



This is a care sheet written with the specific needs of the Water Monitor complex (*Varanus salvator*) of animals addressed, but may also be used with slight adjustments for care of many other monitor lizard species.

Introduction

Monitor Lizards have fascinated me since I was a child. What pet is more exciting than having your own dinosaur like giant lizard. The last five years have been a very exciting time for monitor lizards, the hobby as a whole is really making some great advances in understanding monitor husbandry, captive breeding, and overall monitor theory. Just ten or fifteen years ago, most keepers kept monitors the way they kept their snakes, matching general temperatures, cage setups, and even diets. Many still do care for them this way and it is my job to help change and improve those husbandry techniques. As we learn more about the lizards and their basic needs, we are able to make huge advances not just in captive husbandry, but in breeding as well. These advances in husbandry and the ability to share great amounts of knowledge and information easily over the internet has really opened up the hobby to an entire new generation of keepers and husbandry practices. One of the most popular and most impressive pet monitors available today is the Water Monitor (*Varanus salvator*). Many reptile enthusiasts are drawn to this species because of its impressive size, coloration and the impression that they will make a great “tame” pet. After all what reptile hobbyist doesn't want a

giant pet lizard to walk around the house. The truth is only serious keepers should even consider these as pets.

The Water Monitor is the largest lizard that you can possibly own, dwarfed only in body size by the giant Komodo Dragon. The longest recorded lizard is actually a Water Monitor, measuring 10' 4" long! An average adult Water will reach at least 6 feet from tip to tail, and can easily weigh 40-60 pounds. That is a lot of reptile! Because of their sheer size, and destructive capabilities, Water Monitors should not and cannot be considered a beginner reptile. Wild Caught hatchlings can be very inexpensive to purchase, and care for, but as a keeper you need to make sure to consider the huge amounts of space, resources, time and money that this cute little hatchling will require in less than a year. Looking forward 6 months to a year may not seem like a big deal, and many keepers convince themselves that they will be able to prepare for the forthcoming responsibilities, but many keepers cannot follow thru with these promises. For this type of decision, you also have to consider 1, 2, 5, even 10 years down the line, and consider the awesome future of the this reptile, and what responsible ownership really means for these intelligent animals.

Background

There are dozens of different sub-species/localities of the species *Varanus salvator*. The Water Monitors distribution and range covers a huge chunk of the globe, from areas in India and Sri Lanka to the islands of Indonesia to mainland China. They most likely have the largest distribution of any species of monitor lizard, which means they can come in many different sizes, colors, and patterns from the jet black *V. s. komaini* (or Black Dragons) to the black and yellow giants of Sri Lanka to the smaller spotted or patternless localities on the islands of Indonesia. Many of the areas that Water Monitors inhabit are protected or very isolated, which means that we don't commonly see a lot of the sub-species/localities in the pet trade. If you do come across some of

these “more rare” Salvators, they are usually very expensive, wild caught, make terrible captives and are definitely only for the very serious keeper.

The most common of the *Varanus salvators* seen in the pet trade are the wild-caught or farm hatched sub-species or locality from Sumatra. Sumatran Water Monitors are a normally nicely patterned black and yellow Salvator that can reach very large sizes, while not commonly seen this size, up to 9’ in length and over 100 lbs. The large sizes that this bloodline can attain, actually makes them not the best Salvators for captive conditions, but many of the smaller species better suited size-wise for captivity are much rarer, protected or have very bad dispositions in captivity.

Get Prepared

Water Monitors can be a fine choice for a monitor if a keeper is well prepared, educated and passionate about their wellbeing and willing to care for the animal for the remainder of its life (15-25 yrs). Although there are definitely pros and cons to be weighed and thought about before making this long term potentially giant acquisition.

A six foot Salvator is an eating machine! This is an expensive reptile to feed, house and care for. An adult Salvator will need to be fed large rats, or the equivalent every day or every other day. Monitors are not snakes, they do not even fall anywhere close to the same requirements. Monitors will not function well or survive long if fed weekly like many snakes are. They have a very high metabolism and growth rates which require constant food to maintain. We will talk more about diet later in the article.

The initial investment of the animal purchase price will be miniscule compared to the cost of caging when the monitor hits a year old and 4 feet long, and housing and maintaining an adult can cost a small fortune. That time will come much sooner than you may think. If you do purchase a hatchling, and want to enter into

this long term commitment, have your future plan in place before you even get your monitor, for housing, feeding and care.

