

JBL



TERRARIUM MANUAL



**VORSPRUNG
DURCH FORSCHUNG**
AHEAD THROUGH RESEARCH







Every time I go on an expedition the crawlers and reptiles we meet fascinate me and I am glad that our JBL range not only makes it possible to keep these animals in terrariums but that we also can create conditions for them which are increasingly modelled on nature.

Once you have encountered poison dart frogs, monitor lizards or tree snakes in the wild you will be captivated by these animals for life. I've even come to love tarantulas, not everyone's favourites. In the course of our UV measurements we repeatedly noticed that more UV radiation reaches the animals than many are aware of, and this has strengthened our motivation to develop UV rich lamps. This way keeping and hopefully breeding terrarium animals will become a bit easier.

Yours sincerely

Roland Böhme





The fascination of terrariums

Terrarium-keeping has experienced an enormous boom in the past twenty years. In the midst of the increasing hustle and bustle of our world, an island of nature in their homes offers many people an opportunity to relax while watching their terrarium pets after a long day of work. For example, by losing themselves in a richly planted indoor jungle with a waterfall and a variety of creatures such as small anoles, day geckos and colourful small frogs. Observing the fascinating behaviour and interaction of these animals can be relaxing and entertaining at the same time.

The enormous selection of high-quality technical equipment, diverse accessories and types of food along with the wealth of information on the needs of terrarium inhabitants available to beginners in well-stocked pet shops today has doubtlessly made a major contribution to the triumphant march of terrarium-keeping.

JBL's Research & Development Team is in charge of applying the bountiful findings on the habitats of terrarium animals gained from the JBL Research Expeditions to JBL's products and services. After the test phases are finished, terrarium keepers will be able to find the results on the JBL shelves in pet shops.

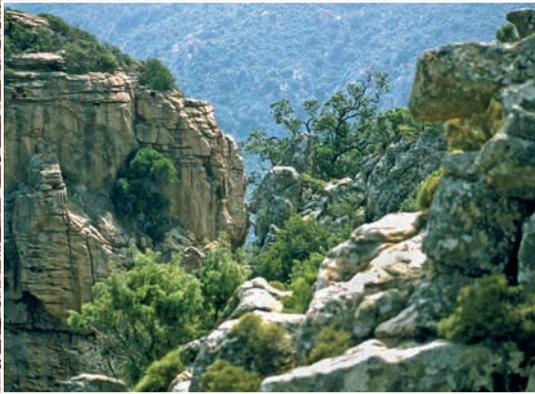
We urgently recommend obtaining detailed information on your future terrarium pets in a specialist pet store and not simply buying a "cute little lizard with a mini terrarium" only to find out later that, firstly, it does not make a good pet and, secondly, it's going to grow to a length of 80 cm.

This booklet intends to give you some information, tips and ideas before you dive into this fascinating hobby.

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Dry rock biotope with wide local temperature variations



Agama basking in the sun in their habitat

Where are the animals from?

Most of the 3000 or so amphibian species and approx. 6000 reptile species come from tropical and subtropical latitudes. There are also many interesting terrarium animals in Europe, but they are almost all protected by law, making them unavailable for terrarium-keeping. As a result of increased breeding in captivity, the share of reptiles that have not been obtained from the wild is increasing significantly. This benefits the protection of the animals in addition to increasing our knowledge of numerous species. Many of the 800 species of spiders are also finding an increasing number of fans and gradually losing their (undeserved) poor reputation. As a result, they are no longer considered creepy, and are viewed as fascinating instead!

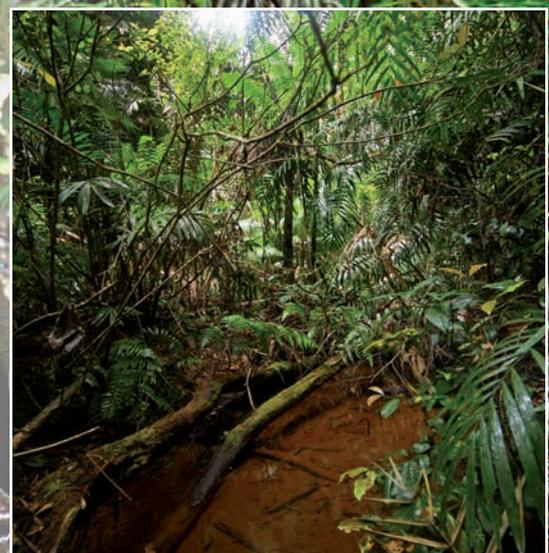
It is always worth learning as much as possible about the natural habitats of your pets. The more detailed the information, the closer the conditions in the terrarium can resemble the natural environment.





Desert animals only appear to live under hot conditions at first glance. Anyone who has been in the desert knows how you can get extremely cold nights there and would want to apply this finding to their terrarium. The situation in tropical rain forests is quite different: Relatively constant temperatures, high humidity and an absence of harsh light are the environmental conditions encountered by animals in the jungle. As almost all terrarium pets are cold-blooded, their body temperature depends fully on the temperature of their surroundings and the sun's rays. The animals keep their body temperature in the optimum range through specific forms of behaviour such as basking in the sun or seeking out cooler zones. Only then can their digestion and metabolism work effectively and the animals display the behaviour typical of their species. This is an important consideration in reptile keeping.

In the following chapters, we would like to present two types of terrariums as examples to illustrate setting up a terrarium, the equipment used and care. One type is a desert terrarium with the corresponding extreme temperature conditions, and the other a rainforest environment, representing the „jungle behind glass“. As a variation on the rainforest terrarium, the paludarium or aqua-terrarium is mentioned, which can resemble an aquarium more or less closely.



A shady stream in the rainforest



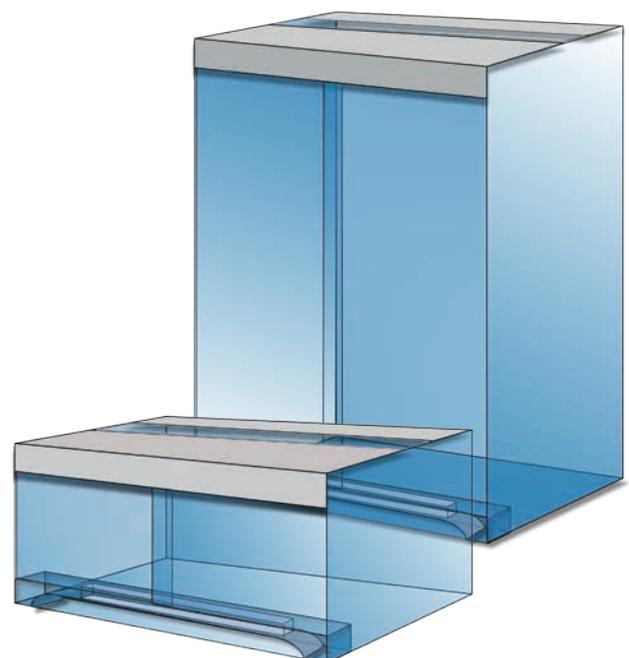
Choosing the size and shape of your terrarium

Nowadays, specialist retailers offer a wide range of terrariums, mostly with glass panes held by silicone adhesive. These can usually be accessed from the front by sliding doors. Small terrariums for invertebrates often come with folding doors on the front instead of sliding panes of glass. Building your own terrarium is barely worth the effort anymore nowadays.



The format, volume and technical equipment of the terrarium should be selected in accordance with the specific requirements of the species, the size of the animals and the range of movement required.

As a general rule, the larger, the better! The equipment should always correspond precisely to the volume of the tank, so that there are no immediate losses due to overheating in the event that the temperature control system fails. Suitable decorations should be used to structure the habitat to provide the animals with spots to retreat to without cluttering the terrarium or compromising hygiene. Of course, the floor of the terrarium is crucial for your bottom dwellers, while the height of the terrarium is important for your tree dwellers. A strict division of terrariums into a few standard types of terrariums doesn't make much sense due to the diverse needs and adaptations of the animals, especially when considering that the boundaries between the different types are often blurred.



Location and climate

Choosing the location for your terrarium

With only a few exceptions, any location within a house is actually suitable. However, you should make sure to choose a location where you can observe the animals comfortably from your favourite place. You should also be able to reach the terrarium for cleaning, feeding, etc. without going through contortions!

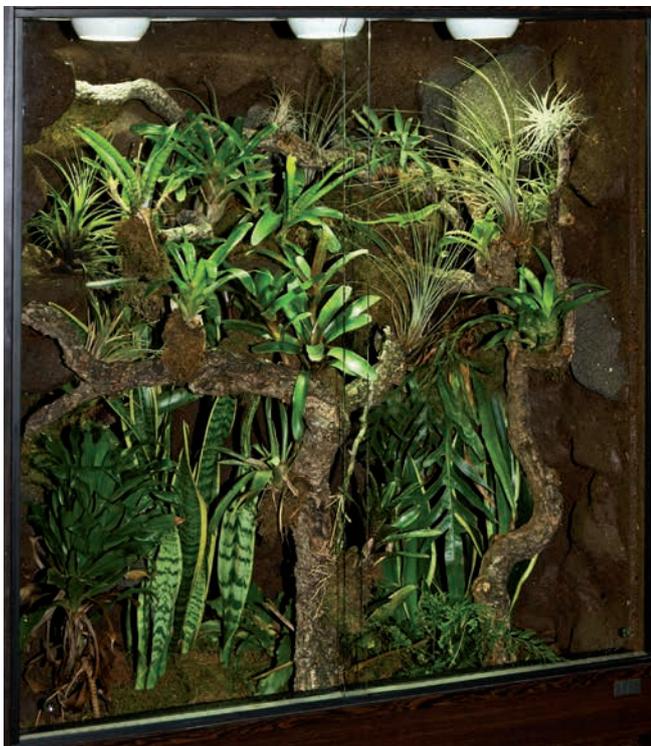
Also make sure not to choose a location with a risk of overheating from sunlight such as a spot near a window. Attic flats which are very warm in the summer and barely cool off at night are not suited for keeping heat-sensitive species. Last, but not least, the weight-bearing capacity of the surface under the terrarium must also be taken into account.

The climate in your terrarium

The climate in the terrarium is the most important factor for your animals' wellbeing. The animals will only be able to display their full repertoire of behaviour and lead a healthy life if the typical climate of their immediate habitat is reproduced as closely as possible through the skilful selection of equipment.



The temperature (of the air and the floor/substrate and of basking spots with high temperatures), lighting (duration, intensity and quality of light), the relative humidity and ventilation (air supply/removal) make up the most important climatic factors in a terrarium. As in the wild, the individual elements of climate influence each other and are subject to the changes occurring in the course of a day. The relative humidity normally decreases in parallel with an increase in the duration of operation of the lighting and heating equipment. This must be taken into account when selecting a terrarium. The individual climate parameters usually change quickly in a small tank, and therefore need to be optimised continually by the use of sophisticated control technology or repeated manual intervention. In large tanks, the climatic factors change much more slowly and it is easier to create zones with different microclimates (zones of different temperatures and humidities) so the animals can seek out places with the climatic conditions they prefer at a given time.





Lighting

As cold-blooded animals, terrarium animals are far more dependent on light, i.e. the quality and intensity of light, than warm-blooded vertebrates. Activity, feeding, digestion or resting phases are influenced by the alternation of day and night, and especially by the intensity of light. Besides this, many terrarium animals associate light with heat and seek light places in the terrarium in order to „bask in the sun“. These considerations are especially important when choosing heating equipment for desert terrariums. There are differences in the yield and quality of light, depending on the light source used. Fluorescent tubes, for example, provide a lot of light with little heat production, whereas light bulbs convert a major share of the energy taken up into heat and only a small share into light. The question as to which quality of light is best suited for a specific terrarium is easy to answer if we take a look at nature: For millions of years, plants and animals have been adapting to what the sun sends down to the earth in a long evolutionary process. If we look at the spectrum of sunlight (meaning the part of solar radiation that is visible to us), we recognise a very even distribution of all spectral colours. For this reason, lamps for terrariums should have a spectrum that is as close to being balanced and without gaps as possible. At the same time, all of the plants and animals will be able to exhibit their full natural brilliant colouring. Metal halide lamps (JBL L-U-W) are the top choice for animals requiring sunlight, ultraviolet light (i.e. diurnal animals) and heat. They offer a full spectrum that is sunlight simulating, including UV-A and B radiation, along with heat emission for the terrarium. Accordingly, the temperature in the terrarium decreases after the lamps are switched off, thereby simulating the desired night-time drop in temperature. The JBL L-U-W lamps are available in



three different wattages and two versions, depending on whether the animals require a lot of UV (JBL ReptilDesert L-U-W Light alu) or less UV (JBL ReptilJungle L-U-W Light alu).

The fluorescent tubes sold by JBL are also so-called full-spectrum tubes and come in two different versions for terrariums: JBL SOLAR Reptil Sun and JBL SOLAR Reptil Jungle.

UV-light, specifically in the UV-A and UV-B ranges, also plays a significant role in terrarium lighting. Depending on their origin, terrarium animals require more UV light or less for their well-being. UV-B stimulates Vitamin D₃ synthesis from the Vitamin D₂ precursor. UV-A stimulates pigmentation. It is important to take into account that the glass absorbs around 50 % of the UV radiation, so that the lamps should always be installed inside the terrarium. The distance between the light source and the animal is another important factor: There is information directly on the lamp indicating how much radiation is emitted at which distance from the lamp. If the terrarium is high, the animals can get closer to their UV source if they are provided with something to climb up on.

The following applies to animals that require UV: These animals will not stay healthy if fluorescent tubes are used, even if they emit UV radiation! It is imperative for a UV spot lamp or an L-U-W lamp to be mounted additionally. When using metal halide lamps, one must also bear in mind that they may/can only be operated with special electronic ballasts (JBL TempSet Unit L-U-W).

The use of high-quality reflectors such as JBL SOLAR Reflect can double the light yield of all the light sources recommended here.

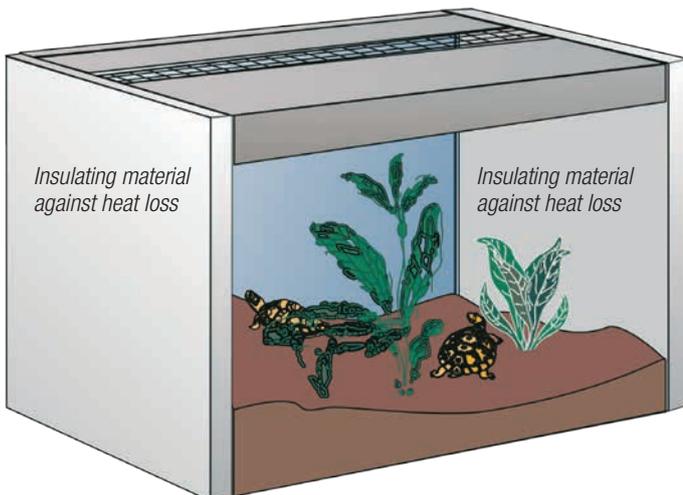


Heating



Heating in a terrarium should be dimensioned such that the animals will not be “roasted” in the event that the control technology fails. In other words, a small terrarium should not be equipped with an oversized 100 watt heating cable with a controller, and instead, should have a small floor heater of only 8 to 15 W. The heating effect of the lighting must also be taken into account. As a result, when the lighting is turned off, the night-time drop in temperature occurs simultaneously.

The heat deperdition of a terrarium can be reduced – and savings in energy costs achieved as a result – by insulating the side panes with insulating material on the outside to prevent heat loss. Foam pads such as the JBL Aqua-Pad under the bottom panel prevent heat emission but also prevent the bottom panel from bursting in case the supporting surface is uneven and there is no heating mat on the bottom. When placing a heat mat on the outside under the terrarium, though, it is imperative to follow the applicable instructions in order to ensure sufficient rear ventilation of the heat mat. The JBL floor heat mats (JBL TerraTemp heatmat) come with “feet” as spacers.





Supply of water and moisture, water care

Aside from light and heat, the drinking water supply, relative humidity and the right moisture of the substrate are very important for the animals' well-being. This is because reptiles and, to a greater degree, thin-skinned amphibians are constantly losing water as a result of respiration, particularly through the skin. This is especially true with amphibians, which almost exclusively take water up through the skin and barely drink at all, in contrast with other terrarium animals. Therefore, in addition to cleaning and refilling the water dish, daily care should also include misting (spraying) the inside of the terrarium with water regularly at least once in the morning. This also applies to desert terrariums. This is because there is often fog or dew in the morning hours in regions with high daytime temperatures and significant decreases at night. Many animals are used to meeting their moisture needs through the water condensing on their body or other objects in their environment. Some species of animals e.g. chameleons prefer moving water. Young animals don't need more than the water drops that collect on leaves or objects after misting, whereas adult animals often require more. In this case, it is recommended to add a dripping system that supplies water over an extended period of time. This way, the animals can take up as much water as they need. The dripping water can be supplemented by occasionally adding vitamins (JBL TerraVit fluid). Your pets can be offered moving water by putting in a waterfall, e.g. a ready-made model or room fountain, operated by JBL ProFlow t water pumps or by setting up a larger-sized waterfall operated by JBL ProFlow u water pumps complete with a water reservoir on the rear wall. In this case, though, it is important to assure consistent good quality of water. Besides this, the substrate of aqua terrariums must be cleaned regularly with a gravel cleaner such as the JBL AquaEx kit and the aquarium panes must be cleaned with glass cleaners such as the JBL Blanki kit. A weekly partial water change of around a third of the water volume should be done, similar



to an aquarium. Without regular cleaning, a slew of bacteria, very detrimental to the animals' health forms very quickly in the reservoir of the room fountain or waterfall. These often contain just a few litres of water.

The water supplied in a terrarium requires certain measures of care in order to prevent a murky brew laden with bacteria from forming. This can endanger the animals' health. Care is relatively simple with drinking vessels: They should be cleaned and refilled with fresh water daily. When it comes to larger bodies of water in a terrarium, e.g. in combination with a waterfall, the care required is comparable to that of an aquarium. For more details please refer to the JBL homepage under "Essentials" and "Aquarium".





Briefly: After the water section has been filled with mains water, a water conditioner (JBL Biotopol T-Renders any chlorine harmless and absorb harmful substances such as heavy metals) should be added. Internal and external filters from the JBL CristalProfi range can be used to filter the water. Internal filters such as JBL CristalProfi i 100 are suited for small water vessels of up to 100 litres. External filters from the JBL CristalProfi e range which are also designed to save energy are recommended for larger volumes of water. It is imperative to do a regular water change of approx. 30 % every 2 weeks. The water replaced should then always be conditioned to meet the animals' needs using JBL Biotopol T.

If you are keeping turtles, it is urgently recommended to use a very powerful external filter (JBL CristalProfi e) due to the animals' enormous metabolism. In this case, a model one size bigger than that recommended for the corresponding water volume should always be selected. With its JBL EasyTurtle, JBL offers a product that effectively accelerates the degradation of the large amount of waste produced by turtles, thereby preventing unpleasant odours. It contains specially bred cleansing bacteria which are bound to a mineral granule. These granules are simply sprinkled onto the bottom of the water section or integrated into the substrate.

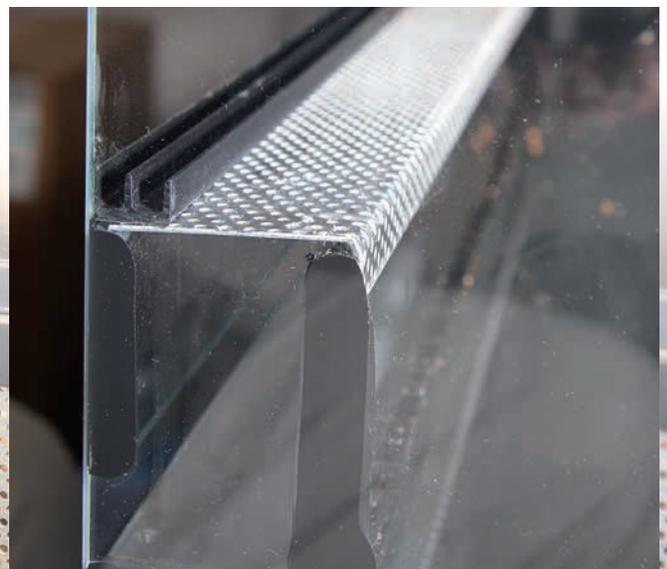
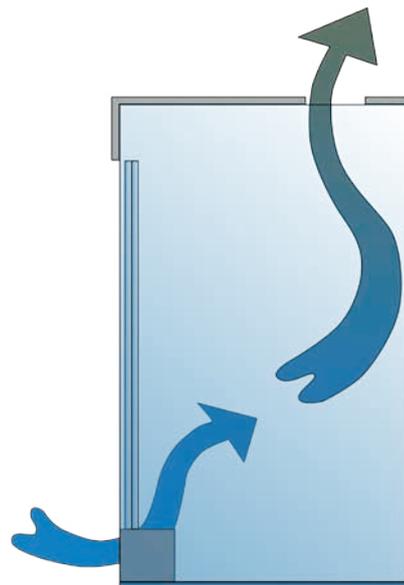




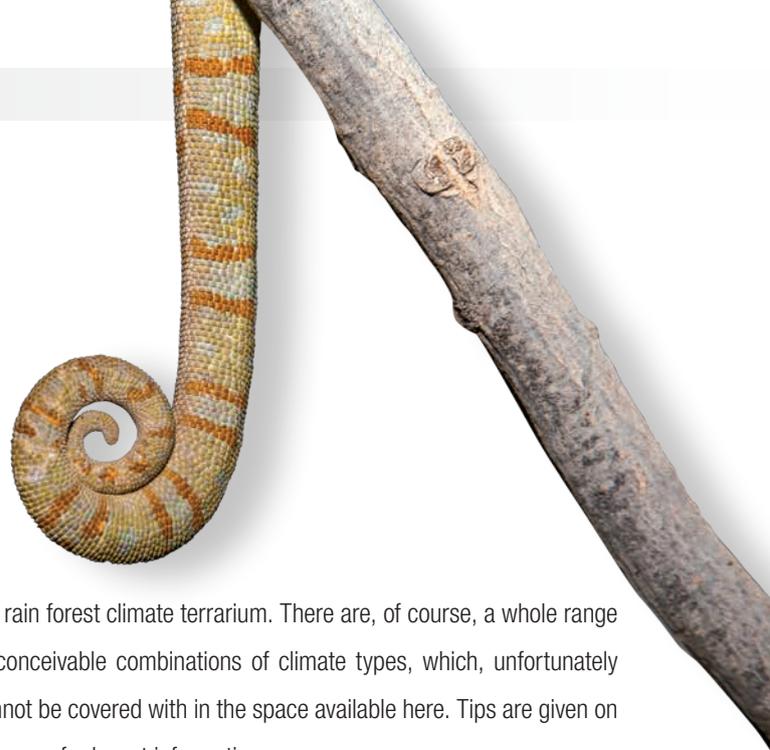
Ventilation

The need for fresh air and all other climatic factors vary significantly in accordance with their origin. Nowadays, the terrarium is usually ventilated through two air screens mounted on different sides which prevent stagnant air from accumulating. Fitting a ventilation grid under the front panes has the advantage of keeping the view into the terrarium unobstructed. The air in a terrarium heats up from the heating mats or cable on the floor, the lighting and the radiators and then rises subsequently. Some of the warm air escapes through the ventilation grids, usually in the top of the terrarium, allowing fresh air to flow in through the grid under the front panes. The air circulation helps keep the panels and furnishings dry. If there is no ventilation in the lower third of a humid terrarium, stuffy congested air saturated with moisture forms quickly, causing the front panes to fog. This is why aquariums are only suited for keeping animals from dry regions (e.g. leopard geckos) and not for setting up a rain forest terrarium unless ventilation slits are placed near the floor subsequently. If diurnal reptiles such as tortoises are kept in aquariums, large ventilation surfaces in the cover must stay open as well. This leads to a high loss of heat and moisture, which is why aquariums can only be recom-

mended without reservation for very few animals. In a terrarium, the optimum moisture can be achieved by increasing and decreasing the size of the ventilation openings. The heat does not escape as quickly and in as large amounts as from an open aquarium.



