



**South Africa`s Hedgehogs Breeders Association**  
**Lesser Tenrec Course 2025**

## Introduction:

This training course was compiled to provide formal training for all tenrec owners. Tenrec breeders in training to become registered will receive an additional task upon this assessment to qualify.

With this, SAHBA strives to ensure that all breeders and pet owners are trained and equipped with the required information on tenrec keeping. By providing formal training to new members, the Breeders Association are leading the way in South Africa when it comes to ethical breeding and information regarding the species.

The course will be a self-study, long distance learning course with a support WhatsApp Group to the benefit of the students.

The course will take place over a period of one and a half month. Throughout the course, mentors will be available to provide assistance to the students.

Once successfully completed the course, the students will receive their certificates via email.

Good luck with your training!

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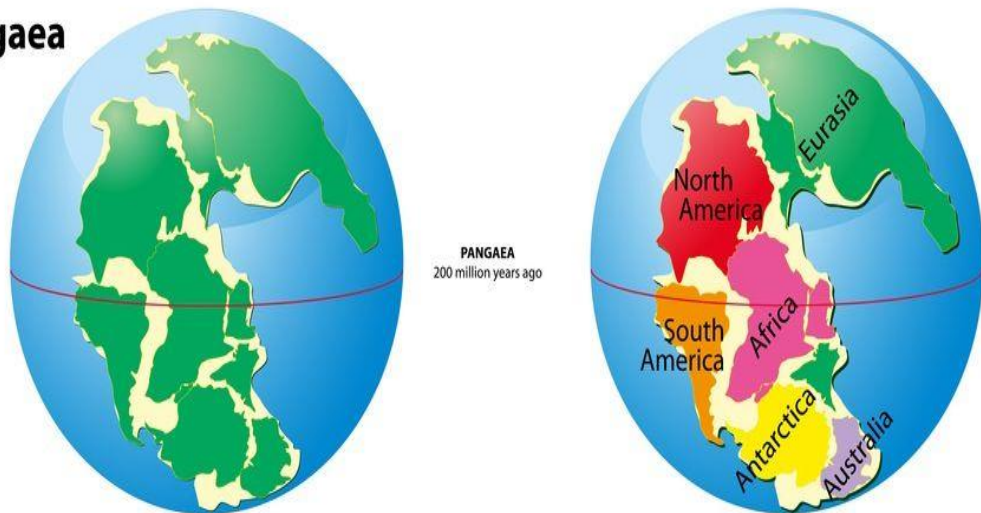
## 1. History of Tenrecs

Madagascar Lesser Tenrecs originated, well yes from Madagascar. But did you know that Madagascar was not always an island on its own? Madagascar separated from Africa in the Middle to Late Jurassic time period.

Africa, India and Madagascar were once part of the supercontinent of Gondwana. This land mass began to fragment approx. 170 million years ago, and again by 83 million years, all the major components we recognize today were separated by tracts of water. Madagascar thus had two separate break-ups. Each time animal and plant life were separated from the original continent and land and then resulted into being trapped in the “new land”.

This means our beloved tenrecs had to adapt and evolve in order to survive in their new environment that was during the time frequently changing. Part of their evolving was to develop spines like hedgehogs.

**Pangaea**





Madagascar today

The tenrec was likely to be the first mammal to land in Madagascar. Tenrecs were being kept and studied by Zoo's since the 1950's. The lesser tenrec hedgehog (*Echinops telfari*) received its name in honour of Charles Telfair. Charles was an Irish botanist who was the honorary curator of the botanical garden at Pamplémoussa from 1826 to 1829.

There are about 36 species of tenrec, all belonging to a family called Tenrecidae. But despite being close relatives, these animals don't look much like one another at all. Some look like rats, shrews, hedgehogs and moles. Sizes differ from around 4.5 cm, weighing 5 grams (Pygmy Shrew Tenrec) to 39 cm and can weigh over a kilogram (Tailless tenrec). There are also about 20 species of shrew tenrec that for most people would be impossible to tell apart from actual shrews.

This is a result of convergent evolution because of the fact that Madagascar had separated from the mainland.

What is convergent evolution?

Convergent evolution is when animals evolve similar solutions to similar problems.

Although being native to only Madagascar, some tenrec species are to be found today on nearby islands such as Mauritius. It is suspected they were accidentally transferred by boats. There are 6 tenrecs species are currently at risk for becoming extinct, but experts fear that it might be more due to deforestation and loss of habitat and even being hunted.

#### Classification of the Lesser Tenrec.

**Family:** Tenrecidae; Gray, 1821

**Gestation period:** Average 63 days

**Scientific Name:** *Echinops telfari*

**Class:** Mammalia

**Body Mass:** 150- 250 grams

**Length:** 16 cm average

**Average Lifespan:** 10-12 years

**Teeth:** 32

**Sexual Maturity:** After their first torpor, from 9 months old, although breeding is recommended from 1 years of age.

**Faunivores:** They eat a wide variety of animals, many of which are terrestrial insects leading to the notion for being called insectivores.

## 2. More about Lesser Tenrecs

Lesser Tenrec basic info:

Lesser Tenrecs have small brains that are characterized by a tiny cap of neocortex over a proportionately large piriform cortex. Much of the forebrain is devoted to processing olfactory information. Olfaction (sense of smell) is important, and they scent mark as a form of communication. During the evolving time Lesser tenrecs has “traded” brain capacity in order to develop spines as a defence mechanism.

The face has several protruding sensory hairs, including hairs on the muzzle, shorter hairs on the chin, and between eyes and ears. Unlike most mammals, the tail is quite short. The external ears protrude, and the eyes are small.

Possibly touching the spines on one side of the body activates somewhat distant receptors, even on the other side of the body, because a muscular system links spines in a system that stretches spiny skin over the ventral body when the tenrec curls. Receptive fields on the trunk were largely or wholly on the spiny skin.

Smaller receptive fields were observed covering the glabrous pads (smooth skin areas without any hairs) of the forepaw and included hairs over a small portion of the face. Receptive fields for some body parts were smaller for neurons, like lips and facial areas.

Dentition of lesser tenrecs is:

Zalambdodonta dentition, is a term used to described mammals that has teeth that bare V- or lambda-shaped crest. Zalambdodont teeth are to be believed very primitive, which we know already from module one that tenrecs are a very old species. The evolutionary advantage of zalambdodont teeth is unclear though.



Tenrecs are both Insectivores and Faunivorous:

Faunivorous- Animals that eat other animals (baby mice, frogs, baby birds, lizards')

Insectivorous – small usually nocturnal mammals (such as moles, shrews and tenrecs) that feed mainly on insects.

Most common characteristics of insectivorous:

- Small eyes
- Small ears
- Long snout

- Though similar in appearance to rodents, insectivorous lack the prominent incisor teeth that distinguishes rodents
- Instead, they have numerous sharp teeth for hunting and eating insects – sharply edged canines, pre-molars and molars for chewing hard – shelled beetles, other insects and worms.
- Poor eyesight, with some species (desmans and moles) being completely blind and lacking a palpebral opening
- They have a very keen sense of smell, and the nasal chamber consists of scrolls of coiled bone covered in olfactory epithelium (specialized tissue inside the nose involved in smell) for enhanced olfaction.

Insectivores make up almost 10 % of all mammal species and most are the size of small mice or small rats.

Insectivores vary greatly in appearance, some are covered in mouse-like fur with a hairy, smooth tail, others are covered in spines and lack tails entirely.

Insectivores live primarily on land, typically at ground level or beneath it. A few species, like the Asiatic water shrews, are aquatic.

Insectivorous are plantigrade (they walk on sole and heel).

Insectivores have 5 clawed toes on each foot.

Insectivore's noses tend to be pointed and tubular.

#### **The unique characteristics of insectivorous:**

Insectivores have evolved a wide range of adaptations to support their insect-based diet.

These adaptations include:

- Specialized teeth and jaws
- Efficient digestion
- Enhanced sensory capabilities
- Specific hunting behaviors

#### The cloaca:

The tenrecs gut tube is short in relation to its body length and lacks a cecum.

The cloaca is a single opening for the intestinal, urinary, and genital tracts.

The cloaca is lined with a multilayered epithelium (a type of tissue that has characteristics of both squamous and columnar cells) and has a circular sphincter muscle that regulates the opening of the intestinal tract.

The male tenrec has glandular structures (a group of cells that produce and release substances into the body) in the terminal parts of the intestinal, urinary and genital tracts, including the prostate gland. Cowper's glands (small, pea-sized glands in the reproductive system that secrete mucus to lubricate the urethra (a tube that allows urine to leave the body and is part of the urinary tract. It also allows semen to leave the body in males) and neutralize urine.

The female tenrec has the urethral (relating to the urethra, a tube that carries urine out of the body) and Bartholin (pair of glands in the female reproductive system that produce mucus to lubricate the vagina and vulva) glands in the terminal parts of the intestinal, urinary and genital tracts. Both male and female tenrecs have a cloacal gland and Pericloacal gland. Pericloacal glands are like anus glands in other mammals.

### How do tenrecs communicate:

Lesser tenrecs communicate primarily through tactile and chemical means, but they can also make a few noises.

- Scent marking:
- Mating call:

During breeding season, tenrecs make a loud, repetitive screeching sound.

- Other vocalizations:

Tenrecs can also make hissing, grunting, twittering, and echolocation clicks. They mostly use tactile and scent to communicate with their own kind.

You will learn more about echolocation and scent marking in the next module.



### 3. Permits, Other species and Tenrec behaviour

Lesser Tenrecs are often mis-identified as hedgehogs. In South Africa it is very often the case where members of public, pet shop owners, SPCA officials and even vets' struggles to distinguish between the species as for the fact that they all have quills. Lesser Tenrecs are also often called Tenrec Hedgehogs that contributes largely to the confusion. As a tenrec owner or breeder, it is your duty to educate people regarding that. Being a totally different species, Tenrecs requires also different care and food than hedgehogs. For the fact that very often Tenrec owners and breeders also have hedgehogs as pets, we included the following section in the training. Bear with us, there is a little bit of extra info regarding hedgehogs included here, but it is important for awareness, especially in South Africa.

#### Species within South Africa and neighbouring countries:

Southern African Hedgehog- Native hedgehog species

African Pygmy Hedgehog- Imported Hedgehog Species and kept as exotic pets.

