



Tortoise Trust Taking Care of Pet Tortoises



Introduction

Tortoises make very interesting pets, and by keeping them you may be inspired to learn more about their conservation and welfare. They are not, however, particularly easy or low-maintenance animals to keep outside of their natural climatic range. Many tortoises that are bought as pets by inexperienced keepers suffer avoidable health problems and premature mortality. Two of the most frequent problem areas are inadequate housing and diet.

This short booklet has been produced by the Tortoise Trust and the Jill Martin Fund for Tortoise Welfare and Conservation to help you to avoid some of these common problems and to help you keep your new pet healthy and safe.

The Tortoise Trust is one of the most respected tortoise organisations in the world, with three decades of achievement in the field of tortoise research. It has pioneered many important husbandry and captive breeding techniques. The Jill Martin Fund for Tortoise Welfare and Conservation is a UK-based educational charity dedicated to promoting the humane treatment and conservation of tortoises, both in captivity and in the wild.

We hope that this short introduction to keeping tortoises as pets will make a positive contribution to the welfare of these amazing and beautiful animals. We also encourage you to consult the further reading and additional resources provided later, as these cover many of the same topics featured here but in much greater detail.

This particular guide is primarily directed at keepers of Mediterranean tortoises. This means members of the Spur-thighed (*Testudo graeca* and *Testudo ibera*) group, the Hermann's tortoise (*Testudo hermanni*) and the Marginated tortoise

(*Testudo marginata*). Although it is not a Mediterranean tortoise (it originates in Asia), the Russian or Afghan tortoise (*Testudo horsfieldii*) has virtually identical husbandry requirements and therefore the information presented here is still relevant.

If you keep Leopard (*Geochelone pardalis*), African Spurred tortoises (*Geochelone sulcata*), Redfoot (*Geochelone carbonaria*), Hingeback tortoises (*Kinixys* species) or any other tropical species you should consult our separate publications and online resources for guidance. These tortoises have totally different dietary, temperature, humidity and housing requirements. Unlike Mediterranean tortoises, these tropical species do not hibernate over winter.

The Tortoise Trust
The Jill Martin Fund for Tortoise Welfare and Conservation

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A well-planted outdoor pen complete with mini-greenhouse to provide extra warmth.

Housing

Mediterranean tortoises kept in the UK and Northern Europe will normally require a combination of outdoor and indoor facilities. Indoor facilities alone are rarely adequate and should not be solely relied upon. Tortoises require far more space than most reptiles, and do not tend to do well if kept in classic vivarium-style enclosures for extended periods. If you cannot provide both indoor and outdoor facilities you should reconsider keeping a tortoise as a pet. Inadequate housing is not only inhumane, but will also result in serious health problems over time. Such problems can be prevented if the correct type of housing is provided at the outset.

Outdoor housing

Mediterranean tortoises need a dry and well-drained area with both shade and full sunlight. Tortoises kept on heavy, wet soils or on damp grass are likely to develop respiratory and shell infections over time.

A small pen on a lawn is completely inadequate. Instead, aim for a very secure enclosure that meets the animals need for:

- Safety from attack by predators. Rats, foxes, dogs and even large birds can attack and kill tortoises. Juveniles are at particular risk. Ensure no potential predator can ever gain access to your tortoise. Juvenile pens are best covered by strong mesh. Attacks by pet dogs kill dozens of tortoises every year. Even normally well behaved dogs may suddenly attack a tortoise without warning. It is best to allow no contact at all between dogs and tortoises.
- A dry, well-drained substrate that helps prevent shell and respiratory infections.
- Shade to prevent overheating in hot weather.
- Shelter from rain and cold in bad weather.
- Sufficient space to permit normal behaviour and adequate exercise. All pens should offer a range of micro habitats including shady plants, rocks, open basking areas and a good selection of edible vegetation. Toxic plants should be excluded from all tortoise enclosures. Ideally, these habitats will provide a variety of slopes and contours as tortoises should not be restricted to flat surfaces exclusively. Tortoises like to create 'scrapes' and burrows, and they also

use contoured surfaces to aid basking and thermoregulation. In addition, contoured surfaces, especially if accompanied by strategically placed rocks and vegetation, are of great help in allowing a tortoise to get onto its feet if it accidentally turns over. On flat surfaces they will find that very difficult and stressful. It can even be dangerous if they become inverted in full sunshine on a hot day, and death can occur from overheating rapidly in such cases.