Types of terrariums



In the following, we would like to present two types of terrariums in detail – the desert terrarium and the rainforest terrarium – to illustrate the wide range of possible terrarium types. The paludarium or aqua-terrarium will also be mentioned as an interesting variation of

the rain forest climate terrarium. There are, of course, a whole range of conceivable combinations of climate types, which, unfortunately cannot be covered with in the space available here. Tips are given on sources of relevant information.





The desert terrarium

We humans generally think of the desert as a very hot habitat. When we take a closer look, though, we find that the habitats of reptiles in the desert are characterised by very high fluctuations in temperature, depending on where the animals are. At night, temperatures drop quite dramatically. Desert animals deliberately alternate between warm, sunny areas and cooler, shady places in their habitat in order to reach and maintain the temperature they need for metabolic processes and typical behaviour (courtship display, territorial battles, etc.).

It should be noted that desert animals in particular also need localised (!!) areas with temperatures of 50–60 °C in a terrarium, although they do not spend all day there. It goes without saying that the time spent under the source of heat is also influenced by the air temperature and wind movement in their natural habitat. In the spring when air temperatures are cool and the winds are strong, they often need to bask in the sun for extended lengths of time to reach their preferred temperature. In contrast, they avoid sunlight in the summer when the air temperature is 38 °C and there is no wind in order not to overheat above their optimal temperature (from 35–42 °C in many desert species). Therefore, the irregular distribution of heat is a very important factor in heating a terrarium. The animals must always be able to move to cooler places when they have warmed up sufficiently. By the careful selection of technical equipment and their use (e.g. never cover the entire floor of a terrarium with a heating system), the terrarium keeper must ensure that climate gradients are created in





the terrarium rather than a uniform sauna climate. Setting a temperature gradient in the terrarium is especially important in this context. No reptile can survive a core temperature of 48 °C.

A desert terrarium can be set up as follows: Any kind of sand is suitable as a floor covering. JBL offers red, yellow and white sand under the name of TerraSand. JBL TerraSand red is supplied damp and can be shaped while it is being spread. After drying, it hardens to a certain degree, thereby permitting burrowing animals to dig caves. Depending on the animals' needs, the terrarium can be structured with stone constructions with or without caves. Stone constructions should be glued together in the interest of the safety of the animals and the glass. This can be done by using non-toxic aquarium silicone such as JBL AquaSil. Weight may pose a problem with larger-sized stone constructions in a large terrarium. Stone imitations made of plastic which can be found in specialist shops are recommended in this case. Dry woods are also well suited as decorations in desert terrariums. Appropriate plants such as succulents or similar complete



the picture. Cacti should only be used in the form of copies made of plastic due to the potential risk of injury. In general, live plants barely stand a chance of survival if there are larger-sized, physically active animal species in the terrarium. Plastic imitations which are available in specialist shops are also well suited in this setting.





Light for the desert terrarium

The desert habitat is marked by its extreme amount of light. The ultraviolet light of the sun can reach the ground and the animals unchecked. Accordingly, desert animals need very bright light with a high concentration of ultraviolet light. The JBL SOLAR Reptil Sun fluorescent tube supplies 36 % UV-A / 8 % UV-B with T8 (63 % / 12 % with T5), the suitable intensive light for a flat desert terrarium. As fluorescent tubes with a high UV concentration only emit relatively little light in the visible range, a combination of full-spectrum tubes with a high concentration of visible light is urgently recommended. JBL SOLAR Reptil Jungle is the appropriate option here. It offers ample light of full-spectrum quality in the visible range with a low concentration of UV, namely 2 % UV-A and 0.5 % UV-B. A desert terrarium with a depth of approx. 50 cm can by all means be provided with suitable lighting by using 1–2 JBL SOLAR Reptil Sun tubes and 2–3 JBL SOLAR Reptil Jungle tubes. It is imperative to mount



the JBL SOLAR Reptil Sun inside the terrarium without having glass panes blocking light between the tubes and the animals. This is so the animals can effectively utilise the ultraviolet light. Otherwise, protection in the form of a wire screen can be mounted so the animals will not come into contact with the tube.

Metal halide lamps which also produce ultraviolet radiation and heat in addition to visible light, are even better than fluorescent lamps. JBL ReptilDesert L-U-W Light alu provides terrarium keepers with the best technical solution currently available for desert terrarium lighting that meets the natural needs of desert inhabitants.

Incidentally, invertebrates such as spiders and scorpions do not require any ultraviolet light, which can even be harmful to them. Here, JBL ReptilDesert or Jungle Daylight are the best option (energy-saving lamps without ultra-violet radiation).

2x JBL SOLAR Reptil Jungle
2x JBL SOLAR Reptil Sun with reflector



Heating in the desert terrarium

As already mentioned, desert animals associate heat with light, so that they automatically seek light spots to warm up. At the same time, a terrarium must also offer cool spots, where the animals can retreat after they have warmed up sufficiently. This is easier to do in a larger-sized terrarium than in a small one, which heats up completely within a relatively short period of time. Here is a suggestion for arranging heating means in a desert terrarium: Half of the floor can be covered with a JBL TerraTemp heatmat. The heating mat should never be placed in the middle. This is so the animals can retreat to the other half of the floor to find cooler temperatures. On the other hand, sun worshippers who like to burrow have the option of retreating from the heat by burrowing.

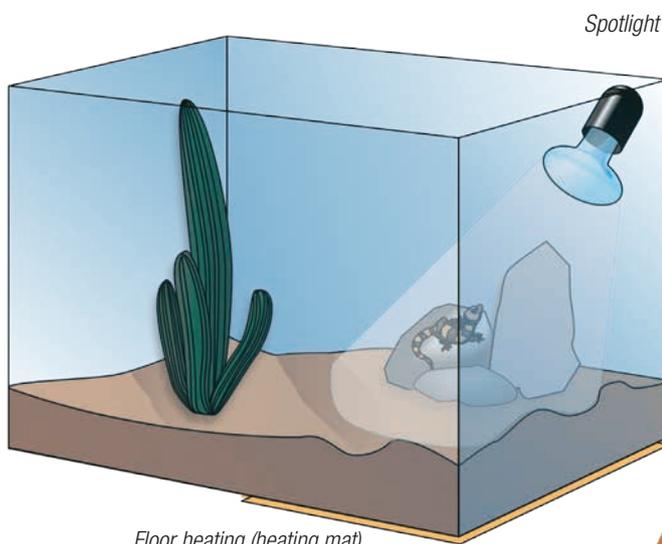
A spot light (halogen light with a reflector) is installed on the side with the heating mat to provide both heat and the necessary light. Again, it should not be installed in the middle, but instead, facing the side panel. As an added benefit, spotlights with colour-corrected glass also provide very natural appearing light with good colour rendering properties. This arrangement creates different temperature zones



from hot to temperate and also unheated ground. These in turn allow the animals to seek different temperature zones at will, similarly to their natural surroundings.

The ceramic heat lamp JBL ReptiHeat is suitable as source for radiant heat according to the chosen wattage, when safely installed with JBL TempSet (heat-resistant socket made of space shuttle material) or directly with socket and protective mesh (JBL TempSet Heat).

Red light bulbs or weak LEDs serve as moderate lighting for observing the animals at night.



Spotlight

Floor heating (heating mat)





A terrarium for sun-loving tortoises

It can principally be set up similarly to a desert terrarium. However, the floor covering should NOT consist of sand. Tortoises need a large surface to move around. The floor surface should be covered with an approx. 2 cm thick layer of JBL TerraBark. A cover can be produced with a large bent piece of cork. Stones and stone plates can be placed in the terrarium, but they must be without sharp edges. A heat lamp and a heat rock offer the required heat and are quickly

recognised as a favourite spot. A drinking bowl (JBL ReptilBar) and a food bowl for vegetarian food should be provided in a sufficiently large size. Please refer to the relevant literature and/or consult a specialist retailer for further details.



Animals for the desert terrarium



Bearded dragon
Pogona species

Type of terrarium	desert terrarium
Animal size	30-60 cm
Terrarium size	150x120x90 cm
Day temperature	28-30 °C
Night temperature	18-20 °C
Recommended heat source	JBL ReptilDesert L-U-W Light alu
Daytime humidity	50-60 %
Nighttime humidity	see day
Substrate	Washed river sand (JBL Sansibar RIVER)
Keeping in pairs/groups	groups
Activity day/night	day active
Main food	animal, vegetable
Complementary nutrition	4-5 times a week crickets
UV requirements	high
UV lighting	JBL ReptilDesert L-U-W Light alu
Lighting needs	12-14 h
Light source	JBL ReptilDesert Daylight (24 W) or JBL SOLAR REPTIL SUN
Special points	very trusting



Collared lizard
Crotaphytus bicinctores

Type of terrarium	dry terrarium
Animal size	approx. 35 cm
Terrarium size	150x60x90 cm
Day temperature	28-35 °C
Night temperature	20 °C
Recommended heat source	JBL ReptilDesert L-U-W Light alu
Daytime humidity	30 %
Nighttime humidity	70-80 %
Substrate	stone surface
Keeping in pairs/groups	pair/group (2f+1m)
Activity day/night	day active
Main food	grasshoppers, beetles, ants, spiders
Complementary nutrition	as well as wax worms, house crickets, flies and maggots
UV requirements	high
UV lighting	JBL ReptilDesert L-U-W Light alu
Lighting needs	10-12 h
Light source	JBL ReptilDesert Daylight (24 W) or JBL SOLAR REPTIL SUN
Special points	a water bowl is a must inside a terrarium



Berber skink
Eumeces algeriensis

Type of terrarium	dry terrarium
Animal size	42 cm
Terrarium size	150x100x60 cm
Day temperature	28-30 °C
Night temperature	18-20 °C
Recommended heat source	JBL ReptilDesert L-U-W Light alu
Daytime humidity	30-60 %
Nighttime humidity	see day
Substrate	sand (e.g. JBL TerraSand natural red)
Keeping in pairs/groups	single/pair
Activity day/night	day active
Main food	house crickets, crickets, mealworms
Complementary nutrition	now and then you also can offer them some sweet, soft fruit
UV requirements	high
UV lighting	JBL ReptilDesert L-U-W Light alu
Lighting needs	12-14 h
Light source	JBL ReptilDesert Daylight (24 W) or JBL SOLAR REPTIL SUN
Special points	skinks need bright lighting for 12-14 hours



Animals for the desert terrarium



Leopard gecko
Eublepharis macularius

Type of terrarium	dry terrarium
Animal size	20-25 cm
Terrarium size	120x80x50 cm
Day temperature	28-30 °C
Night temperature	118-23 °C
Recommended heat source	JBL TerraTemp heatmat
Daytime humidity	40-60 %
Nighttime humidity	60-80 %
Substrate	sand/clay mix
Keeping in pairs/groups	pair/group
Activity day/night	active at twilight/night
Main food	typical feeding insects
Complementary nutrition	only rarely baby mice, waxworms and mealworms
UV requirements	no
UV lighting	no
Lighting needs	12-14 h
Light source	JBL ReptilDesert Daylight (24 W)
Special points	males can be very aggressive to each other



Uromastyx
Uromastyx geyri

Type of terrarium	dry terrarium
Animal size	approx. 38 cm
Terrarium size	130x80x120 cm
Day temperature	30-35 °C
Night temperature	24-26 °C
Recommended heat source	JBL ReptilDesert L-U-W Light alu
Daytime humidity	50-60%
Nighttime humidity	see day
Substrate	sand/clay mix
Keeping in pairs/groups	pair
Activity day/night	day active
Main food	mainly vegetarian diet (lettuce,...)
Complementary nutrition	low animal diet (house crickets, crickets and grasshoppers)
UV requirements	high
UV lighting	JBL ReptilDesert L-U-W Light alu
Lighting needs	12-14 h
Light source	JBL ReptilDesert Daylight (24 W) or JBL SOLAR REPTIL SUN
Special points	The terrarium needs a temperature gradient, enabling areas of just under 30 °C



Red-kneed tarantula
Brachypelma smithi

Type of terrarium	dry terrarium
Animal size	max. 9 cm
Terrarium size	30x30x30 cm
Day temperature	26-28 °C
Night temperature	approx. 21 °C
Recommended heat source	JBL TerraTemp heatmat (at side or rear panel)
Daytime humidity	50 %
Nighttime humidity	slightly higher
Substrate	JBL TerraBasis or Humus (JBL TerraCoco Humus)
Keeping in pairs/groups	single
Activity day/night	active at twilight/night
Main food	live food (grasshoppers, crickets,...)
Complementary nutrition	for juveniles fly maggots
UV requirements	no
UV lighting	no
Lighting needs	12 h
Light source	JBL ReptilDesert Daylight (24 W)
Special points	highly voracious, protected by CITES Appendix II

Animals for the desert terrarium



Chuckwalla
Sauromalus obesus

Type of terrarium	dry terrarium
Animal size	45 cm
Terrarium size	150x80x60 cm
Day temperature	30-40 °C
Night temperature	approx. 20 °C
Recommended heat source	JBL ReptilDesert L-U-W Light alu
Daytime humidity	40-60 %
Nighttime humidity	see day
Substrate	sand (e.g. JBL TerraSand natural red)
Keeping in pairs/groups	pair/group
Activity day/night	day active
Main food	leaf vegetables
Complementary nutrition	now and then the chuckwallas receive blossoms and fruit
UV requirements	high
UV lighting	JBL ReptilDesert L-U-W Light alu
Lighting needs	12-14 h
Light source	JBL ReptilDesert Daylight (24 W) or JBL SOLAR REPTIL SUN
Special points	being desert dwellers, need very bright light and dry air



European tortoise
Testudo species

Type of terrarium	dry terrarium
Animal size	16-30 cm
Terrarium size	4-5 m ² x60 cm
Day temperature	20-30 °C
Night temperature	18-20 °C
Recommended heat source	JBL ReptilDesert L-U-W Light alu
Daytime humidity	60-80 %
Nighttime humidity	see day
Substrate	soil/sand mix (ratio 9:1)
Keeping in pairs/groups	group (2f+1m)
Activity day/night	day active
Main food	hay, grasses, carrots (JBL Herbil)
Complementary nutrition	fresh herbs
UV requirements	medium
UV lighting	JBL ReptilDesert L-U-W Light alu
Lighting needs	12-14 h
Light source	JBL ReptilDesert Daylight (24 W)
Special points	keep outside in summer (15 m ² per pair)



Leopard tortoise
Geochelone pardalis

Type of terrarium	semi-dry terrarium
Animal size	70 cm
Terrarium size	9-10 m ² x70 cm
Day temperature	20-30 °C
Night temperature	18-20 °C
Recommended heat source	JBL ReptilDesert L-U-W Light alu
Daytime humidity	60-80 %
Nighttime humidity	see day
Substrate	soil/sand mix (ratio 9:1)
Keeping in pairs/groups	group (2f+1m)
Activity day/night	day active
Main food	hay, fresh herbs, grasses (JBL Herbil)
Complementary nutrition	carrots
UV requirements	high
UV lighting	JBL ReptilDesert L-U-W Light alu
Lighting needs	12-14 h
Light source	JBL ReptilDesert Daylight (24 W) or JBL SOLAR REPTIL SUN
Special points	cover the terrarium with a canopy



The rain forest terrarium

We automatically associate the term “rain forest terrarium” with a jungle behind glass along with high humidity or high temperatures that more or less remain constant. Our concept here does not deviate as much from reality as it does when it comes to desert terrariums. In reality, the characteristic climate factors of a rain forest terrarium comprise relatively high temperatures of 25–30 °C with mild cooling-off at night and relatively high humidity between 70 and 90 %. The level of required humidity and temperature may vary from one species to the other. Obtaining corresponding information likewise forms a basis for successful reptile keeping that meets the individual needs of the species.

JBL TerraBasis or JBL TerraBark is ideally suited as a substrate. Rainforest terrariums should be generously planted. Please inform yourself as to which plants are suited for the terrarium climate you have selected. For example, if you plan to keep animals with adhesive pads (e.g. day geckos), the leaves of the plants should have smooth surfaces. Otherwise, the animals will adhere to the glass panes most of the time instead. The weight of the animals should also be taken into consideration when selecting the plants. Plastic plants should be used if you have relatively heavy animals such as tree pythons, which would crush live plants.

Water elements can also be integrated into the terrarium. In this case, it is important to make sure that the animals won't drown accidentally. The water should be kept shallow and have many places where the animals can easily get out. With some terrarium inhabitants, the terrarium shouldn't have any water elements whatsoever. Please consult your specialist dealer for further information. There is no need for a drinking bowl in a rain forest terrarium, as the animals cover their water needs with water droplets formed by the humidity.



Water falls can also be integrated into the terrarium. Not only are they decorative, they also effectively increase the moisture in the air. For example, chameleons prefer moving water as their source of water.

All kinds of moisture-resistant branches or cork bark are suited as structuring elements in a rain forest terrarium. Wood roots sold for use in aquariums (e.g. JBL Mopani, Opuwa or Mangrove) are ideally suited, as they won't get damaged by moisture. Branches decorated with air plants (bromeliads) are an eye-catcher in any rain forest terrarium. The side panels and rear panel can also be decorated when setting up the terrarium. This may be done by gluing flat stones, plant elements made of coconut fibre or your own creations made of processed Styrofoam covered with a primer and paint to the panels

later on. You can let your imagination run wild when setting up a rain forest terrarium. At the same time, though, you must always bear the animals' needs and requirements for easy cleaning in mind.





Light for rain forest terrariums

Sufficient light of full-spectrum quality, in particular, is needed for the numerous plants in a rain forest terrarium to grow.

This can be achieved in an ideal manner by using a suitable number of JBL SOLAR ReptilJungle tubes. As the abundant vegetation in a rain forest blocks the sun's rays, animals from the rain forest, especially amphibians, only need a comparatively small amount of ultraviolet light. The small UV concentration of JBL SOLAR Reptil Jungle is ideally suited for this setting.

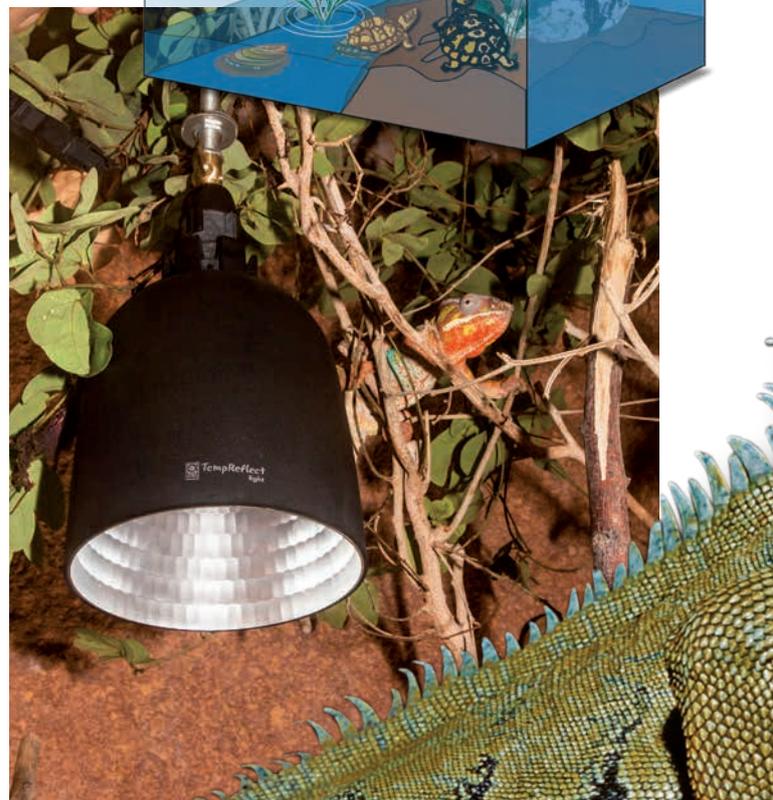
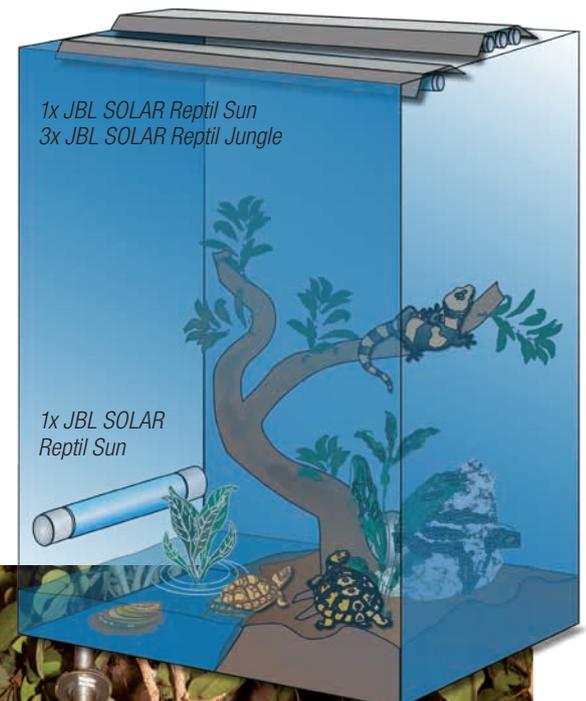
Metal halide lamps such as JBL ReptilJungle L-U-W provide the best lighting for a rain forest terrarium with diurnal animals which require ultra-violet light. They supply appropriate ultra-violet radiation and heat to meet the specific needs of the species in the terrarium in addition to a sunlight simulating full spectrum. Special electronic ballasts (JBL TempSet Unit L-U-W) are imperative when using metal halide lamps.

Lighting options with higher ultra-violet concentrations (JBL ReptilJungle UV 310 or JBL ReptilJungle L-U-W Light alu 70 W) should always be selected for animals that live in more open areas of the rain forest or next to water, such as turtles or tree-dwelling species which actively seek sunlight when necessary.

JBL also offers installation kits for lamps in terrariums with four different variations. As fittings are always mounted from the outside through the lid, there is also a version available with narrow Winsta connectors that fit through a small hole of 2.2 cm (JBL TempSet connect). A version with a swivel joint (JBL TempSet angle) enables the installation of lamps that can be orientated. UV-Spots, though, may not be operated at an angle and must always be mounted vertically. Always make sure to check an installation kit for absolute heat resistance in order to prevent any danger of overheating/fire. The JBL TempSets are all made of genuine SpaceShuttle material which cannot be damaged by heat.



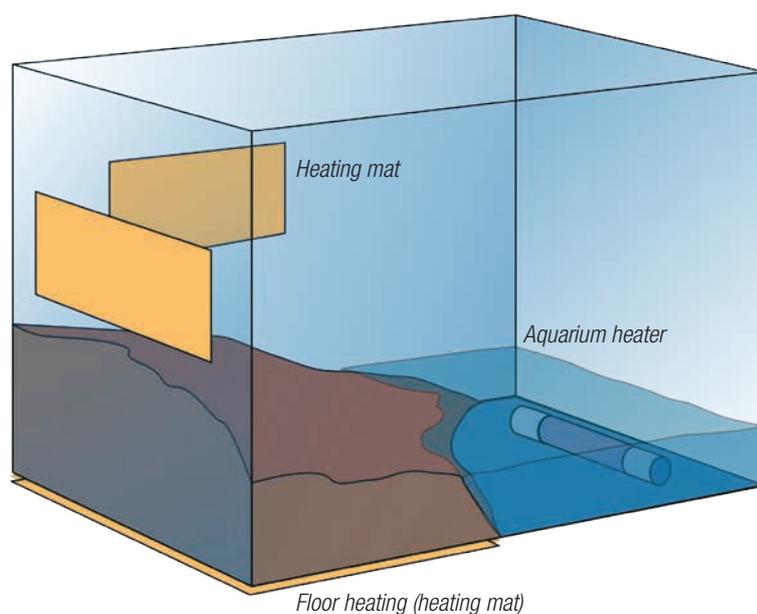
JBL's range includes the JBL TempProtect lamp shade with a protective screen to protect the animals and the terrarium keeper from heat injuries.



Heating in rain forest terrariums

“Mild” floor heating systems such as JBL TerraTemp heatmat are ideal for maintaining a relatively constant temperature in a rain forest terrarium.