The Southern African Hedgehog (*Atelerix Frontalis*) is the only natural occurrence hedgehog specie in South Africa. They can be found in Zimbabwe, Botswana, Namibia. Changes are slim to come across one in Mozambique, but it cannot be ruled out 100%, as wild animals are not bounded by country and provincial borders. Their preferred natural habitat is grassland savannah areas. They have a distinctively white stripe between quills and facial mask, across the forehead. Have 5 toes and have a very dark overall appearance. Bellies are brown / black, and they are much bigger in size than the African Pygmies. They weigh on average around 800 grams. It is important for Tenrec owners to know the differences, as the Southern African Hedgehogs are protected species, and it is against the law to keep them as pets. Sadly, Google info is grossly incorrect as it's indicated that Southern African hedgehogs are the size of African Pygmy hedgehogs, while they are the same size as European hedgehogs.

#### In South Africa they mostly can be found in the following provinces:

Mpumalanga

Gauteng

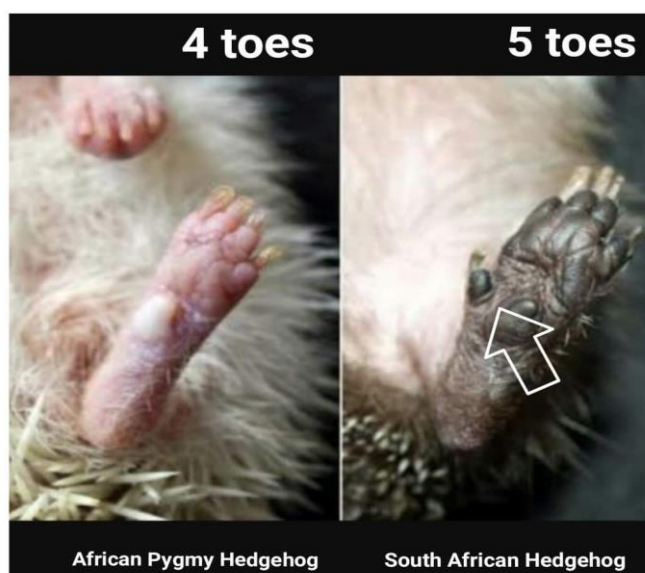
Free State

Limpopo

Northwest

Northern Cape

Certain areas in Natal, more inland. They are rarely seen at coastal areas. This is also the reason why it is highly unlikely to see them in Mozambique.



The African Pygmy Hedgehog (*Atelerix Albiventris*) is imported and does not occur naturally in South Africa or surrounding countries. They originated from Central and West Africa and was initially imported to the USA in the late 1980's. During importing a lot of cross breeding over the years had happened. Thus, leading to the African Pygmy hedgehog, you have today as a pet being regarded as a domesticated cross bred specie. They are to be kept indoors at certain cage temperatures and can never be set free in South Africa, as they surely will not survive.

#### Permits in South Africa

In certain provinces you are required to obtain a permit to keep an Tenrec or African Pygmy Hedgehog as a pet.

Province	Requirements
Gauteng	<b>No permit require.</b> Transport permits require if you are travelling to a province that does not allow exotic pets.
Mpumalanga	<b>No permit require.</b> Transport permits require if you are travelling to a province that does not allow exotic pets.
Limpopo	<b>No permit require.</b> Transport permits require if you are travelling to a province that does not allow exotic pets.
North- West	<b>No permit require.</b> Transport permits require if you are travelling to a province that does not allow exotic pets.
Natal	<b>Permit required</b> Natal do issue permits, it cost R50.
Free State	<b>Banned</b> Against the law to keep exotic animals as pets. They confiscate all exotic pets. This includes tenrecs
Western Cape	<b>Banned</b> Against the law to keep exotic animals as pets. They confiscate all exotic pets. This includes tenrecs
Northern Cape	<b>Permit required</b> They do issue permits if you apply. Without a permit, they confiscate. This includes tenrecs
Eastern Cape	<b>Permit required</b> Without a permit, they confiscate. This includes tenrecs

Permit regulations change from province to province, as they all have their own by-laws.

These laws and regulations might change, so the very best is to contact the local office in your province before you buy an exotic animal like a hedgehog and tenrec to educate yourself what the status of the present law is regarding these animals.

The permit is attached to a person's name and address. That permit is applicable only to the address on it and for the person whose name is on it. They are very specific in terms of physical addresses.

If you move to a new address, you must apply for a new permit again with the new address.

Holding permits regulations varies from province to province. In Mpumalanga it is required to renew permits annually, in the Northern Cape for example, it is valid for 5 years.

If you go on holiday and will travel over the provincial borders you must obtain a transport permit before you go on holiday. That permit will only be valid for travelling to the address you put on it and only for the period of time you apply for.

#### Permits in the USA

In the United States, tenrecs are prohibited in some states and municipalities, including: Georgia, California, Hawaii, Pennsylvania, Washington, DC, and all five boroughs of New York City.

What are the requirements for importing tenrecs into the United States?

1. Importers must contact local authorities to ensure compliance with all relevant laws
2. Importers must obtain a Veterinary Services (VS) import permit
3. Importers must obtain an original health certificate from the foreign country
4. Importers must have their pet examined at the first U.S. port of entry

#### Other countries that ban the import of exotic pets:

Italy, Australia, and recently the Netherlands joined in on the ban of keeping tenrecs. There are more countries that has strict regulations regarding exotic pets, but some only towards dangerous species, such as tigers. Canada has complexed laws and provincial by-laws that also makes it basically impossible to import. Countries and states mentioned here are more of a "Interesting to know"

#### Behaviour:

Behaviour is certain characteristics that all live plants and animals have in their genetic compilation, that determines the way they will act, live, and behave. Fun fact: Did you know that tenrecs sweat on their paws? It is to prevent them from slipping when running. The sweat between the substrate / objects and the paw prevents slipping. They share this ability with rats, hyrax (dassies) and dogs.

Tenrecs have 4 mayor behaviour traits:

- 1) Being nocturnal
- 2) Torpor
- 3) Anointing / Scent Marking
- 4) Echolocation

**Nocturnal:** All tenrec species are nocturnal. Meaning, they sleep during the day and awakens at night.

Fun fact: animals that are awake during the day and sleeps at night is called diurnal.

Nocturnal animals have excellent sense of smell, sight, and hearing.

If a tenrec is awake during the day, it often is a sign of something wrong with the animal. Either medically or hungry. Juveniles are often a lot more active during the day than adults, but that is only until they reach the age between two and three months.

We recommend bonding time to be from after 16h00. This is because tenrecs can be grumpy during their sleeping time. If you need to do cage cleaning and bathing, try at least for after 12h00 during the day. Imagine you got waken up midnight to go for a swim! It is the same for them. Some tenrecs do get used being handled at all times of the day and would simply go back to sleep when you put them back.

But it is extremely important not to disrupt that natural day and night cycle too much. They need to have night-time and daytime. A tenrec that is constantly kept in the dark have higher risks for a poor immune system than a tenrec that has natural light in the room or cage during the day.

Leave a light on or pull open curtains during the day. Exposing your tenrec for short periods of time to natural sunlight are a great practise. As natural Vitamin D from the sun is an immune booster and prevents illnesses.

Never leave bright lights on where your tenrec is kept during the night, avoid loud music or a television set that runs throughout the night can be stress factor for your tenrec.

They need their night-time and quiet times.

*Other nocturnal species*



**Torpor:** Some animals go into hibernating or torpor to survive harsh winters when food is scarce, and temperatures are very low. It is a survival method. Torpor requires minimal movement, or activity and metabolic depression. That means the animals has reduced heartbeat to save energy, eating less so that they are able to survive the winter. To stay warm, you need to have an active pulse, heartbeat, movement, and that consumes energy. Energy comes from body fat, and body fat are burnt to produce bodily heat and energy. Tenrecs are equipped with wonderful instinct and metabolic systems that guides them through seasonal changes. They preserve energy and body fat to last them through this period as well.

What you also must remember is, in the midst of summer, they can also as a result of extreme heat go into a temporary torpor for a day or two to escape the heat.

Tenrecs in nature uses daily torpor during the austral summer (the summer season in the Southern hemisphere, which is from December to February) and deep torpor during winter. It has one of the lowest reported euthymic (a state of tranquillity or well-being) of any eutherian mammal (placental mammals, are mammals that have placenta).

They are also known as viviparous mammals, meaning giving birth to life young) and is highly thermally labile (unstable when heated. When heated or it is too hot many immune bodies, enzymes and vitamins becomes unstable. Meaning- keeping your tenrec awake during winter and cage temps too high is not good for their immune systems.

Every year in South Africa during the month of September, (early Spring) we get many anxious tenrec owners worrying because their tenrecs. Students from other countries can apply this to their spring season.

**Here is 3 of the most common questions:**

My tenrec is awake but not eating

My tenrec was awake and now he is sleeping again.

When will they be fully awake?

Breathe... it is absolutely normal for tenrecs not to overindulge in food after torpor, or to go back into torpor after being fully awake and eating.

When they go into torpor their whole metabolic system and digestive system lowers down. Reduced heartbeat, pulse, blood flow, breathing, digestive system, all comes to an almost dead still.

For them to get up and going can be also a very slow process, as their bodily functions must be completely up and running before they are able to eat and digest food properly.

And then the main thing is, the month of September in South Africa are known for extreme unstable weather conditions. Just as you are ready to put away heat pads and jackets, a cold front will hit us.

It is not uncommon for tenrecs living in South Africa not to be that active and eating during September.

What you also must remember is, in the midst of summer, they can also as a result of extreme heat go into a temporary torpor for a day or two to escape the heat. Tenrecs that were relocated to a different region with different temperatures, humidity also tends to go in a state of torpor. They do this to enable their bodies to adjust to the new environment, that once they are awake, they will be adjusted and settled in. This can very frightening for first time owners.

I am sure you have noticed or experienced it that when a tenrec is sleeping, that they feel cold to the touch and even stiff when being waken up. Until they are awake, and the blood flow is restored, then only do they start moving around. This is the way they sleep, and it is also called a "daily torpor" when sleeping.

If your tenrec is up and awake already and eating, it is also not a cause for concern, your tenrecs environment will be the explanation for that. With that I mean the environment is his cage, heat pads or heat emitter lamps makes the cage warmer, the room might be sunny during the day, your house might be warmer than other people's houses. Or you are residing in a warmer part of the country/ world. You might want to use the opportunity to introduce new food if the tenrec is hungry and eating. Sometimes after torpor they are "open" for "suggestions" in terms of other food that will help replenish their nutritional needs.

