



REPTILE
HUSBANDRY
IN A WILDLIFE REHAB SETTING

Sam Young, DVM
WRNC Symposium
01/20/24

Lees-McRae



COLLEGE

WHERE DO I COME FROM?



Uncommon Creatures
Mobile Veterinary Services



Tufts CUMMINGS VETERINARY MEDICAL CENTER

Tufts Wildlife Clinic

GREENSBORO
SCIENCE CENTER

ASSOCIATION
OF ZOOS &
AQUARIUMS



DISCOVERY PLACE
SCIENCE | KIDS | NATURE



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TOPICS

- Assessment of Needs
 - Long vs. Short-term Patient/Resident
 - Incoming Ailments
- Nutrition
 - Diet
 - Hydration
 - Supplementation
- Housing
 - Enclosure Types
 - Substrates
 - Furniture
 - Lighting
 - Temp and Humidity
- Enrichment



ASSESSMENT OF NEEDS



Short-term

- Minor Wounds/Infections
- Simple Soft Tissue Surgeries
- Early Season Admission/Location
- Head Start Hatchlings

Long-term

- Reptile Healing Time
- More Severe Injuries
 - Orthopedic/Carapacial Fractures
 - Large Degloving
 - Nerve Damage
- Complicating Infections
- Late Season Admission/Location

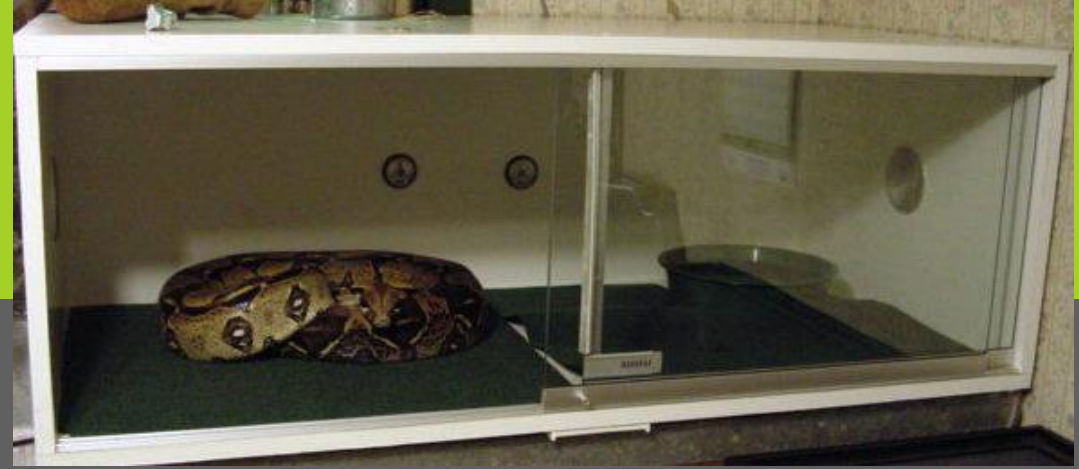


ASSESSMENT OF NEEDS

Short-term vs. Long-term

Considerations:

- Overwintering
- Enrichment
- Enclosure Details
- Ultraviolet Light Exposure
- Diet
- Local Climate



VS.



NUTRITION



Basics

- Appropriate for Species/Life Stage
- Fresh
 - Prepare Daily*
 - Placement in Enclosure
- Variety
- More Natural More Better



Advanced

- kCal calculations: $RER = 10(\text{wt in kg})^{0.75}$
- Herbivores & Insectivores
 - Dust Food with Calcium and Vitamin Supplement
 - **Once a Week Each is Plenty**
 - Insects Can Also Be Gut-Loaded



- Know Your Native Plants



NUTRITION: HYDRATION

- Provide Clean Source of Water
 - Proper Placement
 - Proper Dish/Pool/etc.
- Herbivores: **Fresh** Veg & Fruit is Key
- Offer Appropriate Humidity
 - Misting
 - Soaking
 - Humid Hide
 - Monitor