As of now there are really no good options for pre-constructed, ready to purchase Salvator enclosures. Even if you purchase a set-up for a hatchling or 6 month old, you will still be required to make some modifications. Most pre-made enclosures in the reptile trade are designed for snakes and other species that do not have the same requirements that most monitors need to thrive. You can “get by” with sub-standard housing for your monitor, but they are difficult enough to keep alive and growing healthy, so why add more difficulty to the equation?

Monitors are extremely rewarding and a lot of fun to keep, and I do recommend them, but only if you are prepared to make the time, space, and financial commitment required for a Water monitor or any large sized monitor, and follow thru with it for years to come. Salvators are not a disposable pet to “try out” or purchase without any prior experience of advanced reptile care. If you feel that you are up to the task and can follow thru with the commitments outlined above, continue reading about the more in-depth care of this species. If you want one, but are unsure of your future settings and abilities PLEASE wait until you are more fit to care for one of these magnificent animals.

What and where to buy

For almost EVERYONE, including the most experienced reptile keepers, starting out with a Captive Bred and Born hatchling will make a much more enjoyable experience for the keeper that will translate into a better life and care for the animal. Wild caught and or farm hatched/bred hatchlings and sub-adults are very common and cheap in the pet trade, but more often than not, you are starting off with an animal that has been through many terrible situations and sub-standard care before it comes into your life, and being intelligent and demanding captives, you will be starting off with a

large hurdle ahead of you. Many people who purchase these sub-par animals are faced with either a sick or dying animal or if they can get it to feed normally and survive, they will be stuck with “empty cage syndrome” for a long time coming. As young animals, all monitors are a prey item for other predators until they reach a size where they then become more confident of their surroundings and or become a top predator. Even a CBB (Captive Born and Bred) hatchling will feel unsecure and vulnerable for the early parts of its life, and want to hide in a secure spot for a lot of the time early on. The monitors who were WC (Wild Caught) and or FH (Farm Hatched/Bred) have spent weeks or months in very stress-full and poor conditions and after being exposed to this, they are pre-stressed and very prone to hiding all the time. This “Empty cage syndrome” makes it very difficult for the keeper to observe how the animal is doing and makes even the tasks of feeding and care difficult. These animals who hide all the time will also usually not feed properly or use the temperature gradients provided in the enclosure, setting them back even more. It is also very disheartening for the new keeper, who did all the research, provided for the animal and put in the hard work, to not have a chance to enjoy or observe their new purchase. This then usually translates into lax care by the keeper and eventual death or rehoming of the once cherished animal.

Starting off with a CBB hatchling from a reputable breeder will make your job as the keeper much, much easier and set you up for a much more enjoyable experience in the years to come. When looking for a reputable breeder, do your research and ask around for information. Most of the Water Monitors being sold at reptile swaps, shows and online are WC or FH and should be avoided. There are less than five companies or individuals who actually produce captive bred and born Water Monitors in the USA and any individual or company who is successful with captive breeding of Salvators will have extensive photos of parents, breeding, eggs, hatching and hatchlings because being successful with Salvator breeding is a very proud moment for even the most accomplished breeder. If someone is trying to sell you a CBB animal for a cheap

price or a “deal” and they cannot quickly provide photo proof, they are lying to you and it is a WC or FH animal. Do not support these individuals no matter how good their sales pitch sounds.

Currently the only companies producing CBB *V. salvator* are: Vital Exotics, Prehistoric Pets and New England Reptile Distributers. Everyone else is basically selling WC or FH animals.

When looking at hatchling monitors of any species, it is usually extremely easy to pick out CBB animals. CBB monitors will be full looking, as in well fed, hydrated, bright eyed, constantly tongue flicking and have nice coloring (well cared for CBB animals have a “glow” to them that WC or FH animals usually do not). Monitors grow and shed constantly in patches, not all at once like snakes or many other reptiles, so having shed skin on them is fine, as long as it is not an obscene amount. Their skin should look healthy, and well colored. Not dry and cracked. A well hydrated monitor will show in its skin and body tone. If it looks skinny (especially around the hips/tailbase), baggy skinned or very dull and dusty, it is most likely suffering from lack of humidity and or hydration. Also look for a bright eyed, alert and active individual. I cannot count how many times at a reptile show or pet store I hear an adult or child say “I want that one, because it is tame and will sit in my hand”. This is furthest from reality. The reality of that situation 9 times out of 10 is that animal that is “tame” is on its last leg of survival and does not have the energy to move and or flee like it is programmed to with instinct as a hatchling or young animal. Do not purchase an ill fated animal from a pet store or at a show to “try to save it” from death. There are thousands of WC hatchlings that are imported every year, and that person selling that animal has more in the same condition sitting for sale along with or behind that one. All you are doing with that purchase is supporting the individuals that are keeping that trade alive and starting yourself off with an animal that will most likely perish and taint your view on keeping these creatures.

