



# Captive Husbandry Practices for *Lygodactylus* *williamsi*

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## Table of Contents

Common Name(s):.....	2
Scientific Name:.....	2
Taxonomy: .....	2
Introduction:.....	2
Gender Determination:.....	2
Care Experience Level .....	4
Minimum Recommended Enclosures: .....	4
Enclosure Size (Width-Depth-Height):.....	4
Enclosure Material: .....	4
Enclosure Shape:.....	5
Enclosure Cover:.....	5
Habitat Décor & Vegetation: .....	5
Necessary Features: .....	5
Benefits of a Sterile Environment:.....	5
Bio-active Display Enclosure: .....	5
Lighting:.....	6
Lighting Producing Heat:.....	7
Lighting to Provide UV-B and UV-A:.....	7
Lights that Produce Daylight: .....	8
Temperature Recommendations: .....	8
Feeding:.....	8
Over and Under Feeding: .....	8
Pangea Complete Gecko Diet: .....	8
Calcium/Vitamin Supplementation:.....	9
Feeding New-born Baby <i>williamsi</i> Until About 4 Weeks of Age. ....	9
Feeding Juveniles From One Month Old Until About Three Months of Age .....	9
Feeding Adult <i>williamsi</i> .....	9
Hydration and Humidity Requirements: .....	10
Mister Types: .....	10
Mister Nozzle Placement: .....	10
Automated Misting Schedule:.....	10
Activity Period: .....	11
Temperament and Social Behavior:.....	11
Final thoughts: .....	11

### Common Name(s):

Electric Blue Day Gecko or Turquoise Dwarf Gecko

### Scientific Name:

*Lygodactylus williamsi*

### Taxonomy:

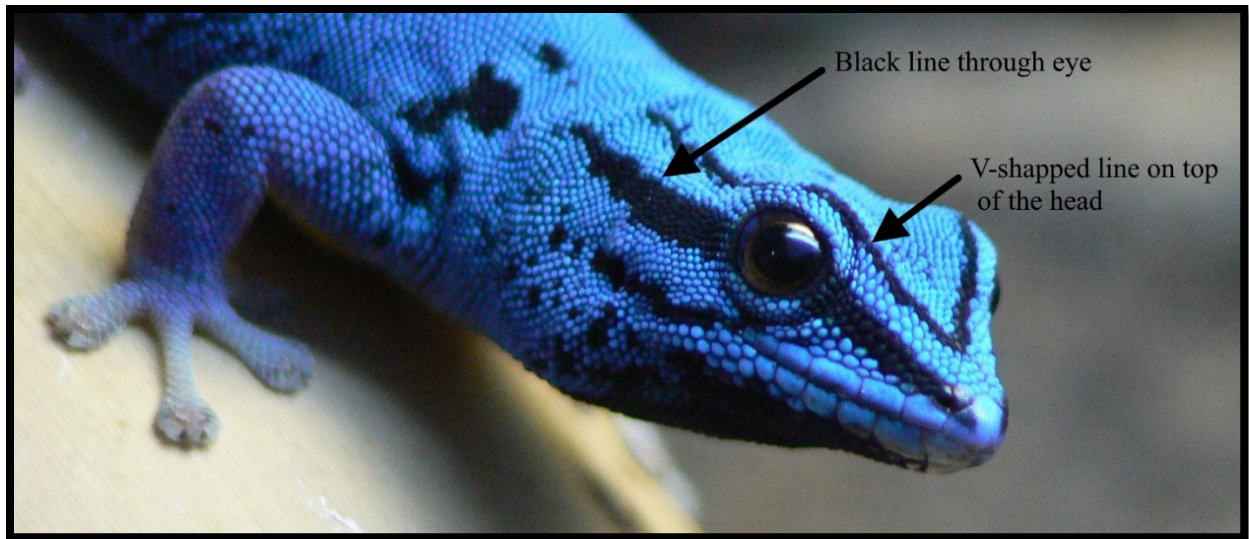
- Kingdom      Animalia
- Phylum      Chordata
- Class          Reptilia
- Order          Squamata
- Family        Gekkonidae
- Genus         Lygodactylus

### Introduction:

Until 2004, this little micro-habitat specialist native to the United Republic of Tanzania remained mostly unknown. More commonly known in the pet trade as the Electric Blue Day Gecko, *Lygodactylus williamsi* was extensively collected for the international pet trade, with at least 15% of the population in the Kimboza Forest collected between December 2004 and July 2009 (Flecks et al. 2012). Greatly sought after by aficionados, this beautifully colored micro-Blue Day gecko remains elusive. But, due to a recent allotted global protection under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), it has been saved from extinction. It was listed under Appendix I, which prohibits the trade of any protected species that is classified as highly endangered. Read more about CITES here: <https://cites.org/eng>.