NUTRITION: HYDRATION

▪ Aquatic Species

- House in Water
- Marine Species in Appropriate Salinity
 - Soak in Freshwater Once a Week
- Maintain Filtration System or Dump and Fill Regularly
 - Water Quality!!!!
- Supplemental Fluids if Drydocking Required



HOUSING



HOUSING

- What are *your* needs?
 - Containment/Security
 - Ease of Disinfection
 - Space Saving/Economical
 - Access
- What are the *patient's* needs?
 - 'Naturalistic'
 - Akin to native biome
 - Lighting
 - Temperature/Humidity
 - 'Safe'/Comfortable/Low Stress
 - Size



HOUSING: +/- TO DIFFERENT OPTIONS



HOUSING: +/- TO DIFFERENT OPTIONS



TRT NCSU CVM
Kent Passingham



HOUSING: +/- TO DIFFERENT OPTIONS

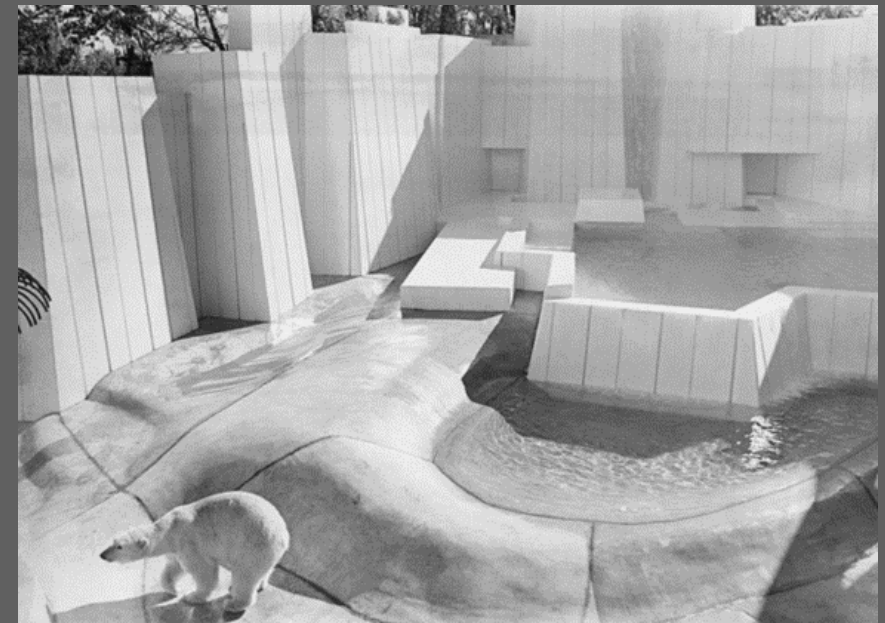
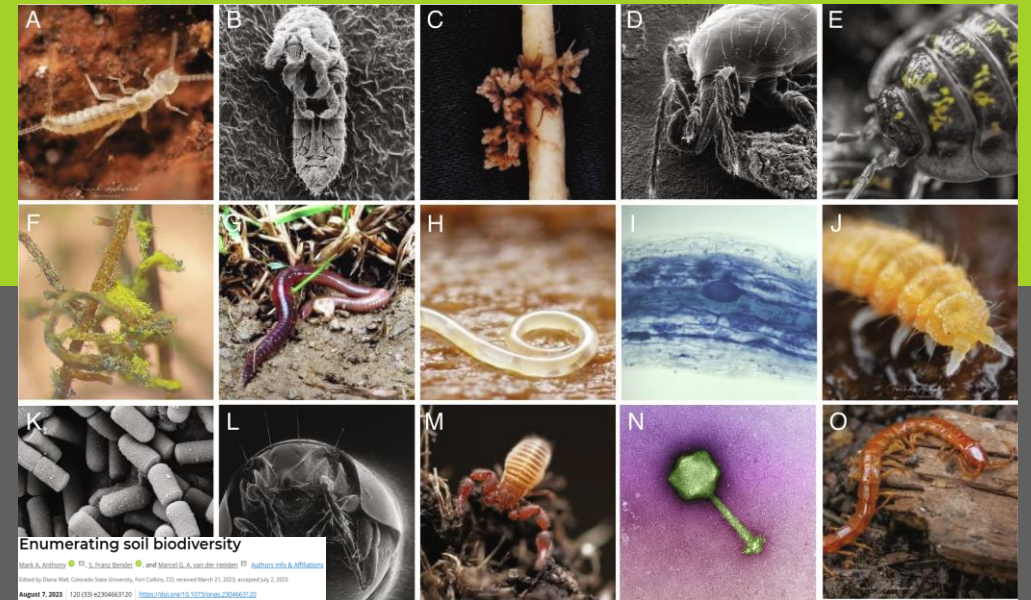