- Secure perimeters to prevent tortoises climbing or burrowing out, or predators burrowing in. Many tortoises are excellent climbers, and others can dig deep burrows very quickly. Burying a strong wire mesh beneath the enclosure is highly advisable in such cases. Take special care in corners, which are often implicated in escapes. All perimeter walls should be at least twice as high as the largest tortoise is long, and it is best if all perimeters are completely opaque and solid, as tortoises will spend hours trying to get through any barrier that they can see through.
- Enclosures can be constructed of a variety of materials. Concrete blocks, stone, brick or treated timbers are all suitable. For smaller tortoises and juveniles, ready made items such as children's sandpits can be easily adapted to provide very secure and attractive housing options.



Outdoor pens for juvenile tortoises.

- Large tortoises may be allowed to roam freely in a garden, but do make absolutely certain that all perimeters really are 100% secure and that there are no toxic plants or garden chemicals in use that present a hazard.

It is an excellent idea to provide a 'tortoise conservatory' in all enclosures. One simple design resembles a small cloche or gardener's cucumber frame. Based on a strong, rot-proof wooden frame and featuring a tough polycarbonate transparent roof, this type of unit can make a major difference to the overall health of any Mediterranean tortoise.

The tortoise can enter and leave this unit at will, and it will quickly learn to use it in its

Rats, foxes, dogs and even large birds can attack and kill tortoises. Juveniles are at particular risk. Ensure no potential predator can ever gain access to your tortoise.

daily thermoregulation cycle. This creates a kind of mini-greenhouse, and temperatures within such a unit can easily be up to 10 Celsius warmer than temperatures outside. This can make a huge difference to feeding and overall health.

No artificial heat is needed, as even on wet and overcast days, this unit will be dry and much warmer than exposed areas outside.



Tortoise Table habitats as used and recommended by the Tortoise Trust

By far the most satisfactory type of indoor housing for juveniles and small tortoises is what is known as the 'tortoise table' design.

Indoor housing

In Northern Europe, some form of indoor housing will invariably be required from time to time, even in summer. That said, whenever possible, outdoor habitats should be used as often as the weather permits. Poor quality and inappropriate indoor housing is a frequent cause of ill health and a major contributor to developmental disorders in juveniles.

If the indoor housing fails to provide adequate space, or if temperature ranges and ventilation are inadequate, tortoises will become highly stressed and far more likely to succumb to respiratory and other serious infections. It is therefore extremely important that the accommodation employed meets all the animal's critical physiological and environmental needs. The least satisfactory form of housing for Mediterranean tortoises indoors in the opinion of the Tortoise Trust consists of enclosed glass 'fish-tank' or reptile style vivaria as used for snakes or lizards.

The main problems with such units are the high cost for the very limited floor space provided, their weight and fragility, the typically poor ventilation and temperature gradients that can be achieved, and the fact that tortoises

really do not respond well (as mentioned previously) to barriers that they can see through. Given that there are far better options available, we see no reason at all why this type of enclosure should be used with Mediterranean tortoises.

Tortoises kept in such units often display high levels of stress, are frequently lethargic, and have far higher rates of respiratory and developmental problems than animals reared in more spacious and better ventilated enclosures.

By far the most satisfactory type of indoor housing for juveniles and small tortoises is what is known as the 'tortoise table' design. This type of enclosure offers many important advantages over traditional 'tank style' habitats:

By allowing for adequate exercise the risk of respiratory and bone development problems is reduced.