As backwards as it seems, getting a hatchling that moves about the enclosure and actually runs away from you or acts defensive,

scared or skittish may be your best choice as a new acquisition as this usually means that it has the energy to follow its natural instincts of avoiding predators (you). A healthy Water monitor hatchling should feel energetic and strong in the hand. While it may become your tamest lizard ever, at first contact and for the next few months it should be very cautious of you.

During the first months of its time in your care, limit your interaction and stress on the animal as much as possible. Your duty is to properly set the hatchling up, maintain its enclosure, temps, feed it and give it fresh water, not to handle and play with it everyday. Let the new monitor explore its surroundings, find good hidespots, temps, and then settle in to a good eating and basking pattern. When you disturb the monitor and stress it out by watching it 24/7 and or chasing it around the enclosure, you are doing nothing but reinforcing its instincts to run and hide from anything and everything larger than it (you and your hand). Trying to “tame” your monitor this way will set you back with the animals trust towards you, not move you forward. Your personal interaction time will come later, once the animal has settled in and you have gained its confidence, primarily through its relation to you thru feeding.

Feeding and Growth/Size

All monitors have a very high metabolism compared to many other species of reptiles, and this high metabolism combined with fast growth rates requires a lot of food and the correct temps to maintain. If you do not provide ample amounts of the proper foods and the proper temperatures needed to process this food, you will end up with a stunted, inactive and or debilitated animal. This high metabolism and food intake also means that there will be a lot of feces/waste. An adult Water Monitor eating 2-3 rats every day or two can make quite a mess when defecating, and will do so on a daily basis. Thankfully, if you provide a large enough water feature, most Water Monitors will defecate in their water, usually

shortly after feeding and if you set up your water feature properly, you can change out the dirty water with fresh water rather quickly.

Feeding even a sub-adult quickly growing water monitor can be a very costly endeavor. Be prepared for the costs associated with the feeding of many prey items per day and also be aware of storage for that food. Large bags of frozen rodents, chicks and fish don't fit well and usually are not accepted happily by other family members when in the family freezer.

Before getting into the proper food items, there are many things to avoid. One of the most common mistakes new keepers make is following the advice found online referring to "home-made" diets of ground turkey, misc meats and vitamins mixed together. While these diets can be used in a "pinch" or as a supplement, they are not appropriate no matter how much "stuff" you add to them. Monitors need insect shells, animal bones, fur and feathers to help keep their digestive tracts working properly as well as the nutrients that they supply while being digested. These "home made" diets are a lot of work to make or create, messy, fast to spoil and stinky while in the enclosure. They also result in very messy and more foul smelling feces, something that I am sure everyone wants to minimize as much as possible. What you want to use as a staple, is a well varied diet of "whole prey" items, not chicken legs, pieces of raw meat or hard boiled eggs, while these can be used as "treat" or supplement, they should not form the bulk of the diet. Some monitors can easily get "hooked" on some of these items and once a monitor gets "hooked" on one item, it can be very hard and frustrating to get them to switch back to a complete and healthy diet.

If you are starting out with a young hatchling monitor, It may take a few days to settle in, but food should be available in a somewhat sheltered or secure area at all times (don't set the food bowl out in the open under a bright light, as the new monitor will be less inclined to eat while feeling exposed out in the open).

For hatchlings up to 1 or 1.5 year olds, I mainly feed appropriate

sized feeder roaches (*Blaptica dubia*, or similar and Madagascar Hissers) that I raise and breed myself (free supply of food once you get a colony set-up and breeding) every day with properly sized frozen thawed rodents, day to week old chicks or quail and fish offered everyday or every other day also. In the wild most monitors spend the early part of their life feeding on insects and this is what their digestive systems are designed for. Many insects can be used, they will eat almost anything that moves and is not toxic, but roaches seem to be the easiest because of their easy of care/breeding and range of sizes. I place the roaches in a stainless steel bowl with tall enough sides that they cannot climb out and basically keep an endless supply in it at all times, so the young monitor can eat them at it leisure. One thing to watch though is exactly how much your animal is eating. Keep track of what is going in and what is going out and this will help you understand how your monitor is doing.

With proper temps, a young monitor needs to be fed as much as it will eat, at least 5 days a week in order to fuel its high metabolism as well as to sustain the huge amounts of growth that it will be experiencing during the first two years of its life.