Keep in mind, that technology (heat pads etc) does not always overrule instinct. Your tenrec might be still in torpor regardless of the heat features you have installed.



Tenrecs can very well survive in warmer climates without any heat source at all.

# HIBERNATION VS. TORPOR

## HIBERNATION

- Voluntary state
- Can last for several days, weeks, or months depending on the species
- Triggered by day length and hormone changes
- Body will lower temp, slow breathing, and heart rate/metabolic rate
- Example: Ground squirrels

## TORPOR

- Involuntary state
- Lasts for short periods of time, sometimes only days or nights (depending on feeding pattern)
- While inactive will enter a deep sleep where body temp, metabolic rate and heart rate will slow
- Example: some bat species



Daily periods of lowering body temperature to reduce energy expenditures

**Torpor**  
a state of physical inactivity; lethargy  
Oxford Dictionary

Longer periods during cold or hot weather drought or food shortage

*Following Deer Creek*

*Other animals that also goes into torpor*

Anointing:

Tenrecs will scratch at items with interesting scents and rub their paws on their spines in a “self-anointing” behaviour. They also spit in their paws and rubs it in their bodies. The spit they produce is not foam like those of hedgehogs. It basically appears more as if they are grooming themselves. Did you know that in the wild they use scent anointing as a camouflage method and also as an insect repellent?

Scent-marking are done by the milk in the males’ eyes and by dragging its cloaca on the ground. This is a form of communication between tenrecs. This is a common behaviour after cage cleaning, adding new objects to their environment, or even when held by a human. Male tenrecs secrete a pungent smell to attract females to mate with.

Echolocation:

Although most communication are done via scent marking, the sounds tenrecs make include hissing and grunting to twittering and echolocation clicks. Echolocation is a technique used by some animal species, including tenrecs, to determine the location of objects using the reflection of sound waves. What they basically do is to make a sound and then listen to the echo’s. The echoes are basically sound waves bouncing off objects around them. By clicking their tongues, they create sound waves that helps them navigate to insects.




Within the tenrec species there are at least 3 species who are able to do this:

Lesser Tenrec

Lowland Streaked Tenrec

Dobson Shrew Tenrec.

## Echolocating Animals

 <h3 style="text-align: center;"><u>Bats</u></h3> <ul style="list-style-type: none"> <li>❖ Echolocation is Only found in Microchiropteran bats</li> <li>❖ Echolocation help them for navigation &amp; foraging in total darkness.</li> </ul>	 <h3 style="text-align: center;"><u>Dolphins</u></h3> <ul style="list-style-type: none"> <li>❖ Dolphin’s habitats have low visibility due to dirty water &amp; Turbidity. Echolocation help them for foraging.</li> </ul>	 <h3 style="text-align: center;"><u>Whales</u></h3> <ul style="list-style-type: none"> <li>❖ Echolocation helps Whales to navigate where vision is extremely limited in range due to Absorption or Turbidity.</li> </ul>
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*Other animals also practising echolocation*

## 4. Tenrecs Cage Setup

This is more applicable to breeders, but tenrec owners should know this also, especially if you want to buy a tenrec from a breeder. This will help you distinguish between a reliable breeder and someone who does not really know a lot about tenrecs. As a registered breeder you must always maintain a high standard in the living arrangement of your animals, and it should be of a high standard and 100% correct.

When breeding and dealing with clients that visit your house for collection, you will be required to show new owners your breeding room, or area where you keep your tenrecs. For this reason, you should always set an example and maintain a high standard.

### What you should have in your breeding room: 6 Items listed.

This is the area / areas where you keep your tenrecs cages. Each male should have an extra cage, where he can be separated from the female after mating. Some breeders keep them separated, especially if the breeder wants to plan specific mating between certain males and females. It is not uncommon for breeders to house males and females together, but you must have extra cages available for an emergency. If you have set breeding pairs; the ideal is then to keep them together to promote bonding. If male and female are not bonded, it might cause a risk of failure to mate or killing of babies.

You should also have enough space for your retired tenrecs as it will be your responsibility to keep and care for ALL your tenrecs until they are deceased. At this stage, registered tenrec breeders in South Africa can-not sell or give a retired male or female up for adoption, as they must keep record of their lineage, illnesses, and reason for death, as SAHBA are still in the process of establishing proper data gathering.

#### 1) Cages

With the preparation of your cages, it is important to keep the following in mind:

- The prescribed minimum floor surface of a tenrec's cage must be 900 mm x 450 mm, and in height the minimum is 500 mm. With tenrecs you can have a higher cage that allows for ladders and climbing accessories. Keep size in mind for when you have a litter of 6 or 7 babies, there must be enough space for the mother and the babies once they start exploring the cage.
- Your cage must have a roof so that your tenrecs can't climb out. Males especially might want to escape and visit the females when you have not planned for them to mate.
- Make sure your cages have enough ventilation as ammonia gas build up, can cause upper respiratory infections. This is especially important with big litters.
- If you build the cages yourself, make sure that if you use welded mesh, that the welded mesh you use, doesn't have holes bigger than 20 mm x 20 mm. If it is bigger, your tenrec will try and climb through them and injure themselves – especially the babies. It is best if you cover the mesh with fly screen netting, that way you can keep insects also contained in the cage.
- The bottom of the cage must be solid, and you need rather big doors to be able to place in, and remove their wheel, house, food and water bowls.
- Fish tanks are NOT suitable for tenrecs, but terrariums are. Fish tanks - the glass doesn't allow for enough ventilation and will cause lung problems. People are inclined to think that if the top of the tank is open that it will provide enough ventilation. Which it does not. Terrariums will have fine mesh on the sides and top to allow for proper airflow at the bottom of the cage where it is needed the most.
- When you position your tenrec cages, make sure that you put the cage in a quiet area - for example not right next to the TV or radio. You don't want direct sunlight on your cages and don't put your cages near a fireplace, heater or fan. Windows in your breeding room are crucial though for ventilation and to allow natural light. With breeding you want to keep your tenrecs separate from your living area to give you more control over the environment when you have babies.



- Wooden cages can be painted with a lead-free paint, and must not have any grooves, wires, splinters etc. that can hurt your tenrecs.
- A second-hand reptile cage, for example bearded dragons, iguanas or a snake cage, is also not suited for tenrecs. The smell of these reptiles stays behind in the cage. In nature they are natural enemies, which means that your tenrec will always be on alert and stressed. It was observed that snakes leave some chemical compound behind that can influence on their respiratory system. Make sure of what any second-hand cages was used for before you buy them. New reptile cages are acceptable if it is big enough, and if you provide extra ventilation holes. Because we feed tenrecs insects, the glass panels are needed to prevent crickets and roaches from escaping. Holes that have a 10 cm diameter on the sides and back can be covered with fly screen netting to prevent insects from escaping and still allows ventilation in the cage.

Examples of cages:



Photo credits: Ruth Smith



Photo credits: Amorie Wolhuter

## 2) **Medicine Kit**

To have a medicine kit at home is always a plus point. Regardless of you only have one tenrec or ten. Registered breeders will have multiple tenrecs. With multiple tenrecs comes higher possibilities of injuries and minor illnesses that requires to have a medicine kit at home. This may help you save a trip to the vet if you have these items at home. Medicine kits can be variable; all depends on your budget. Mostly you must have Calcium D3, Probiotic, Vitamins, antiseptic Ointment, nail clippers, tweezers.

## 3) **Scale**

Any kitchen scale measuring in grams will work. This will always be crucial. You must weigh your tenrec females regular to monitor weight gain during pregnancy. Keeping track of the youngster's growth. Weighing your tenrecs on a regular basis will assists in detecting health issues early.

## 4) **Notebook / Record keeping**

Notebooks might seem old fashioned, especially if you keep record on your phone, or laptop or tablet. But a notebook is crucial while weighing, taking care of your tenrecs, dotting down eating habits. As we all are human and often forget to update your recording on the laptop. Electronic record keeping devices might fail, crush or get stolen and then all your data is gone. You must have more than one backup for data capturing. This is also crucial for recording which male can be mated to which female to avoid inbreeding etc.

## 5) **Table or work desk**

You need a work desk where you can weigh the tenrecs, do nail trimming, write down info, inspecting animals. Sufficient lighting is required here for you to work properly

## 6) **Cupboard or cabinet**

This is where you store food / supplements / insects / food dishes etc. This might not be inside the breeding room, especially insects. Some owners also breed their own insects and prefer to keep the insects in a garage or outside building. Even though it is not in your breeding room, it is regarded as part of your set-up.

## **What do I need inside my cages: 7 Things listed**

### **1) Floor covering:**

Floor covering for tenrecs are mostly a combination of certain substances. See list below. Floor cover is to protect the bottom of your cage from urine and water spillages and to provide a suitable environment for your tenrec to live in.

### **Eco litter**

With eco litter, you cover the whole bottom of cage. Make sure that it is at least 5 cm thick. You don't have to clean daily or weekly, but rather monthly. Most owners just scoop up the poop, and areas where the tenrec has urinated. Once the eco litter gets wet, it swells up and turned into a powdery substance once dried. These you can scoop out, top up again. Eco litter is a great odour combat, especially during summer times. This is also a great type of bedding to use when you have babies. No need to clean up cage at all while you have a litter. Negative point is it can be expensive and becomes a bit dusty after a few weeks of non-cleaning. Eco litter is best for tenrec males, as they tend to have a bit of a smell.



### **Bark Chips**

Bark chips can be used in combination with eco litter and coco husk. This created a nice natural feel to the cage and the advantage is that your tenrec can dig into it. Disadvantage will be that insects can hide easier from tenrecs, although the stimulation of hunting and digging after insects are very good for a tenrec's overall mental health.



### **Coco Husk**

Coco Husk can be used in combination with eco litter and bark chips. This created a nice natural feel to the cage and the advantage is that your tenrec can dig into it. Disadvantage will be that insects can hide easier from tenrecs, although the stimulation of hunting and digging after insects are very good for tenrecs mental health.



### **Kiddies Play Sand**

This can be used as a floor cover or cover only a section of the cage. Take note that when owning a male, the whole area with play sand may become quickly smelly. When taking a bath, the males give off a smell, and they also do scent marking. Most people have the sand in a bath litter tray, but it can be used as a complete floor cover. Bath sand in a litter box is less of a waste as you only fill up the litter box and replace as needed.





## Compost

Compost like most other substances listed are best if used in a combination such as coco husk and bark chips. You need to pay attention to water spillages, dying insects, food leftovers that can cause harmful bacteria. Compost may have more negative points than positive points and is only fitted for the very experienced and attentive owner.