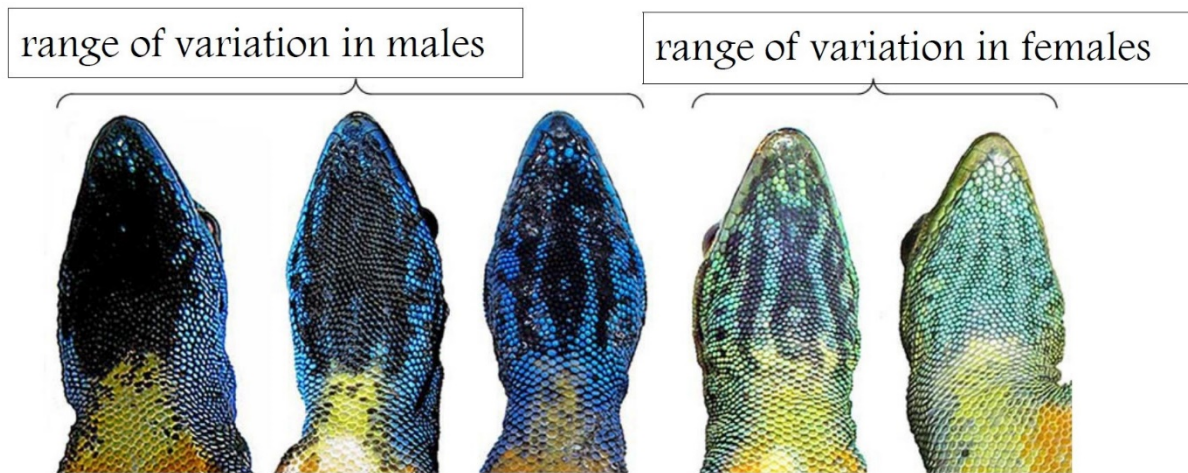
### Gender Determination:

*Lygodactylus williamsi* is only 8.5 centimeters from the snout to the tip of the tail, with the females of the species being slightly smaller. Adults of the species display sexual di-chromatism, which is a form of sexual dimorphism -- the males and females of this species differ in color. Both males and females have a black line that runs on each side of the head from the snout through the eye just past the neck. There is a second line which is V-shaped; this runs parallel to the other line and appears on top of the head.



*Image 1: The dark lines, a trait specific to the species, runs through the eye and creates a V on top of the head.*

The base color of adult males is a bright electric blue, which extends over the entire top portion of the body. The adult females are colored either golden or else various shades of green or blue-green. On the underside both sexes vary in color from pale yellow to bright orange. The throats of the males vary from shades of blue with black markings to solid black. The throats of the females are lighter blue to green and these are devoid of markings. In some cases, females can also exhibit a darker coloration of the throat (Baldamus & Hluschi, 2013).



*Image 2: Range of variation in throat color and markings in Lygodactylus williamsi. Photo by: M. Flecks & F. Weinsheimer.*

#### Differences in the caudal anatomy between Males and Females:

Both males and females have pre-anal pores, but these are much more pronounced in the males. As with most young reptiles, it is very difficult to determine gender when the animals are still juveniles; but as they age, it becomes much easier to identify the pre-anal pores on the males.





Image 3: Male and female *Lygodactylus williamsi* identification. Femoral pores, which are more clearly visible on the males, appear as a series of pits or holes within a row of scales on the ventral portion of the animal's thigh.

### Care Experience Level

Due to their small size and the fact that there is relatively little-to-no information available about this species, Biome Exotics classifies the *Lygodactylus williamsi* as requiring an intermediate to advanced level of experience. It is recommended that you have prior experience working with other gecko or micro gecko species before attempting to keep *L. williamsi*.