Ambassador cages*



SUBSTRATE

- Considerations:
 - Needs of the **Species vs Patient**
 - **Sterility vs Complex Biome***
 - Texture
 - Burrowing/Hiding
 - Absorption
 - Humidity
 - Sourcing
 - Expense
 - Treatments
 - Animal Welfare
 - Duration of Stay
 - Dust



SUBSTRATE

Species

Patient



SUBSTRATE



- Caution with gardening products from large retailers



SUBSTRATE



Coconut Husk Brick



Jungle Mix



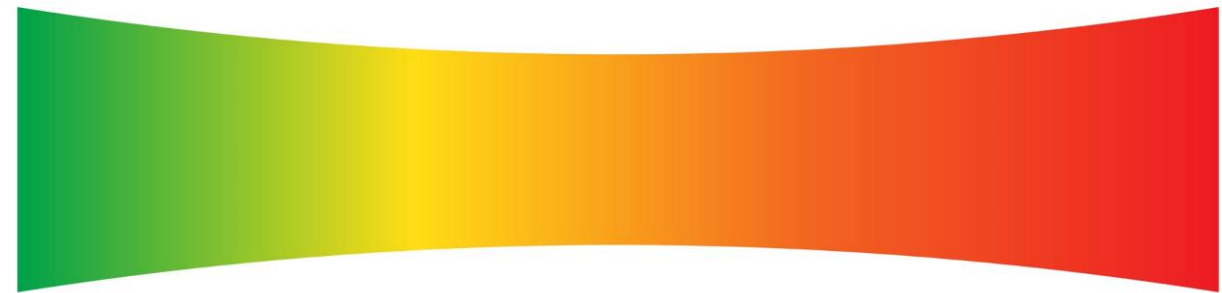
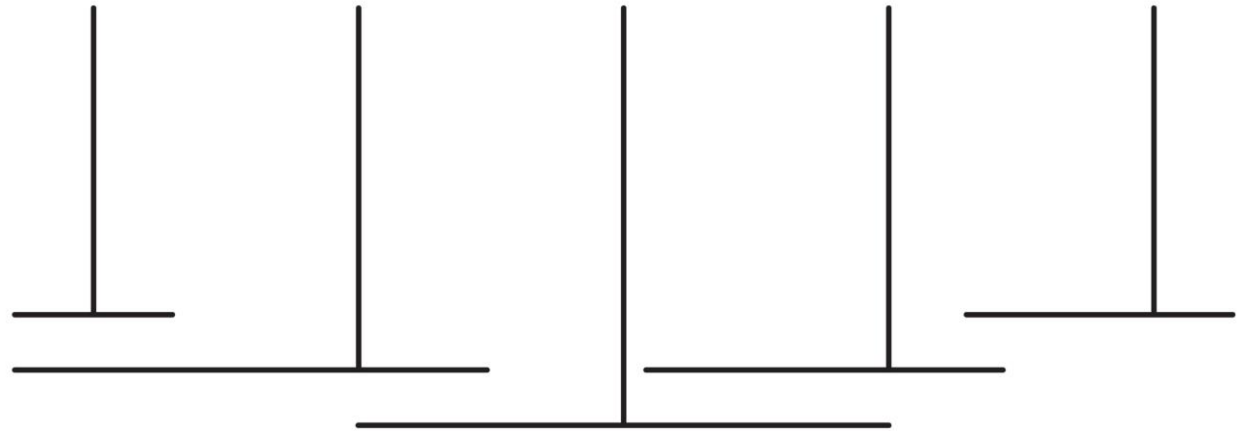
Bark Blend