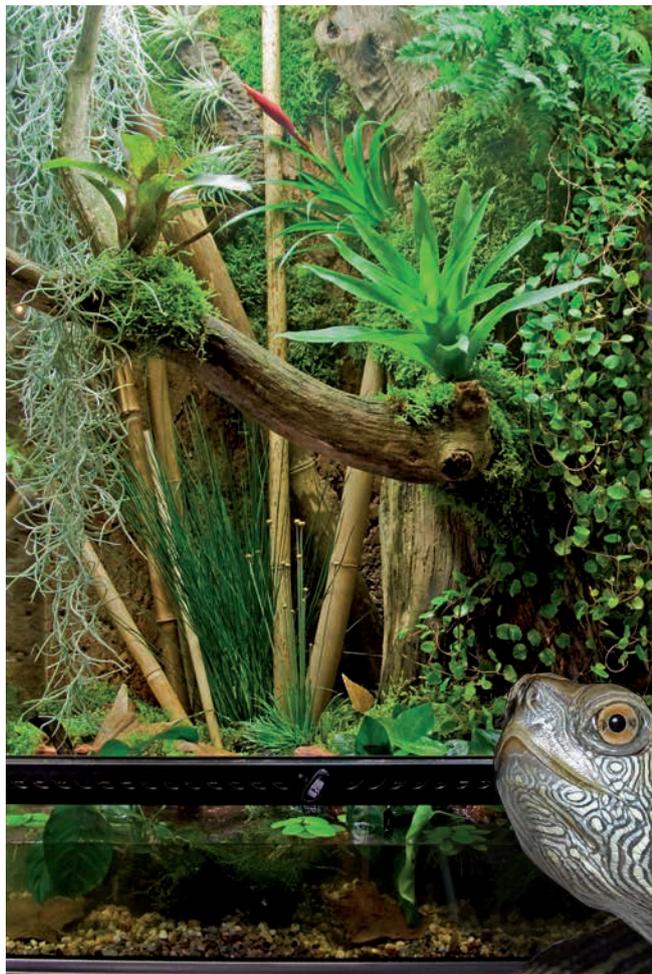
They cause tropical plants to develop so-called “warm” feet, which encourages growth. The lighting also helps to heat the rain forest terrarium from above. In larger-sized terrariums, there is also the option of placing additional heat mats on the outside of lateral surfaces which are not already covered by decorations from the inside if the desired temperature has not been reached. If larger-sized aquatic sections with or without a waterfall are integrated in the terrarium, an aquarium heating element (JBL ProTemp S) is highly recommended in the water section. If turtles or other tropical sun worshippers are being kept, a spotlight should also be installed as a light heat source for basking in the sun on the land section.





The aquatic terrarium or paludarium

The aquatic terrarium or paludarium (lat. Palus = swamp) is basically a rain forest terrarium combined with an aquarium. Breathing landscapes with waterfalls and streams can be built in large paludarium. The typical care, furnishings and technical equipment required for an aquarium also apply for the aquatic section of the paludarium. For more details please refer to the JBL homepage under "Essentials" and "Aquarium".



For turtles:

An aquarium with a large floor surface and low height is suitable. The depth of the water should correspond approximately to the length of the turtles' shell. Good quality of water can be achieved by filtering the water with an internal filter (JBL CristalProfi i) which can also be mounted inside the tank. Fresh tap water must be added to a water conditioner (JBL Biotopol T) which neutralises all of the harmful substances in the tap water.

The aquatic section is often difficult to plant, because the turtles like to eat a lot of plants items. The terrestrial section must be set up so the animals can climb up easily and provide enough space for all the animals at the same time. A terrestrial section can be made of cork, wood or rocks as well. A heat source should be mounted at a sufficient distance over the terrestrial part. Swamp plants are very well suited as decorations, even if the animals may nibble on the leaves occasionally. The water temperature of around 25 °C can be maintained constant by an automatic heating element (JBL ProTemp S). One-third of the water in the aquatic turtle terrarium should be changed weekly. JBL Sansibar River or medium-grained quartz gravel are recommended as a substrate.



Animals for the rain forest terrarium



Day gecko
Phelsuma madagascariensis

Type of terrarium	semi-humid terrarium
Animal size	24 cm
Terrarium size	90x90x120 cm
Day temperature	26-30 °C
Night temperature	18-23 °C
Recommended heat source	JBL ReptilDesert L-U-W Light alu
Daytime humidity	75-90 %
Nighttime humidity	90-100 %
Substrate	expanding humus made of coconut fibres (JBL TerraCoco)
Keeping in pairs/groups	pair
Activity day/night	day active
Main food	twice a week crickets/grasshoppers
Complementary nutrition	once a week fruit-based puree, feeding insects, dusted with minerals
UV requirements	high
UV lighting	JBL ReptilDesert L-U-W Light alu
Lighting needs	10-12 h
Light source	JBL ReptilDesert Daylight (24 W) or JBL SOLAR REPTIL SUN
Special points	feed the females crushed cuttlebones



Carolina anole
Anolis carolinensis

Type of terrarium	rainforest terrarium
Animal size	20 cm
Terrarium size	40x50x60 cm
Day temperature	28-30 °C
Night temperature	16-20 °C
Recommended heat source	JBL ReptilJungle L-U-W Light alu
Daytime humidity	60-70 %
Nighttime humidity	see day
Substrate	soil/sand mix (JBL TerraBasis)
Keeping in pairs/groups	pair/group
Activity day/night	day active
Main food	wax worms, flies, house crickets, crickets
Complementary nutrition	also without temperature reduction they don't mind a fasting period
UV requirements	high
UV lighting	JBL ReptilJungle L-U-W Light alu
Lighting needs	10-12 h
Light source	JBL ReptilJungle Daylight (24 W) or JBL SOLAR REPTIL SUN
Special points	males highly territorial



Veiled chameleon
Chamaeleo calyptrotus

Type of terrarium	semi-humid terrarium
Animal size	max. 60 cm
Terrarium size	120x60x150 cm
Day temperature	28-32 °C
Night temperature	18-25 °C
Recommended heat source	JBL ReptilDesert L-U-W Light alu
Daytime humidity	50-70 %
Nighttime humidity	see day
Substrate	soil or soil/peat mix
Keeping in pairs/groups	single
Activity day/night	day active
Main food	crickets, cockroaches, grasshoppers
Complementary nutrition	for females powdered minerals on food
UV requirements	high
UV lighting	JBL ReptilDesert L-U-W Light alu
Lighting needs	12-14 h
Light source	JBL ReptilDesert Daylight (24 W) or JBL SOLAR REPTIL SUN
Special points	beautifully coloured



Animals for the rain forest terrarium



Dyeing dart frogs
e.g. *Dendrobates tinctorius*

Type of terrarium	humid terrarium
Animal size	3-4 cm
Terrarium size	50x50x50 cm
Day temperature	23-27 °C
Night temperature	18-20 °C
Recommended heat source	JBL ReptiSpot HaloDym
Daytime humidity	80 %
Nighttime humidity	see day
Substrate	two layers: 1. gravel, 2. oak leaves
Keeping in pairs/groups	pair
Activity day/night	day active
Main food	springtails, fruit flies, aphids
Complementary nutrition	Frogs also like to eat micro crickets and house crickets
UV requirements	low
UV lighting	JBL ReptiSpot HaloDym
Lighting needs	10-12 h
Light source	JBL ReptiJungle Daylight (24 W) oder JBL SOLAR REPTIL JUNGLE
Special points	the frog's toxic secretion, which is ingested by the food (ants), is lost in captivity



Emperor scorpion
Pandinus imperator

Type of terrarium	semi-humid terrarium
Animal size	15-20 cm
Terrarium size	60x40x40 cm
Day temperature	29-31 °C
Night temperature	20 °C
Recommended heat source	JBL TerraTemp heatmat
Daytime humidity	60 %
Nighttime humidity	80 %
Substrate	soil/sand mix (JBL TerraBasis)
Keeping in pairs/groups	single/group
Activity day/night	nocturnal
Main food	typical feeding insects
Complementary nutrition	house crickets, field crickets,...
UV requirements	no
UV lighting	no
Lighting needs	8-10 h
Light source	JBL ReptiDesert Daylight (24 W)
Special points	the substrate needs to be 25-30 cm high because the scorpions like to dig deep caves



black millipede
Tachypodoiulus

Type of terrarium	tropical terrarium
Animal size	approx. 12 cm
Terrarium size	60x40x60 cm
Day temperature	25 °C
Night temperature	see day
Recommended heat source	JBL TerraTemp heatmat
Daytime humidity	80 %
Nighttime humidity	see day
Substrate	Moist sand soil (JBL TerraBasis)
Keeping in pairs/groups	
Activity day/night	
Main food	plants, JBL Agivert
Complementary nutrition	they eat earth when burrowing
UV requirements	no
UV lighting	no
Lighting needs	10-12 h
Light source	JBL ReptiDesert Daylight (24 W)
Special points	they have 41-56 body segments

Animals for the paludarium



Green iguana
Iguanidae

Type of terrarium	aqua-terrarium with 2/3 water
Animal size	100-200 cm
Terrarium size	200x200x200 cm
Day temperature	25-30 °C
Night temperature	22-25 °C
Recommended heat source	JBL ReptilDesert L-U-W Light alu
Daytime humidity	60-90 %
Nighttime humidity	see day
Substrate	sand/humus/peat mix
Keeping in pairs/groups	single/pair
Activity day/night	day active
Main food	80 % leaves, herbs, seedlings
Complementary nutrition	10-15 % carrots (grated), 5-10 % fruit
UV requirements	high
UV lighting	JBL ReptilDesert L-U-W Light alu
Lighting needs	12-14 h
Light source	JBL ReptilJungle Daylight (24 W) or JBL SOLAR REPTIL SUN the animals become remarkably tame and welcome people familiar to them by nodding their heads
Special points	



Garter snake
Thamnophis sirtalis

Type of terrarium	aqua-/semi-humid terrarium
Animal size	60-130 cm
Terrarium size	150x60x80 cm
Day temperature	26-27 °C
Night temperature	20-23 °C
Recommended heat source	JBL ReptilDay Halogen
Daytime humidity	50 %
Nighttime humidity	see day
Substrate	beech wood chips (JBL TerraWood) or round gravel
Keeping in pairs/groups	pair/group
Activity day/night	day active
Main food	fish (strips), naked mice
Complementary nutrition	juveniles every 5-6 days, adults once a week
UV requirements	no
UV lighting	no
Lighting needs	10-12 h
Light source	JBL ReptilJungle Daylight (24 W)
Special points	the terrarium needs to contain a water basin (25 °C) which will require daily cleaning



Slider turtle
Trachemys species

Type of terrarium	aquarium with 80 % water
Animal size	max. 40 cm
Terrarium size	100x40x40 cm
Day temperature	water: 24 °C
Night temperature	see day
Recommended heat source	JBL ReptilJungle L-U-W Light alu
Daytime humidity	
Nighttime humidity	see day
Substrate	sand (e.g. JBL Sansibar RIVER or JBL TerraSand natural red)
Keeping in pairs/groups	pair/group
Activity day/night	active at twilight/night
Main food	fish, large earthworms (JBL Turtle Food / JBL Agil etc.)
Complementary nutrition	possibly beef heart, cut into stripes
UV requirements	medium
UV lighting	JBL SOLAR REPTIL JUNGLE
Lighting needs	approx. 12 h
Light source	JBL ReptilJungle Daylight (24 W)
Special points	food supplement: only feed non-living food when the animal is used to it from an early age



Feeding terrarium animals

In order to keep terrarium pets healthy, it is vital that they are fed in accordance with the needs of their particular species. This is the only way to avoid deficiencies e.g. rickets or illnesses caused by malnutrition (fatty liver, renal gout). It is important to know the natural eating habits of the animals in order to provide a balanced diet. In a terrarium, many omnivores or opportunists especially like to eat types of food which they would rarely find in the wild, or only at certain times of the year. For example, some herbivores will also eat live food. If terrarium pets are given fully atypical food, for example, toast bread soaked in milk, cooked pasta, minced meat or cat food, a surprising number are certain to greedily devour this. However, not everything that the terrarium animals like to eat is good for their health. The reason why large common iguana do not eat cat food in the rainforest is not that the tins are hard to open, but simply because there is none there. Simply giving the animals their favourite food (he just loves to eat it) for convenience or out of excessive care is the wrong way to feed.

How often should the animals be fed?

There is no simple general answer to this question. The amount of food to give per meal and the intervals between feeds can vary widely according to the species. Of course, young animals usually need to be fed daily in the first few weeks, whereas adults only have to be fed 2-3 times a week. Depending on their age, snakes only need food at very long intervals, whereas the small colourful tree-climbing frogs (*Dendrobatidae*) develop serious problems after only a few days without food. The amount of food given should also be suitable for the pet. Many animals eat ahead so-to-speak so they will be ready for the annual dry

season in their natural habitat when food becomes scarce. Of course, they are not aware that there will be no food shortage in the terrarium and, as a result, do not stop eating ahead when their owner constantly feeds them too generously. This is why desert animals are at a far greater risk of developing fatty degeneration than rainforest animals. Overfed animals become sluggish, their sex organs may become fatty, leading to sterility, or they may even die from organ failure, e.g. when their liver stops functioning because too much fat has been stored.

Food for carnivores

Most terrarium animals are “animal eaters”, so-called because they eat whole, live animals. As they are “programmed” to particular stimuli, such as the movement of the live food or, in the case of snakes, the warmth of the small mammal or bird serving as the victim, they can rarely be trained to accept substitute food, with few exceptions. Snakes can often be successfully brought to accept dead prey if it is warmed to 37-40 °C (microwave) before being offered as food.

Nowadays, specialist pet shops offer a wide range of live food animals e.g. small mammals, grasshoppers, cockroaches, crickets, house crickets, flies, fruit flies, springtails, worms, mosquito larvae, wax worms or crustaceans. Compared with the vast range available in the wild, this is still a very moderate selection. To avoid deficiency symptoms, the type of food animals purchased should be changed frequently

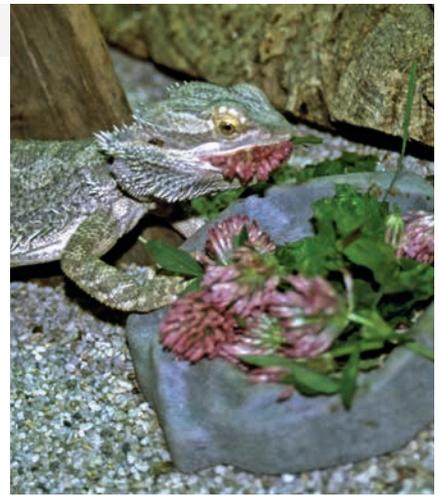
If, despite careful handling, a food cricket should escape, any free-roaming “creepy crawlies” can easily be caught by non-toxic means such as a glue sheet or a baited trap, JBL LimCollect.



A green tree python devouring a rat



Egg snake eating a quail egg



Some carnivores also like green food

instead of buying just one kind. Last, but not least, the food animals that are purchased should be improved by feeding with high-grade food prior to being fed to your terrarium pets. This can be done by feeding them up with high-grade food mixtures such as JBL TerraCrick, bran, herbs, fruit, vegetables and minerals, which significantly improves their nutritional value. Caution: You can NOT recognise the nutritional value of food animals from the outside! Namely, the herbs, minerals and dietary fibres which a cricket eats shortly before being fed, are indirectly eaten along with the “stuffed” insect by a carnivore which would normally not give vegetarian food a second glance. For those who don't want to touch the food animals or risk getting bitten by their terrarium pets when they bite their prey can use a pair of long pincers (JBL ProScape Tool P straight or slim line) to offer the live feed.

In summer, the menu offered to insect eaters can be improved and broadened to include meadow plankton which you can gather yourself. Of course, these should not be picked from areas with intensive agricultural cultivation using herbicides or similar. Likewise, protected species should be released if caught. Obtaining prior permission from the property owner may prevent trouble.

Food for vegetarians

Pets which are solely or primarily vegetarian, e.g. common iguana, chuckwallas or European tortoises, can also be fed with meadow plants (such as dandelion, clover, ribwort plantain), various salad plants and sprouting seeds, chopped vegetables or dried herb mixtures, straw and Lucerne pellets in a terrarium. JBL offers three high-grade readymade foods for vegetarian terrarium pets, JBL IGUVERT for iguana and JBL AGIVERT and JBL Herbil for tortoises. These foods intentionally contain only vegetable ingredients with a high fibre content and only little protein. Spiny-tailed lizards can also be fed various seeds, e.g. from the bird food shelves. As a rule, animals which are distinctly plant-eating need low-protein food that is rich in fibre and high in roughage to remain healthy.



Tortoises and iguanas eating meadow herbs





Food for turtles



Most pond turtles and other turtles are omnivorous, usually with a preference for anything “animal”. Fish and any kind of aquatic creature are among the favourite prey. Now and then, a dead fish is devoured. Turtles also like to eat some aquatic plants and other “greenery”. In contrast to most other terrarium animals, pond turtles and other turtles also eat “dead food” and can therefore readily be fed with dry food. JBL sells the widest range of turtle food that is specially formulated to meet the specific needs of turtles in terms of nutrition and physiology and even takes account of the animals’ sizes. Dried fish and crustaceans, along with algae, are the main ingredients.



JBL Turtle Food, a mixture of freshwater shrimp, other crustaceans and insects, is the classic amongst the food products. JBL Agil, a food in the form of floating sticks, and JBL Tortil, food tablets which sink in water, add variety to the diet. JBL Energil was specially developed for large, fully-grown pond turtles. It contains whole dried fish and crustaceans that turtles are unable to swallow in one piece,

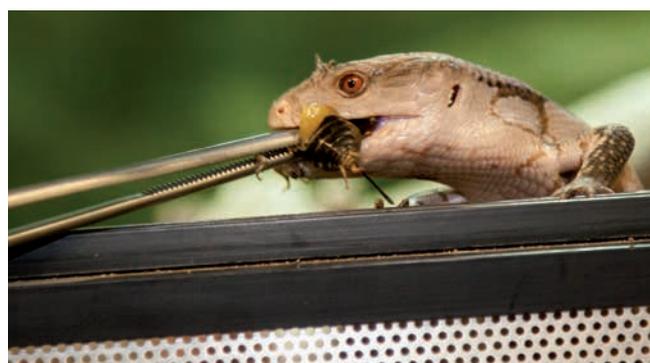
which encourages their natural feeding habits. And finally, there are JBL Rugil and JBL ProBaby for smaller turtles and baby turtles.



Vitamins and minerals

When food animals are purchased, they should always be coated with powder consisting of the right vitamin-mineral mixture for the age of the pet before they are fed. A vitamin-mineral mixture such as JBL TerraVit powder can be placed in a suitable container e.g. the JBL CrickBox and the desired amount of food animals added. Next, shake the whole mixture hard until the food animals are fully “coated” with the mixture. Then, they can be fed to the terrarium animals. Young animals in the growth phase need more vitamins such as JBL TerraVit powder than adult animals, which can be fed food animals that are only coated with calcium e.g. JBL MicroCalcium every so often. In addition, a few drops of a fluid vitamin solution e.g. JBL TerraVit fluid can be mixed into the drinking water to prevent deficiency symptoms. If certain animals such as snakes are only fed thawed

food animals, it is recommended to supplement the vitamin content of the food by squeezing some vitamin drops such as JBL TerraVit fluid into the thawed food animals shortly before they are fed, as vitamins are gradually destroyed when food is kept frozen for a long period of time. JBL Tortoise Sun Terra is specially formulated for tortoises. It is mixed into the animals’ drinking water or bath water (young tortoises should by all means be bathed once a week in the first weeks). Vitamins such as JBL Tortoise Sun can be administered with the food. This can be done by dripping a few drops on the food sticks, making sure to observe the dosage instructions, and then waiting until they have been absorbed. When giving any vitamins, it is always important to follow the dosage instructions, as an overdose (hypervitaminosis) causes organ damage.





Cleaning



Of course, the time spent daily cleaning a terrarium primarily depends on the type of and number of animals being kept. Snakes that only need to be fed every 2-3 weeks or single animals generally produce far less dirt than animals that need to be fed daily or large groups, such as the hundreds of young frogs which need to be reared when breeding frogs. A terrarium should not be overloaded with decorative objects to the point of confusion and the fittings and decorations should be practical and removable so that a terrarium can be kept clean without difficulty. The growth on the glass panes of aquarium tanks for aquatic amphibians e.g. axolotl or clawed frogs can be removed by algae magnets, JBL Floaty, or door handle cleaners or JBL Aqua-T-Handy, similar to a fish tank. JBL's microfibre cloth (& sponge), JBL WishWash T, is very effective here, as it doesn't spread dirt and instead removes it. Dried food remains and excrement in dry terrariums can be vacuumed easily or collected with a pair of pincers such as ProScape Tool P and tongs such as JBL Combi-Fix. In wetland terrariums, they usually have to

be "scooped out" with some surrounding substrate. Excrement sticking to decorative objects can usually be removed with a brush under hot water. The glass panes should not be cleaned with aggressive chemicals, as residues can cause poisoning. A brush, sponges, blade cleaners and luke-warm water will do to remove any stubborn dirt. Unsightly limescale rings should be removed with gentle "biological" cleaners such as JBL Bio-Clean T glass cleaner. Only a few minutes cleaning each day are adequate to guarantee proper hygienic conditions for your pets in their terrarium or aquarium. If cleaning is put off too long, the terrarium or aquarium may have to be emptied completely and re-filled, and there may even be unnecessary losses.

The usual cleaning procedure for aquariums should be followed for larger-sized water tanks, both with and without a waterfall in a rainforest terrarium. For more details please refer to the JBL homepage under "Essentials" and "Aquarium".



Useful utensils

Pincers like ProScape P or tongs like JBL CombiFix can be used to remove excrements remains, dead animal food or other items you do not wish to touch with your bare hands.

Nets such as the JBL fish net are convenient for catching agile animals in the water or terrarium, or even in a room, without harming them.

Thermometers such as the JBL Digital Thermometer and hygrometers are used to check the climate values in a terrarium.

Objects can be disinfected using 70 % alcohol. The object to be cleaned should be completely immersed in the alcohol and left to soak for at least 5 minutes. Nets can also be soaked in a bucket containing JBL Desinfekt.

Terrarium locks, i.e. JBL TerraSafe, can be positioned between the sliding panes to prevent any unauthorised persons, such as small children or even animals, from opening the terrarium.



JBL CombiFix



JBL TerraControl Solar



JBL WishWash



JBL Clean T



JBL Terra Safe



JBL Spongi



JBL ProScape P



Health



Terrarium pets can also become ill. For one, newly acquired pets may be infected with germs or parasites. Often, diseases only break out some time after the animals have been purchased, as changes of habitat are stressful. If climatic conditions in a new terrarium are not optimum, this may also weaken the immune system and cause a shift in balance between the host and the germs, leading to an outbreak of disease. If the pets show any external signs of change, or any noticeable changes in behaviour, a vet with experience in herpetology must be consulted without delay. As different germs or parasites can produce similar symptoms, clear diagnosis of the cause of the disease can only be made after precise tests have been carried out. Tests also indicate the resistance of the germs, so that the most effective medicine can be prescribed for the treatment. In general, the sooner treatment is started, the better the chances of a cure. Once a pet's reserves have been exhausted or its physical decline has reached an advanced stage, even major efforts to restore the animal's strength will no longer help.

Quarantine

Accordingly, new pets should be kept in a quarantine tank with optimal nutritional and climatic conditions first and observed for a while. During this quarantine period, samples of excrement should be taken (at intervals of several days) and submitted to a veterinarian or a veterinary clinic for examination, as it is always better to take precautions than to treat diseased animals, especially if one has a number of other pets already. If pathogens or parasites are found in the faecal matter, the dosage instructions and duration of medical treatment prescribed by the veterinarian must be adhered to carefully. Namely, the slogan "more is better" often leads to the loss of pets as a result of organ failure, while insufficient doses and premature discontinuation of the treatment causes the pathogens to become resistant.



Selecting the animals

Pets should be examined carefully before purchase in order to keep the risk of disease down to an absolute minimum. The following points should be kept in mind:

- **Checking the mouth:**

The mouth should be closed and free of foam or slimy films.

- **Checking the eyes:**

Shedding should be complete, the eyes should not be too deep in the sockets.

- **Checking the skin:**

Check for wounds, boils and other irregularities.