### Minimum Recommended Enclosures:

Enclosure Size (Width-Depth-Height):

- For a single adult the minimum recommended enclosure size is: 12" x 12" x 18".
- For a breeding pair the minimum recommended enclosure size is: 16" x 16" x 24".
- For multiple juveniles the minimum recommended enclosure size is: 12" x 12" x 18".

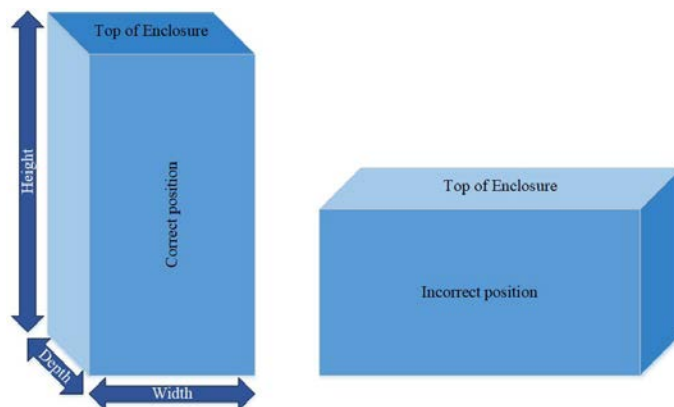


Image 4: The general shape of the enclosure should be rectangular, positioned for maximum height.

### Enclosure Material:

The habitat can be built out of glass or acrylic.

### Enclosure Shape:

Height is the most important dimension for your habitat and should be considered when selecting an enclosure shape. The general shape of the enclosure should be rectangular, positioned for maximum height. Having at least a minimum of 18" to 24" or higher is better, because this species is arboreal and loves to climb.

### Enclosure Cover:

Avoid high humidity conditions widely accepted with keepers of *dendrobates*. Do not cover the tank with acrylic, glass or other solid material; please only use a screen cover. Whether you buy or build a screen cover, remember -- these guys are excellent escape artists. At only ¾" as hatchlings to 3" as adults, their size means that you may want to double and even triple check for tiny cracks where the screen cover does not completely connect with the top of the enclosure.

### Habitat Décor & Vegetation:

There are different methods to consider when deciding on how to design and setup your gecko enclosure. If some general guidelines are followed, all options will work. It just comes down to two factors: a specific need or your personal preference. For those of you looking to setup a single centerpiece inside your home or office, you may want to utilize live plants along with a Bio-active Substrate. If your goal is to breed in volume, you may opt to use an environment that is much more sterile, easy to maintain, and clean.

### Necessary Features:

- Plenty of climbable arrangements such as bamboo, drift wood or manzanita branches.
- Foliage (potted live plants or plastic plants) to provide adequate hiding spots and for additional climbing structures.



Image 5: Two Examples of suitable Habitat Décor & Vegetation arrangements.

### Benefits of a Sterile Environment:

This type of setup would have a bottom surface covered with paper towels, plastic decorative imitation foliage and strategically placed climbing structures also used as basking perches. Breeders prefer these enclosures because they are easy to clean, and sterilize, which in turn reducing the potential for health risks. It also allows for easy access to monitor and, if necessary, to capture the animal.

### Bio-active Display Enclosure:

A bio-active enclosure is usually a naturalistic display masterpiece for all to view. As you can imagine this type of setup would require a lot more work to maintain and clean. When designing

this enclosure, the structural elements are carefully positioned to recreate a natural appearance or a builder's visualization. This type of setup uses various media types as part of the substrate layer, allowing excess water from the misting system to properly drain, preventing stagnation. The enclosure should also contain live foliage planted directly into the soil layer (AVG mixture). Finally, to help maintain the bio-active enclosure, a live cleaning crew is released in it. The following micro-fauna help break down and recycle waste material produced by your geckos, along with dead leaf litter:

- Springtails
- Worms
- Millipedes
- Isopods



*Image 6: Example of Terrarium Bioactive Substrate Layers*

#### Lighting:

There are three rudimentary lighting essentials which are very important to this species. These are:

- Lights that produce heat for basking sites,
- Lights that provide UV-B and UV-A, and
- Lights that produces daylight.