Substrates made of hemp, bark, commercial reptile sand or wood chips should not be used as all of these have been repeatedly associated with deaths due to impaction or toxicity.



Artificial plants and hides contribute to an attractive environment.

- The amount of floor space provided is substantially more than can be offered in all but the very largest traditional vivaria. This is critical, as exercise is as important to tortoises as it is to humans. By allowing for adequate exercise the risk of respiratory and bone development problems is reduced.
- Ventilation in such units is excellent. There are none of the pockets of dead, stale air as found in enclosed vivaria.
- It is very easy to provide flexible lighting and heating arrangements, and to allow for adequate gradients to permit normal thermoregulation.
- There is no danger of broken glass and the units are easy to disassemble and relocate. Several such enclosures can be stacked on top of one another to provide multiple habitats on the same floor space.
- This type of enclosure provides excellent access and is very easy to clean and maintain.

Substrates

A suitable substrate, or terrarium ground cover material, for Mediterranean tortoise enclosures indoors may be provided by mixing soft (play) sand with topsoil at an approximate 50/50 ratio. This is easy to keep clean, is safe and non-flammable, and we have used it with complete success for very many years. Such a substrate should be at least 50 mm (2") deep for small tortoises, and 75 mm (3") deep for larger tortoises. This will allow them to partially bury themselves if desired, thereby stabilising their temperature and reducing fluid loss from evaporation. In addition, a covered shelter should also be included as this helps with thermoregulation and the creation of appropriate micro climates. A feeding area of easy-to-clean tiles will prevent the substrate adhering to the food and will greatly assist with maintaining hygiene. These tiles can be removed and washed daily.

Substrates made of hemp, bark, commercial reptile sand or wood chips should not be used as all of these have been repeatedly associated with deaths due to impaction or toxicity. We have been using this type of open-topped 'tortoise table' indoor habitat for many years now, and we are completely satisfied that they offer a safe, humane and effective environment that is far better than that which can easily be achieved using traditional glass or wooden tank type vivarium systems.

The lack of 'invisible barriers' reduces stress and promotes normal behaviour.

- The lack of 'invisible barriers' reduces stress and promotes normal behaviour.
- The cost of providing large amounts of floor space is very low when compared to expensive glass enclosures.
- Because of their strength, it is possible to use adequate depths of substrate that allow for burying and burrowing. This has important considerations for health, as this is one way that tortoises conserve fluid and prevent dehydration. If tortoises do become dehydrated this can result in irreparable harm to the renal system and increases the danger of potentially fatal bladder 'stones' forming.
- Enclosures of this type can be obtained ready made from a number of specialist suppliers, or can be made at home with a basic set of tools and minimal 'DIY' skills.
- Alternatively, some keepers have adapted existing furniture such as wardrobes laid on their backs to this purpose, and others have taken large indoor rabbit and guinea pig cages (of the type consisting of a large tray and wire top cover) and used these with considerable success. All of these options can provide a substantial amount of floor space and excellent ventilation at very reasonable cost.



Overhead UV-B Heat lamps are recommended



Light and heat

All tortoises require adequate light and heat to function normally and to maintain good health. Overheating is just as dangerous as under-heating. Great care should be taken when selecting all heat and light systems, and when installing and using them.

Some general rules

- Make certain that all cables, flexes and lamp holders are well maintained and are securely fitted. Never overload electrical plugs and always fit appropriate fuses or circuit breakers. It is highly recommended to use an RCD (Residual Current Device) with all animal lighting and heating systems to reduce the risk of electric shock should a fault occur. We also recommend fitting smoke alarms in any room where reptile heating and lighting systems are used. Avoid all flammable substrates and ensure that flexes are securely placed where they do not present a danger of being tripped over or chewed by other pets. Check all cables and fittings regularly for wear and tear. Consult a qualified electrician if in doubt.
- Do not rely upon ordinary domestic lamp fittings in tortoise enclosures. These are not designed to work safely with reptile lamps and will rapidly break or may even catch fire. Use high-quality specialist fittings expressly made for use with reptile lamps. These typically feature heatproof ceramic holders, metal reflectors and full strength clamp fittings.