- **Checking the feet:**

Check the toes and feet of lizards for unshed skin which can cause constrictions.

- **Checking the shell of a turtle:**

Only very young turtles should have soft shells.

- **Checking nutritional condition:**

The skin should not have too many folds and the ribs or vertebrae should not be too prominent.

- **Checking a spider:**

It should have all 8 legs. Whitish, fungus-like areas on the body are suspicious, whereas a "bald patch" on the abdomen presents no problem.





Anole species

Light with UV for tropical forest animals

Tropical rain forest, dry forest & swamp areas

Many forest animals receive a relatively large amount of UV light due to the way they live e.g. in the treetops or on the river bank.

Advantage: Heat can be controlled to suit individual needs e.g. at a specific place by a spot lamp.

Permanent lighting with no heat emission

bright, promotes plant growth



Light	Heat	UV-B
+	-	+

JBL SOLAR ReptilJungle

Fluorescent tube containing UV

- Even illumination
- Bright
- Moderate energy consumption



Light	Heat	UV-B
+	-	++

JBL ReptilJungle UV 190/UV 310

Energy-saving lamps with a high UV concentration

- Bright
 - Low energy consumption
- UV 190 (small tropical terrariums): ideal for a distance of 20 cm
UV 310 (large tropical terrariums): ideal for a distance of 30 cm



Basilisks



Chinese water dragons



Day geckos



Red-footed tortoises



Terrapins



Argentine Tegu



Green iguanas



Dwarf day geckos

Permanent lighting with heat emission

bright, promotes plant growth (contains UV)



Light	Heat	UV-B
++	++	++

JBL ReptilJungle L-U-W Light alu

Aluminium LUW wide-beam spotlight

- Very bright
 - Good source of heat
- 35 W, 4000K (small tropical terrariums): ideal for a distance of 30 – 60 cm
50 W, 4000K (middle tropical terrariums): ideal for a distance of 40 – 60 cm
70 W, 4000K (large tropical terrariums): ideal for a distance of 40 - 80 cm



Light	Heat	UV-B
+	++	++

JBL SOLAR UV-Spot plus

UV spot lamp with daylight spectrum

- 80 W, 100 W, 160 W
- Very bright
- High UV
- Good source of heat



Hinged tortoises



Cooter turtles



Yemen Chameleons



Flap-necked chameleons



Axolotls (temperate waters)

Light without UV for tropical forest animals

Tropical rain forest & dry forest

Some tropical forest animals live on the ground or in the shade and need no UV light. Sometimes it can even be harmful to such species.

Permanent lighting with no heat emission

bright, promotes plant growth



Light	Heat	UV-B
++	-	-

JBL ReptilJungle Daylight

Energy-saving lamp with no UV
24 W

- Bright
- Low energy consumption



Light	Heat	UV-B
+	-	-

JBL SOLAR Natur/ Tropic

Fluorescent tubes without UV

- Even illumination
- Bright
- Moderate energy consumption



Newts (temperate waters)



Red-eyed tree frogs



Poison dart frogs



Dyeing poison frogs



Tree frogs



Tree pythons



Royal pythons



Corn snakes

Permanent lighting with heat emission

bright, promotes plant growth



Light	Heat	UV-B
++	++	-

JBL ReptilDay Halogen

Halogen spot lamp without UV,
2900K
35 W, 50 W, 75 W, 100 W

- Bright
- Low energy consumption
- Dimmable



Light	Heat	UV-B
++	++	+

JBL ReptilSpot HaloDym

Special lamp made of neodymium
glas, 2700 K, UV-A percentage
28 W, 42 W, 70 W

- Even illumination
- Bright
- Moderate energy consumption



Tarantulas



Scorpions



Leaf insects (Phasmatodea)



Praying mantis



Tree frogs

Light for animals that are active at dusk and at night

Many of these animals getting active, as soon as the UV radiation during the day decreased at dawn. During the day please illuminate with light including UV (see: „light with UV“)

Dusk and night time lighting with no heat emission



Light	Heat	UV-B
+	-	++

JBL ReptilJungle UV 190

Energy-saving lamp with no UV
15 W, 23 W

- Bright
- Low energy consumption
- UV suitable for a distance of 20 cm



Light	Heat	UV-B
++	-	-

JBL ReptilJungle Daylight

Energy-saving lamp with no UV
24 W

- Bright
- Low energy consumption



Red-eyed treefrogs



Horned frogs



Leopard geckos



Bibron's geckos



House geckos



Boa constrictors



Mangrove tree snakes



Milk snakes

Dusk lighting with heat emission



Light	Heat	UV-B
++	++	-

JBL ReptilDay Halogen

Halogen spot lamp without UV,
2900K
35 W, 50 W, 75 W, 100 W

- Bright
- Low energy consumption
- Dimmable



Green tree pythons



Tokay geckos



Centipedes



Thick tail scorpions



Rock lizards

Light with UV for desert animals

The advantage: Heat zones can be set up selectively so that the animals are also able to seek cooler areas!

In addition to needing large amounts of light and UV, diurnal animals from deserts and steppes often need warm spots as well, which they seek actively. As light is associated with heat, they automatically look for spots with radiation.



Spiny-tailed iguanas



Collared lizards



Tortoises



Monitor lizards



Bearded dragons



Leopard tortoises

Permanent lighting with no heat emission

bright, promotes plant growth



Light	Heat	UV-B
++	-	++

JBL SOLAR Reptil Sun

Fluorescent tube containing UV

- Even illumination
- Bright
- Moderate energy consumption



Light	Heat	UV-B
+	-	++

JBL ReptilDesert UV 300/UV 480

Energy-saving lamps with a high UV concentration

- Bright
 - Low energy consumption
- UV 300 (small desert terrariums):
Ideal for a distance of 7.4 cm
- UV 480 (large desert terrariums):
Ideal for a distance of 10 cm

Permanent lighting with heat emission

bright, promotes plant growth



Light	Heat	UV-B
++	++	++

JBL ReptilDesert L-U-W Light alu

Aluminium LUW wide-beam spotlight

- Very bright, high UV
- Good source of heat

35W, 6000K (small desert terrariums):
ideal for a distance of 20 - 50 cm

50 W, 6000K (middle desert terrariums):
ideal for a distance of 30 - 50 cm

70W, 6000K (large desert terrariums):
ideal for a distance of 30 - 70 cm



Light	Heat	UV-B
+	++	++

JBL SOLAR UV-Spot plus

UV spot lamp with daylight spectrum

80 W, 100 W, 160 W

- Very bright
- High UV
- Good source of heat



Dab lizards



Rainbow lizards



Yellow-headed agamas



Filled-neck lizards



Girdled lizards



Bedriaga's skinks



The right heat for your terrarium

Heat for tropical forest animals

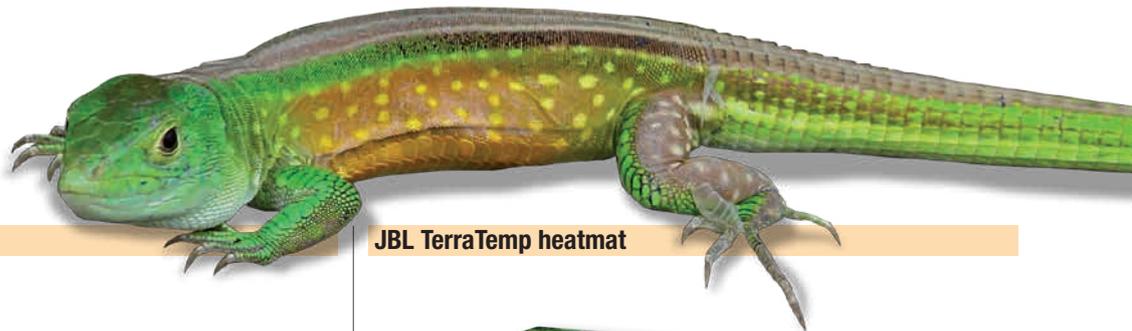
Tropical forest inhabitants usually need high temperatures during the day and somewhat lower temperatures at night (e.g. Amazon basin 32 °C day/ 23 °C night – no lower!). Temperatures can be lowered at night by turning off heat-emitting lighting during the day.

Heat for reptiles active at dusk and night

Nocturnal animals from tropical forests need higher night time temperatures (between 23 °C and 30 °C), than those from deserts, which prefer a night time temperature between 15 °C and 22 °C.

Heat for desert animals

Desert animals are adapted to temperatures that are high during the day and often low at night. If they get too warm during the day, they must be able to seek refuge in cooler spots in the terrarium.



JBL ReptilHeat



Ceramic heat lamp (dimmer lamp)
60 W, 100 W, 150 W

- Natural heat from above
- No visible light



JBL TerraTemp heatmat



Heating pad
8 W, 15 W, 25 W
Thermal radiation (infrared) for animals and plants.
Self-adhesive for mounting on the outside of the terrarium.





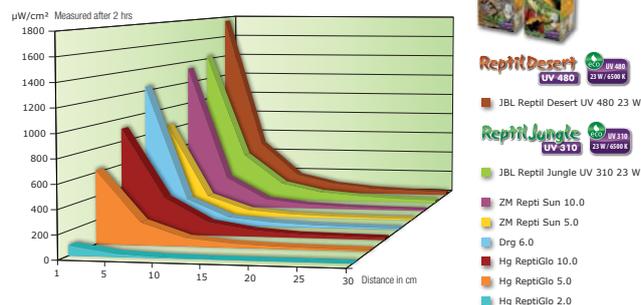
Overview of JBL terrarium lights

JBL Product	Type of lamp	Light	UV-A	UV-B	Heat
JBL ReptilJungle Daylight	Energy-saving lamp	++	-	-	-
JBL ReptilJungle UV 190	Energy-saving lamp	+	++	++	-
JBL ReptilJungle UV 310	Energy-saving lamp	+	++	++	-
JBL ReptilDesert Daylight	Energy-saving lamp	++	-	-	-
JBL ReptilDesert UV 300	Energy-saving lamp	+	++	++	-
JBL ReptilDesert UV 480	Energy-saving lamp	+	++	++	-
JBL SOLAR UV-Spot plus	UV-Spot lamp	+	++	++	++
JBL ReptilJungle L-U-W Light alu	Metal halide lamp	++	++	++	++
JBL ReptilJungle L-U-W Light alu	Metal halide lamp	++	++	++	++
JBL ReptilDay Halogen	Halogen lamp	++	-	-	++
JBL ReptilSpot HaloDym	Neodymium/Halogen lamp	++	+	-	++
JBL SOLAR Reptil Sun	Fluorescent tube	+	++	++	-
JBL SOLAR Reptil Jungle	Fluorescent tube	+	+	+	-

++ high + medium - zero

Comparison of JBL Reptil Jungle/Desert UV energy-saving lamps with competitor products

The JBL lamps achieve the best UV-output in comparison



Accessories

JBL TempSet

- basic
- angle
- angle+connect



Installation kits:

specifically designed for high temperature lamps such as ceramic lamps or spots.

Easy to install.

Comes with an E27 socket for lamps of up to 250

JBL TempSet Unit L-U-W



Installation kit L-U-W:

For the safe operation of metal halide lamps in terrariums.

Comes with an electronic control ballast.

For 35 W, 50 W, 70 W

JBL TempProtect light



Reptile thermal burn protection for JBL TempSets

JBL TempReflect light



Reflector screen for energy-saving lamps

JBL TerraControl



Thermometer and hygrometer

2 separate instruments that reliably measure and display air humidity (0–100 %) and temperature (-30 to +60° C

JBL TerraControl Solar



Solar-powered thermometer & hygrometer Swivelling digital thermometer and hygrometer with an extremely powerful solar cell that requires very little light to function in all terrariums. Temperature range: - 30 to +50 °C Humidity range: 20–99 %



The right food for your turtles and tortoises



European tortoises

Staple food



JBL Herbil
Complete food for tortoises
Green food pellets with minerals and vitamins for all tortoise species

Supplement to staple food: Salad (not lettuce), dandelion, wild herbs, clover, chickweed



JBL Agivert
Pure vegetable food sticks
Healthy growth without shell problems
Multivitamin complex and stabilised Vitamin C for increased resistance

Supplementary food: Cucumber, Apple, Zucchini, Carrot,
Not suitable: Tomato, Banana, Citrus fruit, Food containing meat

Care products

Substrate

JBL TerraBasis mixed 50 : 50
with JBL TerraBark 5-10



Health care

JBL Tortoise Shine
shell care, combats parasites

JBL Tortoise Sun Terra
multivitamin preparation

JBL MicroCalcium
ideal calcium supply

JBL Biotopo! T
drinking water conditioner for terrarium animals



Testudo hermanni boettgeri



Testudo marginata



Testudo greaca iberia



Testudo hermanni hermanni

Tropical tortoises – Rainforest

Staple food



JBL Herbil
Complete food for tortoises
Green food pellets with minerals and vitamins for all tortoise species



JBL Agivert
Pure vegetable food sticks
Healthy growth without shell problems
Multivitamin complex and stabilised Vitamin C for increased resistance



Geochelone carbonaria

Supplement: Fruit, bananas, green plants, wild herbs
Not suitable: Citrus fruit, food containing meat

Care products

Substrate

JBL TerraBasis mixed 30 : 70
with JBL TerraBark 10-25



Health care

JBL Tortoise Shine
shell care, combats parasites



JBL Tortoise Sun Terra
multivitamin preparation

JBL MicroCalcium
ideal calcium supply



JBL Biotopol T
drinking water conditioner for terrarium animals



Geochelone denticulata

Tropical tortoises – Arid regions

Staple food



JBL Herbil
Complete food for tortoises
Green food pellets with minerals and vitamins for all tortoise species



JBL Agivert
Pure vegetable food sticks
Healthy growth without shell problems
Multivitamin complex and stabilised Vitamin C for increased resistance



Geochelone pardalis babcocki



Geochelone elegans

Supplement: Hay, rucicola, wild herbs, apples, pears
Not suitable: Citrus fruit, food containing meat

Care products

Substrate

JBL TerraBasis mixed 20 : 80
with JBL TerraSand



Health care

JBL Tortoise Shine
shell care, combats parasites



JBL Tortoise Sun Terra
multivitamin preparation

JBL MicroCalcium
ideal calcium supply



JBL Biotopol T
drinking water conditioner for terrarium animals



Geochelone sulcata



Geochelone radiata



Turtles (swamp areas)

Staple food



JBL ProBaby
Special food for young turtles

JBL Rugil
Food sticks for small turtles

JBL Turtle Food
Staple food for all turtles

JBL Gammarus
Washed water fleas, staple food for all turtles

Supplementary food



JBL Tortil
Food tablets for turtles

JBL Energil
Treats containing fish and shrimp

JBL Calcil
Mineral food sticks for tortoises

JBL Agil
Food sticks for tortoises

Rain worms, red mosquito larvae (JBL NovoFil), tubifex (JBL NovoFex), fish, slug and shellfishmeat, mosquito larvae and tubifex as frozen food, baby mice, sweet fruit



Emys orbicularis



Terapene major



Mauremys japonica



Terapene carolina

Care products

Equipment

Ratio land 25 % & water 75 %
Coarse gravel, wood roots (mangroves), sepi shells
Strong filter, heater

Health care

JBL Tortoise Sun Aqua - multivitamin preparation
JBL Easy Turtle - removes unpleasant odours in turtle terrariums
JBL Biotopol T - drinking water conditioner for terrarium animals



Tropical turtles (swamp areas)

Staple food

- Fruit (except citrus fruit)
- Slugs
- Baby mice
- Rain worms
- Fish

Supplementary food



JBL Gammarus
Washed water fleas, staple food for all turtles

JBL Energil
Treats containing fish and shrimp

JBL Turtle Food
Staple food for all turtles

JBL Rugil
Food sticks for small turtles



Rhinoclemmys pulcherrima



Rhinoclemmys punctularia

Care products

Substrate

JBL TerraCoco mixed 20 : 80 with JBL TerraBark 10-20
Ratio land 90 % & water 10 %

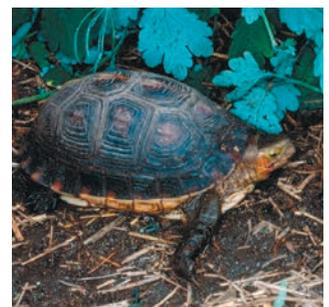


Health care

JBL Tortoise Shine - shell care, combats parasites
JBL Tortoise Sun Terra - multivitamin preparation
JBL Biotopol T - drinking water conditioner for terrarium animals
Sepia shells



Heosemys grandis



Cuora flavomarginata

Turtles

Staple food



JBL ProBaby
Special food for
young turtles



JBL Rugil
Food sticks for
small turtles



JBL Turtle Food
Staple food for all
turtles



JBL Gammarus
Washed water
fleas, staple food
for all turtles



JBL Agil
Food sticks for
tortoises

Supplementary food



JBL Tortil
Food tablets for
turtles



JBL Energil
Treats containing
fish and shrimp



JBL Calcil
Mineral food sticks
for tortoises

Rain worms, fish, slug and shell-
fishmeat, red mosquito larvae
(JBL NovoFil), tubifex, (JBL No-
voFex), live flea shrimp



Sternotherus carinatus



Platemys platycephala



Pseudemys concinna



Chinemys reevesi

Care products

Equipment

Ratio land 25 % & water 75 %

Coarse gravel, wood roots (mangroves), sepiia shells

Strong filter, heater

Health care

JBL Tortoise Sun Aqua - multivitamin preparation

JBL Easy Turtle -
removes unpleasant odours in turtle terrariums

JBL Biotopol T -
drinking water conditioner for terrarium animals





Substrates for the bottom of the terrarium



JBL TerraBasis

Indian python/royal python, corn snake, pilot black snake, Arizona king snake, water agama, mountain dragon, anolis, common iguana, garter snake, tortoise, tree frog, toad, dart frog, red-bellied toad, hairy mygalomorph, emperor scorpion, Madagascar day gecko, chameleon



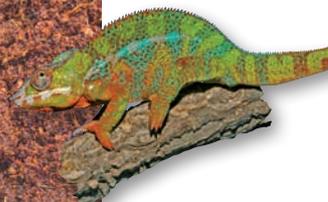
JBL TerraCoco

Giant boa and python species, large monitor species, large water agama, large common iguana



JBL TerraCoco Compact

Dry as for TerraCoco, wet as for TerraBasis



JBL TerraCoco Humus –

Indian python/royal python, corn snake, pilot black snake, Arizona king snake, water agama, mountain dragon, anolis, common iguana, garter snake, tortoise, tree frog, toad, dart frog, red-bellied toad, hairy mygalomorph, emperor scorpion, Madagascar day gecko, chameleon



JBL TerraWood

Giant boa and python species, large monitor species, large teju, large water agama, large common iguana



In addition to the lighting the substrate is one of the most important factors for a near-natural care of animals in the terrarium. Mixtures of two different bottom substrates are often ideal. It's really important to select a bottom substrate which is suitable for your purpose.



Suited for rainforest terrariums



Suited for desert terrariums



JBL TerraSand – white

Bearded dragon, leopard lizard, rubber snake and Turkish sand boa, horned toad, common agama, desert iguana, spiny lizard, ridge-tailed monitor, mastigure, rainbow curly-tailed lizard, desert scorpion



**JBL TerraSand – yellow
JBL TerraSand – red**

Bearded dragon, leopard lizard, rubber snake and turkish sand boa, horned toad, common agama, desert iguana, spiny lizard, ridge-tailed monitor, mastigure, rainbow curly-tailed lizard, desert scorpion



JBL TerraBark – pine bark 2-10 mm

Indian python/royal python, corn snake, pilot black snake, Arizona king snake, water agama, mountain dragon, anolis, common iguana, garter snake, tortoise, tree frog, toad, dart frog, red-bellied toad, hairy mygalomorph, emperor scorpion, Madagascar day gecko, chameleon



JBL TerraBark – pine bark 10-20 mm

Arizona king snake, water agama, mountain dragon, anolis, common iguana, garter snake, tortoise, tree frog, toad, dart frog, red-bellied toad, hairy mygalomorph, emperor scorpion, Madagascar gecko, chameleon



JBL TerraBark – pine bark 20-30 mm

Boas, pythons, water agamas, monitors, common iguanas and large tortoises





Research results

Since 2001 JBL has been undertaking its own research expeditions to the original homes of our terrarium dwellers. With the help of measuring instruments all biotope data is logged and measurement errors are eliminated by the multiple measurements of the expedition members.

Don't forget that measuring results made with different manufacturers' devices are not easily comparable! And devices with sensors are a particular problem: a UV-B sensor made by Gröbel (Radiometer RM 12) indicates another value than – let's say - the popular solar meter from USA's Solartech Inc. during the measurement. The reason is NOT the inaccuracies of the measurement or the bad quality of the devices but the "response characteristic" of the sensors:

NO UV sensors start abruptly at e.g. 315 nm; they slowly increase at 280 nm to a maximum at 300 nm and then slowly drop to 315 nm again. Their response characteristic corresponds to a wave. Other devices also show a wave structure but a more steeply increasing or decreasing one. That's how it can come to MASSIVE differences in the results.

We have made a key observation after twelve expeditions around the world: the data varies from year to year, but more from season to season. In the rainy season biotope surveys naturally result in different values than during the dry season. But microhabitats also play an important role: a clearing in the rainforest can drastically change the climatic values compared to a shady location under a dense tree population, although they are only 100 m apart.



UV measurements

South America, Rio Negro near Barcelos, April 2009

Hour	Weather	UV-A mW/cm ²	UV-B mW/cm ²
7:00	cloudy	0,2	0,0
9:00	partially cloudy	1,3	0,04
10:00	partially cloudy	1,9	0,06
12:00	cloudy	2,2	0,09
16:00	cloudy	0,3	0,0

Vietnam, Nha Trang, May 2013

Hour	Weather	UV-A mW/cm ²	UV-B mW/cm ²
15:00	partially cloudy	0,5	1,51

For comparison Germany, Neuhofen June 2013

Hour	Weather	UV-A mW/cm ²	UV-B mW/cm ²
15:00	partially cloudy		0,82

Australia, Atherton Tablelands, October 2015

Hour	Weather	UV-A mW/cm ²	UV-B mW/cm ²
16:00	cloudless	0,61	0,12

Australia, Outback near Kata Tjuta, October 2015

Hour	Weather	UV-A mW/cm ²	UV-B mW/cm ²
8:30	cloudless	1,9	0,46
9:30	cloudless	2,05	0,54
11:00	cloudless	2,26	0,68
12:00	cloudless	3,36	1,28*

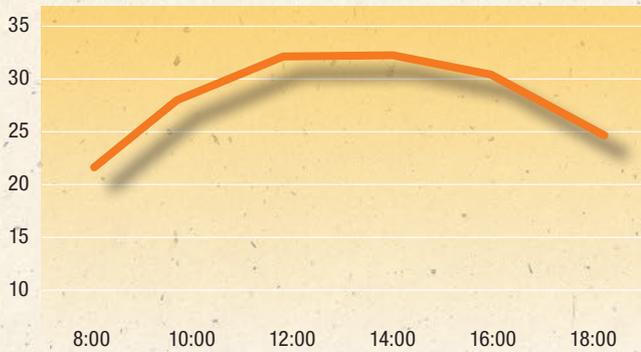
*(our all-time highest measurement)



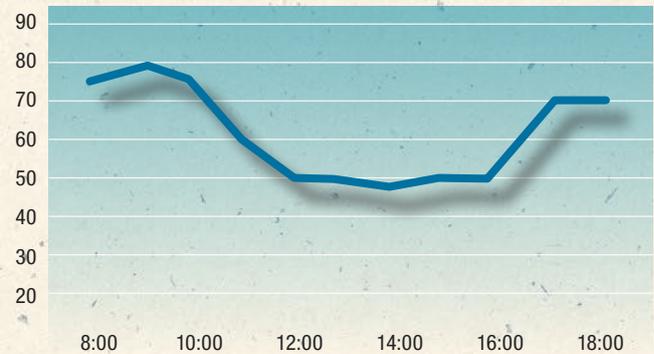
Air temperatures/relative humidity (in the shade):

French Guyana, September 2004

°C air temperature

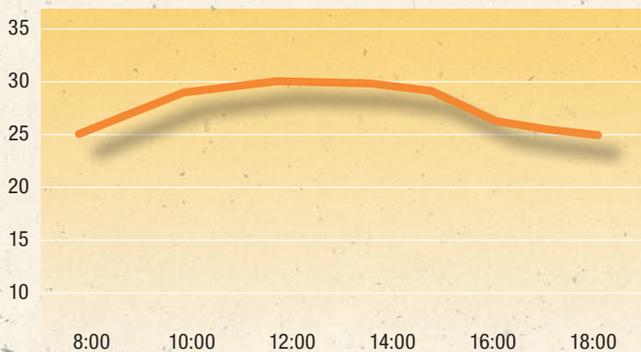


% humidity

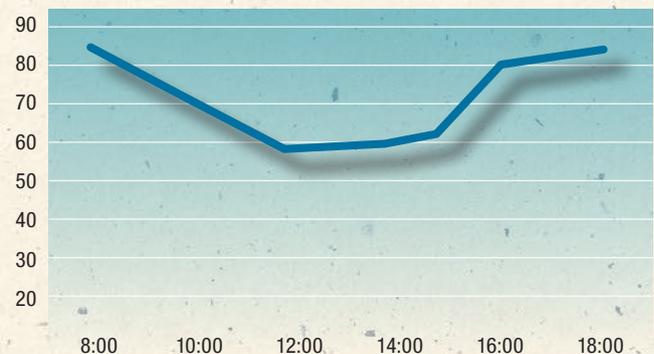


South America, Rio Negro, April 2009

°C air temperature



% humidity

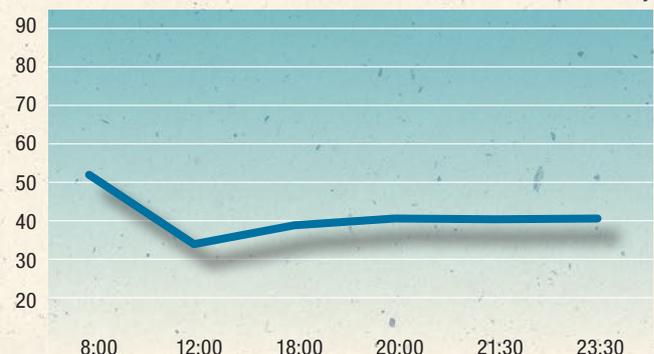


Malawi, September 2006

°C air temperature



% humidity



The temperature measurements on the different surfaces the reptiles sit on, are also interesting. A laser temperature-measuring device is easy to use and provides accurate measurements within 1-2 °C.