### Lighting Producing Heat:



Unlike mammals, which can generate their own body heat, geckos are ectothermic. That means that they raise or lower their body temperature by moving around in the environment in which they live. In the wild, if a gecko needs warmth, it will move up towards a sunny area. If it needs to cool, then it will find a shady area. The heat throughout the day warms up gecko's muscles so they can move faster to catch prey, and for digestion.

The most popular light source used to provide basking areas for geckos are halogen heat pucks. These are strategically placed in areas where climbing vegetation has been built up almost to the top of the enclosure. The wattage used will depend on the height and overall size of the enclosure. Generally, for a 12" to 18" enclosure we recommend a 25-watt halogen bulb. For enclosures ranging 24" to 36" a 50-watt halogen bulb should be used.

As a side note, be sure to avoid any possibility for your gecko to obtain contact burns. Please make sure that nearest reachable basking spot does not exceed 95° degrees. If it's too hot, elevate the light or heat source above the enclosure slightly to adjust the temperature down or use a dimmer switch to control the output. See the section on "Temperature Recommendations" for more information on temperature thermoregulation.

### Lighting to Provide UV-B and UV-A:



Without getting too technical, UV-B light waves from the sun are around 290-315 nanometers. UV-B is essential for your gecko, because it allows them to synthesize Vitamin D3 (Pre-Vitamin D/Cholecalciferol). Your gecko needs Vitamin D3 in order to absorb and use Calcium, which is important for overall bone health. Geckos also have a fourth ocular cone, which allows them view light in the infrared spectrum, which is why a UV-A light source is also important.

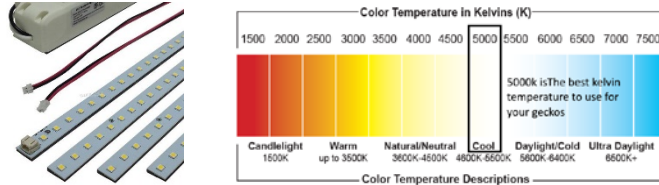
For wider enclosures, the best option would be to use a reflective florescent light fixture with the Arcadia Reptile T5 or T8 6% or 10% UV-B D3 tube (<https://www.arcadiareptile.com>). This option will provide both natural light -- around 7000 kelvin -- and the appropriate UV-B and UV-A levels. Because the light rendered is at 7000 kelvin you won't need an additional LED strip to provide natural daylight.

For narrower set-ups, finding the right UV-B options becomes a little trickier. If you have several enclosures side by side, you can use a single reflective florescent light fixture long enough to cover the entire row. If you only have a single enclosure, then you will need to use a mini CFL screw-in bulb and a small reflective hood. We recommend the Zoo Med ReptiSun 5.0 or 10.0 UVB Mini CFL or the Zilla Halogen Mini Dome.

The output strength and length of the fluorescent tube will depend on the size of your gecko's enclosure. The taller the setup the stronger the UV-B output should be.



### Lights that Produce Daylight:



The visible light spectrum is essential to reptiles because they have extremely good color vision, which is used to see clearly and in great detail. Daylight is also extremely important for a gecko, since it helps regulate the brain's circadian (daily) and circannual (yearly) rhythms. To provide simulated natural daylight any LED strip light will work as long as it's labeled "DAY LIGHT" and has a kelvin rating of from 4800 kelvin (direct sunlight) to 7000 kelvin (cool white). Most LED's will come with a kelvin rating of 5000k, which is perfect. Buy a strip long enough to cover the length of the enclosure to assure proper coverage.

### Temperature Recommendations:

In the wild, *Lygodactylus williamsi* resides in the temperate, deciduous forest within the Kimboza Reserve, Tanzania. Temperate forests are considered the second-rainiest biome, right behind tropical rainforests. It can be difficult to duplicate the exact climate and environment where they live, but luckily these little guys are forgiving and somewhat adaptable. We have had excellent results maintaining general day-time temperatures between 78 to 80 degrees, with a basking site reaching upwards of 90 to 95 degrees near the top perch. Providing a temperature gradient is key, because this species is cold blooded. *L. williamsi* will move up and down this gradient to regulate their internal temperature throughout the day. Nighttime temperatures should be on average 8 to 10 degrees cooler, without the heat lamp or lights on. These recommendations are based on average household temperatures of between 68 and 75 degrees. In cooler or warmer climates, please adjust any variables as necessary to achieve the ideal temperatures listed above for inside your enclosure.