Snake & Lizard Litter



Desert Blend



TROPICAL

DESERT

SUBSTRATE

- 'Patient' Preferred Options



FURNITURE

Species Vs. Patient Needs

- Hide Structure(s)
- Climbing/Perching
- Textured
- 'Disinfectable'
- Economical/Reusable
- Safe/Secure
- Non-Toxic



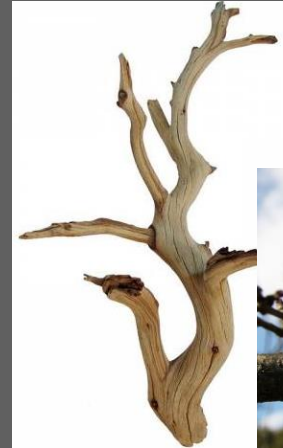
FURNITURE: HIDES



Thrive Lizard Hideaway Lurker \$19.99 PetSmart	Thrive Desert Reptile Corner Hide \$36.99 PetSmart ★★★★★ (28)	Thrive Rainforest Cave Reptile Decor \$34.99 PetSmart	Thrive Corner Tree Snake Hide \$36.99 PetSmart	Leoterra Large Reptile Hides Snake \$11.99 Amazon.com	Thrive Forest Wood Reptile Hide, Size: ... \$16.99 PetSmart	Thrive Tree Stump Hideaway Terrarium \$19.99 PetSmart	Terrarium Underground \$47.95 Etsy ★★★★★ (31)	PENN-PLAX Reptology Shale \$11.99 Amazon.com	Hides Medium Round Reptile Hide \$5.00 Groveland Gecko
Amazon.com · In stock Reptile Hides and Cavities	Pangea Reptile Pangea Reptile Hide	Etsy · In stock XL Large Reptile Hide	Amazon · In stock XYZReptiles Reptile Hide	The Serpentarium · In stock Lugarti Grapevine Reptile Hide	Amazon.com · In stock Amazon.com : Tfwadm...	Vision Products · In stock Large Reptile Cave Hide	Pangea Reptile · In stock CocoHut Coconut Hide	Amazon · In stock Generic Oversize Reptile Hide	

FURNITURE: PERCHING

- Species Dependent
 - Normal Behaviors
 - Normal Wear/Tear
 - Texture
- Exercise
 - Aid Return to Function
- Increases Square Footage
- Enriching
- Elevated Basking/UVB
- Haul Out for Aquatics



LIGHTING: ULTRAVIOLET


JZAR JOURNAL OF ZOO AND AQUARIUM RESEARCH
www.jzar.org


Evidence-based practice

How much UV-B does my reptile need? The UV-Tool, a guide to the selection of UV lighting for reptiles and amphibians in captivity

Frances Baines¹, Joe Chattell², James Dale³, Dan Garrick⁴, Iri Gill⁵, Matt Goetz⁶, Tim Skelton⁷ and Matt Swatman³

[View of How much UVB does my reptile need? The UV-Tool, a guide to the selection of UV lighting for reptiles and amphibians in captivity. \(jzar.org\)](http://www.jzar.org)