Australia, Outback, cloudless, 15:00 h:
light sand 58 °C, stone 56.6 °C, wood 66.4 °C

Australia, Red Center Highway near Uluru, 15:00 h:
red sand 63.6 °C, stone 58.2 °C, wood 59.4 °C
(our all-time highest measurement)

Vietnam, Nha Trang, rainforest, 14:00 h, cloudy:
stone 34.4-36.2 °C, wood 34.4 °C.

Africa, Tanzania near Arusha, February 2010, partially cloudy, 14:00 h:
wood shade 21.8 °C, sand shade 28.6 °C, stone 34 °C,
wood 30 °C, soil 35.6 °C



EXPEDITION

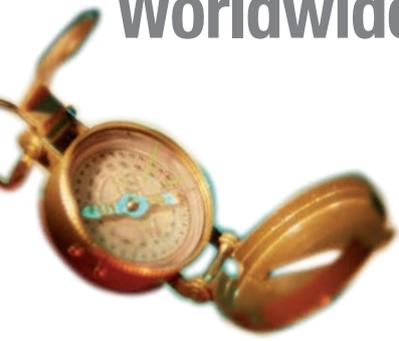
RESEARCH
TEAM
JBL EXPEDITION



**JBL expeditions to the natural habitat of our
aquarium and terrarium animals**



Worldwide destinations of the JBL Expeditions



The JBL Research Team obtains information on aquarium fish and terrarium animals first-hand by carrying out expeditions into the regions where the animals live on a regular basis. There, biotope investigations are performed on site, the results of which are used for publications and the development of JBL's products.

Every fan of nature is eligible for participation: As soon as the details of a JBL Expedition have been set, they are posted on JBL's website. Then it's time to apply – and, with some luck, take part!



French Guyana & Caribbean



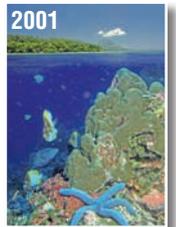
Red Sea/Egypt



Vietnam



Sulawesi/Indonesia



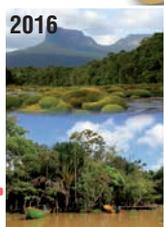
Central America & Galapagos



Sri Lanka & Maldives



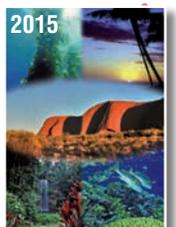
Venezuela



Negros/Philippines



South Pacific & Australia



Tanzania & Lake Tanganyika



South Africa & Lake Malawi



Amazonia & Pantanal/Brazil



Who can take part in the JBL Expeditions & Workshops?

JBL Expeditions stand for adventure and research, all in one!



Every lover of nature who is physically fit and at least 18 years of age (at the time of departure), can take part. Proficiency in German and/or English is helpful so that communication within the group is not limited to body language. Physical fitness helps withstand the tropical temperatures and humidity levels, which are sometimes high. There are no extreme walks. Sometimes, though, a few walks to beautiful biotopes just can't be avoided.

Do you have to be an animal specialist?

No! There are always experts/scientists along who are very knowledgeable about their field of expertise and willing to help, be it in regard to salt water, fresh water, invertebrates, terrarium animals or plants.



What makes the JBL Expeditions different from other trips?

What's different about the JBL trips is that like-minded persons travel together. On other trips, you can't stop simply to see a beautiful body of water or a lizard basking in the sun next to the road. On our trips, it's normal to be „crazy“ and storm every puddle and shrub.



Do you have to be a diver?

If you don't have a scuba diving license, you can go snorkelling. Snorkelling is usually better suited than compressed air diving in fresh water anyways. In the ocean, there are always spots for snorkelling in addition to the scuba diving spots. Sometimes there are animal species that can only be found at great depths, so that they can only be reached by scuba divers. Many participants acquired their scuba diving license after they received their written confirmation for participation.



What about if you can't handle boat travel and car travel?

If you are unable to handle boat travel or car travel, you can use medication against travel sickness. Read the trip description carefully in order to determine whether there is a lot of boat travel and car travel.



How good are the chances of taking part?

If JBL receives more applications than there are spots by the deadline that has been set, unfortunately, a draw must decide. Prospective participants who have not yet taken part in a JBL Expedition are given priority over former participants. Looking back, we can confirm that every applicant had a chance of over 60 %.





Expedition 2001

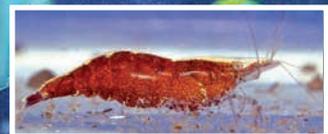
Sulawesi/Indonesia



Back when Sulawesi shrimp weren't popular yet, the first JBL Expedition led to the island of Sulawesi in the Indo-Pacific Ocean. The base that was selected for the group's activities was near the city of Manado located in the far north of the island.

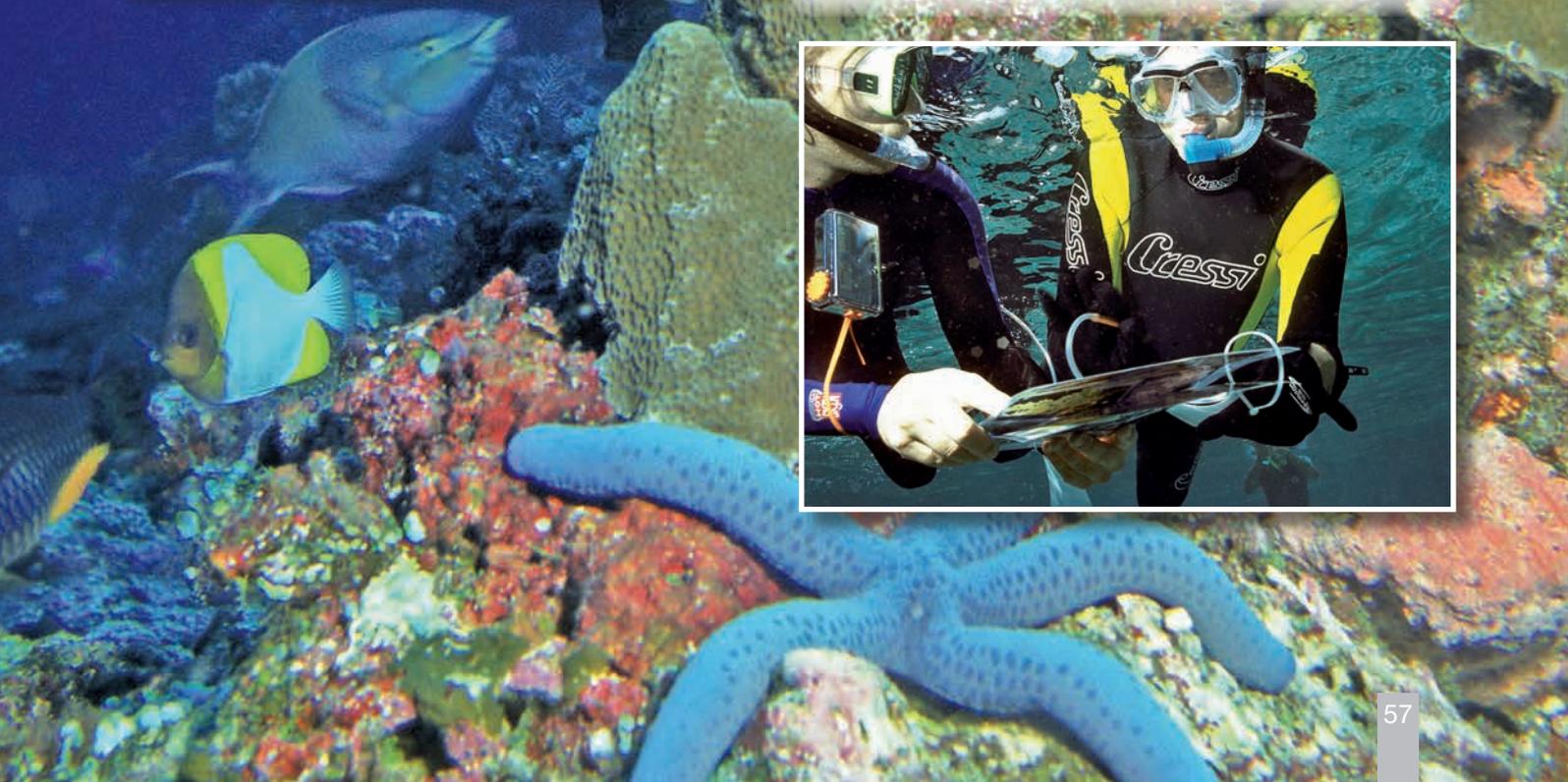
The primary goal consisted of saltwater research in the Bunaken National Park with coral reefs counted among the most beautiful in the world and boasting the greatest diversity of species.

This first expedition was aimed at determining all of the saltwater parameters on site. A second goal consisted of investigating the water parameters and fish fauna of freshwater lakes in the region.



Bunaken National Park	Salt water			
	Depth of 5 m	Depth of 10 m	Depth of 20 m	Depth of 30 m
Temperature (°C)	29,7	29,7	25,0	24,0
pH	8,17	8,13	8,08	8,10
Carbonate hardness (°dKH)	7	7	7	7
Calcium (mg/l)	420	400	400	400
Magnesium (mg/l)	1200	1200	1200	1200
Oxygen (mg/l)	7,5	7,3	7,0	7,1

Freshwater biotopes	Lake Seper	Lake Uluna	rice field	Ronuanco River
	Temperature (°C)	30,2	25,0	35,0
pH	8,45	6,30	6,60	7,60
Carbonate hardness (°dKH)	4	3	3	5
Oxygen (mg/l)	7,8	7,8	?	7,5
GH (°dGH)	3	3	3	4
Conductivity value (µS/cm)	144	300	?	290

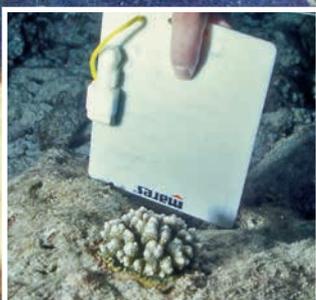


Expedition 2002

Sri Lanka & Maldives



We always try to cover both fields, fresh water and salt water, on our expeditions. Due to the fact that the ocean of Sri Lanka can become very murky within a few hours, we only did the section concentrating on the rain forest and fresh water there and then flew over to the Maldives nearby to measure coral growth in natural surroundings. The high seawater temperatures of 36 °C in 1998 caused by the El Niño phenomenon killed all of the coral down to a depth of around 8 m. Therefore, we were able to determine growth accurately 4 years later and find out that stony coral (madreporarians) grow faster in an aquarium under ideal conditions.

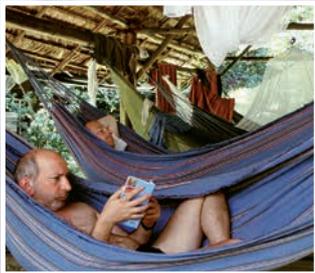


Expedition 2004

French Guyana & Caribbean

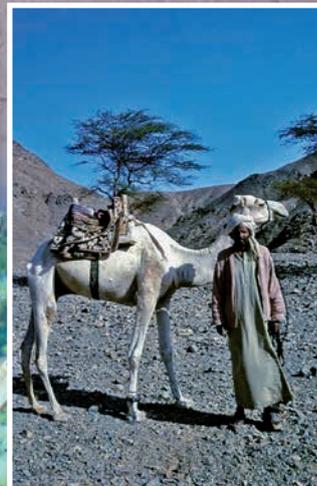
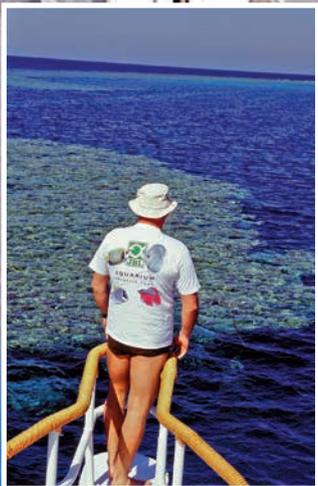
French Guyana offers an opportunity to penetrate deep into the rain forest and spend the night outdoors safely at the same time. This is not the case everywhere in South America. Accordingly, we were able to spend a few days and nights right next to a river in the Amazonian lowlands and record 24-hour trends of temperatures and air humidity. Astonishingly, air temperatures dropped down to 22 °C.

In the Caribbean, we unexpectedly had an opportunity to experience a hurricane with its effects on the reefs live. Hurricane Jeanne developed from a tropical storm into a hurricane right in front of our eyes and conjured a nifty JBL green tint on the faces of our team on the diving ship. We were able to observe how the uppermost sections of the reef were damaged directly by the storm, and indirectly as well by uprooted trees that were drifting in the ocean. A famous marine biologist once said: "A reef roof won't grow until it has been damaged." This highly provocative statement is actually not wrong, although, of course, it does not give people a carte blanche to damage natural reefs!



Workshop 2005

Red Sea, Egypt



80 persons travelled to Marsa Shagra with the JBL Research Team in order to carry out seawater research under scientific guidance right in the reef. Shark researcher, Dr. Erich Ritter, came from Florida expressly to give a lecture on the body language of sharks to all of the participants. The following day, the scuba divers were able to try out what they had learned with oceanic whitetip sharks right on the Elphinstone Reef.



The water analyses were aimed at determining whether marine water parameters differ in different areas, among other things. Water samples were taken from near the beach, at the surface and at a depth of 30 metres, as well as from reefs that were distant from the coast, and analysed for this purpose.



Expedition 2006

South Africa & Lake Malawi

The southern most coral reef of the world lies off the east coast of South Africa. We found the water temperature here to be 17 °C, which is lower than the minimum temperature indicated for coral reefs in the literature (20 °C). The world's most famous shark researchers were there with us, so that we were able to listen to personal lectures on the various species of sharks by Dr. Erich Ritter, Andre Hartmann and Andy Cobb. We were then able to see all of these sharks in their natural surroundings during our dives and from a cage. This is where the friendship with the shark protection organisation, SharkProject, began, which JBL has been supporting ever since.

While at Lake Malawi, our primary goal was to do water analyses, while our second goal was to do feeding experiments right under the water and on cichlids that had just been caught in Stuart Grant's export station. We found that grazing cichlids such as *Pseudotropheus* prefer carnivorous food if it is offered to them. It was also interesting to discover that green algae are only found down to a depth of 50 cm and that blue-green algae and diatoms predominate below this, so that they form the primary food of grazing cichlids.



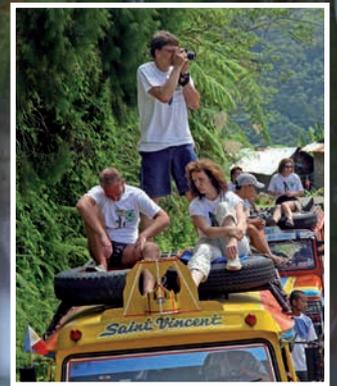
Workshop 2007

Negros/Philippines



The friendship with Georg, the owner of two lodges in the Philippines, made it possible to keep the price of the workshop below € 1,000. 82 participants analysed, observed and experimented in the ocean and the rain forest of the island of Negros for one week. The trip into the rain forest, which fully lived up to its name, was an unforgettable experience for several participants. A normal tropical rain shower caused the water levels of the streams to rise so high that bridges were under water and our group prevented from traveling for a number of hours.

The underwater fauna off of Apo Island was especially impressive. The coral formations and colours were among the most beautiful that even the most experienced divers had ever seen.



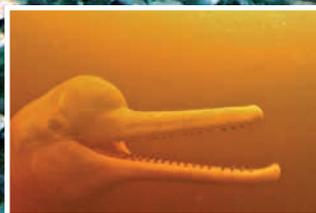
Expedition 2009

Amazonia & Pantanal

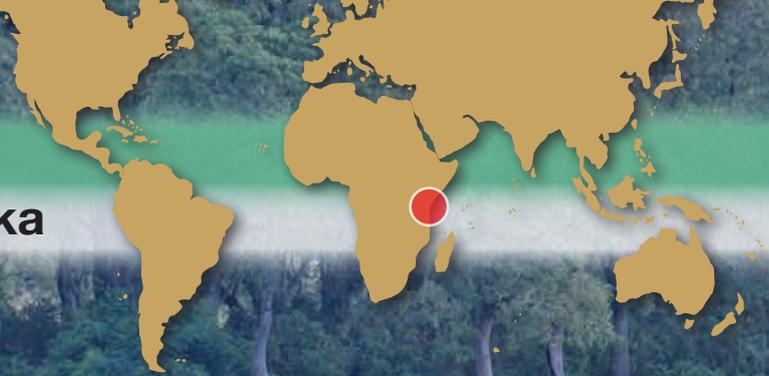


We rode on the Rio Negro, the black water river with clear tributaries, for one week before we reached where it flows into the Amazon River at Manaus. We examined the black water, which is hostile to life and had an immeasurable hardness and a pH level of 4. In this water, we were barely able to catch any plankton with our plankton net. Only the river dolphins and the red neon appeared to feel comfortable here.

We left the cloudy white water of the Amazon and the tea-coloured water of the Rio Negro behind us and continued on to the clear water rivers of the Pantanal. Here, we were able to observe fish with a visibility of over 50 m under water, as though they were in an aquarium. Encounters with piranhas and freshwater rays were definitely highlights.



Workshop 2010 Tanzania & Lake Tanganyika



76 participants took the opportunity to get to know very diverse African habitats in 13 days. Rain forest, tropical dry forest, savannah, steppe, mountains, streams and lakes, and, as a grand finale, Lake Tanganyika were all on the program. Cichlid specialist, Dr. Stefan Koblmüller, and some other participants were able to catch a species of cichlid that was considered extinct alive in a stream near Mt. Meru and identify it. Terrarium enthusiasts, in particular, were able to measure the surface temperature of rocks and wood with laser metres for the first time in order to offer animals optimal conditions in captivity.



Lake Tanganyika, which already presented almost all of the cichlids known from aquariums near the shore, was definitely a highlight. The scuba divers then also had an opportunity to observe *Cyphotilapia frontosa* in their natural habitat at a depth of 20 to 45 m. The logistics for this workshop were a real challenge: They ranged from organising an airplane that all of the participants and their luggage could fit into (freshly bought, unpainted Boeing of Air Tanzania) to the transport of compressed air cylinders by truck across Tanzania from Mount Kilimanjaro to Lake Tanganyika.



Expedition 2012

Central America & Galapagos



RESEARCH TEAM
 Mexico
 Nicaragua Costa Rica
 Galapagos



In Costa Rica, we had to learn that it was more difficult to find the famous red-eyed frogs than we had imagined. We were on the exact river where they lived, we could hear them, but we couldn't find them, not even after many hours of search by night!

We dove deep into the Mexican cenotes in search of the Mexican blind cavefish. The longest cave system in the world with a length of several hundred kilometres belonged to the most fascinating biotopes we had ever seen.

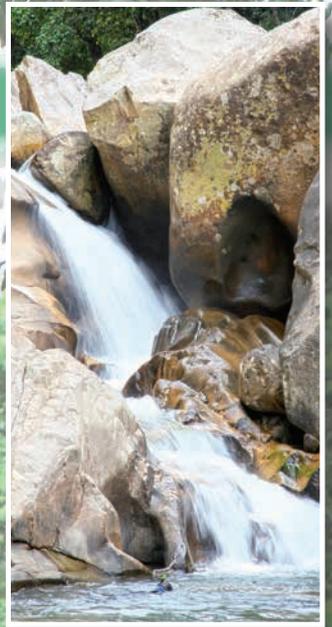
We were able to find shrimp in Lake Nicaragua, even though they weren't as pretty as the ones in Sulawesi.

Our trip culminated with an absolute highlight: the Galapagos Islands in the Pacific. These extraordinary islands, which had already inspired Charles Darwin to come up with his theory of evolution, offered a true emotional adventure for every nature enthusiast. All the way from observing the giant tortoises, to unique marine iguanas and to hammerhead sharks and mantas, our days were filled with unmatched experiences of nature. Even if they weren't all truly relevant for aquarium keeping, they did offer an incredibly intensive motivation to preserve nature.





Workshop 2013 Vietnam



70 nature lovers had 10 days to explore the region around Nha Trang in the rainforest, the desert and the offshore coral reef. Everyone was thrilled by the clear mountain rivers with gobies and loaches, the waterfalls with hillstream loaches and the jungles with many interesting snakes. More dangerous were the slippery stones in the rivers they had to cross in order to penetrate deeper into the wilds. But it was worth it. They were rewarded with intensive natural experiences, extensive biotope data and for the first time water current measurements.





Expedition 2015

California, South Sea & Australia

Around the world in 18 days

Although the two protagonists in Jules Verne's novel needed 80 days for the journey around the world, we managed to fit many unforgettable experiences, animal observations and measurements into 18 days. The 14 members of the JBL research team visited the island Catalina off Los Angeles in California for one day, Moorea in the South Seas for 2 days, various regions of Australia for 12 days and finally the desert next to Dubai.



Catalina Island: from Gobies to the Great White Shark

When we left Los Angeles by ferry for Catalina early in the morning we could hardly believe that we would find crystal-clear water with fascinating fauna and flora just half an hour away from L.A. In return we experienced the cold Pacific from its most beautiful side: clear water with well over 20 °C, plenty of orange-coloured garibaldi (which belong to the family of Pomacentridae). The beauty of the garibaldi is only surpassed by their own young, whose orange is flecked with luminous light-blue. Water measurements indicated a relatively low calcium and magnesium content (360/1084 mg/l). One of our reasons for coming here was to observe the incredibly colourful Catalina goby (*Lythrypnus dalli*). We didn't have to search for long. In the rocky habitat of the shallow water they were to be found in large numbers. The small gobies, which grow up to 6 cm in size, are unfortunately only suitable for cold saltwater aquariums, and all attempts to keep them at 25 °C have failed. For anyone going to visit L.A., we can only warmly recommend a trip to Catalina Island!