It is absolutely vital, especially with small juveniles, that they are never able to fall upon their backs directly under a hot basking lamp. Fatal overheating can occur in those circumstances very quickly.

There are two basic approaches to providing light and heat. The first relies upon separate fittings for basking heat and a secondary UV-B lighting source; for example, a special UV-B fluorescent tube or 'compact' lamp. This can work well, but in recent years, a new type of self-ballasted mercury vapour lamp known as a "UV-Heat" lamp has become increasingly popular. These lamps, although initially more expensive than separate heat and UV-B sources have the major advantage of offering high outputs for an extended period, and of providing a particularly high quality of visible spectrum light, UV-B, UV-A and basking heat all in one package. They have rapidly become the preferred light and heat source for many tortoise keepers. It is extremely important to carefully examine the detailed specifications of any lamp used. In particular, be very careful of lamps simply advertised as 'reptile basking lamps'. Most of these emit no essential UV-B whatever.

Tortoises are dependent upon UV-B to make their own vitamin D3. This is generated as UV-B radiation interacts with sterols in their skin in conjunction with radiant heat. They are also highly sensitive to what is known as the 'colour temperature' of visible spectrum light. They rely upon this when feeding, and the quality of lighting has an impact on various aspects of their behaviour. It is therefore very important that tortoises housed indoors receive the correct type, intensity and duration of artificial lighting.

In most cases, for small to medium-sized Mediterranean tortoises, a single 'UV-Heat' (self

ballasted mercury vapour) lamp will be capable of meeting their complete needs for both quality illumination and radiant, basking heat. Such a lamp should be installed in full accordance with the manufacturer's instructions in an approved heatproof ceramic holder and reflector. Normally, such lamps are installed between 30 cm (12") to 45 cm (18") above the basking position. This should result in temperatures of 32 to 35 Celsius being achieved directly beneath the lamp, with a decreasing gradient to background temperatures of approximately 24 Celsius at the periphery of the enclosure during the day.

It is absolutely vital, especially with small juveniles, that they are never able to fall upon their backs directly under a hot basking lamp. Fatal overheating can occur in those circumstances very quickly.

This can be prevented by raising the lamp to reduce ground temperatures or by turning it off completely if you are leaving it unattended.

To maintain full activity, provide approximately 14 hours of light and heat daily. At night, unless the room where the tortoises are kept is unusually cold, little or no overnight heating should be required with Mediterranean tortoises (tropical tortoises require different conditions). Ambient overnight temperatures for Mediterranean tortoises (even hatchlings) can safely be allowed to fall to 15 Celsius or even somewhat less. Actual harm would not result unless temperatures approached freezing point. Even in the wild, it is quite normal for temperatures to fall markedly at night. This will