## Bedding types that are not suitable for tenrecs are:

Traditional cat litter, crystal cat litter, fleece, wood shavings, grass, corn cob and newspaper, yoga carpets, industrial carpets, non-slip rubber carpets and many more. Your tenrec's nails will get stuck in fabrics and get ripped out.

Cat litter is any tenrecs enemy as the litter tends to block their cloaca. Besides blocking, it also dries out their skin and is not a good substance for your tenrec to bath in. When it comes the bathing sand, avoid Chinchilla bath sand at all costs. It is too fine and causes for respiratory issues, and upon that certain brands are scented as well.

But, keep in mind, to experiment and test out new products is always good and a learning curve. Just don't do the experimenting while you are having babies. You can't risk a litter's wellbeing for testing out new products.





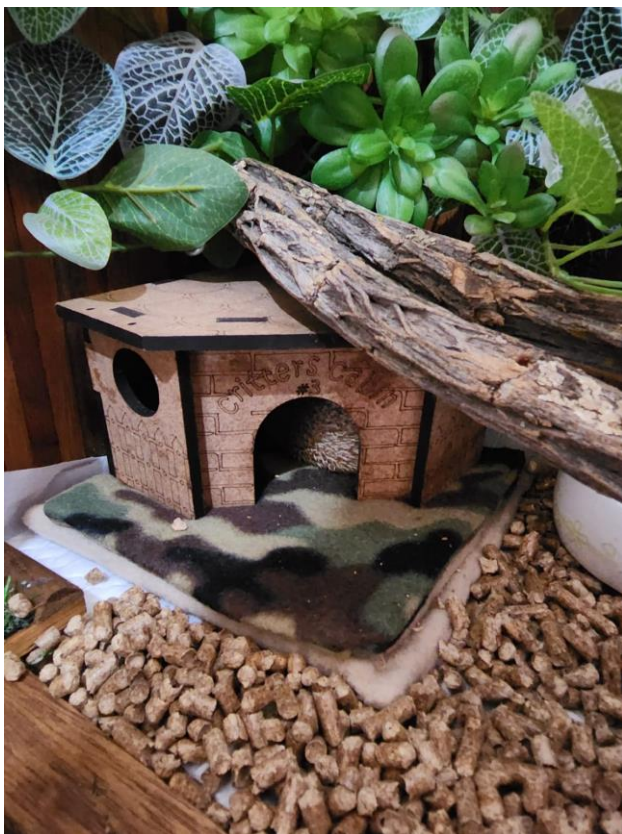
## 2) House/ Sleeping Den

It is very important that each tenrec should have a house (sleeping den) where they can hide and feel safe in and that is warm, cosy, and dark for their sleep during the day.

Your females need houses that are solid, can't collapse on them and the babies, and are easily accessible when you need to handle the babies. A hide with a lid that you can lift-up, and peek inside without disturbing the mom, is best to use. All houses should also be easy to clean as hygiene is of the utmost importance when you breed. We do not recommend fleece houses for breeding females as you will not be able to clean them when the babies are small.

Please also note that bonding pouches, beanies and a heap of blankets alone are NOT suitable housing. Typical sleeping dens for tenrecs would be wooden cabins, artificial logs, laid out with a small fleece blanket or dry moss to sleep on. Creative owners make cardboard boxes that get to be painted and decorated to look like a natural log cabin. Tenrecs prefer to have a very small space to sleep in, but it's best to ensure that the female's nest is a bit bigger. To leave dry moss or dry leaves in the cage is always clever as she will carry it in her den for nesting material.





This cabin is resting on a fleece "matrass"

*Photo credits: Amorie Wolhuter*

### 3) Wheel

Wheels are optional if you have a big cage with lots of climbing objects and hidey holes. Owners have found that if their tenrecs cages are interested enough with tunnels, climbing objects and tree stumps, that they will ignore their wheel.

The wheel must be between 28 and 30 cm. If the wheel is too small, they can injure their backs and develop arthritis between the spines. The wheel must have a solid bottom. The hamster and chinchilla wheels that has mesh wire or wire bars is not suitable. They have very small feet, and the wires can easily injure or even break their feet. And those cat-like nails get hooked on it.





## Food and water bowls

The food and water bowls must be low enough for your tenrec to reach but still be large for enough food and water.

Typical food and water bowls that we use is the traditional cat food bowls, or natural looking types of bowls. Make sure that when putting out super worms that the bowl is not too shallow to allow the worms to escape. Miniature water fountains work great, as it not only is a water bowl, but improves on cage humidity, increasing that natural feel of the cage.

Tenrecs do not drink water from drinkers. No water bottles – tenrecs are not adapted to using water bottles due to their snout shape and drinking behaviour.

Important for hydration: tenrecs need access to fresh water regularly



#### 4) Tenrec "toys"

This will be tunnels, ladders, little bridges, fake logs, real tree stumps, rocks, plants can be fake or real. With this you create little secret passages for your tenrec to explore, hunting for insects, especially if you set free a couple of crickets in the cage.



##### **Safe plants:**

African Ferns, Boston Fern, Stag Horn fern, African violets, Hen and Chicks (Spider Plant) Pansies, Parlor palm., Christmas Cactus, Hibiscus, Venus Fly Trap, Wax Plant, Mint, Dandelion, Strawberry plants.

##### **Toxic plants:**

Aloe Vera, Clivia, Asparagus Fern, Monstera, Sago Palm, Peace Lilly, Pathos, Jade plant (Succulent), Amaryllis, Lemon Grass, Basil, Chives, Oregano, Rhubarb, Thyme, Thieves, Catnip, Carnations.

##### **Safe wood:**

Apple, bamboo, pear, mulberry, quince, willow, grape, grapevine, hazelnut, oak.

How to clean outdoor pet friendly branches:

Wash and clean your branches from any excess moss and ensure it is free from fungi or mould. Saw and sand the edges as necessary.

One method:

Is to bake the wood in your oven on a low heat for an hour. This does weaken the structural integrity of the wood however, which can lead to it splintering in unsafe ways.

Second method:

Is to clean the wood with a diluted bleach solution such as the pet safe disinfectant F10 and allow to air dry before adding to the cage

#### 5) Heat Source

Although tenrecs can pretty much survive cold temperatures and we don't need to prevent them from hibernating like hedgehogs, it is needed to have a heat source available if you are breeding, especially for juveniles less than a year old. For tenrecs a heat pad will fill the basic need, but you can use a heat emitter lamp or even a heater in your room. In South Africa tenrecs can go without any heat source at all. Heat sources are mainly for juveniles. We disrupt their natural bodily functions severely if we prevent them from torpor.

Heat emitter lamps is a globe that provides heat but no light. It is important not to make use of any other type of globe like infra-red lights or white globes. Tenrecs must have a natural day and night cycle. Infrared lights are basically radiation like exposed microwave rays. Heat emitter lamps warm up the whole cage, upon where other heat sources only warms up a small area. Before you buy a heat emitter lamp, you need to know what wattage is



correct for your tenrec's cage. Mostly heat emitter lamps get to be used for juveniles. For adults you don't need more than a 50-watt globe.

#### Wattage:

If your cage is less than 1 meter in length - 75 - 50-watt bulb

1 meter in length - 100 watt.

1.2 meters and up 150 watts

Dome or not? The dome is that thingy majick that you can get with the lamp. This helps to channel heat in a certain direction. The wider the dome, the bigger the area that the heat is directed in. Domes are optional and not a must have.

#### Placement of heat lamp:

It is important to know that you must NEVER place your heat emitter lamp on top of your wheel, especially steel wheels. You don't want to cause your tenrec to burn.

Heat lamps must be at least 30 cm or more above the bottom of cage. Some owners install it on the side of the cage on the inside, so that the heat lamp to be directed in a horizontal way- in the length of cage instead of from above.

#### Installation:

You must use a ceramic bulb fitting. Copper / brass or plastic fittings will melt.

By using a temperature controller installed with heat emitter lamp is the safest, and best way to go. You can set your temperature controller on the desired temperature, and heat lamp will go on and off accordingly to maintain stable temperatures.

This way you save electricity and prevent your tenrec from heat exhausting.

#### Tips:

Remember to unplug your heat lamp when there is planned loadshedding. (This is a South African thing. In South Africa loadshedding means our electricity gets to be put off certain times, mostly for 2 hours at a time. This is to save electricity.) Power outages can damage your bulb.

Have enough water in your tenrec's cage, as the heat might dry out the air and quickly evaporates the water. Heat pads will be typically the plastic type or the foil type.

Foil- If installed properly, these heat pads is a money safer heat source. Low electricity usage. The foil heat pads must be installed correctly to be safe. It must never be bend or folded as the wires that acts are elements will crack and can cause electrical shorts. Remove the paper and stick the heat pad smoothly on to a tile (ceramic tile) and place another tile on top of it. Then you can place the sleeping den on top of the tiles. Ensure that there is a barrier between the heat pad and sleeping den. The sleeping den will then be warmed up but not getting so hot that your tenrec is in risk of burn injuries.

All wires must be kept out of reach of your tenrec. Although they are not rodents, they can nibble on it or even attempt a game of tug and war with the wires. Concealed wires also eliminate possible risks coming from water spillages. Heat pads do not warm up the whole cage, only the area where it is installed.



**Plastic-** The plastic heat pads come with a dial that you can set it to be cooler or warmer. These heat pads do not have the risk bending. They are waterproof and in general safe to use. Low on electricity usage. They are more expensive than the foil types though but is highly recommended as a safe heat source. Although they don't stick on to a surface, all installation methods for a foil heat pad applies to this one.

#### 6) Temperature / Humidity meter

For tenrecs an average cage temperature of 18-19 degrees during the winter is perfectly fine. Did you know that as their breathing slows their body temps drop to match the ambient temperature. Humidity 40-50 during the winter and summer up to 70-80. It is not a must to have a humidity meter installed, but very often you get temperature meters that is a combination of both. Summer temperatures for tenrecs are average between 22- 26 degrees.



## 5. Tenrec Care Taking

This module is all about proper caretaking of your tenrec. Breeders: Without the required skills and knowledge, you cannot be a registered breeder. Therefore, for this module it is important that you know the basics.