Moorea – a Remote Island Paradise in the Middle of the Pacific

After the cold California Current we visited the coral reefs of the South Seas, so that, after we had been to the Barrier Reef in Australia later, we would be able to carry out a triangulation of our Pacific results. The coral diversity wasn't bad, but it wasn't nearly as high as it was later at the Barrier Reef. The reason is simply the isolated nature of the South Sea Islands. The nearest mainland (Mexico or Australia) is 7000 km away. Even Hawaii lies closer to a continent, being only 4000 km away from one. We counted the coral species, measured the water composition and started the feeding trials on our second dive. Although 3 m long lemon sharks arrived along with the obligatory blacktip reef sharks, we opened the food tins and noted which fish species were interested in the food. The number of curious sharks rose but they remained wary and kept a distance of 1 m. The red snappers had no such inhibitions and bit into the tins, the food and the fingers of the feeding divers! As well as the snappers, butterfly fish and a large titan triggerfish were interested in the food.



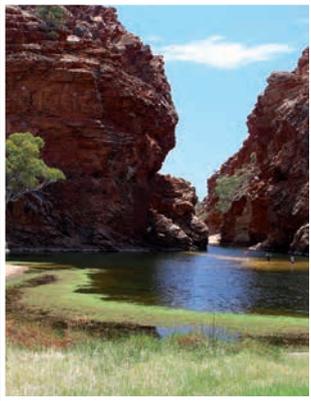
2300 km Coral Reef: Australia's Great Barrier Reef

With over 400 coral and 1500 fish species the faunal diversity is many times higher than in the South Seas. One glance at the reef showed us the meaning of coral diversity. You had the feeling you were seeing the 360 hard coral species which live there all gathered together within a few square metres.



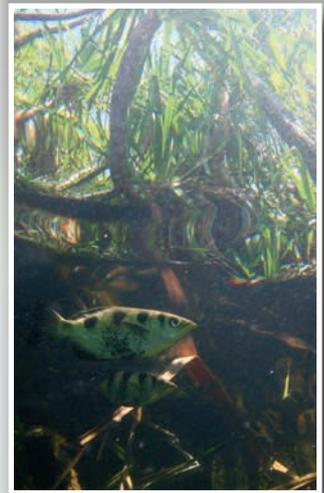
Expedition 2015

California, South Sea & Australia



From Sea Serpents to the Land Snakes

After the Barrier Reef we had two whole days to carry out measurements and observations in the Australian rainforest. For that we drove to Lakes Eacham and Barrine and to some rivers and streams with promising flora and fauna. At Lake Eacham we were surprised to find archerfish (*Toxotes chatareus*) 30 cm in size in pure freshwater with only 52 $\mu\text{S}/\text{cm}$ and the GH and KH were both 1°. Furthermore we saw rainbowfish (*Melanotaenia splendida*) in their natural habitat for the first time. We found them in smaller groups of 2 to 5 animals but also in bigger schools of fish with about 50 animals. Our terrarium enthusiasts had to wait until we were heading back to the lodge for their turn. A python with a length of a little over 2 m was lying on the street, enjoying the warm asphalt. We saved the animal from being run over and went on for a night hike in the forest. The lodge had set up some lamps in one area, so the guests could observe nocturnal marsupials, such as sugar gliders, easily. Our fans of “crawling animals” were pleased to find dragon lizards and huge orb-weaver spiders at another brook. From then on the biotope data for the area (humidity, temperature, UVA, UVB and lux) were added to the water values and noted down with the current GPS data.



From the Jungle to the Sacred Mountain in the Outback

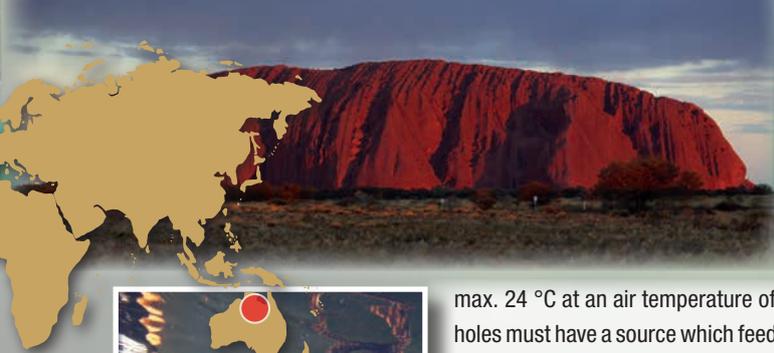
First of all, on our arrival after a 3-hour flight, we were to meet those inhabitants of the outback who outnumber all the others by far: the flies. Millions of flies were waiting for us, their new victims, at the airport, as we unsuspectingly climbed out of the aircraft. They swamped our mouths, ears and noses and we couldn't buy head-protecting netting fast enough. From that moment on we viewed the outback through nets until sunset. At sunset the flies disappeared without a trace, only to return in the morning, just before sunrise. Our team visited various places between Ayers Rock and Alice Springs to learn about the habitats of the animals in the outback. Because, after all, the most popular lizards of our terrarium enthusiasts origin from just this area. But unfortunately we found neither bearded dragons nor frill-necked lizards. We couldn't even find the fairly common thorny dragon, even though there were 14 of us searching for it. We thus learnt the hard way that it is really very difficult to find lizards in the vastness of the outback! On the second day, however, we managed to observe monitors, skinks and other small lizard species and we noted down their habitat data. Most impressive were the temperature measurements of the ground. The red sand actually reached a temperature of 63 °C around noon. It was the highest ground temperature we have ever measured. Everyone wearing sandals had to hop back into the truck after 1-2 seconds. The UVA and UVB values were also the highest ever measured on a JBL expedition.



Water Holes in the Deserts of the Outback

The gorges are popular destinations in the heart of Australia. That's what the Australians call the canyons which often have water at the bottom. Normal tourists admire the water, sometimes have a refreshing swim and then head on. Our gang unpacked our landing nets and water tests, entered the water and took photos of everything which had fins or legs and which swam, crawled or hopped around. The tourists there kept asking us what we were doing. Some of the water holes had very clear water, so we were able to take beautiful underwater pictures of the biotopes, which formed the living space for many rainbow fish. Interesting was also the low water temperature of





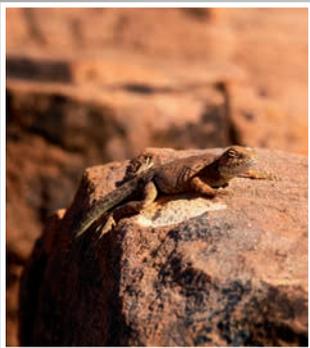
max. 24 °C at an air temperature of 28-37 °C. This indicates that the water holes must have a source which feeds fresh and cold groundwater. Otherwise they would soon dry up in the dry season. Yet there are water holes for which the on-site researchers couldn't determine the water source. For bird lovers the water holes were a paradise too. Parakeets, cockatoos, zebra finches and even birds of prey often allowed us to approach close enough to take some beautiful photos.



The Waters in the North at Darwin: Crocodile-free or not, that is the Question



Our last days in Australia took us to the Litchfield and Kakadu National Park, in the very north of the Northern Territories. Both national parks are renowned for their abundance of animals and especially for their high numbers of crocodiles. Of these only the saltwater crocodiles are really dangerous. The freshwater crocodiles are not really seen as excessively dangerous and in clear water encounters with them are no problem. In a clash between humans and salties, as the saltwater crocodiles are called, the humans always draw the short straw and every year there are fatal accidents. Once you are in the water and face-to-face with the thick-skinned reptiles, you really have to be cool to distinguish the dangerous salties from their more peaceable, freshwater counterparts. The freshwater crocs don't grow particularly large – but how can you know that it is not simply a saltie which has not yet reached maturity? Have a look at its dentition – hope this helps, ha ha!



A bony tongue also lives in Australia and we were lucky enough to be able to observe these animals (which are about 80 cm in size) together with garfish at Maguk. Their flight behaviour was interesting. Although *Sclerophages jardinii* is a surface predator he can dive to greater depths of up to 8 m at a snorkeler's approach, but never deeper than that. You'll have trouble googling freshwater garfish. The species we observed was more than 30 cm long and you will read about freshwater fish species with a maximum length of 8 cm. Although Australia doesn't have much freshwater species diversity, the few species it does have are really interesting and unusual.



After 11 flights and over 40,000 air kilometres, 2,500 km in the off-road vehicle and 500 km in boats we all arrived healthy and without any injuries worth noting in Frankfurt. Now it's time for the follow-up, the sorting of photos and films and all the many measured values we noted. We're all set for more excitement!



Expedition 2016

Venezuela / South America



In all our 12 previous JBL expeditions we had never come so close to cancelling the whole thing! The country Venezuela is descending into chaos. One of the stops on our trip, Maturin, is said to be the world's fourth most dangerous city and then came the Zika virus on top! This caused some late cancellations from participants who had already been confirmed. After consultation with our local organisation we discovered that our itinerary and group size did not pose any dangers for us. We allowed other applicants to take the place of those who had cancelled and by April 26, 2016 we set off with 50 participants via Caracas and Maturin to the Orinoco river delta, South America's second largest river, which is more than 2,000 km in length. At night under an unbelievable starry sky we went by boat through the jungle to the Orinoco Eco Lodge which was built on piles into the marshy banks of a tributary in the delta. The first class hotel had some hammocks and palm roofs with mattresses under mosquito nets but no windows or doors. This was just the thing for our nature mad group from a diversity of European countries.



Our plan for the group members was to form 6 small teams which went by boat to different locations to snorkel, observe and collect biotope data on-site. Every three days the teams changed places so that everyone was at every place. Only in the morning and evening the whole bunch met for a meal and for lectures which were given by Dr. Wolfgang Staeck and Andreas Tanke.

The Orinoco Delta

Anaconda Sandbank

After his fourth beer our guide Antonio told us an exciting and detailed story about his fight with a large anaconda. We visited the place where he had described the fight as taking place. Unfortunately we could only admire a baby anaconda which had been caught by a local. But Antonio wanted to show that his cinematic fighting actions were not only vision caused by the beer. That's why he got up at three o'clock in the morning and brought us for breakfast a 3.5 m long anaconda 4793, 4805 to the camp. Despite the many flashed photos and the fiddling around the snake stayed relatively relaxed and after its model performance it meandered leisurely into the water. If you looked away for a moment and tried to find it again, you were hardly able to make out its head between the leaves in the water.



The Water Lily Camp

It was rarely the case that the natives on-site understood what we wanted when we asked for places with clear water. They showed us places where they considered the water was clear, but which we thought was incredibly cloudy. So we changed strategy and asked for places where we could find aquatic plants. This idea was successful and we reached a camp which was no longer in use, where the water was slightly clearer than at any of the other locations we had visited at the delta. The visibility was at about 60 cm which doesn't sound very much. But in the shallow water of the embankment it was at least good enough to be able to really observe the plants and fish. We observed X-ray fish (*Pristella maxillaris*), pike cichlids (*Crenicichla*), Leaffishes (*Polycentridae*) and even suckermouth armoured catfishes (*Loricariidae*) there!



The Jungle Walk to the Poisonous Snakes

It can be summed up with: few animals and deep mud. No matter – everyone needs to have experienced that at least once. Although the teams weren't exactly silent, rather the contrary, we almost had a serious accident. One of us stepped over a fallen tree trunk right near a highly poisonous pit viper. High rubber boots and luck prevented a bite. Most animals flee from approaching humans. Only pit vipers rely on their poison and wait patiently. The problem with poison bites in the rainforest is mainly the distance to rescue services, which are too far away. We were armed with satellite telephones and we had our physician Ludwig with us, but with a strong bite with plenty of injected poison any help would have been too late. That's why we were all advised to be very careful the very first evening. Our guides showed us how to drink water out of lianas, how balsa trees bleed and that their bark is a very good help for open wounds, how to get palm hearts from the tree, what they taste like, and how to get some edible fruit as well as drinkable fruits. Should we lose our guide and get lost, our survival would be guaranteed!



The surroundings of our Orinoco Eco Lodge

We used canoes and kayaks to explore the surroundings and the smallest rivers practically in silence. Everyone enjoyed this rather isolated form of exploration and it allowed us to approach animals like monkeys and birds more successfully. This wouldn't have been possible with the whole team in the motor boat. There were tarantulas living in the trees at the lodge and these became the pets of most (not all) of the group members.





It was really entertaining to observe the difference between our group and the average tourists in the mornings. A large banana spider (Phoneutria) jumped down from the breakfast table and caused the sort of scrum normally caused by a sumptuous buffet. And before we could brush our teeth in the morning there were the nosy little crawlers such as cockroaches, centipedes and numerous spiders to be removed from our tooth mugs. We did this as if was the most normal thing in the world. And anyone who still thinks of women as the weaker sex would have changed their minds if they had seen them at the washbasin or later in the mud getting to grips with the leeches! Claudia from Hamburg was fascinated by the leeches on her arm, and instead of removing them she got her camera and took photos of her new pets for posterity. Directly within sight of the lodge turtles were sunbathing at the river. Lizards and snakes were there too, as were the non-swimming or crawling bunch, which included howlers, birds and incredible butterflies.



Onward Journey to the Table-top Mountains South of Venezuela
From the airport Ciudad de Bolivar we flew in a small 6-seater plane about 400 km south-east towards Canaima, the starting point for all expeditions to the famous table-top mountains.



The Canaima Lagoon

At the foot of three waterfalls lies the lagoon of Canaima, a small place with about 3,000 inhabitants. In 1975 the Canaima National Park was extended to 30,000 km² and is one of the largest in the world! Its main attraction is the Salto Angel which, at 979 m, rates as the world's highest waterfall. A first glance into the water of the lagoon finally showed transparent blackwater. At last we could do a bit of intensive snorkelling and carry out some observations under water. But even the 28 °C warm water felt cold after half an hour and most of us were glad that we had packed a thin diving suit.



Through the Rapids to Isla Orchidea

We went further upstream the Rio Carrao by boat. At two rapids everyone had to leave to boat to get around the rapids on foot, while the skipper manoeuvred the boat up the rapids. Because of the low water level this was only possible with our helping hands to push and shove. Unfortunately the low water level also forced us to abandon our plan to go the whole way up to the Salto Angel waterfall. But Orchid Island, where we stayed one day instead, also proved to be a worthwhile destination. In the river we spotted sucker catfish, Crenuchidae and numerous cichlids.

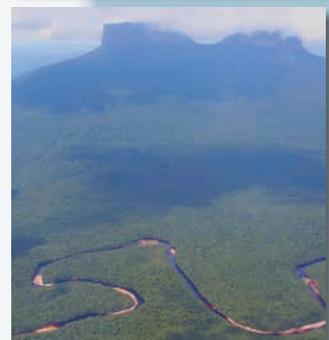


At last: Poison Dart Frogs

On the last day of the expedition we finally spotted some yellow-banded poison dart frogs (*Dendrobates leucomelas*), which can live to be 15 years old in the terrarium, when kept well! It was exciting to find these animals in their natural habitat at all. As much as the bright yellow colour attracts our attention, it also serves as camouflage. And the forest floor is, of course, not only brown. Yellow blossoms and colourful fruit lie around to form a multi-coloured potpourri on the floor. Most frogs are only discernible by their jumping movements. They are not very shy and can be easily observed. Lars, who keeps this species at home in terrariums, was immediately aware that he keeps his animals in too high humidity. The original biotope was relatively dry and only during rainfalls was the humidity as high as most of us imagine the tropical rainforest to be.



With all these discoveries: the evaluations of the data logger, which recorded the temperature and humidity intensively twenty four hours a day; with countless data measured in the most varied biotopes imaginable; thousands of photos and countless films, our team of 50 men and women returned to Europe. All were safe and sound, even if the strong tropical sun was a problem for some of us, even to the extent of forming blistering sunburn. We will never forget our discoveries and our research results will help us to optimise all of our animal keeping, and make breeding possible. And we should never lose sight of this long term goal!



Announcement:

Expedition 2018

Indian Ocean



This 16-day expedition will lead us to the dream destinations in or near the Indian Ocean. The best time to travel to these four destinations is October. Since

staying overnight in hammocks is not possible, this trip is also suitable for spider sceptics.

Application: www.jbl.de/en/expeditions

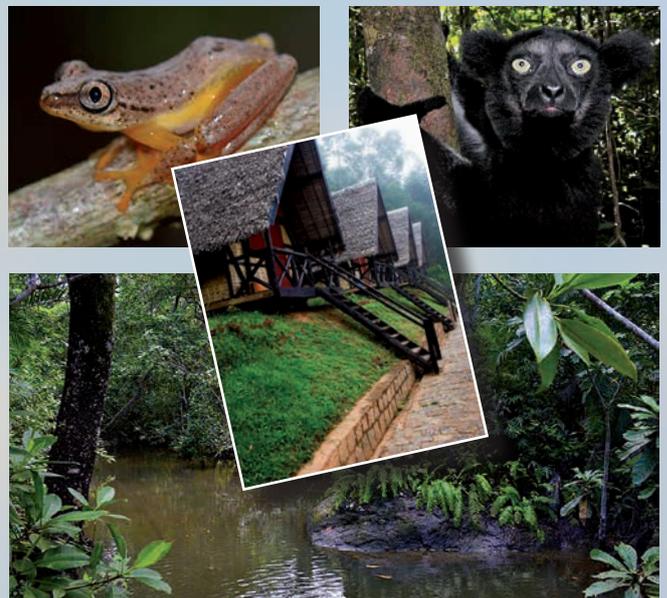


Mozambique

We will be flying over South Africa to Maputo, the capital of Mozambique. From there we are heading off towards the north to Tofo on the coast. The main attractions are the whale sharks, which you are almost guaranteed to find in October. We'll be able to snorkel with the world's largest fish and observe them slurping their 6000 litres of plankton food at close range. Even if the 13 m long animals are not typical aquarium dwellers, no nature lover could fail to enjoy experiencing these 12 ton lightweights close up. The shallow water reefs are sure to prove as fascinating for the snorkelers as the 25 m deep reefs will be for the divers, where will carry out seawater analyses.

Madagascar

With its 1600 km length, the world's second largest island state offers incredibly many and diverse habitats, and can only be visited after days of travelling by car or several domestic flights. We will limit ourselves for three full days to a region in the central east of the island (Andasibe National Park) which has an incredible biodiversity and a large density of individual reptiles and amphibians. Our top priorities will of course be the beautiful day geckos and the many chameleon species we want to observe. But the aquarium enthusiasts will also be able to have the time of their lives: in the streams and rivers live endemic fish and invertebrate species which we are surely bound to find. The water of some streams is so clear that snorkelling observations are possible.





Mauritius

After flying for nearly two hours we will reach the dream island Mauritius. We'll have two whole days to explore the coral reefs and the rainforest in the interior of the island. With the help of the island's JBL importer, who, of course, knows every nook and cranny, we will have the chance to get to know the best spots on the island in no time. The coral reefs are fascinating for snorkelers and divers alike. We intend to compare the water values from Mozambique with those taken in the Seychelles and look for a correlation between the water values and coral growth.

Seychelles

At the end of the expedition we will continue our flight from Mauritius to the Seychelles, 1800 km north and just below the Equator. The Seychelles have become world-famous for their granite rocks and giant tortoises. We will continue our flight from the airport on Mahe to the small island Praslin which provides an ideal basis for explorations. The island is covered by a dense rainforest and has picturesque bays where we also will carry out light measurements. One trip will also take us to the island La Digue which must have the most beautiful granite formations of all Seychelles. From the Seychelles we will head off on a direct flight to Germany or to the participants' other home countries.





JBL Japan Expedition 2019

Not just koi, koi breeders and the coral reefs are on the agenda of the Ryukyu islands. We also plan to take the ferry to reach the rainforest of the island Iriomote, south of Ishigaki. From there we will take a boat deep into the rainforest to search for fish, invertebrates and, of course, for reptiles, amphibians and spiders. We will examine the light of the habitats with UV and lux measuring devices and record values of humidity and air temperature by means of a data logger.

Rough schedule for the Japan Expedition 2019

Long-haul flight to Tokyo, for Europeans from Frankfurt, but also possible from other countries. From Tokyo we are taking the high-speed train from Shinkansen to Nikko, situated about 180 km to the north. From Kikko we will be continuing our trip to the Nikko National Park with its crystal-clear but cold lakes and rivers, where nobody but us would probably think of snorkelling. Not much has been published about the fish and invertebrates living there.

From Nikko we'll be taking the Shinkansen to the prefecture Niigata, the northern hub of koi breeding. We will visit koi breeders, their breeding facilities and we will have the opportunity to have all our questions answered during discussions with breeders who are friends with JBL.

From Niigata we are then flying 2500 km southwards to the tropical Ryukyu islands which are nearer Taiwan than Japan. We will be based on the island Ishigaki. Part of our group is taking dive boats to the surrounding coral reefs and manta ray dive spots and conducting seawater research there. The other part of the group will be visiting the neighbouring island Iriomote for two days to go deep into the jungle and watch out for interesting terrarium animals to analyse their habitats. You will be able to snorkel in the rivers and observe fish and invertebrates. Hermit crabs, such as the coconut crab are to be found on Iriomote. We are trying to organise a jungle night, but to date haven't received confirmation of that. At the end of the journey we are going to be travelling via Fukuoka, where we will visit the koi farm of the Ogata family, before returning to Tokyo and further to our homelands.

Between 16 to maximum 32 persons will have the chance to participate in this one in a million expedition. You will find the exact travel schedule, the price and the application form on the JBL homepage at the beginning of 2017.



JBL

JBL PRODUCTS



**VORSPRUNG
DURCH FORSCHUNG**
AHEAD THROUGH RESEARCH



Feeding > Turtles/Terrapins > Main food



JBL Turtle Food

Main food for turtles 10 – 50 cm in size

- Especially for the dietary needs of turtles and pond terrapins: natural food with food sticks containing fish
- Excellent palatability: natural food made of gently dried crustaceans, water insects and sticks
- Healthy shell growth thanks to natural calcium content in the shells of the crustaceans, no water contamination
- High-quality ingredients, feed formulation created by practical research, no processing of cheap fishmeal
- Can be stored for 3 years unopened, use within 3 months after opening

Art. no.	Content	Weight
70362	100 ml	11 g
70363	250 ml	30 g
70364	1000 ml	120 g
70365	2500 ml	300 g



JBL Agil

Main food for turtles 10 – 50 cm in size

- Especially for the nutritional requirements of turtles and pond terrapins: staple food in the form of floating sticks
- Excellent palatability: proteins from fish and shrimps
- Promotion of bone growth thanks to lysine, strengthens and stabilises immunity by means of multivitamin complex
- High-quality ingredients, feed formulation created by practical research, no processing of cheap fishmeal
- Can be stored for 3 years unopened, use within 3 months after opening

Art. no.	Content	Weight
70342	250 ml	100 g
70343	1000 ml	400 g
70344	2500 ml	1000 g
70346	10,5 l	4200 g



Feeding > Turtles/Terrapins > Complement



JBL Gammarus

Treats for turtles from 10 to 50 cm

- Supplementary food: cleaned gammarus crustaceans, supplementary food for turtles and terrapins
- Excellent palatability: gently dried gammarus crustaceans
- Natural calcium content promotes healthy shell growth
- High-quality ingredients, feed formulation created by practical research, no processing of cheap fishmeal
- Can be stored for 3 years unopened, use within 3 months after opening

Art. no.	Content	Weight
70322	250 ml	25 g
70323	1000 ml	110 g



JBL Gammarus Refill pack

Treats for turtles from 10 to 50 cm

- Supplementary food: cleaned gammarus crustaceans, feed supplement for turtles and terrapins, refill pack
- Excellent palatability: gently dried gammarus crustaceans
- Natural calcium content promotes healthy shell growth
- High-quality ingredients, feed formulation created by practical research, no processing of cheap fishmeal
- Can be stored for 3 years unopened, use within 3 months after opening.

Art. no.	Content	Weight
70326	750 ml	80 g



JBL Energil

Main food for turtles and pond terrapins

- Main food for turtles and pond terrapins: whole fish and crustaceans
- Excellent palatability: untreated, whole fish and crustaceans
- Floats on surface: encourages movement through natural preying instinct
- High-quality ingredients, feed formulation created by practical research, no processing of cheap fishmeal
- Can be stored for 3 years unopened, use within 3 months after opening.