After allowing your monitor to settle in you can slowly start to gain the animals trust through tong feeding. This is the best and first way to introduce yourself to and interact with the animal. It will allow the animal to start to associate you with food, a positive time for the animal, and it will start to gain trust in you. Tong feeding is very valuable, especially when keeping pairs together, or when you are wanting to examine your monitor and keep tabs on how it is doing. It also allows you to know exactly how much the animal is eating and gauge its activity level.

At one year of age, it is possible for your monitor to reach 4' or 5' in length and 10 or 15 pounds in weight. That is a huge amount of growth! A 4' Salvator will eat and require a lot of food. I feed 2-3 appropriately rats or large chicks and some fish 5 or 6 days a week with large roaches supplemented to the diet daily (after your Salvator hits 4' or 5', all roaches except Madagascan Hissers

become too small to justify feeding to your monitor, and rodents, chicks and fish become the staple diet from that point forward. A healthy Salvator will continue to grow at a rapid pace until it hits between two and three years of age. At 3 years old you may have a 6' or 7' and 30-50 pound giant on your hands. After the monitor reaches three years of age its growth rate in length will usually slow down, although it will still grow 6" to 12" a year if a proper set-up and temps are provided. During this period in its life, the Salvator will start to "bulk" up a lot and you will start to see a increase in the animals overall body structure and size, especially in males. With its "length" growth rate slowing some, you will have to watch your animal to determine how much food is appropriate to maintain the activity level and growth, but not feed too much and allow your Salvator to get overweight and lazy. A slightly hungry animal is much better than an obese one, and keeping an adult motivated for food will usually result in a much more active animal.

Growth rates and finale sizes will also depend on the sub-species, locality and blood lines of your animal. Some animals will not reach these huge sizes because the bloodlines that they are derived from do not reach the large sizes, but the most common Salvators in the pet trade are of the Sumatran bloodline, which are some of the largest of the Salvator sub-species or localities. I currently have a 6 year old 9' long 80+ pound Sumatran male in my care that was raised in great conditions by a good friend of mine. That is a massive amount of animal to care for and maintain so be prepared!

As you can see, these animals are not cheap to feed and that daily feeding also takes time. So please be sure that you can commit the time and funds to maintain this animal for its entire life.

Enclosures

Many think that once you have done your research, found your breeder and purchased your new animal, then it is time to think

about how you are going to set up your new acquisition. WRONG. Figuring out how you should and how you are going to set-up or house your new Salvator is one of the most important decisions to make regarding keeping one alive and healthy. As we stated earlier, it is almost impossible to walk into a pet store or find an online resource that makes a suitable enclosure for monitors. What you need to look for are; something that holds heat and humidity very well, and provides room to maneuver and grow, yet also can provide security which is extremely important for young monitors. Glass aquariums do not work unless major modifications are made to them by someone who is handy with tools. And speaking of tools, and being handy constructing things...if you take on the endeavor of a giant monitor lizard, you should be or have someone very close to you who can build and maintain the enclosures that you will need for your animal. It will save you a fortune in the long run, being able to work/build/fix your own enclosures rather than pay someone to do it for you. When your Salvator hits 1 year old, you are basically looking at a custom cage, or a remodeled room, to accommodate this type of reptile. These custom environments can run from \$500 to \$5000 or more and require large amounts of work and money to also maintain them over the course of their lifespan.

For a good hatchling enclosure I suggest building your own or you can use the custom or pre-made snake/reptile enclosures that are made out of PVC sheeting (Animal Plastics Brand or similar). A good starter size is 3' wide X 32" deep X 16' or 24" high. These type of enclosures hold heat and humidity very well and provide security from the back, top and 3 of the 4 sides. One of the only drawbacks to this type of enclosure is they are designed with snakes in mind and usually only have belly heat, meaning that you either have to special order an enclosure with an internal basking lamp or modify the enclosure yourself to make one work. However if you decide to construct and or modify something yourself, do your research into the design and technique required so you do not build something that can injure your animal or burn your home down.