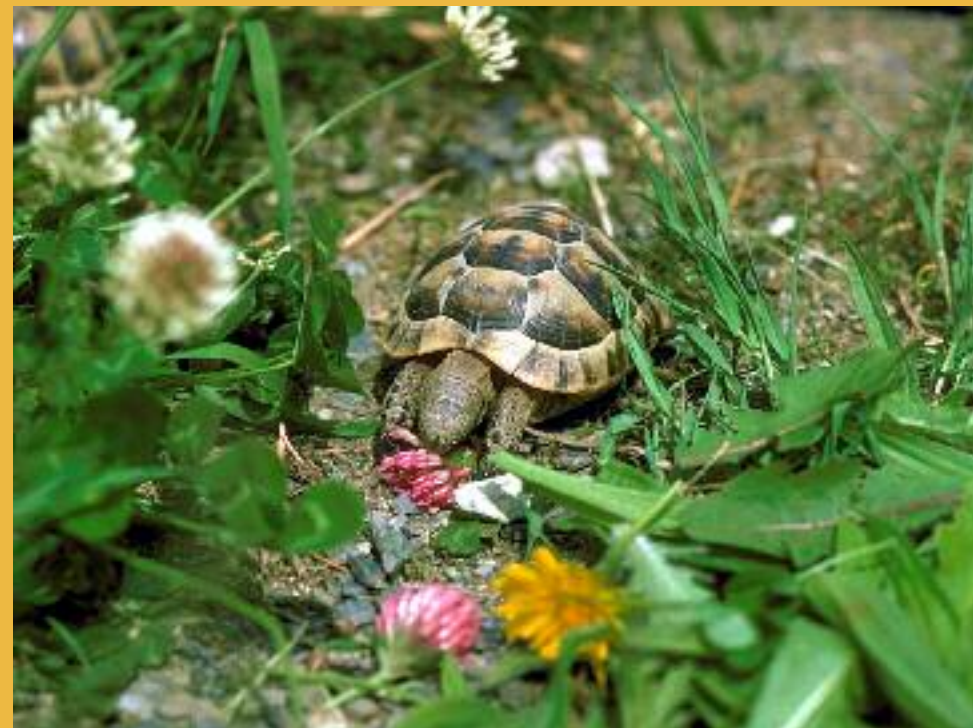
As long as the tortoise is cool, but dry at night, it will remain in perfect health as long as it is able to raise its temperature to normal levels required for activity and feeding during the day.



not result in illness or present a danger for any Mediterranean tortoise. As long as the tortoise is cool, but dry at night, it will remain in perfect health as long as it is able to raise its temperature to normal levels required for activity and feeding during the day.

If extra warmth overnight is required, in winter, for example, we recommend using an overhead infra-red ceramic dull emitter heater in a heat-proof holder. These provide radiant heat, but no light. It is possible to control these very accurately by means of a pulse-proportional electronic thermostat. Red or blue “night lights” should not be used. These are unreliable, failing frequently, and they also interfere with normal sleep patterns.

Heat mats and other forms of under-floor heating are not recommended and are not necessary under normal circumstances. They, however, may play a role when nursing sick tortoises, or if the room where the tortoises are kept is exceptionally cold. Under no circumstances should they be relied upon as the sole or main heating source. Mediterranean tortoises require an overhead, radiant source of heat and light if normal thermoregulation is to be achieved. Provision of a combined UV-Heat lamp is the simplest and most effective way to meet this requirement.



Feeding Mediterranean tortoises

Mediterranean tortoises are almost exclusively herbivorous. The only occasional exception to this is if they find carrion or a small snail in the wild. This is not a frequent occurrence. They can be raised safely and in perfect health on a 100% herbivorous diet.

Nutrition

The entire topic of tortoise nutrition is quite complex, and we can only provide the briefest of summaries here. Our basic recommendations are as described below. Please consult our website and technical publications for far more comprehensive information.

The general requirement of Mediterranean tortoises is for a high fibre, low protein, low fat, low carbohydrate, low sugar and calcium rich diet.

In practice, this means avoiding completely items such as peas, beans, cat or dog food, high levels of fruit, or any other item that the tortoise would not come across in the natural environment. The correct diet for Mediterranean tortoises is based around a good variety of green leaf vegetation and flowers. This is what they eat in the wild and what their digestive systems are optimised for. Some highly dangerous feeding recommendations have unfortunately appeared in books and on websites. You really need to be extremely careful when designing a diet for

captive tortoises. They are very sensitive animals and are highly susceptible to developing growth abnormalities as a result of incorrect nutrition. We urge you to research this topic for yourself and to seek advice from reputable tortoise organisations, many of which have extensive guidance available on this subject. The Tortoise Trust has very detailed technical and practical articles on feeding tortoises of all species on our website.