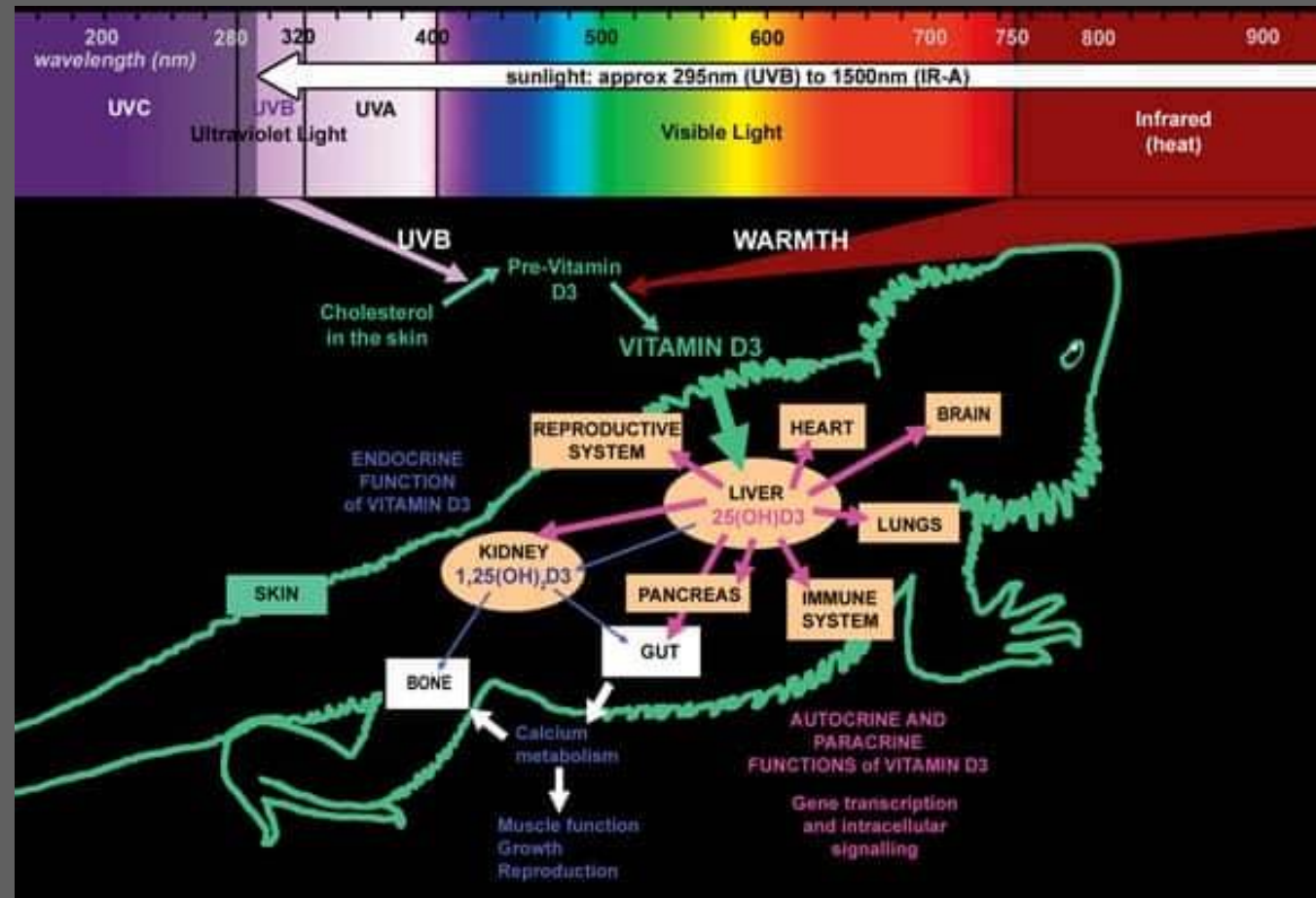
- UVI?
- Ferguson Zones?

Fig. 5. Some examples of Ferguson Zone allocations based on Baines et al. (2016)

Ferguson Zone	Species	Suggested UVB
Zone 1 = crepuscular or shade dweller, thermal conformer.	Crested Gecko Leopard Gecko Tokay Gecko Burmese Python Green Tree Python Milk Snake Reticulated Python	Shade Method: gradient UVI 0 – 0.7
Intermediate between Zone 1 and 2	Fiji Banded Iguana Corn Snake Carpet Python	
Zone 2 = partial sun/ occasional basker, thermoregulator.	Australian Water Dragon Emerald Tree Monitor Green Anole Monkey-tailed Skink Pygmy Chameleon Ornate Box Turtle Red Foot Tortoise Boa Constrictor Red-tailed Ratsnake Garter Snake Western Hognose Snake	Shade Method: gradient UVI 0 – 1.0 or Sunbeam Method: UVI maximum 1.1 – 3.0 in basking zone
Intermediate between Zone 2 and 3	Blue-tongued Skink Chinese Water Dragon Panther Chameleon Common Musk Turtle	Sunbeam Method: UVI maximum 1.1 – 3.0 in basking zone
Zone 3 = open or partial sun basker, thermoregulator.	Black-and-White Tegu Frimled Lizard Standing's Day Gecko Yemen Chameleon Indian Star Tortoise Leopard Tortoise Spotted Turtle Diamond Python	Sunbeam Method: UVI maximum 2.9 – 7.4 in basking zone
Intermediate between Zone 3 and 4	Bearded Dragon Bosc or Savannah Monitor Green Iguana Painted Turtle Red-eared Slider Sulcata or African Spurred Tortoise	
Zone 4 = mid-day sun basker, thermoregulator.	Chuckwalla Uromastyx Rhinoceros Iguana Texas Horned Lizard	Sunbeam Method: UVI maximum 4.5 – 8.0 in basking zone.