Art. no.	Content	Weight
70313	1000 ml	150 g
70314	2500 ml	430 g



JBL Tortil

Food tablets for turtles and pond terrapins

- Main food for turtles and pond terrapins: food tablets for turtles
- Excellent palatability: 25 % crustaceans, proteins from fish and shrimps
- Promotes natural eating behaviour with sinking tablets, strengthens and stabilises immunity
- High-quality ingredients, feed formulation created by practical research, no processing of cheap fishmeal
- Can be stored for 3 years unopened, use within 3 months after opening

Art. no.	Content	Weight
70301	100 ml	60 g



JBL Calcil

Food sticks for turtles and pond terrapins

- Main food for turtles: mineral-packed food sticks for turtles and pond terrapins 10 - 50 cm in size
- Excellent palatability: high protein content from fish and shrimps
- Healthy shell growth thanks to added minerals, strengthens and stabilises immunity
- High-quality ingredients, feed formulation created by practical research, no processing of cheap fishmeal
- Can be stored for 3 years unopened, use within 3 months after opening.

Art. no.	Content	Weight
70292	250 ml	95 g



Feeding > Turtles/Terrapins > Breeding



JBL ProBaby

Special food for young turtles

- Main food for baby turtles: sifted and cleaned small crustaceans and insects
- Excellent acceptance: gammarus and insects with vitamin supplement
- Healthy shell growth thanks to natural calcium content, immunity is developed and stabilised
- High-quality ingredients, feed formulation created by practical research, no processing of cheap fishmeal
- Can be stored for 3 years unopened, use within 3 months after opening

Art. no.
70360

Content
100 ml

Weight
13 g



JBL Rusil

Food sticks for small turtles

- Floating food sticks for turtles: species-appropriate food mixture for small turtles 8 – 15 cm in size
- Impressive palatability: 20 % wheat germ, fish and shrimps.
- Healthy growth and efficient energy metabolism thanks to wheat germ and omega-3 fatty acids
- High-quality ingredients, feed formulation created by practical research, no processing of cheap fishmeal
- Can be stored for 3 years unopened, use within 3 months after opening.

Art. no.
70351

Content
100 ml

Weight
37 g



Feeding > Tortoises > Main food



JBL Herbil NEW

Complete food for tortoises

- Green food pellets with minerals and vitamins for all tortoise species
- Put pellets into food bowl or soak in advance. Adult animals 4-5 feeding per week. Feed juveniles on a daily basis
- High fibre content with low plant protein content for a slow intestinal passage and ideal digestion of fibre
- Contains: dried grasses, minerals and herbs with vitamins. Without any colourings or preservatives
- Package contents: 1 water and light-proof tin, sealed for freshness with green food pellets of approx. 7 mm diameter

Art. no.
70454
70455

Content
120 g
510 g

Content
250 ml
1000 ml



JBL Agivert

Main food for tortoises 10 – 50 cm in size

- Especially for the nutritional requirements of tortoises: food sticks made up of a mixture of purely plant-based raw materials
- To maintain the animals' health: selected herbs and plants
- Ideal for the digestive system: high fibre content, low protein content
- Healthy growth without shell problems, stabilises and strengthens immunity
- Can be stored for 3 years unopened, use within 3 months after opening

Art. no.
70331
70332
70333

Content
100 ml
250 ml
1000 ml

Weight
43 g
105 g
420 g



Feeding > Reptiles > Main food



JBL Iguvert

Main food for iguanas and lizards

- For the nutritional needs of iguanas and other plant-eating reptiles: food sticks made from 100% plant ingredients
- Ideal for the digestive system: high fibre content, low protein content
- Healthy growth, stabilises and strengthens immunity through vitamin complex and vitamin C
- Can be stored for 3 years unopened, use within 3 months after opening

Art. no.
70282
70283

Content
250 ml
1000 ml

Weight
105 g
420 g



Feeding > Vitamines/Minerals



JBL Turtle Sun Aqua

Vitamins for turtles and pond terrapins

- Especially for the requirements of turtles: feed supplement with essential vitamins
- Easy to use: fill the measuring spoon with food sticks, add 10 to 20 drops vitamin complex, feed to the turtles
- Healthy turtles: optimal growth, boosts appetite, balanced shell formation
- High-quality vitamin product: water-stable, fully active vitamins
- Can be stored for 3 years unopened, use within 3 months after opening

Art. no.
70441

Content
10 ml



Feeding > Vitamines/Minerals



JBL Tortoise Sun Terra Vitamins for tortoises

- Especially for the requirements of tortoises: feed supplement with essential vitamins
- Easy to use: fill the measuring spoon food with sticks, add 10 to 20 drops vitamin complex, feed to the tortoises
- Healthy tortoises: optimal growth, boosts appetite, balanced shell formation
- High-quality vitamin product: water-stable, fully active vitamins
- Can be stored for 3 years unopened, use within 3 months after opening

Art. no.
70442

Content
10 ml



JBL TerraVit Powder Vitamins and trace elements for terrarium animals

- Especially for the requirements of reptiles and other terrarium animals: supplementary food with essential vitamins
- Easy to use: put feeder insects into a container, sprinkle with a dosing spoon over the feeder insects, shake
- Especially suitable to vitaminize living feeder insects, plant leaves or fruit
- High-quality vitamin product: fully active vitamins
- Can be stored for 3 years unopened, use within 3 months after opening

Art. no.
71029

Content
100 g



JBL TerraVit fluid Vitamins and trace elements for terrarium animals

- Especially for the requirements of reptiles and other terrarium animals: supplementary food with essential vitamins.
- Easy to use: put drops on the food and/or drinking or bathing container.
- Healthy terrarium animals: prevents deficiency diseases, promotes growth, appetite and natural process of shedding skin
- High-quality vitamin product: fully active, water-stable vitamins
- Can be stored for 3 years unopened, use within 3 months after opening

Art. no.
71032

Content
50 ml



JBL MicroCalcium Mineral supplementary food for all reptiles

- Especially suited to reptiles: supplementary food for the calcium supply for healthy terrarium animals
- Easy to use: put feeder insects into a container, sprinkle with a dosing spoon over the feeder insects, shake.
- Particularly suitable for sprinkling on live feeder insects
- High-quality calcium preparation: fast and effective adhesion through micro-fine particles.
- Can be stored for 3 years unopened, use within 3 months after opening.

Art. no.
71033

Content
100 g



JBL TerraCrick Complete food for feeder insects

- Improves nutritional value of feeder insects for terrarium animals: wholesome complete food for crickets and insects
- Easy to use: offer TerraCrick 24 hours before feeding the insects to your terrarium animals.
- Valuable ingredients (minerals, carbohydrates, vitamins) to fill the digestive tract
- High-quality ingredients, feed formulation created by practical research, no processing of cheap fishmeal
- Can be stored for 3 years unopened, use within 3 months after opening

Art. no.
70271

Content
100 ml

Weight
60 g



Feeding > Bowls and Containers



JBL CrickBox Shaker box to sprinkle powder on feeder insects

- Improves the nutritional value of feeder insects: shaker container to sprinkle powder on feeder insects
- Easy to use: put in the feeder animals, sprinkle with mineral powder, shake.
- Clean, easy and comfortable.
- High-quality ingredients, feed formulation created by practical research, no processing of cheap fishmeal
- Dimensions: 6 x 9 cm

Art. no.
71034

Size
6 x 9 cm



JBL ReptilBar GREY Feeding, drinking, bathing bowl for terrarium animals

- Individual terrarium design: bowl in stone look for food, water or for bathing.
- Non-toxic: coloured resin - does not emit any harmful substances, easy to clean and disinfect
- Rescue ladder to prevent feeder animals from drowning
- Heavy -duty version to prevent it from being accidentally knocked over
- ReptilBar – the bowl for terrariums: available in various colours and sizes

Art. no.
71070
71071
71072
71073
71074
71075

Size
XS
S
M
L
XL
XXL



Feeding > Bowls and Containers

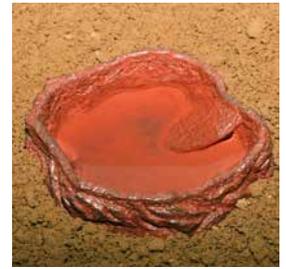


JBL ReptilBar RED

Red feeding, drinking, bathing bowl for terrariums.

- Individual terrarium design: bowl in red sandstone look for food, water or for bathing
- Non-toxic: coloured resin - does not emit any harmful substances, easy to clean and disinfect
- Rescue ladder to prevent feeder animals from drowning, heavy-duty version to prevent it from being knocked over
- ReptilBar – the bowl for terrariums: available in various colours and sizes
- Package contents: feeding, drinking and bathing bowl for terrarium animals, red, available in 6 sizes.

Art. no.	Size
71076	XS
71077	S
71078	M
71079	L
71080	XL
71081	XXL



JBL ReptilBar SAND

Terrarium feeding, drinking, bathing bowl, sand colour

- Individual terrarium design: bowl in beige sandstone look for food, water or for bathing.
- Non-toxic: coloured resin - does not emit any harmful substances, easy to clean and disinfect
- Rescue ladder to prevent feeder animals from drowning, heavy-duty version to prevent it from being knocked over
- ReptilBar – the bowl for terrariums: available in various colours and sizes
- Package contents: feeding, drinking and bathing bowl for terrarium animals, sand coloured, available in 6 sizes.

Art. no.	Size
71082	XS
71083	S
71084	M
71085	L
71086	XL
71087	XXL



Care products > Animals



JBL Biotopol T

Water conditioner for terrariums

- For reptiles and amphibians in terrariums and aqua-terrariums: converts tap water into bathing/drinking water.
- Removes aggressive chlorine and chloramine, absorbs toxic heavy metals
- Improves health of reptile and amphibian skin thanks to valuable plant extracts and vitamin B
- Promotes problem-free shedding
- For 200 l

Art. no.	Content	Range
71001	50 ml	200 l



JBL Tortoise Shine

Shell care for tortoises

- Tortoise Shine: for the tortoise's shell care and pest control.
- Works effectively against ticks.
- Easy to use: bathe the tortoise, dry, spread thin coat of Tortoise Shine with a cotton swab over the shell
- Prevents brittle shell surface, non-toxic – but avoid contact with the animal's eyes.
- 100 ml contain: Oleum syzygii aromatici 0.4 ml, Paraffinum subliquidum DAB7 ad 100 ml

Art. no.	Content
70450	10 ml



JBL TerraGel

Water gel for terrarium animals

- Healthy and safe supply of drinking water in the aquarium: for small reptiles and spiders
- Mix powder with water, put into microwave for 1-3 min, leave to cool – ready
- Pure natural seaweed product, no chemical residues.
- Can be mixed to desired gel consistency
- Contents for max. 3 litres prepared gel.

Art. no.	Content
71005	30 g



Care products > Habitat > Filtering



JBL EasyTurtle

Special granulate to remove odours

- Special mineral granulate which produces odour-free and crystal-clear water in aqua-terrariums
- Quick and effective breakdown of animal excrement.
- Easy to use: spread required quantity over the water covered bottom once a month
- Possible water discolouration disappears after a short time.
- 25 g are sufficient for approx. 50 l water.

Art. no.	Content	Range
71036	25 g	50 l





JBL Clean T

Glass cleaner for terrarium panes

- Clean terrarium panes: powerful and non-toxic glass cleaner with pump spray head
- Powerful cleaning: wet the glass pane with glass cleaner, dry it with soft lint-free cloth
- Dissolves the most stubborn lime-scale from the inside and the outside of the pane, harnesses the cleaning power of nature
- Safe for fish and plants
- Dimensions: 60/120/60 mm

Art. no.
71035

Content
250 ml



JBL WishWash

Cleaning cloth and sponge

- Crystal-clear aquarium and terrarium panes: cleaning cloth and sponge to remove algae and dirt
- Convenient to use: sponge for the removal of dirt at the inside of the pane. Cloth to clean the outside
- Soaks up the whipped off dirt: no spreading of dirt in the water
- Free of chemicals, clean sponge/cloth with water up to 60°C.
- Package contents: 1 x cleaning cloth and sponge. Sponge size approx. 100 x 100 x 25 mm, cloth size approx. 400 x 570 mm

Art. no.
61526



JBL Spongi

Cleaning sponge for aquariums and terrariums

- Clean aquarium or terrarium: robust cleaning sponge
- Easy to use: move the sponge over the inner surface of the aquarium pane
- Cleans thoroughly: residue-free sponge
- Neutral material - adds no pollutants to the water
- Dimensions: 11.5 x 9 cm

Art. no.
61380

Length
115 mm

Width
90 mm



Technic > Lighting



JBL UV-Spot plus

UV spot lamp with daylight spectrum

- Healthy and lively reptiles: effective supply with essential UV-A and UV-B.
- Produces heat and light at the same time
- Self-starting without ballast.
- Optimal safety: thermal protection against overheating, no harmful UV-C radiation.
- 38 % UV-A, 7 % UV-B, E27

Art. no.
61834
61838
61839

Performance
80 W
100 W
160 W

Socket
E27
E27
E27



Technic > Lighting



JBL ReptilSpot HaloDym

Halogen spotlight with daylight spectrum

- Facilitation of the plant growth and vitality of the animals: special spotlight with balanced daylight spectrum
- Warmth regulation modelled on nature by sunbathing under the lamp, facilitates natural behaviour through UV-A proportion
- High-contrast colour reprod., 30% energy savings and twice the service life compared to conventional incandescent lamps.
- Reaches 24 °C at a distance of 100 cm.
- Average life approx. 2000 hours

Art. no.
61866
61867
61868

Performance
28 W
42 W
70 W

Socket
E27
E27
E27



JBL ReptilDay

Halogen spotlight with daylight full spectrum

- Facilitation of plant growth and vitality of the animals: production of areas of warmth and light
- Warmth regulation modelled on nature by sunbathing under the lamp, facilitates natural behaviour through UV-A proportion
- 15 % more light, twice the service life compared to conventional spot lights.
- Creating daylight full spectrum 2900 K
- Average service life approx. 2000 hours

Art. no.
61841
61842
61843
61844

Performance
35 W
50 W
75 W
100 W

Socket
E27
E27
E27
E27



Technic > Lighting > Solar Light tubes T8

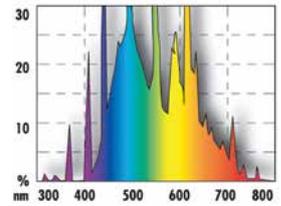


JBL SOLAR REPTIL JUNGLE

Terrarium fluorescent tube for rainforest animals

- For all terrarium animals which, due to their way of life, are only exposed to low UV radiation (e.g. rainforest)
- Light spectrum is adapted to the natural light conditions of rainforest animals.
- Low UV-B proportion of 0.5 %
- Low UV-A proportion of 0.2 %
- Minimum life span 1 year

Art. no.	Performance	Length
61590	15 W	438 mm
61591	18 W	590 mm
61592	25 W	742 mm
61593	30 W	895 mm
61594	36 W	1200 mm
61595	38 W	1047 mm

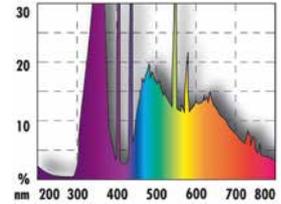


JBL SOLAR REPTIL SUN

Special terrarium fluorescent tube for desert animals

- For all desert animals which are exposed to full sunlight in their natural habitat.
- Light spectrum is adapted to the natural light conditions of desert animals.
- High UV-B proportion (8.0 %).
- High UV-A proportion (36.0 %)
- Minimum life span 1 year

Art. no.	Performance	Length
61650	15 W	438 mm
61651	18 W	590 mm
61652	25 W	742 mm
61653	30 W	895 mm
61654	36 W	1200 mm
61655	38 W	1047 mm



Technic > Lighting > SOLAR light tubes T5

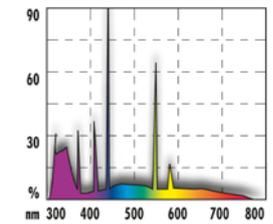


JBL SOLAR REPTIL SUN ULTRA

Special terrarium fluorescent tube for desert animals

- For desert animals and animals which are exposed to full sunlight in their natural habitat
- Full spectrum, equivalent to sunlight – medium daylight
- Facilitates activity, appetite and reproductive behaviour through UV-A, ideal calcium metabolism through UV-B
- Daily operation time 9 to 11 hours
- Minimum life span 1 year

Art. no.	Performance	Length
61597	24 W	550 mm
61598	39 W	850 mm
61599	54 W	1150 mm



Technic > Lighting > Energy-saving lamp



JBL ReptilDesert

Energy-saving lamp for desert terrariums

- Compact lamp with high UV-A+UV-B proportions for desert terrariums, 6500 Kelvin for light conditions modelled on nature
- For a species-specific care of bearded dragons, tortoises and spiny-tailed agamas
- Facilitates activity, appetite and reproductive behaviour through UV-A, ideal calcium metabolism through UV-B
- Recommended distance to the animal: 5 to 8 cm with a daily irradiation time of 8-10 hours
- E27 socket.

Art. no.	Performance	Socket
61851	15 W	E27
61852	23 W	E27



JBL ReptilDesert Daylight

Energy-saving lamp for desert terrariums

- Full spectrum energy-saving lamp without UV for desert terrariums.
- Daylight lamp for animals, which do not tolerate UV light.
- 6500 K colour temperature.
- E27 socket.
- 24 W

Art. no.	Performance	Socket
61850	24 W	E27



JBL ReptilJungle

Energy-saving lamp for rainforest terrariums

- Terrarium lamp with medium UV for tropical terrariums and 6500 Kelvin for conditions modelled on nature
- For a species-specific care of animals from the tropics and subtropics, such as chameleons and snakes
- Facilitates activity, appetite and reproductive behaviour with UV-A, ideal calcium metabolism thanks to UV-B
- Recommended distance to the animal: 5 to 20 cm with a daily irradiation time of 8-10 hours
- E27 socket.

Art. no.	Performance	Socket
61856	15 W	E27
61857	23 W	E27



JBL ReptilJungle Daylight

Energy-saving lamp for rainforest terrariums

- Energy-saving lamp without UV for rainforest terrariums.
- Screw lamp into socket – switch on, ready! Needs a moment to reach its full brightness
- 4000 K colour temperature.
- E27 socket
- 24 W

Art. no.	Performance	Socket
61855	24 W	E27





JBL ReptilDesert L-U-W Light alu
Solar light (spot light) for desert terrariums

- Full spectrum solar light (spot light) made of aluminium for rainforest terrariums with 25° spot.
- Complete solution: light/UV/warmth.
- All-day lighting with 5000 K colour temperature for 10 – 12 hours per day.
- Aluminium body: better heat dissipation – more output, more UV output, no overheating
- Special ballast (JBL TempSet LUW) for each lamp required.

Art. no.	Watt
61890	35 W
61891	50 W
61892	70 W



JBL ReptilJungle L-U-W Light alu
Wide-beam spotlight for rainforest terrariums

- Full spectrum solar light (spot light) made of aluminium for rainforest terrariums with 40° wide beam spot.
- Complete solution: light/UV/warmth.
- All-day lighting with 5000 K colour temperature for 8 – 10 hours per day
- Aluminium body: better heat dissipation – more output, more UV output, no overheating
- E27 socket.

Art. no.	Watt
61894	35 W
61895	50 W
61896	70 W



JBL TempSet Unit L-U-W
Installation kit for metal-halide lamps

- For the safe operation of any metal-halide lamp: pre-assembled installation kit with quick coupling
- Attach holder in terrarium cover, screw in LUW lamp (separately available), plug in
- Lamp angle freely adjustable to 180°
- Heat-resistant to 270 °C
- Made in Germany – quality ballast with automatic shut-off, overheat protection, safety shutdown.

Art. no.	For
61878	35 W
61875	50 W
61879	70 W



JBL TempSet basic
Installation kit for lamps in terrariums

- For more safety in the terrarium: installation kit for lamps in terrariums
- For safe operation of energy-saving & incandescent lamps, halogen & neodymium spot lamps, UV spot lamps, ceramic lamps
- Easy to install: mounting plate, screws and switch are pre-assembled
- Heat and dimension stable to 270 °C
- Installation kit for an output up to 250 W, including 1.5 m cable

Art. no.	Socket
71180	E 27



JBL TempSet angle
Installation kit for lamps in terrariums

- For more safety in the terrarium: installation kit with joint for lamps in terrariums.
- For safe operation of energy-saving + incandescent lamps, halogen + neodymium spot lamps, UV spot lamps, ceramic lamps
- Easy to install: mounting plate, screws and switch are pre-assembled
- Heat and dimension stable to 270 °C
- Installation kit with joint (up to 60° angle) for lamps in terrariums with output up to 250 W

Art. no.	Socket
71181	E 27



JBL TempSet connect
Installation kit with connector

- installation kit with connector for lamps in terrariums.
- For safe operation of energy-saving & incandescent lamps, halogen & neodymium spot lamps, UV spot lamps, ceramic lamps
- Easy to install: quick coupling - pre-assembled mounting plate, screws and switch.
- Heat and dimension stable to 270 °C
- Installation kit with connector for lamps in terrariums

Art. no.	Socket
71182	E 27



JBL TempSet angle+connect
Installation kit for lamps in terrariums

- For more safety in the terrarium: installation kit with joint and connector for lamps in terrariums.
- For safe operation of energy-saving & incandescent lamps, halogen & neodymium spot lamps, UV spot lamps, ceramic lamps
- Easy to install: mounting plate, screws and switch are pre-assembled
- Heat and dimension stable to 270 °C
- Installation kit with joint (up to 60° angle), WINSTA connector for install. through a 2 cm hole for output up to 250 W

Art. no.	Socket
71183	E 27



Technic > Lighting > Accessories lighting



JBL TempProtect light
Reptile thermal burn protection for JBL TempSets

- Thermal burn protection for reptiles in the terrarium: lamp screen made of stable, heat-resistant special plastic
- Suitable for: UV spots, metal-halide lamps and others.
- Prevents overheating and consequently a shortened life expectancy of the lamp.
- Highest safety: narrow slits, fine mesh width to prevent young animals from entering and burning themselves.
- Can easily be affixed to any JBL TempSet at a later date

Art. no.
71186
71187

Size
 100 mm
 130 mm

Size
 M
 L



JBL TempReflect light
Reflector screen for energy-saving lamps

- Doubles light 100%: high gloss reflector screen for terrariums.
- Clip reflector to holder (JBL TempSet not included), screw in lamp, switch on – ready
- Increases depth of penetration and directs the essential UV-B light (with energy-efficient lamps emitting UV-B)
- Not suitable for use with lamps that get very hot or with heat emitters.
- Suitable for terrariums approx. 80 – 150 cm height.

Art. no.
71189

up to
 30 W



Technic > Warmth & Heating > Spotlights & Mats



JBL ReptilHeat
Ceramic heat lamp

- Ideal heat radiation for terrarium animals: ceramic heat lamp for terrariums
- Easy to install – can also be fitted inside the terrarium
- Requires a special socket (e.g. TempSet Heat)
- Heat protection required
- Radiant heater does not emit visible light

Art. no.
71173
71174
71175

Performance
 60 W
 100 W
 150 W

Socket
 E27
 E27
 E27



JBL TerraTemp heatmat
Heating mat for terrariums

- Ideal heat radiation for animals and plants: self-adhesive infrared heating mat for terrariums
- Easy to mount: self-adhesive fixing at bottom, sidewall or top
- Especially robust: extra strong PET foil
- Highest safety: 2 insulation layers, electrical connection sealed with a special resin
- Including overheat protection

Art. no.
71147
71148
71149

Performance
 8 W
 15 W
 25 W

Size in mm
 280x180
 280x350
 280x600



Technic > Warmth & Heating > Accessoires



JBL TempSet Heat
Install. kit with ceramic bulb holder for heat radiator

- Reptile protection against burns – kit with ceramic bulb holder, heat guard and protective mesh for heat lamps
- Best protection: sturdy, heat-resistant special plastic, mesh made of galvanised steel, bottom made of stainless steel
- Young animals cannot enter the mesh due to small mesh size and narrow slits
- Distance of at least 50 cm from pets and burnable substrates
- Up to 160 W, E27

Art. no.
71185

up to
 160 W

Socket
 E27



Accessories > Control > Monitoring



JBL TerraControl
Thermometer and hygrometer incl. suction cup

- Easy check thermometer for the relative humidity and the temperature in terrariums
- Temperature range: -30 to +60 degrees
- Humidity values: from 0 to 100 % in steps of 10 %
- Area between 20 and 35 is marked as "optimal"
- Incl. suction cup.