### Food:

In captivity their staple diet are insects, but they are able to digest and eat other food as well. Tenrecs were historically called insectivores but are actually faunivorous and eat a wide variety of animals, many of which are terrestrial insects. They are not particularly fond of vegetables but may occasionally eat some fruits. They don't have a cecum, therefore digesting raw fibres from vegetables might be challenging, and not part of their natural diet. Basic diets for tenrecs in South Africa consist of mealworms, super worms, beetles of mealworms, silkworms, crickets, black fly soldier larvae and pinkies. Pinkies **should actually be part** of their diet to suit of their natural needs. They will eat live pinkies, but frozen pinkies can be given also if you are a bit squeamish. We avoid raw meat for the risk of bacterial and parasite infections. When your tenrec is on a 100% insect diet it is required that you add Calcium D3 to their diet 2-3 times a week. Calcium without D3 is not suitable, as the D3 is what is needed for the correct absorption of the calcium.

If your tenrec's staple diet is dry cat food and only receives insects as a treat, then you only need to give Calcium once every second week as for a precaution for Metabolic Bone Disease. The dry cat food already contains calcium. Please note that insects are their natural food source and also their preferred choice of food.

### Food lists for tenrecs:

Insects

Fruits

Other foods

### Insects:

Mealworms, super worms, silkworms, crickets, BFSL, other parts of the world also have wax worms, horn worms, butter worms. Feeding feeder insects comes with pros and cons.

### Pros:

A variety of insects should be part of a feeding routine for your tenrec. 90% of their diet is insects which means they get most of their vitamins, minerals, etc through the insects and different insects have different nutrients to offer. Some insects have a heavier exoskeleton which gives fibre, some insects are high in calcium naturally, other high in protein and amino acids like taurine. Tenrecs needs all the different nutrients for his body to function normal and healthy.

### A study conducted by the University of Helsinki revealed the benefits of insects:

**Chitin-** The armored outer layer of mealworms and crickets were extracted and measured in the study. Chitin levels in mealworms and cockroaches were 45% of the insect's total body weight when content was removed. Why is that cool? Because chitin is a polysaccharide, which helps store energy gained from food and helps with healthy bodies and minds. It basically helps tenrecs digest their food. Remember tenrecs have no cecum to help with digestion.

**Taurine-** Is a naturally occurring essential amino acid inside of the insect's organ and skeletal tissue. The amount of taurine your tenrec receives in their food helps with metabolic and neurological functions like eye health. Taurine has important functions in the heart, brain and immune system. Zumpano explains – it helps support nerve growth, helps us maintain proper hydration and produce bile salts, which helps in digestion. Taurine also regulates minerals and supports the general function of your nervous system, vision and eyes.

**Calcium-** The body needs calcium for muscles to move and for nerves to carry messages between your brain and every part of your body. Calcium also helps blood vessels move blood throughout your body and helps release hormones that affect many functions in your body.

**Phosphorus-** Is needed for the growth, maintenance and repair of all tissue and cells, and for the production of the genetic building blocks, DNA and RNA. Phosphorus is also needed to help balance and use other vitamins and minerals, including vit D, iodine, magnesium and zinc

**Protein-** Serve as structural support, biochemical catalysts, hormones, enzymes, building blocks, and initiators of cellular death. Proteins can be further defined by their four structural levels: primary, secondary, tertiary and quaternary.

**Fiber-** Normalizes bowel movements

**Thiamine-** Helps the body's cells change carbohydrates into energy. The main role of carbohydrates is to provide energy for the body, especially the brain and nervous system. Thiamine also plays a role in muscle contraction and conduction of nerve signals.

#### **Cons:**

**MBD-** Feeding insects have the risk of causing Metabolic Bone Disease if you do not pay attention to what needs to be done and not. Metabolic Bone Disease is the result of Calcium/phosphorus imbalance – on other words, food related. Incorrect diet! Vitamin D deficiency. Learn more about MBD in the Diseases module.

**Hunger strikes-** Tenrecs can go on hunger strikes if used to only insects

**Food options-** When your tenrec refuses other food, it becomes challenging to provide food in the case of a feeder insect scarceness period (during Covid it was a challenge to get insects). Also sick, recovering tenrecs might be required to eat other food items for a certain period, and now you have a tenrec on your hands that refuses any other food. Lactating females may need extra food to boost milk supply.

**Required additional supplements-** You have to add Calcium D3 to the diet to balance out Calcium / Phosphoric acid ratios out.

#### **Fruits:**

Fruits tenrecs might eat because it is available / some native to Madagascar

- Banana
- Jack fruit – related to the fig tree = figs
- Litchi
- Mango
- Strawberries
- Guava
- Apple
- Papaya
- Passion fruit
- Breadfruit – species of flowering tree in the mulberry family = mulberries
- Custard apples - replace with apple, pears or berries mix
- Loquat
- Soursop – replace with mix of apples and strawberries

#### **Other food:**

Dry Cat food as per the prescribed list by SAHBA

Cooked / scrambled eggs

Proteins such as cooked mincemeat (ground beef), chicken, chicken livers, pinkies.

### Cats Soft Food/ Treats

Soft food often indicates to sachets wet food or tin foods. In general, do not use tin foods example: Pampers, Top Cat. Tin food mostly consists of a lot of fillers, it goes down quickly as well, and manufacturers add fish to the recipe, even if it is indicated as beef or chicken. The wet food sachets do not contain all those fillers and unhealthy items, colourants etc as the tins. That is the reason why the sachets are more expensive. Example: Whiskas sachets contain no salt, but contains sugars, therefore it is important to use this only as a treat.

It is important to know that there are certain tin foods that is approved and viewed as safe to enhance diet if needed.

Always remember, this is not their staple diet, but just a treat.

#### Safe tin foods:

Royal Canine Mother and Baby Mousse- under-weight, recovering tenrec, female and babies

Royal Canine Recovery Mousse- sick recovering tenrec, mother with babies, juveniles.

Hills a/d Recovery Mousse- sick recovering tenrec, mother with babies, juveniles.

Bon-a-petit Mousse – chicken & turkey mousse- safe treat for adults and babies



#### Gut loading insects:

Gut loading is the term used for the provision of a special diet to insects, shortly before the insects will be consumed by the tenrec.

Feeding the “food” is extremely crucial. It is important to know that gut loading the insects will benefit your tenrecs health and contribute to its lifespan. Your tenrec is what he eats. By offering healthy insects you increase your tenrecs immunity. Insects that are commercially available are in general not sufficiently nutrient-balanced to promote health for insectivorous pets. They are mostly deficient in calcium, which is a vital mineral for tenrecs. They are also generally deficient in vitamins D3, A, E, and B1. Gut loading allows the insects to carry the nutrients from the food they ate in their digestive tracts. Those nutrients will be absorbed by your tenrecs when they consume the feeder insects.

#### List of items to feed your insects:

Goldfish flakes

Cat pellets

Grains- alfalfa, wheat germ, rice cereal, oats

Vegetables- Dark leafy greens (but not spinach), potatoes, carrots, squash, sweet potatoes

Fruits- apples, bananas, oranges

#### Cage Hygiene:

Maintaining good hygienic practises in terms of food and water bowls are crucial in preventing outbreaks of diseases. Fresh water in clean bowls is extremely important as biofilm build-up can cause your tenrec to be very ill. Biofilm is the slimy feel you get when you wash the water bowls. This is fungus growing in water.

Fresh food daily, clean food bowls prevents bacteria build-up that causes infections, upset stomachs and even salmonella. Salmonella results often from dirty cages, dirty food bowls, and water bowls, as well as raw or rotten eggs, and raw meat. If a salmonella outbreak occurs, authorities are called in to deal with the situation and can result in to all your animals to be removed. This also place the whole of the tenrec and hedgehog community at

[sabreeders4@gmail.com](mailto:sabreeders4@gmail.com)

<https://southafricahedgehogbreedersas.com>



risk, as authorities may then ban the keeping of exotic pets. In Some USA states tenrecs and hedgehogs are banned, specifically for these reasons.

Clean dry cages are a must, and not an option.

### **Bathing and nail trimming:**

Some tenrec owners prefer to go to the vet for nail trimming, others do it themselves. Registered breeders are required to be able to trim nails and bath themselves. Bathing of tenrecs should only be done when required. Mostly bathing is required in the cases of rescues, and extreme dry skin conditions, or under vets' supervision. In most cases a sand bath will help them get rid of dry skin. If you keep your tenrec in the correct conditions a water bath will never be needed.

But you never know when you will be required to bath a tenrec, therefore a tenrec breeder must be able to pull it off. Nail trimming is a must have skill.

### **Bathing methods:**

Traditional Bath- Baby shampoo with linseed oil- dirty tenrec or dry skin.

Oatmeal Bath- Oats in a sock – quilling, can provides relief for sensitive skin, soothing bathing method.

Betadine Bath- Relief for itching of mites, bacterial or fungal infection. Not cure- relief. Minor injuries.

Rooibos Tea Bath- Anti-inflammatory natural bathing method.

Footbath- dirty feet.

### **Consistency:**

Maintain consistency throughout everything you do. Consistent cage temperatures, consistent with food and water supply, stick to the same type of food, only change when you have no alternative. Consistent in cage cleaning, and checking up, inspection of your tenrec. Consistent in time spend with your tenrec. By maintaining a routine and being consistent in your care taking of your tenrec will assist with longer lifespan.

### **Bonding / Time spending:**

The golden rule is never to have more than what you can afford and have time to give attention, and general care taking. Tenrecs are easy going animals, that requires less time spending with their owners than hedgehogs. If you are a breeder, your female should still be used to human handling, and you should spend a great amount of time with juveniles. Although there are tenrecs that are extremely tame and seems to tolerate and crave the human attention, it was found that a mere 10 – 15 minutes time spending daily to be enough. Some can even skip a day or two, and it won't affect their "tameness". Tenrecs tend to show their displeasure with owners through biting when you overstay your welcome with them. They prefer in general to rather roam your lap or use you as a human jungle gym than to be held in the hands. Overall, tenrec owners care more about their tenrecs than what the tenrecs care about them!

### **Health Matters:**

In the case of tenrecs, we mostly use additional supplements only as and when needed. See short list below:

Calcium D3- to prevent Metabolic Bone Disease.

Vitamins- Multi vitamins – enhance appetite, maintain energy and immune booster.

Probiotics –aids in the prevention of infections, promotes healthy gut and digestive system, good for sick / recovering animals, lactating and pregnant females.

Omega – Healthy skin and quills- Please ensure this is real omega and not mixed with other oils. Not to be given to females with babies. This is also just needed in extreme cases, mostly for rescues.

