L., & Daszak, P. (2008). Global trends in emerging infectious diseases. *Nature*, 451(7181), 990-993. <http://doi.org/10.1038/nature06536>
- Keeble, E. (2003). Addressing the welfare needs of exotic pets. *Journal of Small Animal Practice*, 44(11), 517-518.
- McBride, A. (2009). *Why Does My Rabbit...?* Chippenham: CPI Anony Rowe.
- McDonald, D. (2003). Feeding ecology and nutrition of Australian lorikeets. *Seminars in Avian and Exotic Pet Medicine*, 12(4), 195-204. [http://doi.org/10.1053/S1055-937X\(03\)00035-5](http://doi.org/10.1053/S1055-937X(03)00035-5)
- Meehan, C. L., Garner, J. P., & Mench, J. A. (2003). Isosexual pair housing improves the welfare of young Amazon parrots, 81(1), 73-88. [http://doi.org/10.1016/s0168-1591\(02\)00238-1](http://doi.org/10.1016/s0168-1591(02)00238-1)
- Oakwood, M., & Hopwood, P. (2014). A survey of the attributes and requirements of quolls that may affect their suitability as household pets. *Australian Zoologist*, 31(2), 365-375. <http://doi.org/10.7882/AZ.1999.038>
- Pikitch, E. K., Doukakis, P., Lauck, L., Chakrabarty, P., & Erickson, D. L. (2005). Status, trends and management of sturgeon and paddlefish fisheries. *Fish and Fisheries*, 6(3), 233-265.
- Praud, A., & Moutou, F. (2010). *Health risks from New Companion Animals. Eurogroup for Animals*. Brussels.
- Raymundo, L. J., Maypa, A. P., Gomez, E. D., & Cadiz, P. (2007). Can dynamite-blasted reefs recover? A novel, low-tech approach to stimulating natural recovery in fish and coral populations. *Marine Pollution Bulletin*, 54(7), 1009-1019. <http://doi.org/10.1016/j.marpolbul.2007.02.006>
- Reed, R. N. (2005). An Ecological Risk Assessment of Nonnative Boas and Pythons as Potentially Invasive Species in the United States. *Risk Analysis*, 25(3), 753-766. <http://doi.org/10.1111/j.1539-6924.2005.00621.x>
- Riley, P. Y., & Chomel, B. B. (2005). Hedgehog zoonoses. *Emerging Infectious Diseases*, 11(1), 1-5. <http://doi.org/10.3201/eid1101.040752>
- Rubec, P. J., Cruz, F., Pratt, V., Oellers, R., McCullough, B., & Lallo, F. (2001). Cyanide-free Net-caught Fish for the Marine Aquarium Trade. *Aquarium Sciences and Conservation*, 3(1), 37-51. <http://doi.org/10.1023/A:1011370106291>
- Salmeto, A. L., Hymel, K. A., Carpenter, E. C., Brilot, B. O., Bateson, M., & Sufka, K. J. (2011). Cognitive bias in the chick anxiety-depression model. *Brain Research*, 1373(0), 124-130. <http://doi.org/doi:10.1016/j.brainres.2010.12.007>
- Schultz, S. A., & Schultz, M. J. (2009). *The Tarantula Keeper's Guide*. New York: Barron's Educational Series.
- Schuppli, C. A., & Fraser, D. (2000). A framework for assessing the suitability of different species as companion animals. *Animal Welfare*, 9(4), 359-372. <http://doi.org/10.1016/B978-1-59749-995-8.09984-1>
- Smith, K. F., Behrens, M., Schloegel, L. M., Marano, N., Burgiel, S., & Daszak, P. (2009). Reducing the Risks of the Wildlife Trade. *Science*, 324(5927), 594-595. <http://doi.org/10.1126/science.1174460>
- Snyder, N., Derrickson, S. R., & Beissinger, S. R. (1996). Limitations of captive breeding in endangered species recovery. *Conservation Biology*, 10(2), 338-348. <http://doi.org/10.1046/j.1523-1739.1996.10020338.x>
- Sobie, J. L. (2010). Sugar gliders. In V. V. Tynes, *Behavior of Exotic Pets* (pp. 181-189). Singapore: John Wiley & Sons.
- Temple, S. A. (1992). Exotic Birds: A Growing Problem with No Easy Solution. *Auk*, 109(2), 395-397. <http://doi.org/10.2307/4088214>
- Tlusty, M. (2002). The benefits and risks of aquacultural production for the aquarium trade. *Aquaculture*, 205(3-4), 203-219. [http://doi.org/10.1016/S0044-8486\(01\)00683-4](http://doi.org/10.1016/S0044-8486(01)00683-4)

Association of Pet Behaviour Counsellors, PO BOX 46, Worcester, WR8 9YS, UK.

Tynes, V. V. (Ed.). (2010). Behavior of Exotic Pets. Singapore: John Wiley & Sons.

Van Zeeland, Y. R. A., Spruit, B. M., Rodenburg, T. B., Riedstra, B., van Hierden, Y. M., Buitenhuis, B., et al. (2009). Feather damaging behaviour in parrots: A review with consideration of comparative aspects. *Applied Animal Behaviour Science*, 121(2), 75-95. <http://doi.org/10.1016/j.applanim.2009.09.006>

Young, R. J., & Cipreste, C. F. (2004). Applying animal learning theory: training captive animals to comply with veterinary and husbandry procedures. *Animal Welfare*, 13, 225-232.

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