### Feeding:

We use Pangea Complete Gecko Diet as our main dietary food for all stages of life, and it should be available to your gecko 24/7. Other live foods are used to supplement the diet. The type of live food used is determined by the size and age of your gecko.

### Over and Under Feeding:

Just as with dogs, cats, and other animals, you must monitor your gecko's eating habits carefully to prevent obesity or malnourishment. These little guys are very driven by food and don't always know when enough is enough. Therefore, careful portions should be provided so as not to over feed. Please avoid throwing a handful of crickets in the enclosure which would be enough to feed them for a whole week. Observe how much they eat in one sitting and stay consistent with portions you offer, cutting back a little if necessary. We generally offer small portions of live food at least once-a-day in the morning or in the afternoon. By giving a variety of live food you stimulate their natural hunting behavior while providing an excellent source of protein.

### Pangea Complete Gecko Diet:

We have gotten the best feeding responses from our animals using the Pangea Fruit Mix Banana Papaya Complete Diet and the Pangea Fruit Mix Watermelon Complete Diet. Please read the individual product descriptions and ingredients on the Pangea website. <https://www.pangeareptile.com>.



Our experts have found that mixing the powdered formula with lukewarm water until you achieve a consistency of American-style ketchup works best. The mixture will always thicken just a bit more after the initial mixing, so we recommend you wait 15 to 20 minutes and re-check before feeding. The mixture can be refrigerated for a few days, so discard any left-over formula thereafter and make a fresh batch. To make the storage and dispensing of the formula easier, we make our batches in four ounce plastic squeeze bottles, with sealing cap for freshness.

Feeding the Pangea formula is done by using small disposable soda bottle caps or something similar. It should be secured to the side of a branch, half-way up vertically in the enclosure, with self-adhesive hook and loop fasteners. Place the food dishes (bottle caps) in the same location from that point on to make it easier for them to find. For larger enclosures you may want to have multiple feeding stations. When you dispense the formula, keep in mind that your gecko is very small and only requires a dab the size of a dime. Provide a fresh batch every day and discard the old dried-up remains from the previous day.

#### Calcium/Vitamin Supplementation:

You can also boost their vitamin and mineral intake by dusting the live feeder insects with a Repashy calcium and vitamin supplemental powder available at (<https://www.store.repashy.com>). It is crucial to add the calcium/vitamin supplement to live feeder insects every feeding, especially for growing babies and females laying eggs. From time to time we also use the Repashy superpig which is a carotenoid supplement to bring out the beautiful colors for which these geckos are famous.

#### Feeding New-born Baby *williamsi* Until About 4 Weeks of Age.

- Use Pangea Complete Diet and keep it available throughout the day. About a dime sized dab is enough.
- Supply a small portion of calcium/vitamin dusted fruit flies, pin-head 1/16" crickets, or bean beetles twice a day (we use Wingless *Drosophila Melanogaster* Fruit Flies because they are easier to breed, reproduce faster, and are smaller than the Hydei fruit flies).

#### Feeding Juveniles From One Month Old Until About Three Months of Age

- Keep Pangea Complete Diet available throughout the day -- about a dime sized dab.
- A medium portion of calcium/vitamin dusted fruit flies, pin-head 1/8" crickets, or bean beetles should be served once a day.

#### Feeding Adult *williamsi*

- Keep Pangea Complete Diet available throughout the day -- about a dime sized dab.
- A medium portion of calcium/vitamin dusted 1/4" crickets, bean beetles, small waxworms, or newly hatched Dubia roaches should be served once a day.

### Hydration and Humidity Requirements:

Hydration and adequate humidity levels are two very important aspects for proper *williamsi* husbandry.

