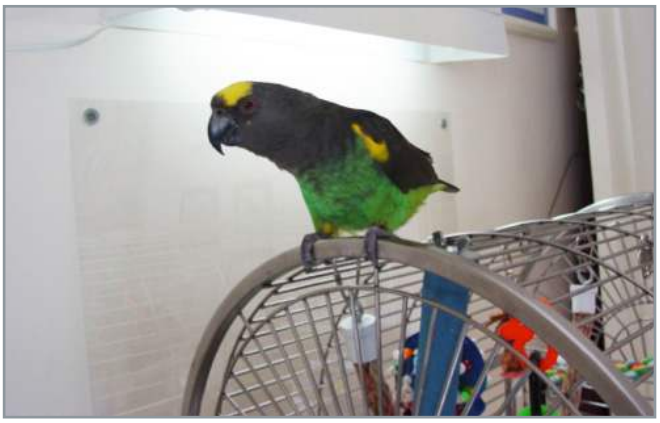
ULTRAVIOLET LIGHTING FOR COMPANION BIRDS: BENEFITS & RISKS

One of the goals of enriching the lives of our companion birds is to ensure that they receive optimal environmental conditions. As guardians of our birds' health, another important goal is to avoid causing harm. UV lighting has both the potential to improve as well as harm the health of our birds. Client education on proper UV lighting for birds had received little attention from the veterinary community until only recently. In addition, there has historically been a considerable amount of misinformation and lack of information from the pet industry on this subject. This discussion will focus on parrots but applies to all birds in captivity.

This handout will first give you the key points you need to know about providing full spectrum light for your bird(s) followed by a more in-depth discussion of the ins and outs of UV light.



A Meyer's parrot, "Pepper" demonstrating the use of an 18-inch linear fluorescent mounted in a modified flowerbox above his cage.

KEY POINTS

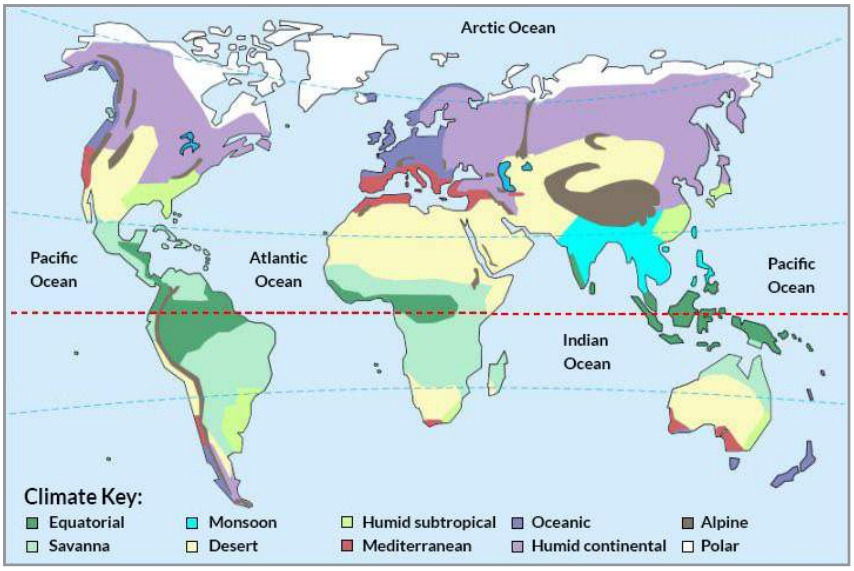
- **The benefits of UV light warrant that all companion birds should receive some exposure.**
- **UV light can help maintain good bone density and can help stimulate exercise.**
- **Most windows filter out the beneficial UVB rays that help birds produce Vitamin D.**
- **Natural sun exposure (i.e. taking your bird outside) for 20-30 minutes, 2-3 times a week in the warmer months is ideal.**
  - Birds should be wearing a harness or be in a cage to prevent accidental escape.
  - Never leave birds outside unattended as they can be eaten by predators.
  - Ideal outdoor temperatures are 65-85F (18-29C).
  - Watch for overheating (panting, wings held away from the body).
- **During the winter, UVB bulbs are recommended.**
  - Birds on a poor diet (i.e. all seed and therefore calcium deficient) and birds that are chronic egg layers will especially benefit from year-round UVB light.
  - Bulb exposure time and distance depend on the bulb used.
    - *The goal is to mimic mid-morning sun (UV index of 2 to 4; see below for more information on UV index).*
    - *Generally, the bulb should be on for a minimum of 3-4 hours a day.*
    - *Always mount the bulb above (not to the side of) the cage.*
    - *Always provide a UV gradient so the bird can move away from the light if it wants to.*
    - *In general, high output bulbs should be no closer than 6 inches (15 cm) and low output bulbs should be no further than 12 inches (30 cm) from the top of the bird's head at its highest perching location (see page 3 for more details).*
  - At this time, it is recommended that linear tubes and compact fluorescent bulbs are used rather than mercury vapor flood lights (see below for more information on the different types of bulbs).
  - ALWAYS carefully read the package instructions for your bulb.
    - *Use at the recommended distance from the bird.*
    - *Discontinue use immediately if you note any squinting, face rubbing, or redness of the skin around the eyes.*
  - Bulbs should be replaced every 6 months because UV output will decrease over time.

