Species: **Horsfield Tortoise**
Agrionemys horsfieldii
(formerly known as Testudo horsfieldii)

Description:
The Horsfield, also known as Russian tortoise, is a hardy tortoise which can better withstand cooler climates due to its more northerly habitat, Though, extra care should be taken if you are considering taking on a Horsfield as they are extremely competent at digging and tunnelling. In the wild they are found at the eastern end of the Mediterranean from Pakistan through Iran, Afghanistan and Western China to the Black and Caspian Seas. They can be found at relatively high altitudes of 4000-5000 feet on dry, rocky terrain, also close to streams and grasslands.

Horsfields are recognised by their yellow/green/brownish colouring with a darker underside. The shell is quite round in shape and slightly flattened. Horsfields are unlike other Mediterranean species in that they only have four claws on each forelimb instead of five. They also tend to be slightly smaller than other Mediterranean species, the carapace measuring on average 18-20 cm (7-8 inches), the females often being larger than the males. Horsfields are hibernating tortoises.

General Husbandry Requirements: In the wild Horsfields have a very short period of activity, lasting approximately three months from April/May to August: they are therefore programmed to eat as much as possible in this short amount of time. During the peak of the summer heat when temperatures exceed 30℃ (86F) Horsfields are known to go into a period of near hibernation known as aestivation. The colder months are spent hibernating. In captivity Horsfields must be kept dry as dampness can lead to shell and respiratory infections.

General Housing: Horsfields are natural climbers and diggers, and therefore any indoor and outdoor enclosure should be deep enough to allow them to dig down and have high sides, as they are very adept at climbing walls and fences. Provision should also be made for hibernation during winter months (see separate hibernation sheet). It must also be borne in mind that male tortoises can be aggressive towards other male tortoises and continually pester females in the enclosure, so provision may have to be made to keep males housed separately.

Hatchling Housing/Care: Like any tortoise, when a Horsfield hatches out it is a fully independent miniature of its parents. In the wild it would leave the nest site and start feeding for itself immediately. This is the same in captivity; however, keepers can do much to assist the new hatchling in its early stages of development. The general care is the same as that of juveniles and adults.

Horsfield hatchlings are very small and can quickly become dehydrated. To prevent this, hatchlings will benefit from being soaked daily for about 20 minutes in baths of warm water. The water should be shallow enough so that the tortoises can easily keep their head above the surface, and they should be supervised during bathing.

Housing for hatchlings should be in an indoor open-top tortoise table, which allows for lots of light and good air circulation, and **never** in a vivarium (and this also applies

to all tortoises). The vivarium allows too much humidity to build up and very little temperature variation, thus not allowing the tortoise to thermoregulate. The open-top table should be as large as can be accommodated so that the tortoise has plenty of room to grow and move around, and this should also take into account room for water bowls, hides, rocks and plants, which should be arranged to form a mini 'natural' habitat. The open table should be high sided, firstly to prevent the tortoise from climbing out, and secondly, to allow for a deep substrate. The most natural substrate is sterilized soil. This is the safest form of substrate for hatchlings especially with them being so small. This allows the hatchling to follow its natural instinct to burrow down to escape heat and its instinct to hide from predators.

Fresh water should be available at all times, in a suitably sized container, such as a flower pot dish containing large pebbles so that the hatchling can gain easy access and exit from the dish. A large slate, tile or flat rock makes an ideal feeding platform, as it helps prevent the ingress of the substrate material and helps to keep nails and beaks filed trim, preventing them from overgrowing. Hides and plants should also be provided in different parts of the table, giving the tortoise a choice of where to sleep, hide and escape from the heat to prevent dehydration. The hides and plants and varying substrates also break up sight lines, making the table more interesting for the hatchling to explore.

Hatchling diet consists of weeds sprinkled each day with high-quality vitamin, mineral and calcium supplements, such as limestone flour and Nutrobal. A cuttlebone could also be put into the enclosure for them to nibble on. If the hatchlings are deprived of the necessary vitamins and nutrients they require for steady healthy growth they will succumb to dietary disorders/deformities, including MBD, shell pyramiding and rickets. At this stage in their development hatchlings require exposure to good quality UVB light. Indoors this should consist of high quality UVB strip light or combined heat/UVB lamp.