LIGHTING: WHY UVB IS IMPORTANT

- **UVB** Converts Cholesterol in the Skin with aid of ambient heat to **Vitamin D₃**
- **Liver** Converts to
 - **Calcifediol** ($25(\text{OH})\text{D}_3$)
- **Kidneys** Convert to
 - **Calcitriol** ($1,25(\text{OH})_2\text{D}_3$)
 - aka: 1,25 dihydroxycholecalciferol
 - **Blood:** Maintains Circulating Ca^+
 - **Gut:** Absorption of Ca^+
 - **Bone:** Maintains Ca^+ Stores
- Disinfects Skin Surface
- Boosts Skin Immune Function



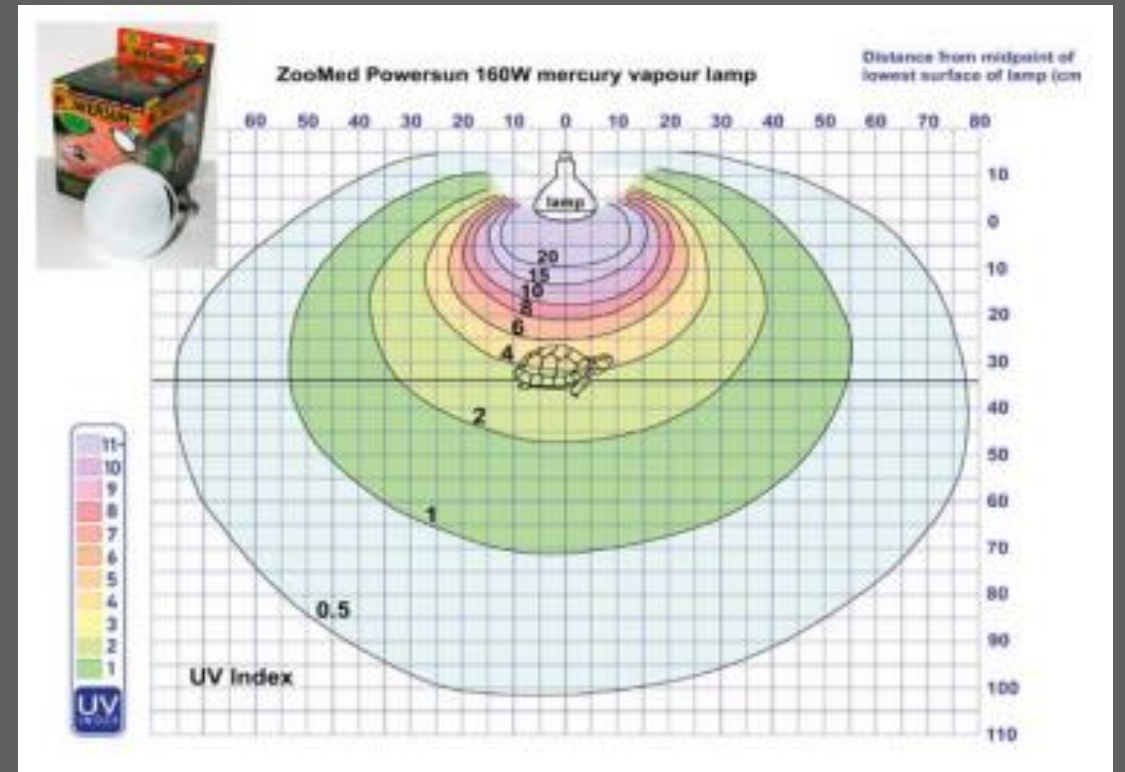
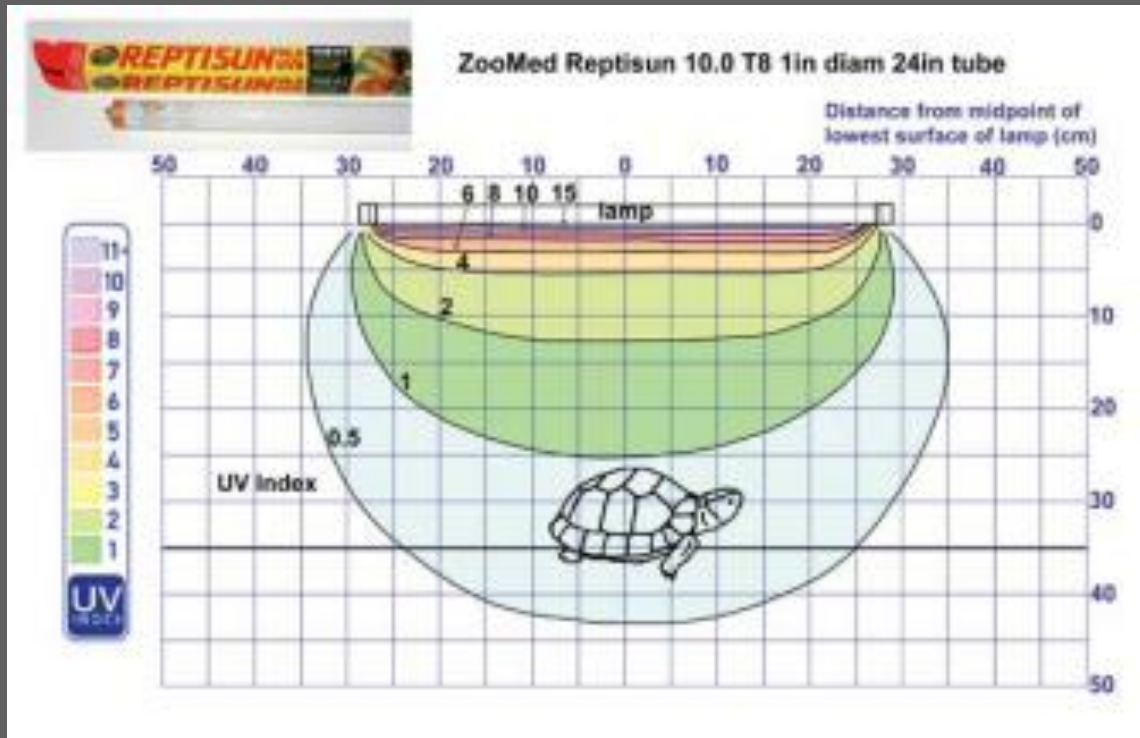
LIGHTING: MEASURING UVI

Get One



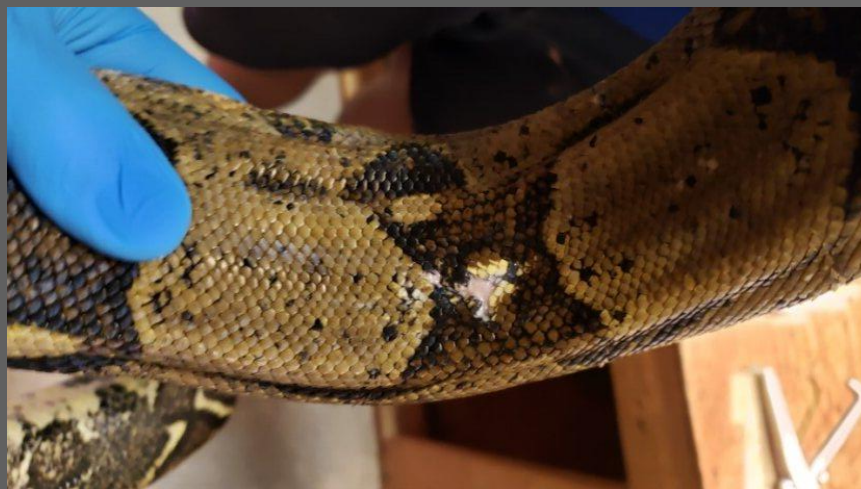
- Start at the Bulb and Move Down to Level of Animal
- UVI Exponentially **Decreases with Increasing Distance**
 - Hanging Height
 - Perching/Platform Height
 - Provision of Options
 - Make Adjustments Based on Resources
 - Bulb Life
- UVB Impeded Easily