SPEAK WITH YOUR AVIAN VETERINARIAN ABOUT THE IMPORTANCE OF FULL SPECTRUM LIGHT!

Association of Avian Veterinarians
aav.org

ULTRAVIOLET LIGHTING FOR COMPANION BIRDS: BENEFITS & RISKS

Parrots are from the equatorial and tropical parts of the world that are within 40˚ latitude from the equator. These regions have the highest solar radiation on the planet. Our parrots' wild relatives receive exposure to natural sunlight every day, but much of this is filtered through dense vegetation. Any direct sunlight is usually in the mid-morning, when ultraviolet (UV) light is at lower levels. There are probably species-specific UV requirements, but this is an area of research that has not been completely developed.

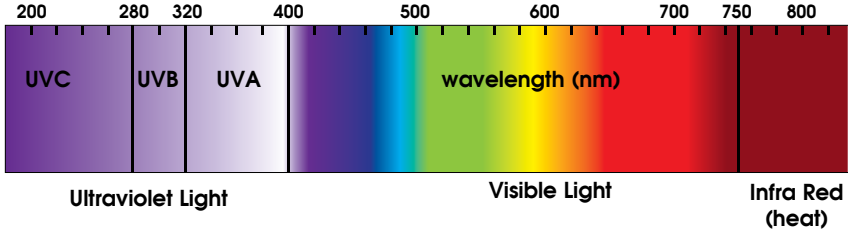


From Wikimedia Commons (https://commons.wikimedia.org)

The **ultraviolet light spectrum** consists of three kinds: UVA, UVB and UVC. Unlike mammals, birds (and reptiles) are able to see UVA, which seems to help them select ripe foods and identify mates. UVB enables birds to produce vitamin D, also known as the "sunshine vitamin," which is essential for calcium metabolism and immune function. UVC is normally filtered out by the earth's ozone layer and does not exist on the planet naturally. Exposure to high doses of UVA and short-wavelength UVB radiation can also lead to inflammation of the cornea, eyelids and skin. UVC can be created synthetically and is typically used for microbial sterilization.

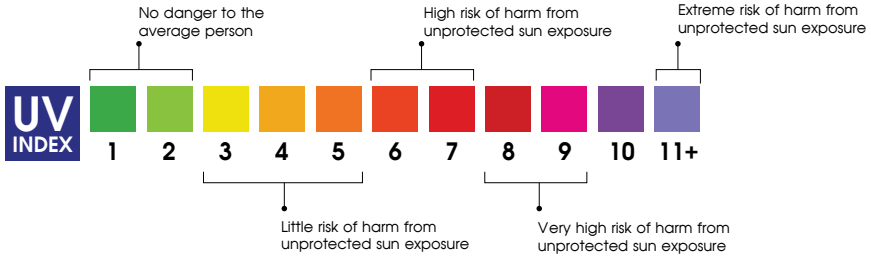
UNDERSTANDING ULTRAVIOLET LIGHT

Ultraviolet light is a small portion of the electromagnetic spectrum (shown here adjacent to the visible light portion to the right).