Art. no.
61517



Accessories > Control > Monitoring



JBL TerraControl Solar

Solar-powered thermometer + hygrometer for terrariums

- Digital thermometer and hygrometer to conveniently check temperature and relative humidity in terrariums
- Large temperature and humidity measuring range: -30 to +50 °C, humidity range: 20 to 99 % relative humidity
- High precision: temperature +/- 1 °C (from 0 to +30 °C), other measuring range +/- 3 °C, humidity +/- 5 %
- Convenient to mount: double-sided adhesive tape, fix mounting plate left or right.
- Incl. battery and double-sided adhesive tape.

Art. no.
71164

Length
95 mm

Height
65 mm



JBL TerraSafe Lock for terrarium pane

- Secure terrarium: terrarium lock for sliding doors.
- For all panes up to 8 mm glass thickness
- Robust design for sliding doors
- Incl. 2 keys
- Weight: 60 g

Art. no.
61516



Accessories > Decoration



JBL Cork Bark

Cork bark for decoration

- Cork bark as hiding and spawning place for fish, sleeping and hiding place for terrarium animals
- Decoration for the individual design: place in the aquarium, can be weighted down (to prevent floating)
- Natural product without toxic substances, water neutral: no release of unwanted pollutants into the water
- Clean thoroughly before use, initial brown discoloration of water disappears after partial water changes
- Design of backgrounds and hiding places

Art. no.
67040

per Kg



JBL ReptilCava GREY

Cave for terrarium animals

- Individual terrarium design: cave in stone look - retreat for the terrarium dwellers
- Non-toxic: coloured resin - does not emit any harmful substances.
- Heavy-duty version to prevent it from being accidentally knocked over
- Reproduction in natural look.
- ReptilCava - the cave for terrariums: available in various colours and sizes

Art. no.
71088
71089
71090

Size
S
M
XL



JBL ReptilCava SAND

Cave for terrarium animals, sand coloured

- Individual terrarium design: sand coloured cave in sandstone look - retreat for your terrarium dwellers
- Non-toxic: coloured resin - does not emit any harmful substances.
- Heavy-duty version to prevent it from being accidentally knocked over
- ReptilCava - the cave for terrariums: available in various colours and sizes

Art. no.
71096
71097
71098

Size
S
M
XL



JBL Desinfekt

Disinfectant for aquariums

- Higher filter performance with clean hoses: double-ended hose brush with highly flexible steel helix
- Easy to use: remove hose, move brush inside the hose, clean about every eight weeks
- Do not use with animals: very powerful bactericidal, fungicidal and virucidal effect, active substance: 100 % chloramine T.
- Package contents for approx. 20 l disinfection solution.

Art. no.
20091

Content
50 g



Use biocides safely. Always read the labelling and product information before use.



JBL AquaPad

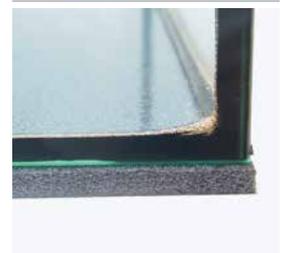
Special underlay for aquariums and terrariums

- Prevention of tension in the glass – compensates unevenness: special underlay for aquariums
- Easy to use: place the AquaPad under the aquarium
- Compensates unevenness, prevention of heat loss
- Prevention of glass breakage, stability

Art. no.
61100
61101
61102
61106
61103
61104
61105

Length
60 cm
80 cm
100 cm
100 cm
120 cm
120 cm
150 cm

Width
30 cm
40 cm
40 cm
50 cm
40 cm
50 cm
50 cm





JBL ProScope Tool P straight

Straight pincers for decoration, insertion of plants

- Professional insertion of aquatic plants for the design of aquarium landscapes: straight pincers for aquascaping.
- Easy handling: fatigue-free working thanks to its light weight: 78.3 g, length: 30 cm
- Protects plant: tips with cross corrugation, especially smooth surface: stainless high-quality steel, made in Japan.
- Maintenance tip: rinse with freshwater after use in saltwater

Art. no.
61548

Length
30 cm



JBL ProScope Tool P slim line
Pincers for the decoration and insertion of plants

- Professional insertion of aquatic plants for the design of aquarium landscapes: slender and straight pincers
- Easy to use: fatigue-free working thanks to its light weight: 44.8 g, length: 30 cm
- Protects plant: tips with cross corrugation, especially smooth surface: stainless high-quality steel, made in Japan.
- Maintenance tip: rinse with freshwater after use in saltwater

Art. no.
61549

Length
30 cm



JBL FIXOL
Adhesive for background pictures in aquariums and terrariums

- Perfect hold without bubbles: non-toxic adhesive for glossy plastic foil backgrounds
- Complete visibility: no annoying reflections caused by air gaps or unwanted bubbles (3D effect)
- To use: apply adhesive to the outside of the aquarium/terrarium rear pane, position the foil on the outside on rear pane, smooth gently with a scraper
- Not suitable for: foil backgrounds with a matt surface, backgrounds in 3D look, paper foil backgrounds

Art. no.
61210

Content
50 ml For
2,0x0,8 m



JBL ProHaru Universal
Universal adhesive for aquariums, terrariums and ponds

- For the bonding of decorations, panes, technical items, leaks and anything else
- Bonds above and under water. Non-toxic to animals and plants.
- Bonds glass, metal (aluminium), wood, plastic materials (except PE, PP), mineral materials etc.
- Also glues mosses and ferns to decorations
- 80 ml black universal adhesive in resealable tube

Art. no.
61397

Content
80 ml



JBL HARU Universal (with compressed air)
Universal adhesive for aquariums, terrariums and ponds

- For the bonding of decorations, panes, technical items, leaks and anything else
- Bonds above and under water. Non-toxic to animals and plants.
- Bonds glass, metal (aluminium), wood, plastic materials (except PE, PP), mineral materials etc.
- Also glues mosses and ferns to decorations
- 200 ml black universal adhesive with resealable compressed air cartridge

Art. no.
61398

Content
200 ml



JBL ProHaru Rapid
Instant adhesive gel for aquariums and terrariums

- Bonds plants, corals and small decorations
- Fixes moss, plants and coral pieces
- Hardens instantly
- Transparent colour
- 20 g in resealable tube with tip

Art. no.
61399

Content
20 g



JBL AquaSil transparent
Special silicone for aquariums and terrariums

- Special transparent silicone for the repair and production of frameless glass aquariums and bonding of decorative material
- For use please follow the product information attached
- Harmless for fish, fast hardening, high adhesive strength
- TÜV type tested, after hardening: non-toxic, odourless and physiologically safe.

Art. no.
61391
61394

Content
80 ml
310 ml



Accessories > Decoration



JBL AquaSil black

Special silicone for aquariums and terrariums

- Special black silicone for the repair and production of frameless glass aquariums and bonding of decorative material
- For use please follow the product information attached
- Harmless for fish, fast hardening, high adhesive strength
- TÜV approved, after hardening: non-toxic, odourless and physiologically safe.

Art. no.

61390

61393

Content

80 ml

310 ml



JBL Cocos Cava

Coconut cave for aquariums and terrariums

- Hiding and spawning place for fish, sleeping and hiding place for terrarium animals
- Individual design: reproduction of the animals' biotopes with natural materials – decoration attractive for animals and humans
- Natural product, water neutral: no release of unwanted pollutants into the water
- Tip: rinse the decoration under running water before using it in the aquarium
- Note: Since this is a natural product, the size can slightly differ

Art. no.

61510

61511

61512

61514

61513

Size

1/2 L

1/2 M

3/4 L

1/1 M

1/1 L



JBL Mopani

Root wood for aquariums and terrariums

- Hiding and spawning place for fish, hiding and climbing area for terrarium animals
- Individual design: reproduction of the animals' biotopes with natural materials – decoration attractive for animals and humans
- Natural product: no release of unwanted pollutants into the water. Weighing the root down prevents it from floating.
- Tip: before use in the aquarium rinse the decoration under running water
- Note: since this is a natural product, the size can vary slightly

Art. no.

67011

67012

67013

Size

S

M

L

Size

10-27 cm

20-35 cm

30-40 cm



JBL Mangrove Roots

Mangrove wood root for aquariums and terrariums

- Hiding and spawning place for fish; for aquariums and terrariums. Essential fibres for armored catfish
- Individual design: reproduction of the animals' biotopes with natural materials – decoration attractive for animals and humans
- No unwanted pollutants released into the water. Weighing it down prevents the root from floating.
- Tip: Before use lay the wooden root into a bucket with water for several days to avoid water discolouration
- Note: Since this is a natural product, the size can slightly differ

Art. no.

67031

67032

Size

S

M

Size

10-20 cm

25-35 cm



Accessories > Substrate



JBL TerraBasis

Substrate for rainforest terrariums

- For humid and semi-humid terrariums: specialty soil from selected natural products for rainforest terrariums
- Does not contain fertiliser, high humidity capacity, no mould formation thanks to mould-resistant coconut humus
- Loose bottom covering provides activity for digging animals
- For each animal the right ground: information about the suitable animal species at the bottom of the bag
- Available in two sizes

Art. no.

71010

71012

Content

5 l

20 l



JBL TerraCoco

Substrate for all types of terrariums

- Substrate for all types of terrariums
- Natural substrate made of coconut chippings.
- From the fibrous outer husks of ripe coconuts
- Natural germ-inhibiting effect.
- Reduces fungal infection.

Art. no.

71015

Content

5 l



JBL TerraCoco Compact

Substrate for all types of terrariums

- Substrate for all types of terrariums
- Natural substrate made of coconut chippings
- From the fibrous outer husks of ripe coconuts.
- Natural germ-inhibiting effect.
- Reduces fungal infection.

Art. no.

71025

Content

450 g





JBL TerraCoco Humus
Substrate for all types of terrariums

- Substrate for all types of terrariums
- Natural substrate made of turf-like coconut humus.
- From the fibrous outer husks of ripe coconuts.
- Natural germ-inhibiting effect.
- Reduces fungal infection.

Art. no.
71026 Content
600 g



JBL TerraWood
Substrate for dry and semi-dry terrariums

- For dry and semi-dry terrariums: natural substrate made from beech chippings
- Evenly sprinkle JBL TerraWood on the floor surface, then spread it
- Pesticide-free.
- Also suitable as litter for birds and small pets
- Available in 2 sizes

Art. no.
71016 Content
71006 5 l
20 l



JBL TerraSand natural red
Substrate for desert terrariums

- For desert terrariums: natural substrate made of fine red sand.
- Grain: 0.05 – 1 mm.
- Virtually dust-free sand
- Fine grain encourages the natural digging behaviour of many species
- Round grain shape reduces abrasive effect on the animals' skin

Art. no.
71017 Content
7,5 kg



JBL TerraSand natural yellow
Substrate for desert terrariums

- For desert terrariums: natural substrate made of fine yellow sand
- Grains: 0.2 – 0.6 mm
- Virtually dust-free sand
- Fine grains encourage the natural digging behaviour of many species
- Round grain shape reduces abrasive effect on the animals' skin

Art. no.
71018 Content
7,5 kg



JBL TerraSand natural white
Substrate for desert terrariums

- For desert terrariums: natural substrate made of fine white sand
- Grain: 0.2 – 0.6 mm.
- Virtually dust-free sand
- Fine grain encourages the natural digging behaviour of many species
- Round grain shape reduces abrasive effect on the animals' skin

Art. no.
71019 Content
7,5 kg



JBL TerraBark
Ground substrate for forest and rainforest terrariums

- For forest and rainforest terrariums: substrate made of pine bark.
- Pesticide-free
- Germ and fungus curbing effect.
- Humidity-regulating properties.
- Made exclusively from the valuable underbark of pine trees

Art. no.	Content	Graining
71021	5 l	2-10 mm
71024	20 l	2-10 mm
71020	5 l	10-20 mm
71022	20 l	10-20 mm
71023	20 l	20-30 mm



The JBL success story

From a 30 m² pet shop to a worldwide terrarium-, aquarium and pond product specialist

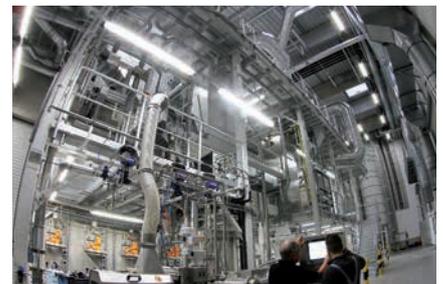
It all began in Ludwigshafen in 1960 with a small pet shop, just 30 m² in size, which Joachim Böhme, a trained chemist from Dresden, opened and so made his hobby his job. His love of animals, his white lab coat as his working clothes, and his friendly manner as well as his specialist knowledge all contributed to his success.

His business grew and the pet shop evolved into a wholesale ornamental fish business. As fish diseases became a problem, Joachim Böhme put his studies to good use and developed a highly effective remedy against ectoparasites, which he named Punktol. Up to the present day, JBL, under the leadership of Roland Böhme, the son of the founder, has expanded its range to over 1000 products for the aquarium, terrarium and garden pond and has established a position as a leading producer in this field, exporting to 65 countries around the world.

Using the latest production and filling plant, all JBL products are manufactured and dispatched in Neuhausen. The company site covers over 12,000 m² and includes not only the Production plant and the 6,500 m² Logistics Center completed in 2008, but also the Research Center. Here many fully stocked aquariums and terrariums operate on a permanent basis in order to test all the products under realistic conditions. In order to take the in-house tests to an even more stringent level, JBL cooperates with leading scientific institutions throughout Europe, such as the Leibnitz Institute for Marine Science in Kiel (IFM Geomar), the Department of Measurement and Laser Technology at the University of Ulm and the Haus des Meeres in Vienna.

In addition to the usual experiments and tests in the laboratory, JBL biologists have for many years now gained their insight into the habitats and life of the animals directly from nature in the course of JBL research expeditions and workshops. The protection of wildlife and environmental awareness are key factors for JBL. By means of a photovoltaic system installed on the roofs of the company buildings, JBL is able to generate sufficient electricity itself to meet the entire requirements of production. For many years JBL has been a supporter of the SHARK PROJECT, the largest international protection organization for sharks, as sharks are threatened with imminent extinction at the hands of man.

Garden Pond enthusiasts know that they can depend on the quality of JBL products and appreciate the new innovations which JBL regularly launches on the market. Dr. Rainer Keppler, Director of Development at JBL states, "The best ideas don't originate from us! It's the aquarium and terrarium fans and sales staff who phone us and tell us their ideas. We then apply our knowhow to convert these often amazing ideas into products at acceptable prices."



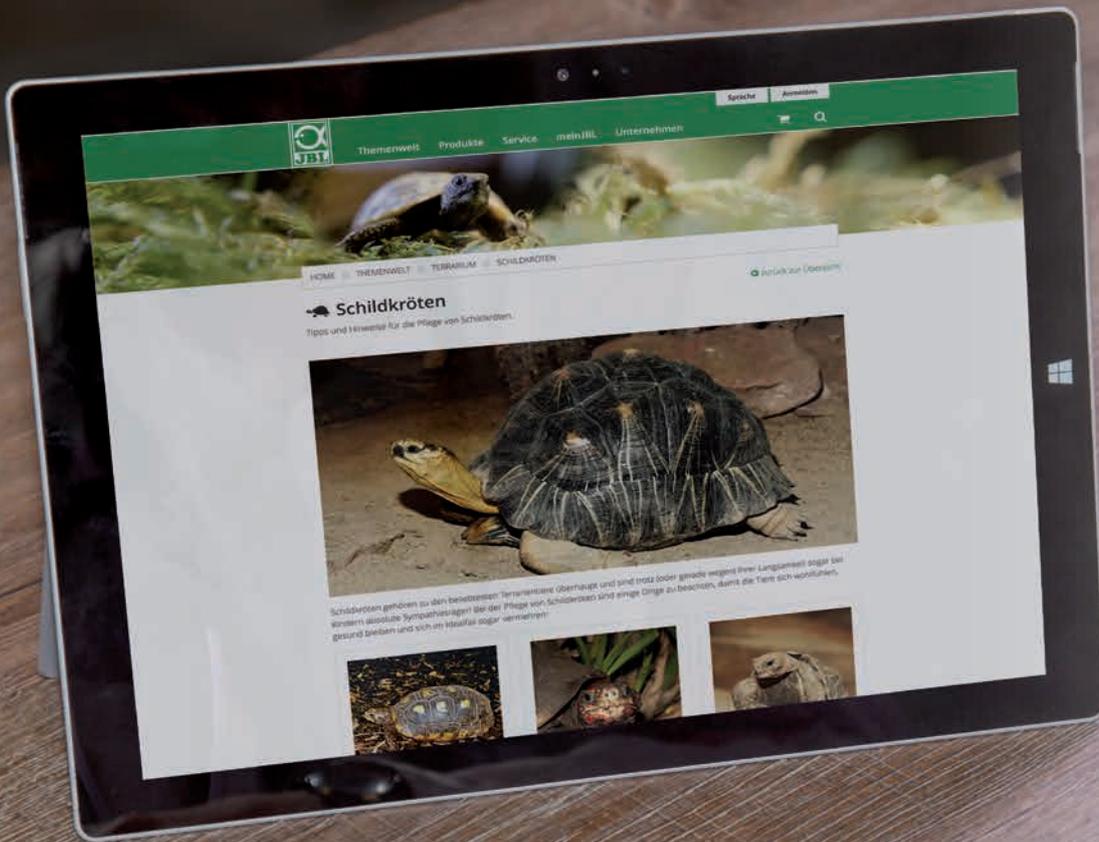
Understanding Nature

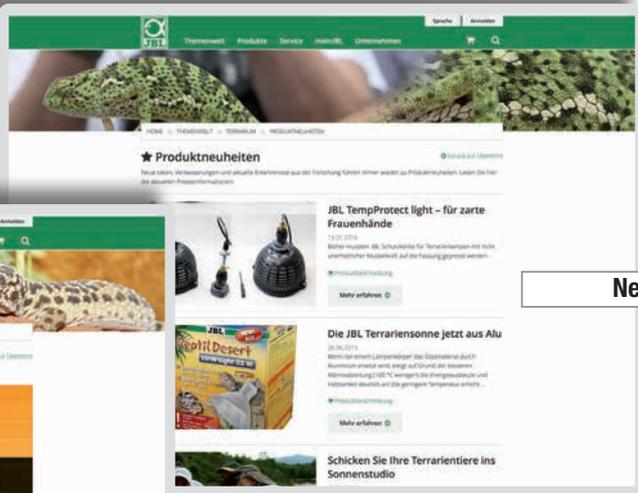
Ahead through research

Anyone researching their terrarium animals (kept or planned) in books or online, will have no means of knowing which information is reliable and which not. As a reputable manufacturer JBL does not rely on second hand information. JBL has a research department with terrariums where animals are either observed long term or short-term for specific purposes. The findings obtained there directly inform our product concepts and developments. The biotope data and animal observations, collected during the JBL research expeditions, are also used for product development or optimisation. The UV and lux measurement values are especially important as a basis for the development of lamps.

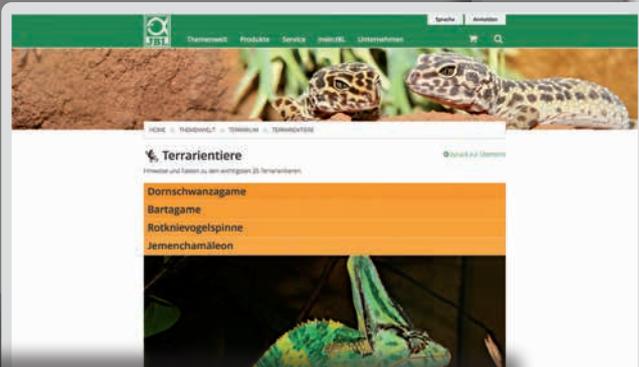


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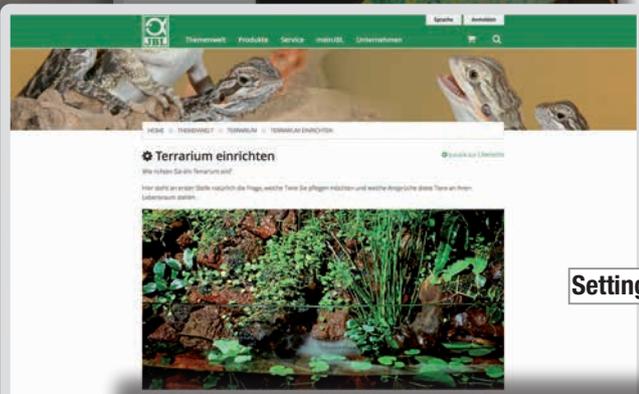




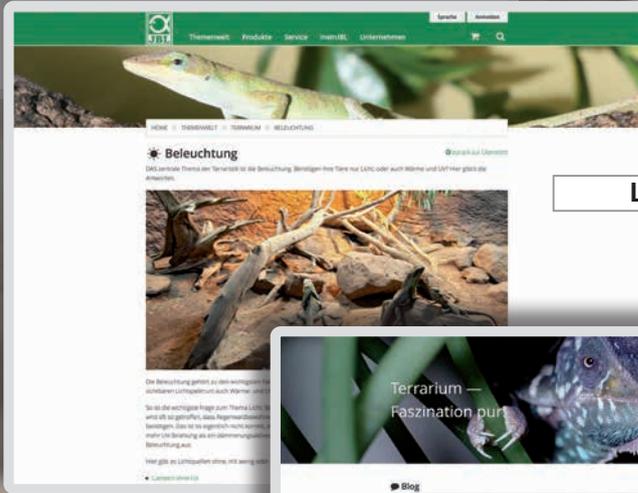
News



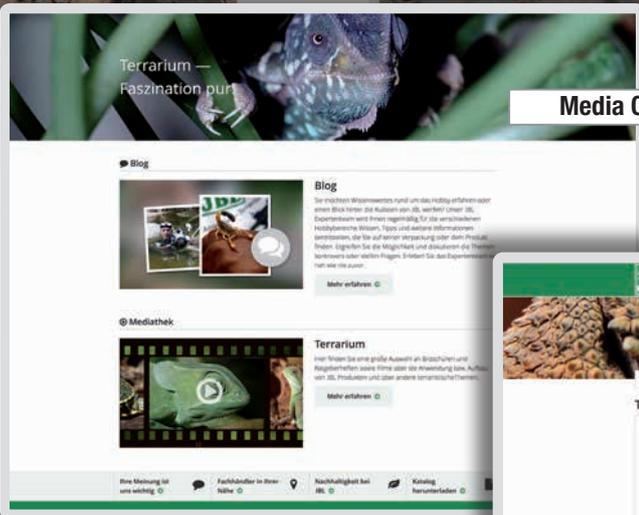
Terrarium Animals



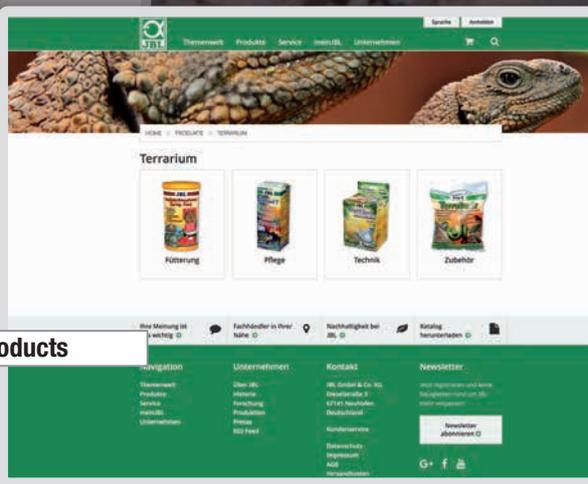
Setting up a terrarium



Lighting



Media Center - Blog



Products

JBL



We kindly ask you for environmental reasons to pass the catalogue to other interested parties if you don't need this catalogue anymore. This way you help to save raw materials.



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**VORSPRUNG
DURCH FORSCHUNG**
AHEAD THROUGH RESEARCH