Registered breeders: you should know how to deal with certain health matters and be wise enough to realise when it is time to call in a vet's help.

Before we dive into diseases, did you know that tenrecs have NK cells? (Natural Killer cells.)

This is also why they were able to adapt and stay alive for millions of years. Where other species wouldn't have made it.

What are NK cells? Natural killer (NK) cells create a form of immunity that recognizes and eliminates cells that are infected with certain viruses or have undergone malignant transformation. In other words, it fights off most bacterial and viral infections. That is also the reason why tenrecs are such healthy animals. But, keep in mind, tenrecs in captivity can have a lower immune system due to human care taking, and being exposed to illnesses that they normally would not have suffered from in the wild. If a tenrec is sick, it is often because of incorrect caretaking.

**This section will be divided into 3 sub modules.**

- 1) Diseases treatable at home (6 topics listed)
- 2) When is a trained vet required?
- 3) Diseases that cannot be cured yet requires vets' assistance / advice.

## 1) Diseases treatable at home

### 1. Mites:

Mites / Acariasis is one of the most common parasite diseases that can occur with tenrecs. Easy to be treated, but if left untreated, conditions can turn to the worst. Mites are ectoparasites- that is a parasite that lives on the body of the host and not internal such as worms. They suck out the blood, eating away skin, hair, quills of the host animal.

#### Signs:

Scratching a lot

Losing quills, bald spots appear

Skin very dry and flaky

Red areas of irritated skin, crusts on skin, base of quills

Mites can sometimes be visible to the naked eye – depending on life cycle stage and type of mite.

Tattered ears.

#### Treatment:

Revolution for Kittens are world-wide used to treat mites. When having mite issues, you also need to clean out the entire cage, disinfect cage and all bedding such as blankets and more. Before treatment is administered, you can give the animal a Betadine bath / Oatmeal Bath or Rooibos tea bath to provide relief of the itchiness, this will help towards getting rid of the mites up to a certain point. Normally after treatment the quills start to grow back within a period of two weeks, that is, if the case was not too severe.

**Revolution for Kittens:** This is a Drop on method of treatment. Full tube behind the head. Repeat after 3 weeks again. Tenrec's skin is much more absorption resistant than hedgehogs, and therefore stronger dosages are required when using these products than with a hedgehog. This works for mites and worms.



**NexGard Combo for Kittens:** This can also be found in Europe and the USA. This is a Drop on method of treatment. Just drop (half tube) behind the tenrecs neck, if needed, repeat after 3 weeks again. This works for mites and worms. This product is new on the market, but the active ingredients were tested previously and proved to be more effective in fact than selamectin and ivermectin that normally is active ingredients in Revolution for example.



#### What triggers it:

Mites can be dormant in a cage or bedding for months, and once environment changes favourable for them, they will hatch, grow, comes alive. Mites can be transferred from other animals, such as dogs, cats, birds, hamsters, rats, mice, poultry onto tenrecs. Wood shavings and bedding can be an excellent host for them as well, and it is possible that you can buy already infested bedding at the pet shop. For those reasons I will strongly advise against using wood shavings / saw dust as a form of bedding. Mites also flourish on dry skin. Poor cage keeping and cleaning also promotes the infestation of mites.

#### Types of mites:

**Cheyletiella mange-** also called the walking dandruff mite. This mite is red and visible to see. Cannot survive away from the host, easily treated with Revolution and baths really helps.

**Sarcoptiform mite** – Very common with tenrecs. Females lay their eggs in the skin of the host, which causes for the excessive scratching.

**Caparinia tripilis** – Also very common. Can be visible with the naked eye or under a microscope. Most often the head of the animal will be the most affected. Very common under wild hedgehogs and tenrecs.

**Psoroptes cuniculi** – Ear mites. Causes for ear infection, ear irritation, discharge from ears often smelly. Can cause imbalances of the animal.

**Notoedres** – known as feline scabies. Causes for crusts, thickening of skin. Spreads easily and fast.





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## 2.Worms:

Worms are endoparasites, this is parasites that lives inside the internal organs or tissue of its host. There are a variety of internal parasites, we are only going to discuss a few that may be applicable to tenrecs. Deworming tenrecs is not a regular practise but more of a “required when needed” practise. Because tenrecs are small of statue it would be best to deworm only from the age of year. There are tenrec owners who do deworm their tenrecs annually. It is not wrong to do it, and also not wrong NOT to do it.

### Signs:

Tenrec is constantly hungry, coming out too often during daytime.

Runny green to neon green stools, sometimes a whitish mucus appearance to faeces.

Worm eggs might be visible in stools- tiny white specks.

Losing weight

Blood in stools

Can stop eating and become less active once it becomes worse.

Lung worm- rattling cough- needs antibiotics.

### Treatment:

For tenrecs we use kitten de-wormer, always also according to weight as prescribed by manufacturer. Certain types of worms require antibiotics, such as lungworms.

Milpro for Kittens- Break tablet into a quarter, crush and dissolve tablet in water and administer with a syringe. Repeat after 3 weeks again.

Drontal dewormer for Kittens- Administer according to tenrec`s weight. Break tablet into a quarter and crush and dissolve tablet in water and administer with a syringe. Repeat after 3 weeks again.

Because tenrecs can hand out nasty bites, we recommend to rather make use of a product that you can “drop on”.

Revolution and NextGard Combo – however it is used for mite`s treatment mostly, this is also a deworming agent. Used as a drop on method. Drop behind tenrec`s neck. Repeat after 3 weeks again.

Types of worms:

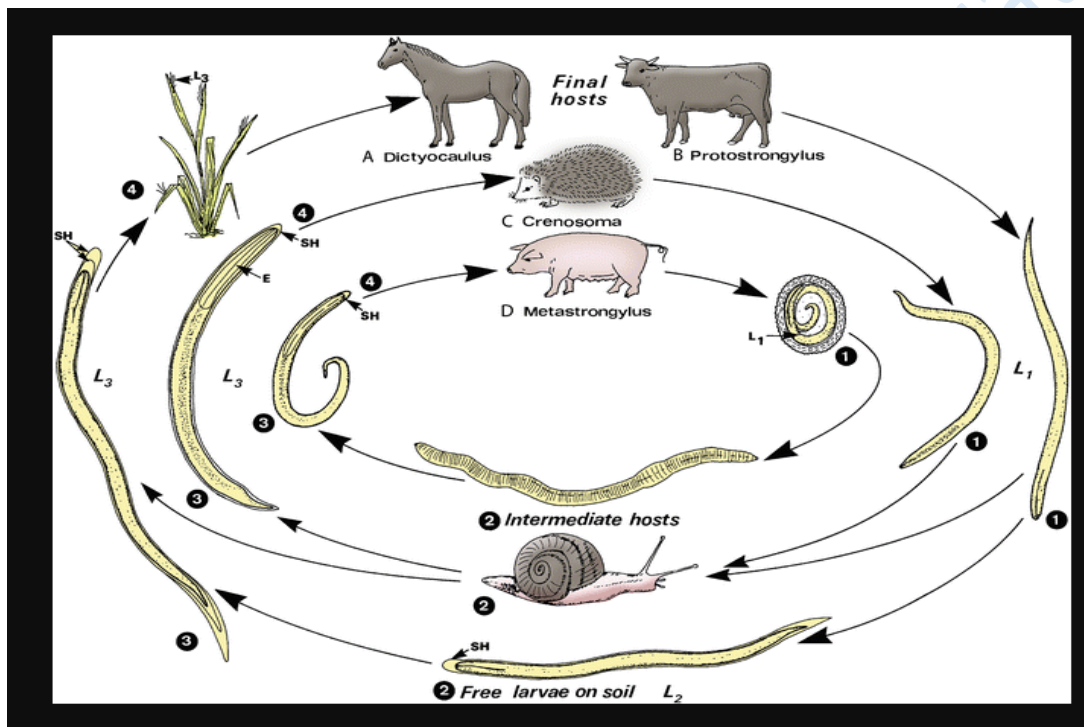
**Round worm** – *Capillaria* spp. The most common worm found in tenrecs. Typically, earthworms are hosts for round worms. Birds and other animals such as tenrecs who eat the earth worms become secondary intermediate hosts.

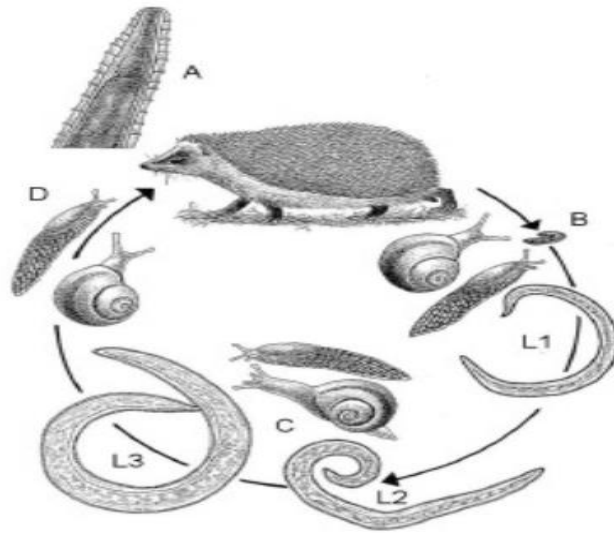
**Lung worm** – *Crenosoma striatum* – Lung worms come across in faeces of pigs, however, there is a variety of animals that can carry it. Hosts are slugs, snails, if birds consume the snails, they become the next intermediate hosts. Requires antibiotics to treat.

**Intestinal Fluke** – First intermediate host is always snails, if birds consume the snails, they become second intermediate hosts.

**Thorny headed worm** – First intermediate host is snails, if birds or other animals consume the snails, they become second intermediate hosts. Requires antibiotics to treat.

**Coccidia** – Not a worm – Coccidia are tiny single-celled parasites that live in the wall of the tenrec's intestine. This is to be treated with antibiotics.





### 3.Minor stomach issues:

Tenrec's are not known for stomach problems, but it is possible. It is important not to ignore serious issues, and therefore it is required that you study your hedgehog's poop on a regular basis. If your tenrec has runny poop, slimy green poop, black or even bloody, you will know something is wrong.

Black or bloody stools requires a vet visit immediately. Green, slimy poop might be an indication of intestine parasites or just a mild infection. For loose, watery or slimy poop we normally use a bit of Protexin over food / insects to see if it settles. Protexin is a probiotic product manufactured in the UK, but available in most countries.