Because they grow quite rapidly, and are developing their bone structure in the process, juvenile tortoises are exceptionally likely to suffer serious consequences from dietary mismanagement. There is no room for error at



Severe deformity caused by improper diet, lack of calcium and vitamin D3. This is entirely preventable with good husbandry.



A wide range of edible flowers and green leaves dusted with calcium forms the basis of a healthy diet for Mediterranean tortoises

all when feeding hatchlings and juveniles. Just a few weeks on an incorrect diet can result in irreparable harm. Sadly, such deformed tortoises with 'lumpy' or soft shells are often seen. This is very regrettable as it is entirely preventable with good dietary management. A fully grown adult may survive for longer, even on a terrible diet, but will slowly suffer serious liver and kidney complications over time. Herbivorous tortoises are simply not equipped to deal with large amounts of saturated fat, or with high protein intakes.

Most experienced tortoise keepers aim to provide a diet based upon as wide a range of non-toxic 'weeds' and flowers as possible. This is then supplemented with additional calcium and other trace elements to ensure that all

essential requirements are met. Comprehensive lists of suitable plants and guides to feeding are widely available online (see the Tortoise Trust website for details). There are even entire books devoted exclusively to this topic; for example the 'Tortoise and Turtle Feeding Manual' by A. C. Highfield (Carapace Press). Such publications include very detailed guidance on exactly what to feed, and equally importantly on what not to feed.

It is worth mentioning the "complete" tortoise diets offered by various manufacturers, usually in concentrated pellet form. There are undoubtedly problems with many such products. They are frequently associated with very high (unnatural) rates of growth and with poor bone density. If you do choose to use them,

The feeding of dry concentrate pellet foods is particularly damaging. The bulk of the diet should always be based around natural, fresh vegetation.

we would recommend that they be offered no more than once or twice a week and always hydrate them fully in advance. The feeding of dry concentrate pellet foods is particularly damaging. The bulk of the diet should always be based around natural, fresh vegetation. It is also worth pointing out that a diet based around lettuce, cucumber and tomatoes (though readily accepted by most tortoises) is also likely to prove disastrous. Simply because a tortoise likes a particular diet does not mean it is safe or appropriate. Such diets may usefully be compared to junk-food diets for humans: satisfying in the short term, but ultimately leading to severe health problems.

It is very important to avoid unnaturally accelerated growth in hatchlings and juveniles. This places demands on the calcium metabolism that are hard to support. Slow, even growth is much better for long-term health and survival than fast growth. High rates of growth can be controlled by carefully monitoring the diet to prevent over consumption of protein-rich items, and by preventing general overfeeding.

One of the most common nutritional health problems of captive tortoises is Metabolic Bone Disease, a condition closely related to osteoporosis and rickets in humans. The underlying cause is a diet inadequate in calcium and a lack of vitamin D3. The condition is most frequent and severe in hatchlings and juveniles, as it is during periods of rapid growth that any lack of bone-building 'raw materials' is most critical. Egg laying females are also at considerable risk.



Tortoises will drink if soaked in a shallow tray.

The best way to prevent this is to offer a calcium supplement daily, and to provide adequate exposure to UV-B lighting and radiant basking heat as discussed previously. Several suitable supplements are available from specialist suppliers. We would suggest that a product that combines calcium carbonate with vitamin D3 and additional trace elements is the best option. Avoid brands that include

Fresh water should always be provided to tortoises. It is a dangerous myth that tortoises meet all of their water requirements from their food. They do need to drink on a regular basis. If they do not drink, there is a very high risk of kidney disease and bladder 'stones' forming. These can have fatal consequences.

unnecessary and unproved ingredients such as amino acids. Some formulations are 'phosphorus free' and these are ideal, as the phosphorus requirement will easily be met from the diet itself, whereas calcium needs are much harder to accommodate from food alone.