A hatchling should ideally be supervised if put outdoors and never left to fend for itself. In the wild they would instinctively hide in burrows to both regulate their temperature and hide from predators. A hatchling can very quickly lose its core body heat and perish if unable to get back under a heat source. Outdoors it is recommended they are housed in a secure enclosure with a mesh bottom and lid to protect them from predators and to prevent them digging out of the enclosure. They should be brought back indoors when conditions dictate.

Housing Juveniles: Indoors - A juvenile Horsfield should also be housed in an open-top tortoise table as described for hatchlings, again taking into account the high sides of the table to allow for a deep substrate and to prevent the juvenile climbing and falling from the table.

Outdoors - Horsfield juveniles are still relatively small tortoises, and it is therefore advisable to house them in a secure enclosure with a mesh base and lid: a good example is to use a rabbit hutch and mesh run which is boarded all way round the base so the tortoise can't see out.

The Horsfield is a hardy tortoise and can be safely put out in the day during the summer months without supplementary heating.. However, during early spring and late autumn it will need to be provided with supplementary heating in the outdoor accommodation at night. The enclosure should also be furnished with hides and plants to allow the juvenile a choice of where to sleep and hide/shade from the sun/heat. You must ensure the enclosure is secure, as coming from a cooler climate, Horsfields are very competent at not only digging but tunneling also.

Housing Adults: Indoors - Adult Horsfields should be housed in exactly the same manner as juveniles but on a larger scale. As with hatchlings and juveniles a sterilsed soil should be used as substrate.

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N.B. Hemp has sharp particles which can easily cause serious damage to tortoises and it can sometimes prove to be fatal especially if ingested and as such is not recommended for use as a substrate.

Outdoors - Horsfields must be allowed access to the outdoors: they thrive and are much more alert and happier when housed or allowed long periods of time outdoors. The adults will require a much larger area outdoors especially if more than one Horsfield are kept together. A part of the garden could be fenced off, having no gaps or outcrops or corners for the inquisitive horsfield to climb or shimmy up. Providing the tortoise with less angles will prevent them climbing out. The area provided should also have wire mesh laid at least 8 inches below the soil surface to prevent the tortoise from digging its way out. If kept out 24/7 the tortoise will also require access to an insulated and heated enclosure such as a shed, kennel, greenhouse or cold frame. The heated area will allow the tortoise to warm up under the lights and then have access to the outdoors. The shed, greenhouse or cold frame should be mounted on a brick foundation base, which should be buried partly into the ground to stop the tortoise escaping and to prevent rodents getting in. One or two bricks can be left out of the base wall to allow the tortoise to enter and exit at will. The greenhouse/cold frame should have hiding places such as access to a separate shed or to a wooden house such as a dog kennel, which during cooler months can be heated. During warm summer months the Horsfield may choose to sleep outdoors under a bush or hide in a terracotta pot.

Heating and Lighting: can be achieved in a number of ways, which will depend on personal preference and the area to be heated. For heating a tabletop enclosure a combination of a separate basking bulb and UVB strip light is one choice. An ordinary spot bulb can be used, increasing or decreasing the wattage of the bulb according to the season, and would be used in conjunction with a separate UVB strip light. The highest percentage UVB strip light should be used: and should be suspended so that it is about 6 inches from the surface of the substrate (although a 10.0 strip light may be suspended a bit further away). A reflector is recommended to be used above the strip light to ensure all the available UVB is directed downwards into the enclosure.

An alternative form of heating/lighting is a combined heat/UVB lamp, which provides both heat and UVB. These combined lamps provide a much higher level of UVB. They must be used with ceramic fittings and heat resistant cable, and they cannot be used with a thermostat. The temperature of the hot spot under the bulb is controlled by either raising or lowering the height of the lamp until the desired temperature is achieved. In an indoor table top enclosure aim for a temperature of approximately 30℃ (86℉) – 32℃ (90F) under the basking spot and a cooler end of 18℃ (65F) – 21℃ (70F).