Probiotics helps restore healthy proteins and bacteria in your pet digestive system, also good for fighting of infections. It is important to check on the chart in terms of a green runny stool if it is just a stress related matter or parasite related.

Constipated tenrec can be the result of not drinking enough water or a diet that contains too much of dried insects.

Just as with a runny stomach, you can offer Protexin.



#### **4. Bleeding toenails:**

If you accidentally cut your tenrec's toenail too deep and it is bleeding, just rinse off in cold water. The cold water helps to reduce bleeding and dip the feet in corn starch / sugar / wheat flower / maize meal. That will stop the bleeding, and you can just rinse off the flower later.

#### **5. Nail Fungus:**

Tenrecs hardly suffer from this, especially if you have bio-active / natural cage setup. If not serious, you can give the tenrec a footbath 2 – 3 times a week with apple cider vinegar. Dilute 1 cup of vinegar with plus minus 1 litre of clean water. Pour in a washbasin or dish. Water must just cover the tenrec's feet. Let him walk in it for about 5 minutes at a time. If it does not improve after 2 weeks, seek a vet's opinion. Foot bath for a tenrec might be easier said than done, but it is worth a try.

Signs: Toenails will be thickened, yellow, crusty, or even black.

What triggers it: Wet conditions in cage, dirty wheel, fungal infections can also be spreading from tenrec to tenrec.

#### **6. Dry Skin and other skin issues:**

Tenrecs use sand baths to get rid of dry skin, especially after winter. In the case of an extreme dry skin, you can give your tenrec a bath with Baby shampoo with linseed oil. Best is to see if a sand bath can do the trick. Oatmeal Bath- Oats in a sock – quilling, can provide relief for sensitive skin, soothing bathing method. Betadine Bath- Relief for itching of mites, bacterial or fungal infection. Not cure- relief. Minor injuries. Rooibos Tea Bath- Anti-inflammatory natural bathing method. Rooibos tea is a South African product but is available on Amazon.

## **2) When is a trained vet required?**

In most cases of infections, you cannot get away without antibiotics and requires a vet to prescribe it. There is no over the counter quick remedy for infections.

There is a variety of different infections tenrecs can get. If left untreated, in most cases, it can result in death. In all cases of diseases, it is always recommended to isolate the animal to prevent further spreading of the disease. Wash hands carefully before and after handling, ensure cages are disinfected on a regular basis.

**There are 4 types of infections:** Viral, Bacterial, Infectious and Parasites. Parasites were already discussed in the above section and will not be repeated here. (worms)

#### **Viral Infections:**

Within viral infections is a world of possibilities, we are only going to discuss those that are more likely to occur under tenrecs.

Herpesvirus infection- In 2018 a herpesvirus, "tenrec" gamma herpesvirus (family Herpesviridae) was identified in an oral lesion from a tenrec with a herpes viral PCR. The tenrec lived in a colony, and suspicions were that there might be a virus outbreak in the colony due to deaths occurring.

Several pregnant females have died, and the theory is that their pregnant state has increased the severity of the disease. The tenrecs suffered from necrotising stomatitis (destruction of the mucous membranes in the mouth, cheek, tongue, palate) and glossitis in the form of lesions. Glossitis sores on the tongue. Meaning, the virus is in a lesion form. Being a painful condition and eating might be challenging; the tenrecs relied on supportive care. Herpes viruses' spread through skin-to-skin contact and can be transmitted from humans to tenrecs if the caretaker has cold sores. This virus can be treated but not cured.



*Photo Credits: Science Direct*

Coronavirus Studies after the outbreak of Covid included Lesser Tenrecs to see if they are commensal reservoirs for the virus. It was indicated that it is possible for the SARS CoV-2 strain, but up to date no reports were made of tenrecs with the virus. It is important to know that as habitats shrink, the animals are forced to live in human populated areas, and that if a tenrec gets affected, it will be most likely through human contact. Tenrecs living in captivity can only get the virus from their caretaker. Best is to not avoid handling your tenrec when ill.

Adenovirus- This virus is responsible for illnesses such as pneumonia, and respiratory type of infections. An outbreak of this can be deadly for tenrecs if not treated. For any type of cold, flu like illnesses, antibiotics is required and mandatory. Housing large numbers of tenrecs in close proximity can result in spreading the virus rapidly. Most of the time viruses don't respond to antibiotics. Mostly the symptoms get to be treated.

Respiratory infections as a result from a virus-

Upper and lower respiratory infection: Tenrec can also catch a cold, just like humans. It is important to treat it early to prevent it from turning into a serious case of pneumonia. Tenrecs can die if not treated. The difference between a viral and bacterial respiratory infection is when the symptoms last longer than 10-14 days. Accompanied by a high fever, and instead of the fever improves, it will get worse.

Symptoms: Sneezing, runny or crusted nose and eyes, constant licking of lips and nose, wheezing, raspy breathing or coughing, laboured breathing, lethargic, fever, anorexia and weakness.

Treatment:

- 1) Isolate the tenrec from others to prevent spreading the illness
- 2) This requires a vet's visit and prescribed antibiotics and supportive medicine to treat symptoms.
- 3) Vitamins
- 4) Nebulization- only done under veterinary supervision. Never do this by yourself! You can permanently damage your tenrecs lungs, if not causes its death.
- 5) Supportive care- syringe feeding, fluids, proper cage temperature control (keep the animal warm) and a bit of restriction of movement so that the tenrec can build up strength.



## Bacterial Infections:

Mouth: Gum infections, dental abscesses. There is no over the counter medicine to combat this, antibiotics are required to clear up the infection. Tenrecs with mouth related infections will often stop eating, have swollen areas in the face, blood coming out of the mouth, or the tenrec will try to scratch or rub his face.

Teeth check-ups and cleaning can be done by a skilled vet if you are concerned about this.

Tooth Decay: This can happen when your tenrec goes into torpor while eating! Ensure that they do not fall asleep while still chewing.

Urine: Urinary, bladder infections. Very often urinary diseases are a secondary symptom / problem from the original or main disease. It can be then kidney related as well. Most often it is noticed when the tenrec has blood in the urine, struggling to urinate. Urinary Tract Infections (UTI) can be affected the bladder, urethra, and kidneys. This again cannot be ignored and requires veterinary treatment. While awaiting an appointment ensure to provide as much as possible clean fresh water. If your tenrec's urine is a yellow colour, it is an indication of a healthy urinary tract system. If there is a problem the tenrec will urinate regularly, as to relieve only a little bit of urine at a time, as to reduce the pain.

Intestine Infections: Gastrointestinal diseases include anything that affects the mouth, oesophagus, stomach, intestine, colon, or rectum. Signs to look out for include diarrhoea, dehydration, decreased appetite, and weight loss. Slimy green poop is normally an indication. Blood in the faecal matter is an alarming indication that something is seriously wrong. Keep the tenrec hydrated and get to a vet as soon as possible.

### Upper and lower respiratory infection:

Symptoms: Sneezing, runny or crusted nose and eyes, constant licking of lips and nose, wheezing, raspy breathing or coughing, laboured breathing, fever, lethargic, anorexia and weakness.

### Treatment:

- 1) Isolate the tenrec from others to prevent spreading the illness
- 2) This requires a vet's visit and prescribed antibiotics.
- 3) Vitamins
- 4) Nebulization- only done under veterinary supervision. Never do this by yourself! You can permanently damage your tenrec's lungs, if not causes its death.
- 5) Supportive care- syringe feeding, fluids, proper cage temperature control (keep the animal warm) and a bit of restriction of movement so that the tenrec can build up strength.
- 6) Corrective action- that means fix the problem that causes the infection.

### Causes:

- 1) Wet bedding / tenrec wet for some reason.
- 2) Draft on tenrec's cage
- 3) Aromatic or dusty environment
- 4) Cold conditions in cage

Salmonella: Salmonella infection can be confirmed with testing a poop sample. This is a highly contagious disease and can be carried over from animals to humans and vice versa. It is normally transmitted in their faeces. Diarrhoea, weak dehydrated tenrecs is most typical symptoms to be on the lookout.

To avoid the risk of such an outbreak clean cages and food / water bowls is mandatory. Avoid feeding raw or "off" eggs and raw meat, especially chicken meat. Salmonella is a zoonotic disease (zoonotic means animals can transfer it to humans) and great caution must be applied in the treatment of such an animal. Wash hands good, before and after care taking, wash all tenrecs items in a separate dish and not in regular kitchen wash basin. Once the tenrec is diagnosed with Salmonella, the vet will notify authorities.

Leptospirosis: Leptospirosis is a disease caused by spiral-shaped bacteria called leptospirosis. Leptospira bacteria, the pathogen responsible for the disease, are maintained in the lumen of the kidney tubules of animal reservoirs.

This is a disease caused by consuming water that is contaminated with animal urine and poo. It can affect people as well as many wild and domestic animals. The bacteria thrive in moist environments and in water. It can be spread through the urine of infected animals. Tests that were conducted were done on wild tenrecs, Shrew tenrecs and Tailless Tenrecs. However, it was not tested on Lesser Tenrecs, it was confirmed that the family of Tenrecidae are commensal reservoirs for Lepto.

Symptoms often appear as mild flu like symptoms, organ failure, weakness, animals losing weight.

Mild leptospirosis is treated with doxycycline, ampicillin, or amoxicillin. Clean cage conditions and food and water bowls and regular disinfection of cages are key role players to prevent outbreaks of this disease.

Unfortunately, if the tenrec is a carrier of the disease, there is not much to do, unless the animal becomes sick. Animals can carry the disease but not become sick, however, their urine can affect other animals or humans.

#### Other possible illnesses:

Calcium build-up- This happens when a tenrec gets too much calcium or the wrong type of calcium. If your tenrec eats cat pellets and you add forms of calcium to the diet, it can cause a build-up that can lead to calcium crystals, kidney stones, heart tremors, hair and quill loss. This can be fixed by correcting the diet. You may want a vet to test the calcium levels in the urine. This is why we also use Calcium D3 only to add to the diet if the main source of food is insects. They need the D3 to properly absorb the calcium. If you use regular calcium; it will just cause build-up. The reason is because your tenrec is a nocturnal animal that does not bask in the sun like other reptiles and animals.

Malnutrition- Starved, or over fed tenrecs, or tenrecs that don't get the proper food they need. This can in most cases be fixed with diet and lifestyle changes.

### **3) Diseases that cannot be cured yet requires vets' assistance / advice.**

Diabetes

Cancer

Metabolic Bone Disease

Cardiac related

Impairment such as blindness, deafness.