As with many other reptiles, this species sheds its old skin. It is a misconception that shedding occurs on a seasonal schedule. It's actually tied to the animals' growth cycle, with younger specimens shedding more often than older ones. If the enclosure is too dry, the gecko will have a hard time shedding its skin. We refer to this as "having a bad shed;" the skin becomes too dry and it flakes off in little pieces. In a worst-case scenario, the skin shrinks and constricts the toes, legs, or tail, cutting off their circulation; this can cause serious, irreversible damage. It is therefore important to maintain adequate humidity levels. Hydration is equally important for good health and for proper shedding.

Even though your gecko will get most of its hydration requirements from the food you provide, they do often drink the dew and water droplets collected on leaves and glass after a misting.

*Lygodactylus williamsi* don't do well in overly humid environments such as the ones required to keep dendrobates. By using a screen cover you'll allow the enclosure to air out while preventing it from becoming overly humid. The misting system will provide adequate humidity and drinking water in cycles.

### Mister Types:

To ensure both needs are covered, we recommend using an automated misting system which can be pre-programmed to meet your animal's needs. Hand misting is another alternative for those not ready to invest in the more expensive automated option. If you go this route, you will have to manually mist several times per day which may become bothersome with time.

As for automated misters there are some options available. We personally prefer the MistKing (<https://www.mistking.com/>); it's especially a favorite choice for those who plan to expand on their collection with multiple tanks. This system can support multiple misting nozzles attached in series. If you need a mister for only one enclosure, then consider the Exo-Terra Monsoon Rs400 / High-Pressure Misting System or the Exo-Terra Monsoon Multi or solo (<http://www.exo-terra.com>). These are designed for set-ups between one and six enclosures only.

### Mister Nozzle Placement:

For small short or tall enclosures, a single misting nozzle is usually adequate, but for larger enclosures which are long and wide, multiple nozzles are required for proper coverage. Some hobbyists even utilize dual nozzle tips for each sprayer providing increased flexibility to point the misting tips in multiple directions. Nozzles should be mounted on the top front of the enclosure pointing down and back. That way you avoid spraying water on the front viewing area.

### Automated Misting Schedule:

For the initial configuration you want to have the system spray a minimum of 10-12 seconds every 1.5 – 2 hours; adjust the length of time in between each cycle and spray duration if needed to find the right balance. You do not want the enclosure to become saturated nor do you want it to dry out. If you have a bio-active set-up with live plants, fine-tuning this schedule becomes even more important.

### Activity Period:

*Lygodactylus williamsi* is considered a diurnal gecko; thus, it is active only during the daytime. This makes the species especially attractive to hobbyists since it is visible and active while we are awake. Around dusk they generally find a safe hiding spot to rest for the night.

### Temperament and Social Behavior:

This species is not an ideal pet for those who are looking to handle or hold the gecko regularly. They are extremely fast and once loose hard to catch. It's best to leave your gecko within the confines of its protected habitat and enjoy its social interactions with other geckos. They are very active during the day and constantly on the move, investigating any small movement that catches their eye.

This particular species can be very bold, territorial, and social. In the wild these animals live their entire lives on a single Pandanus plant, which is why the males are very territorial and won't tolerate the presence of other males. Social gestures made may include lateral flattening, puffing out of the throat patch, head-shaking, head-bobbing, and tail-wagging. It is therefore generally not recommended to keep more than one dominant male per enclosure. Many of these behavioral traits may also be observed in captivity, so be aware of them and if necessary and to avoid serious injury, be ready to separate the fighting males.

Colors of individuals can also vary depending on their mood, stress level or ambient temperature. Color change is another way they communicate with each other. Male colors can range from black, to gray, to brilliant electric blue. The females can range from dark brown to brilliant green with turquoise highlights.

### Final thoughts:

At Biome Exotics, we are dedicated to providing you, the customer/hobbyist, with the best possible experience. We always respond back to our customers in a timely manner. We believe that by educating our customers before they make their purchase, and providing follow-up support after their purchase, we increase our customers' overall comfort level and we enhance the animal's long-term care. We do everything we can to ensure that our customers get what they need to be successful. **We want you to succeed!**

For more information, please do not hesitate to contact us at:

(Email us) [info@biomeexotics.com](mailto:info@biomeexotics.com)

Use the contact form on our website <https://www.biomeexotics.com/>



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