When heating an outdoor enclosure such as a greenhouse, shed or wooden box, high wattage combined basking/UVB lamps (as described above), tubular heaters and ceramic lamps can be used during cooler weather, although, tortoises need a drop in temperature at night. Background heating on thermostats can be set to come on if the night time temperature drops below 50℃ (10C). Although Horsfields are renowned for being hardy tortoises, they cannot tolerate damp or humid conditions which can lead to respiratory and shell infections.

Hibernation: Horsfields are naturally programmed to hibernate for several months in their natural habitat during the cold winter weather and to aestivate during the hotter summer months. In captivity, if the tortoise is healthy and of good weight, hibernation during the winter months is recommended. Please see our hibernation guidelines for details.

Feeding and Dietary Supplementation

Due to the very short natural activity cycle of a combination of hibernating and aestivating, Horsfields can tend to overfeed in captivity. If left unchecked they will consume large amounts of food. They should therefore be fed a natural balanced diet of mixed flowers and green leaves, and fruit should always be avoided. Wild food is not only high in fibre but has the correct calcium/phosphorus ratio. An average weight gain of between 1g – 3g per month is considered appropriate.

Essential weeds/plants: should consist of a varied diet of a wide range of broad leafed weeds such as dandelion, hawkbits, sowthistles, plantains, clovers, bittercress, bindweeds, shepherds purse, chickweed, hedge mustard, white and red deadnettle, mallows, sedums and vetches.

In addition to these foods. Horsfields also enjoy many flowers such as, mallows, honeysuckle, dandelion, clovers, rose petals, hibiscus, lavatera, pansies, and petunia. It is advisable to check the identity of all weeds and flowers picked; to ensure they are free from chemicals and to thoroughly wash them.

Foods to be avoided:

FRUITS of any kind.

Dried PELLETED manufactured food, cat and dog food, contain a high protein content resulting in a high rise in urate production and an accelerated growth and eventual death of the tortoise.

BRASSICAS: as they tie up free iodine and goitres can result if fed in large quantities. e.g: cabbage, Brussels sprouts, and broccoli are high in oxalates, which bind with calcium to give insoluble calcium oxalate and thus interfere with calcium absorption.

SPINACH: Spinach and chard are also high in oxalates, which bind with calcium to give insoluble calcium oxalate and thus interfere with calcium absorption.

Supermarket salad and greens: such as **iceberg lettuce** and cucumber, contain no nutritional value and are very low in fibre, often containing high levels of chemicals used in the commercial growing methods.

Some salads such as romaine, lambs lettuce, raddichio, and a small amount of cucumber can be fed occasionally as part of a varied diet but not as the main diet, or the tortoise will not be provided with adequate nutrition.

Water – should be made available at all times.

Mineral and Vitamin Supplements
UVB levels in the tortoise's natural habitat are vastly higher than anything we experience in the UK, so its food must be lightly dusted with a vitamin and mineral supplement which contains vitamin D3 and calcium, such as Nutrobal.

Hatchling and Juvenile tortoises
In Northern climates a mineral and vitamin supplement such as Nutrobal or Reptavite should be offered to all growing tortoises on a daily basis for the first 3-4 years of life and after this it can be offered three times a week. This should be lightly sprinkled on the tortoise's food.

NB. That if the tortoise is kept outside of the UK, where the climate is similar to its natural habitat, and it is maintained outside where it can synthesise its D3 requirements from the UVB component of solar radiation, then the frequency of additional supplementation of D3 can be reduced.

Adult tortoises
Mineral and vitamin supplementation for adult tortoises in the form of Arkvits or Nutrobal can be lightly sprinkled daily on to the food.

Tortoises of all ages
In addition all tortoises, whatever their age, will benefit by some calcium supplementation in the form of limestone flour (or another form of pure calcium carbonate) and this can be sprinkled lightly on to the daily feed. Limestone flour is available from most equestrian stockists and is recommended due to its high calcium content and the fact that it is easily digested.

Cuttlefish, which contains calcium, should be made available at all times, and although it is not as easily digested as limestone flour, it is a good way of keeping the beak trimmed.

When providing mineral and vitamin supplementation it is important that the manufacturer's instructions be followed to avoid the possibility of over dosing.