Fresh water should always be provided to tortoises. It is a dangerous myth that tortoises meet all of their water requirements from their

food. They do need to drink on a regular basis. If they do not drink, there is a very high risk of kidney disease and bladder 'stones' forming. These can have fatal consequences. Soaking daily in a shallow dish of water can encourage drinking. Tortoises will put their heads down to drink, submerging the nostrils, and you will see the neck 'pulse' as they do so. Letting them enjoy warm summer rain when housed outdoors can also encourage drinking.

You may notice that as tortoises drink, they evacuate a semisolid white substance with their urine. This is not excess calcium, as many mistakenly believe, but uric acid, a by-product of their protein metabolism.

As inhabitants of arid habitats, tortoises have evolved a very water-efficient method of eliminating this by concentrating it in the bladder in semisolid form. They also appear to be 'programmed' to urinate only when replacement fluid is available. It is one of the fascinating features of these animals that they are able to survive in arid habitats by employing a number of such strategies, one of which is the ability to reabsorb fluid stored in the bladder in times of acute water shortage. This is not without risks, however, as it does put great strain on the renal system and can cause uric acid in the bladder to solidify into a mass that can prove difficult to subsequently eliminate. In captivity, provision of fresh drinking water on a regular basis is by far the safest option.

General care

It is critically important to quarantine all new tortoises from existing animals for at least 18 months. New animals may be carrying a wide range of bacterial, parasitic and viral diseases that may not manifest for some considerable time. It is also very important not to keep different species together in the same habitat. Different species will have different dietary and environmental needs, and may also exhibit mutually antagonistic behaviours. Some species bite and 'ram' each other quite violently, for example, while others do not. This will result not only in severe stress but also may cause very serious injuries. Fatalities have also occurred. It is by far the best option to keep different species entirely separately. Two males together may also fight quite violently, and exposing older females to young, aggressive males is also highly inadvisable.

Mediterranean tortoises normally hibernate in the wild. They can do so in captivity (with some exceptions). Examples from certain areas (such as Tunisia and Libya) do not hibernate but instead remain active throughout the winter. These tortoises need to be over-wintered in warm and bright indoor habitats. Hibernation is quite a complex subject in its own right, and the Tortoise Trust has produced a completely separate free guide on the topic which is available on request. Extensive and up-to-date advice is also freely available on the Tortoise Trust website covering all the different methods of managing hibernation, preparation for hibernation, emergence from hibernation, and the hibernation of juveniles. We advise you to consult these resources for further information as space limitations preclude a sufficiently detailed discussion here.

Even the best kept tortoises may suffer from health problems from time to time, so it is very important that you locate a veterinary surgeon who has a particular interest in, and experience of diagnosing and treating tortoises and turtles. Most tortoise organisations maintain lists of vets recommended by their members. By belonging to a tortoise organisation you will not only remain informed of the latest developments in husbandry, but will also be able to share experiences and advice with fellow enthusiasts.

Frequently Asked Questions

Is it true that juvenile tortoises have to be kept indoors for the first three to four years as they are too fragile to go outside?

No. Juvenile tortoises, even hatchlings, have exactly the same environmental requirements as adults of their species. Due to their small size, however, they respond more rapidly to temperature changes than large tortoises and they are obviously much more vulnerable to predators. They can go outside in suitable weather, just as adults can, but they need extra measures to be taken for security and protection.

I was looking for a Mediterranean spur-thighed tortoise but instead have been offered an African Spurred tortoise. Is there much difference?

Yes. The Mediterranean spur-thighed tortoises are relatively small, up to a maximum of around 30 cm (12") in length and a maximum weight of around 6 kg (13 pounds). The African Spurred tortoise (*Geochelone sulcata*) is one of the largest tortoises in the world, and can weigh more than 98 kg (216 pounds). Giant tortoises such as these are incredibly demanding and costly to maintain. Please research any species you are considering carefully in advance. Do not be caught out by taking on a species you have no realistic hope of caring for properly.