If you must use a glass tank or aquarium to temporarily house your hatchling of very young monitor, you will need to make a few adjustments to contain the heat and humidity (a glass tank with just a screen lid and a light on top will put heat in, but it will rise right back out, along with any moisture and humidity, essentially drying out your enclosure and the animal 24/7) as well as do something to provide some cover and shelter for the animal (hatchlings will not do well in a wide open glass tank where they feel exposed). I suggest purchasing a good quality, heavy duty screen top (monitors, even hatchlings are escape artists) and cutting a piece of plexi-glass to cover the entire top of the enclosure (to contain the heat and humidity). You only need a few small holes or areas for air exchange. You will then need to mount your light to the screen top inside the enclosure (this is where it is nice to be somewhat handy, you can easily do this by purchasing some electrical components and building your own light base on a piece of wood that is fastened to the screen and plexiglass lid. Make sure to consult a professional if you are not familiar with these processes). Now you can adjust your bulb wattage (for a 20 gallon aquarium you can most likely sustain proper basking and ambient temps with a 45 or 65 watt bulb) to get your correct temperatures. Be sure that you do not overheat the enclosure. This is why it is so important to have your set-up built and working before you make your purchase, to allow you time to adjust or modify things, should they not be working as needed. A properly cared for hatchling will outgrow this set-up in a few months (2-3) so remember this is only very temporary, and will need to be moved into something more appropriate.

Once your Salvator hits around 6 months old it will be between 2' and 3' long and require a fairly large enclosure; Something in the range of 3'x 6' of floor space, with as much height as you can provide. The premade python enclosures such as Animal Plastics, Neodesha, and Vision cages will work temporarily, but they do not provide the proper environments for monitor lizards, they simply do not allow for the temperature gradients, the substrate requirements, and they don't have the square footage or height

necessary for such an active animal.

At a year or year and half old you will have a 4' or 5' lizard in your care and will need to move your Salvator up into its permanent enclosure. A minimum size for an adult Salvator should be 4' deep by 8' wide/long and 6' or 8' tall. The larger the better for these highly active animals, and be sure to take advantage of the space inside the enclosure. Don't just build a big empty box. Do your animals justice and provide them with as much usable area as possible and you will have a much more active and healthy monitor which will be much more enjoyable to have in your care.

Now that you have found out you need at least a 4' X 8' X 8' enclosure for an adult Salvator, where does that cage go? Probably not in your bed room or the living room. Many keepers end up putting large monitor cages in the garage or in a basement, and now you have just added a lot to your heating and or electricity bill, because those rooms are often COLD, and will have to be specially heated to meet the needs of your new monitor

Many people who are familiar with keeping large pythons or constrictors, feel they are able to provide for a monitor lizard since they are doing fine with large snakes. Monitors are in a completely different league than snakes, with much larger maintenance requirements, enclosure sizes and higher feeding and electricity bills. Do NOT purchase a monitor lizard and put it in the same type of enclosure, maintenance and feeding schedule as you would with a large snake. Your monitor will not thrive, it will barely survive.

Enclosure Substrate, Internals and Temps

Now that you have your enclosure built, you need to figure out what to put in it and how to set it up. Monitors can be and usually are very destructive. So you want to be sure to set it up and design it with this in mind.

Substrate

Many monitors and especially Salvators live in or near forested areas so your job is to try to replicate that as close as possible. Enclosure substrate is often overlooked by many keepers, when in reality it is one of the most important pieces of your set-up and can have a great effect on your monitors health, growth and activity level. If you use the proper substrate you will be able to observe how these animals act and live in the wild, and it will be much more pleasing to you as the keeper, as the monitor will live a much healthier life and be easier to care for.

First, here is a short description of what NOT to use:

-Do not use pure clean sand. It sticks to everything (including a wet Water Monitor who loves to go in and out of its water all day, giving you a nice mix of muddy/sandy water) and usually does not hold a burrow very well.

-Do not use the pre-manufactured chipped bark that you see at every reptile swap and store. It is dry, dusty and does not hold a burrow or humidity at all, plus its expensive.

-DO not use aspen or any of the manufactured reptile/snake beddings they are not at all suitable for monitors. They will not hold humidity and are just all around a poor choice.

There many options available to choose from for use as substrate, but most of them are not suitable for use with monitors. What you are looking for in a substrate is something that holds humidity (stays damp under the surface, yet does not turn to mud when wet) burrows well (does not cave in, yet stays soft enough to allow the animal to dig anywhere it wants) and provides natural organisms and good bacteria to help keep the enclosure fresh and clean.

The substrate that will get you the best results as far as animal health, activity level and ease of maintenance is a mix of sandy topsoil, mulch and leaf litter. To save everyone a lot of trouble and

money, I will describe to you how I set up my substrate.

Create a mixture of the following:

- Sandy Topsoil (not black dirt that you buy at a garden store, that will turn to mud when wet, but also not sand). You can make your own soil by mixing sand and topsoil together to create a mix that will clump together when damp, but then fall apart easily in your hand.