FYI:

- UVB Burns are Possible in Herps

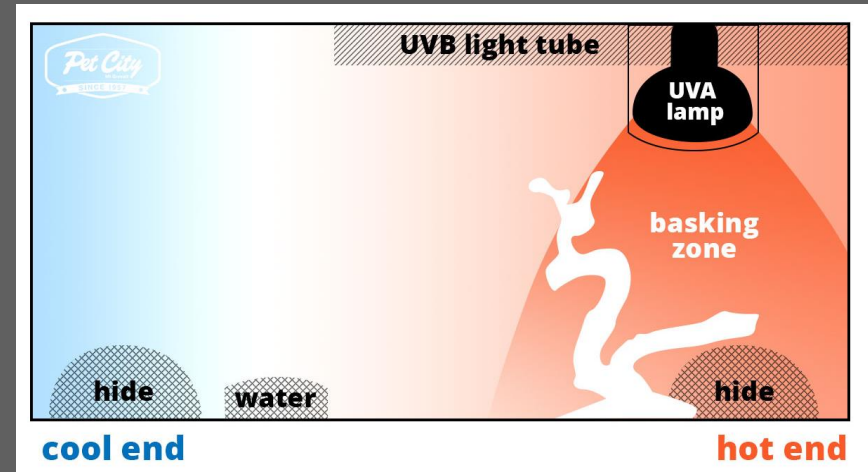


TEMPERATURE

- DO YOUR RESEARCH!!!
- Vast Species Differences
- Provide Options to Match Nature
- BULBS are BEST (generally)
 - Under Tank Mats
 - Hot Rocks



Type of Bulb	Wattage	UVB Output	Good For
Exo Terra Natural Light	13 w	None	Poison Dart Frogs
	26 w		
Exo Terra Reptile Vision	13 w	None	Crested Geckos
	26 w		
Exo Terra Ion Bulb	13 w	Low	Invertebrates
	26 w		
Exo Terra ReptiGlo 2.0	13 w	Low	Leopard Geckos
	26 w		
Exo Terra ReptiGlo 5.0	13 w	Moderate	Live Terrarium Plants
	26 w		
Exo Terra Reptile UVB 100	13 w	Moderate	Anoles, Day Geckos,
	26 w		
Exo Terra Reptile UVB 150	13 w	High	Green Iguanas
	26 w		
Exo Terra ReptiGlo 10.0	13 w	High	Bearded Dragons
	26 w		
Exo Terra Reptile UVB 200	13 w	Intense	Velvet Chameleons
	26 w		
	13 w	Intense	Monitors
	26 w		



TEMPERATURE: PLACEMENT IS KEY CHECK THE TEMP



HUMIDITY



- DO YOUR RESEARCH
- Highly Variable with Species
- Measure/Monitor
- Multiple Options:
 - Mist
 - Soak
 - Humid Hide
 - Pool
 - Humidifier



BRING IT ALL TOGETHER





ENRICHMENT:

- Modifications made to improve overall quality of life both mental and physical
- 'Newness'/Change/Variety
- Good vs. Bad Stress

- Manipulative:
 - 'Toy'
 - Food Puzzle
- Environmental:
 - Hide/Furniture
 - Substrate
 - Perching
 - Temp/Humidity Zoning
 - Lighting
 - 'Weather'
- Nutritional:
 - Novel Item
 - Variety: Quantity, Items
 - Whole/Live Prey
 - Fasting Days
- Sensorial:
 - Scents
 - Animal
 - Perfumes
 - Spices
 - Auditory
 - Nature Sounds



ENRICHMENT



QUESTIONS?