Are there any legal restrictions on keeping and breeding tortoises?

Yes. The law distinguishes between different species, so to answer this fully you need to define the exact species in question. Many 'common' tortoises are now covered by C.I.T.E.S (Convention on International Trade in Endangered Species) regulations as well as by individual EU or national laws relating to their sale or possession. Mediterranean tortoises may not be sold or offered for sale unless the seller has a certificate issued by the C.I.T.E.S authorities authorising the sale. You should never buy a tortoise unless you are completely satisfied that it is from a legal source. If you breed tortoises yourself, you must hold the relevant certificates before you can sell any offspring.

Juvenile tortoises are more vulnerable to predators





I have a female tortoise that has been in the family for many years and I would like to breed with it. Where can I find a male?

You need to be extremely careful when introducing a new tortoise to an existing one. There is not only the danger of disease, but also the possibility of behavioural problems. In addition, you need to be absolutely certain that your female is in good health and is not too old to breed with safely. You should not introduce any other tortoises until you have investigated this thoroughly.

Which species is easiest to keep?

Most keepers will agree that the Hermann's tortoise (*Testudo hermanni*), the Turkish spur-thighed tortoise (*Testudo*

ibera) and the Russian tortoise (*Testudo horsfieldii*) are among the more straightforward species to keep in captivity. Of the three, the Russian tortoise is more sensitive to damp related problems, but provided the correct accommodation is provided, all three are much less challenging than many other species you may be offered.

Is there any tortoise that I can keep exclusively indoors as I have no access at all to a secure garden?

The Tortoise Trust and the Jill Martin Fund for Tortoise Welfare and Conservation do not feel that it is humane to keep any tortoise indoors exclusively. They need an outdoor area.

What is the main difference between a tropical tortoise and a Mediterranean tortoise?

Different species of tropical tortoises have differing environmental and dietary needs from one another, so it is not easy to generalise. Some of these species (such as the Leopard tortoise shown on the left) are not too difficult while they remain small, but they are extremely challenging as full grown adults. Think carefully and do plenty of research in advance before committing to tortoises like this. The Tortoise Trust has special information available for keepers of tropical tortoises.

Further reading & online resources

Books

The Tortoise Trust Guide to Tortoises and Turtles
by A. C. Highfield
(Carapace Press)

Keeping a Pet Tortoise
by Andy and Nadine Highfield (Interpet Publishing)

The Tortoise and Turtle Feeding Manual
by A. C. Highfield
(Carapace Press)

Safer Hibernation & Your Tortoise
(Tortoise Trust, free on request)

Practical Encyclopedia of Keeping and Breeding Tortoises and Freshwater Turtles
by A. C. Highfield
(Carapace Press)

Turtles of the World
by Bonin, Devaux and Dupre
(A. C. Black Publishers)

Important online resources

www.tortoisetrust.org

Official website of the Tortoise Trust. Highly comprehensive reference section of articles on all aspects of tortoise and turtle care, veterinary medicine, field research and conservation. Printed newsletter for members.

www.tlady.clara.net/TortGuide/

Excellent free booklet for downloading on rearing Mediterranean tortoises by Lin King. Includes comprehensive housing, feeding and general husbandry advice.

www.britishcheloniangroup.org.uk

UK based tortoise and turtle society with regular newsletter, meetings and symposia.

www.tortoise.org

The California Turtle and Tortoise Club website. Numerous articles of interest to all keepers.

www.jillmartintortoise.org

Website of the Jill Martin Fund for Tortoise Welfare and Conservation.

www.ttinstitute.co.uk

Runs excellent online educational courses for tortoise keepers.

www.uvguide.co.uk

Outstanding reference site on all aspects of UVB lighting and vitamin D3 synthesis.

www.carapacepress.com

Publishes books and DVDs of interest to tortoise keepers.

Many private keepers maintain their own informative websites. A current list may be viewed at www.tortoisetrust.org/links.html