- Mulch and or Cypress Mulch is nice because it holds humidity well, and many times contains natural acids that prohibit mold growth, but depending on how it is processed, it can be very sharp and does not usually burrow very well so that is why we are mixing other items into the substrate. Just be careful not to use cedar or any other toxic mulches.

- Leaf Litter (in most areas of the US you can either rake leaves out of your yard or find somewhere such as a yard debris recycling site to get all the free leaves you want. Oak leaves work best due to their slight acidity and ability to last longer in an enclosure, but many types of leaves will work (make sure they are non-toxic). Leaves are great because when mixed into the substrate they keep it softer for burrowing, help hold humidity and slowly break down to create better substrate for the monitor. They also help provide your monitor with good areas to hide as well as new smells to stimulate them (your monitor will spend much time searching through the leaf litter for food or burrowing to create hide spots), my monitors all get very active and almost excited when I put a “fresh” batch of leaves in their enclosure.

Now that you have all the “ingredients” in your enclosure, mix it up well, you want a soft, fluffy and moist substrate that should be a minimum of 6” deep for a hatchling up to 2’ or 3’ deep for an adult. The deeper the better. You want the substrate to dry out somewhat on top, but it should always be moist or damp not soaking wet, right under the surface. You will learn to adjust your enclosures humidity by paying attention to evaporation rates and

temperatures and will have to adjust or add moisture to the substrate depending on your enclosures dry out time. Every couple of weeks or whenever I notice the substrate starting to get packed down or lose the “softness” or ability to absorb or release moisture, I will “fluff” or “overturn” the substrate to soften it up and give the monitor some new scents and terrain to explore. I also add more leaves as I notice the ones in the enclosure being broken down or buried. This will also help stimulate your monitors activity level once again.

Many people worry about bacteria, insects or bad smells coming from the enclosure when using this type of substrate, but the opposite is true. You do not need to clean, cook or bake your substrate or cage furnishings. Just make sure they do not have any high amounts of insects or anything out of the ordinary. With this type of substrate program, you are introducing healthy, natural bacteria and small insects that will actually “clean” your substrate and create a natural cycle in the enclosure to break down any waste and help keep everything in check or balance. When I ask anyone who sees my set-ups what they think of them, they always are impressed that they smell natural and “earthy” or “woody”, and I never hear complaints.

Enclosure Temps

In the last 10 and even 5 years, there have been huge advances in monitor husbandry. Much of the data or information in the older books and care sheets with regards to temperatures and husbandry is now considered incorrect. Many of the books, websites and out of touch keepers still believe in and perform these antiquated husbandry practices, so be sure that when you are looking for or taking advice it is coming from someone reputable and that they have a proven, successful track record with monitors (many keepers who are successful with snakes or other reptile species, often are not close to being qualified for giving monitor husbandry

advice). One of the most incorrect areas of distributed information is the temperatures that monitors require to thrive. Temperatures are one of the most important factors in successfully raising any healthy reptile and this is also the case for monitors.

When it comes to useable temperatures, monitors are very close to the top, requiring much higher basking and operating temps than most other species. When it comes to temperatures, there are two vastly different areas to consider when comes to setting up a proper enclosure: ambient temps (air) and basking temps (surface). The previous school of thought was to provide ambient temps in the mid 70's and 80's, which is still in practice today and is proven to be correct. The real issue that has changed over the years is the basking temps. For many species of reptiles, basking temps of 85-95 degrees is considered to be correct and proven to work (especially when dealing with most snake species). We now know that to barely work for most monitor species, it may work to keep them alive, or barely alive, but it will not allow them to flourish and thrive, which is what we, as good keepers should be determined to achieve. Temperatures of 85 or 95 degrees may seem like it should be "hot" enough, but in reality, monitor lizards who require large amounts of heat to digest their meals as well as to help fuel/charge their high metabolisms, require much more heat.

So what kind of temps do you need and how do you measure them? One of the best and most important investments for a reptile keeper is a TempGun. It is a small, very affordable infrared temperature gun that can be ordered here: www.tempgun.com. Every reptile keeper should have one on hand and be constantly checking and adjusting temps if or when needed.

In your enclosure you want to provide ambient temps (air) on the hot side of the enclosure or near the higher parts of the enclosure of the mid 80's and even 90 degrees. You also need a "cool" area that the animal can retreat to when is desires lower temps, this area should be in the low 70's. Providing "warm" and "cool" temperature zones will allow your monitor to choose when and

what temp it desires depending on what its needs are. A nighttime ambient temperature drop is acceptable to the mid 70's, so you may be required to use some form of heating (heat emitter, red heat bulb, etc) to keep your enclosure warm enough at night, when the main basking lights are off and not providing the heat to keep ambient temps high enough.