The **UV index (UVI)** is a measurement of the intensity of ultraviolet radiation (UVA and UVB) produced by the sun or a UV bulb. Typically the higher the UV index, the more intense the UVB radiation (see tables below). Generally UVI less than 5 is considered safe.

Birds have thinner skin and corneas compared to mammals. This is why they appear to be more sensitive to ultraviolet light than mammals and reptiles. This is especially a concern for birds that have bare facial skin, such as African greys and macaws. And similar to people, increased damage from high intensity, low-wavelength UV light may increase the risk of cancer and cataracts over time.



Association of Avian Veterinarians
aav.org

ULTRAVIOLET LIGHTING FOR COMPANION BIRDS: BENEFITS & RISKS

TYPES OF BULBS ON THE MARKET



Linear



Compact



Mercury Vapor

Not all fluorescent bulbs are created equal. The research of Drs. Laura Wade and Frances Baines has established that some bulbs produce virtually zero or very low UVB which provides no benefits. They have also found that some bulbs produce the wrong (too short) wavelengths of UVB (and in some cases, UVC), which can be harmful at close distances. At Dr. Wade's practice, she can check to see if a particular bulb is optimal by measuring UVB output. She can also determine if the bulb might be potentially dangerous by measuring the UV index. From these two data points, she can determine an approximate safe and effective distance from the bulb to the patient.

Since most people don't have access to solarmeters (the instruments used to measure the UV output and UV index of a given bulb) some bulbs that we can currently recommend* are:

- **the low-output compact fluorescent ZooMed Avian Sun 5.0**
- **the high-output Hagen Exoterra UVB 100 compact fluorescent**
- **Hagen's Reptiglo 5.0 linear fluorescent bulb**

Preliminary ongoing research by the author indicates that without a reflector, the ZooMed compact bulb should be approximately 4-8" (10-20 cm) and the Hagen compact should be 9-15" (23-38 cm) from the bird's head; since reflectors intensify the output, when one is used, increase the distance from the bird by about 3 inches.

**Any reference in this document to specific products, processes, or services does not constitute or imply an endorsement by AAV. The views and opinions expressed in this document do not necessarily state or reflect those of AAV.*





Handheld Solarmeters used to measure bulb output in Dr. Wade's practice. The UV index (UVA + UVB) meter measures 280-400 nm wavelengths and the UVB meter measures 280-320 nm wavelengths. From Solartech, Inc. **(www.solarmeter.com).**

REFERENCES:

1. Stanford M. Effects of UVB radiation on calcium metabolism in psittacine birds. *Vet Rec.* 2006.19;159(8):236-41.
2. Varela FJ, Palacios AG, Goldsmith TH. Color vision of birds. *In:* Ziegler HP, Gischof JH, eds. *Vision, Brain and Behavior in Birds.* Cambridge, MA: MIT Press.1993;77-98. Available at http://users.mis.net/~pthrush/lighting/cvb.html. Accessed April 10, 2008.
3. Foulks GN, Friend J, Thoft RA. Effects of ultraviolet radiation on corneal epithelial metabolism. *Invest Ophthalmol Vis Sci.* 1978;17(7):694-697.
4. Podskochy A, Gan L, Fagerholm P. Apoptosis in UV-exposed rabbit corneas. *Cornea.* 2000;19(1):99-103.
5. Young AR. Acute effects of UVR on human eyes and skin. *Prog Biophys Mol Biol.* 2006; 92(1):80-85.
6. Baines FM, Buono M. Photo-kerato-conjunctivitis in reptiles under zoomed compact fluorescent lamps. UV Guide UK. Available at http://www.uvguide.co.uk. Accessed April 10, 2008.
7. Lefebvre R. Wise choice in lighting. *Parrot Life.* 2006;3:54-60.
8. Wade LL, Baines FM. Ultraviolet-induced Photokeratitis in a Meyer's Parrot (Poicephalus meyeri) and Ultraviolet-induced Photodermatitis in an African grey parrot (*Psittacus erithacus*). *Proc Annu Conf Assoc Avian Vet.* 2008;421-422.

Original client handout © 2009 with updates © 2018 by Laura Wade (Specialized Care for Avian & Exotic Pets, Clarence NY, USA)

Association of Avian Veterinarians
aav.org