Ambient temps are fairly easy to achieve, when you have the proper basking temperatures set up, as the basking area and bulbs are used to heat the enclosure. That is why you really need to pay attention to the basking (surface) temps available in an area of the enclosure. Monitors process their food using high temps as the fuel to help accelerate their digestion, and just providing good ambient temps will not be enough to allow your monitor to process this food in the proper manner. Aside from basking to aid and speed up digestion, monitors derive much of their energy from being able to heat up their body and use this as energy for getting around and fueling their daily bodily functions.

With the new advances in monitor husbandry, basking temps of 120-150 degrees are used successfully with many monitor species. Many new or other reptile keepers are amazed when told that they need to provide basking temps in that range. When in reality, if you go out to a tropical place, or even your own back yard in many cases in the summer, and take a temp reading of a rock in the sun or the road, you will see temperatures in the range of 100-150 degrees on surfaces that are used to bask on by many reptiles. Now think about doing this in the tropics of Indonesia or Asia in the height of summer.

Achieving basking temps of 120-150 degrees is not that hard. You do not need huge wattage or special bulbs. Many successful keepers achieve these temps using 45 or 65 watt flood (not spot, as they produce too concentrated of light focus which can burn your monitor's skin) bulbs that you purchase from your local store. The key is to mount your bulbs in the enclosure in a manner that the monitor can bask within a safe range of distance from the bulbs, yet close enough to reach the desired temps. Mount your bulbs on

something or in a way that will protect them from being damaged or reached by your monitor from the top and sides, while leaving the bottom open to allow the heat and light to broadcast down onto the basking area. Your monitor will most likely be able to reach the bulbs from the underside if it wants to, but usually these animals are intelligent enough to learn not to touch them, and if they do touch them for a moment, by using low wattage (45w or 65w) the temps of the bulb are usually not enough to hurt the animal. Numerous bulbs are mounted in a line with 10-18 inches in between them to provide a larger basking area for longer or adult animals. You want to heat the entire animal, not just one small area of it as this will cause your animal to burn the focused area as it tries to heat up the rest of its body. Design your set-up with the idea in mind that you may have to adjust the basking area height or position to get your desired temps or positioning in the enclosure. UVA and UVB producing bulbs may be used to provide or in conjunction with your basking lights, and while if used properly they should not hurt your monitor, there are many successful keepers who do not use UVA or UVB at all for their enclosures. It is believed that due to the diet of whole prey items, monitors receive much or all of the proper vitamins/nutrients needed for proper growth and development without the assistance of UVA or UVB. Many herbivorous reptiles seem to benefit from UVA or UVB but this does not seem to be the case with monitors.

I use large pieces of driftwood or branches for basking areas in my enclosures. In some of my very large enclosures I will provide 2, 3 or even 4 different basking locations at different heights in the enclosure to provide a range of basking temperature and locations. Another method that works very well is stacking things such as hollow logs, flat rocks, or even custom made structures (plywood and 2x4's is commonly used) to create a tiered basking structure or stack that allows the monitor to bask at different levels of temperature (the closer to the bulb or higher up in the stack, the higher the temperature). This type of basking area design does many things, it provides your animal many choices of temp gradients, as well as allowing them to bask and heat up (at

different temperatures as the higher up in the stack the animal moves, the higher the basking temps will be) while feeling secure and sheltered between the layers of the stack, it also adds much more surface area for your monitor to use in its daily activities. If built correctly to allow your animal to move between the tiers, yet feel snug and secure your animal will use this structure very often. This is often very useful with hatchlings of sub adults who are shy or do not feel comfortable basking out in the open. Just be sure to build this structure secure enough to allow your animal to use it safely, so that it does not have the risk of crushing or trapping your monitor.

How do you know if you are providing the correct temps for your monitor? The best way to know is watch and learn from your animal. You are wanting to see an animal that is active, bright eyed, feeding and defecating with a normal pattern and growing appropriately. You also should watch your monitors habits. If it is basking all day, every day, your basking and ambient temps are too low. If your animal never basks, your temps are too high. A healthy monitor with good temps should come out of hiding, bask for 10-30 min and be off foraging or exploring the enclosure. It will then return every once and a while thought the day to bask for a short period, recharge its energy reserves and be off again with activity.

Enclosure Internals

Now that you have a proper enclosure, built, a basking location selected and designed and proper substrate understood what else goes in the enclosure? Useable surface area, hides and a water feature.

Like we talked about before, monitors are incredibly active and intelligent, so they need to be treated that way. A proper monitor enclosure should have as much usable area as possible for the animal. Monitors in the wild spend large amounts of time roaming,

exploring and searching for food, and by putting them in extremely small boxes, we are not doing them justice. The least we can do is provide them with as much space and useable area as possible to stimulate their natural instincts and keep their activity level up. I find large, unique looking and shaped wood pieces outside and fasten them to the walls of my monitor enclosures to create visual appeal for myself as well as providing as much natural apparatus as possible for the monitor to use. Having different levels of useable area in the enclosure will also allow your monitor to more easily seek out the appropriate temperatures that it is looking for.

Another important feature for monitor lizards is hide areas. Monitors, especially when hatchlings and or sub adults, need places that they can retreat to feel secure and rest. An animal with no appropriate hide spots will be very stressed out, effecting its eating patterns and overall survival. I provide numerous hide areas in each enclosure, allowing the monitor to chose which one suits it best at that time. These hide areas should be provided on both the warm side of the enclosure as well as the cool side, to allow your monitor to choose which one it will use depending on its situation.

Water Monitors can usually be found near bodies of water (hence the name) in the wild and will benefit from them if they are provided in captivity. There are responsible and successful keepers who keep Salvators without a large water feature or tub (keeping a large bowl of fresh water available at all times) but I do not recommend it. These animals are designed and hard wired to spend large amounts of time near or in water, so I provide my animals with the largest water feature available to my enclosure. You will see higher animal activity levels, better/healthier skin sheds, better enclosure humidity and all around a better life for your Salvator if they are provided some sort of area to get their full body underwater. Water Monitors will also almost always defecate in the water and this can be a positive, as daily cleaning of feces in the enclosure is not needed, but this also means you will also be required to change the dirty water to fresh water at least every other day. This is why it is very important to design your water

feature so that it is easy to clean and refill. I use large plastic water troughs or heavy duty plastic pond liners as ponds and plumb them with 1.5" or 2" PVC valves and lines to allow for a quick empty and cleaning. Many keepers try to alleviate this step by setting up an elaborate pump and filter system, but these need to be very involved and massive systems to deal with the large amounts of waste that even a sub-adult Water Monitor will produce daily. I would not even waste your time or money trying to purchase or design this type of system as I have yet to see one functioning properly that did not cost a fortune or take up more space than the enclosure. There are many ways to design a functional water feature, it all depends on your enclosure situation (size, location, etc) but with a little creativity and handy work almost anyone can make a nice useable feature for yourself and the monitor.

Your decision

Reptile husbandry practices are changing and advancing all the time, with the technology and new, easier ways to share information keepers are constantly learning, reading, improving and fine tuning our husbandry techniques. New advances will continue to be made and this will translate into better care for the animals. I have worked with dozens of reptile species over the years, and monitor lizards have stood out as one of the most fascinating, motivating and fun reptiles for captive care.

This care sheet was not written to discourage anyone with the similar fascination for these amazing animals as I have, but written to make sure those are prepared for the task and responsibility ahead. In this day and age it is all about responsible ownership. These very impressive, huge lizards are incredibly visual animals but the novelty and excitement of size and work involved can wear on and discourage a keeper really fast. It is my job to make sure that when you do choose a Water Monitor, or any new reptile, to be part of your life for the next 10 or 20 years, that you are prepared and that you can fulfill the lifelong needs of that reptile.

Monitors are time consuming animals. Any animal that eats this much, grows this fast, and needs this much attention to caging and care is going to be a handful. Monitor lizards are a lot more work than snakes and most other reptile species. There is more feeding, more waste, bigger enclosures, higher temperatures and more maintenance, and with the more specific and higher level of requirements/care the costs also add up quicker. Monitors also will not tolerate sub-par care and can go downhill a lot faster than your snakes or other reptiles.

If you are one of the few keepers truly capable of caring for a giant monitor like the Salvator, PLEASE take the time to figure many or all of these care and husbandry issues out beforehand, it will make your life a lot easier and be much better for the animal and the reptile hobby in the long run. Do your research and figure out what options you have and what works best for the animal, and in turn, you will be much more pleased with your choice. And if you stick to your decision, you will be rewarded with an amazing animal! Many Salvators can have a great personality, are inquisitive, interactive, and can reward keepers in ways that other animals cannot.