Organ related, liver, kidney functions

Epilepsy and seizures

#### Diabetes

Diabetes mellitus occurs under Tenrecs mostly because of an incorrect lifestyle. Typically, when owners treat their tenrecs as hedgehogs. In the case of captive tenrecs, it is more likely that overweight tenrec suffers from Type 2 diabetes. Just as with humans it means that the tenrec's body does not produce insulin. It means that the sugar levels in their blood are uncontrolled.

Symptoms: High water consumption, urinating a lot, urine often has a different smell and colour as healthy urine. Rapid weight gaining / loss. Belly, bottom area often wet, rapid formation of cataracts, seizures. Rotten tooth may also be an indication of diabetes. If the tenrec has an infection or minor wound, it

takes much longer to heal than those of a healthy tenrec. If left untreated, it can cause permanent damage to organs, resulting in organ failure.

**Treatment:** In order to get a diagnosis, blood or urine tests should be first conducted. Treatment involves change of lifestyle – getting more exercise and offering the right food in measured quantities, and in some cases, treatment with insulin. If a tenrec is diagnosed with diabetes, then it requires regular testing of blood sugar levels. Holistic treatment – insulin injections to be conducted, prescribed by an exotic vet.

Urine tests can be bought online in South Africa, at pharmacies, or obtained from a vet.

See picture below of Luna, a Tenrec who had diabetes.



### Cancer:

Did you know that male tenrecs are more likely to get cancer than the females? Factors that contribute to cancer with tenrecs are diet, genetics, pesticide treatment (if fed wild caught insects) and other environmental factors.

Typical list of cancers amongst tenrecs are thyroid, reproductive, lymphoma, skin related, neuro and mandibular. Although any type of cancer is possible, we will focus on a few.

Tenrecs can get tumors that can be safely removed if it is not benign (not cancerous).

**Oral tumors-** Regular inspection of your tenrec's teeth can help to detect any abnormal growth in early stages. This is difficult as it is very difficult to properly inspect a tenrec's mouth, teeth, and gums. It is sometimes a two-man job. Otherwise, put a mirror on a flat surface, holds the tenrec above the mirror and try to pry open the mouth. If cancer sets in the lower or upper jaw, there is little that even experienced exotic vets can do about the situation. The humane thing is to euthanise the animal to prevent further suffering.

**Brain-** These types of cancers can be very misleading, as it is not visible to the naked eye. Typical symptoms of the animal will be unbalanced, even paralyzed, not behave like normal, not able to run the wheel.

Walking might be impaired. Drastic change in normal behaviour and patterns. This cancer affects the nervous systems and therefore without proper examination (X-rays, Sonars) it often gets misdiagnosed.

**Reproductive-** Females often suffers from these types of cancers. Uterus, Ovary infections and cancers are more common under breeding tenrecs. Although that is not to say that a female who never had babies cannot get this.

Female tenrecs affected by reproductive cancers (in the uterus or ovaries) can show non-specific signs initially of weight loss or decreased appetite and activity. Many presents with bloody discharge from the urogenital region, which often looks like blood in the urine. Prolapse of the tissue out of the vulva is a serious complication of advanced disease. Treatment requires spaying to resolve the primary issue, and



some patients need other supportive care treatments prior to pursuing surgery to make sure they are good anaesthetic candidates. Most of the time, spaying is curative for this disease. At the SAHBA, breeders are restricted in terms of quantity of litters per female is allowed. This is to prevent overbreeding and possibility of cancer risks.

#### Lymphoma-

Lymphoma is a type of blood cancer that develops in the lymphatic system. Lymphatic system is part of the body's germ-fighting and disease-fighting immune system. Lymphoma begins when healthy cells in the lymphatic system change and grow out of control. A 15-year-old male tenrec from the Potter Park Zoo, Michigan USA were successful treated with radiation after a growth was removed.

Thyroid- Thyroid cancer is a rare disease that occurs when malignant cells form in the thyroid gland, a small butterfly-shaped gland in the neck that produces hormone. This will normally appear as a lump in the neck area, and the animal may have weight loss, because of difficulties eating and swallowing, will walk, sleep in awkward positions. In some cases, the carcinoma can be removed and treated with external radiation.

#### Metabolic Bone Disease-

Metabolic Bone Disease (MBD) is a common disease in tenrecs caused by a lack of calcium in the body. This lack of calcium is most caused by an imbalance of calcium, phosphorus, and Vitamin D3.

Symptoms: Soft or brittle teeth, micro bone fractures, weakening bones, rubber-jaws, deformities, reduced movement, joint abnormalities, inability for blood to clot, muscle tremors, loss of appetite, lethargy, pain, sometimes seizures and paralyses, and if left untreated it will lead to a slow and painful death.

What triggers it: Calcium/phosphorus imbalance – Food related. Incorrect diet! It is crucial to feed the insects proper food in order for your tenrec to absorb the required nutrients via the insects they eat. Added Calcium D to their diet helps preventing MBD. Vitamin D deficiency- Food and lack of exposure to natural light- no proper day and night cycle. Taking your tenrec out for short periods in the sun are good for them. Lack of exercise- No stimulation, small cage. Stress and anxiety- Stressful (noisy) environment, being harassed by other animals, children, lack of entertainment (Wheel or climbing objects), lights permanent on in room or cage. Disrupt digestion and affected calcium absorption causes for bodily stress as well. Underlying illnesses.

See below the examples of imbalances of Calcium / Phosphoric Acid to understand why the Calcium D3 is so important.

Mealworms: Calcium /Phosphorus Ratio incorrect 1:5

Super worms: Calcium /Phosphorus Ratio incorrect 1:3

Crickets: Calcium /Phosphorus Ratio incorrect 1:6

Beetles: Calcium /Phosphorus Ratio incorrect 1:3

#### Treatment:

MBD can only be diagnosed with an x-ray. On a healthy tenrec the bones on an x-ray will appear white and they will have a thick white layer whereas with a tenrec with MBD the lines are dim, and the bones appear blurred. This is because the tenrec's bones are becoming soft and soft tissue absorbs less x-rays making the bones appear grey and not as prominent as with a healthy tenrec.

Most often, if your tenrec was diagnosed with MBD he will have to be put down and therefore it is so important for us to rather follow a safe diet and prevent it as far as possible than to have to deal with the loss of a pet.

Once discovered it is not always too late to turn around, but if the calcium in the bones has been depleted, it can't be easily reversed. You may try working with your vet to increase their calcium and D3 intake and to balance their intake of calcium to phosphorus intake during meals. This can better their condition if it is not worsened beyond control, but unfortunately, we usually only recognise the problem once it is too late and therefore prevention is much better than cure.

SA Hedgehogs Breeders Association

## 6. Genetics & Colour Chart

In this module we will be focussing on bloodlines /genetics and understanding the colour chart. Yes! Tenrecs do have different colours. Genetics refers the colours that your tenrec is carrying and have in his / her bloodline. This also includes what colour traits are inherited from the parents and grandparents. It is difficult as tenrec colours can be unstable and can have seasonal changes. But, if you repeatedly bred tenrecs with the same colour characteristics, the colour of that lineage becomes more stable and seasonal changes will be more subtle than drastic.

### Definition of genetics:

*Genetics is the study of genes and why certain traits / conditions are passed down from one generation to the next.*

### Bloodlines/ Genetics

South Africa has a young registry, and previously no record keeping of tenrec genetics or lineages were kept. To get a breeder with 3 or more generations info on their tenrecs is pretty rare here. First of all, the tenrec colour chart was only compiled in 2024, so those types of info were not available, if a breeder does have information, it will be mostly just the names of parents, and no proper colour descriptions. Secondly, most owners can provide details of the offspring they have bred, but in general can't provide much info about the parents, their age, colour, health matters etc., or who the original breeder was.

For those reasons SAHBA will accept two generations as acceptable for registering. From 2027 it will change to 3 generations as mandatory for registering. This means, if you have a breeding pair with no other detailed information, you may register their babies.

Why is genetics important?

Genetics determine things such as health, body shape (big or small), colour, personality traits such as aggression. Some illnesses can be heredity, and preventing breeding with an animal that have any genetically carried over illnesses is of utter most importance. By keeping record of lineages, we can eliminate inbreeding which often is the mayor cause for illnesses that can become genetically carried over.

**In short you can say the bloodline or genetic history contributes to appearance, health and personality**

**Colour Chart:****Definition of colour chart:**

*This is a systematic arrangement of colours and their effect on the physical appearance of an animal.*

At the South Africa's Breeders Association we have a colour chart made specifically for tenrecs. It is the only colour chart available worldwide. Even though other breeding registries does not regard it as important, we do. This is a milestone on the Tenrec Breeders world with South Africa leading the way. SAHBA is the only breeder's registry worldwide that offers mandatory training to breeders. Without training, they cannot become registered breeders. This is to ensure that all registered breeders are on the same standard.

Tenrec colours can be unstable and seasonal changes can occur, but it is the fact that the colour is in the genes, that is important. The more you bred with a specific colour, the more stable the colour become.

If you breed two tenrecs with different colours, the offspring will have a variety of colours and are more likely to have seasonal changes. If you breed copper with copper the colour will become more stable and less likely to change seasonal.

The colour chart is something that requires lots of practise. But it is much easier than a hedgehog colour chart, as with tenrecs, it is literally matching the tenrec with a photo on the chart.

Breeders must practise their skills with comparing photos to the colour chart to see if they are able to identify the colour correct. Experience cannot be taught, and this is a case of practise. As you proceed, you will become more comfortable and fluent with it.

See the colour chart on page 44

# **SA Hedgehogs Breeders Association`s Lesser Tenrec Colour Chart**



Revision : SAHBT01/2024



## Introduction to our Tenrec Colour Chart

This colour chart was compiled by the **South Africa`s Hedgehogs Breeders Association**, based upon the guidance from the very skilled Tenrec Breeder, Jennifer Griffith Ayers from Vulcan Exotics from The United States of America.

Most of the colours presented in the colour chart are available in South Africa, but photo`s were not available at the time of the compiling of this document. As photos becomes available from our South African breeders, it will replace the current ones, graciously supplied by our USA ally.

Developing a colour chart for tenrecs is a fairly new concept, yet it is needed as they do have different colours. Tenrecs colours are very unstable as they can seasonally change shades of colour. From birth to adult their colours can also changed drastically! Currently you can get 12 different colours in Lesser Tenrecs, as showcased and described in this document.

This document will be updated continuously as and when new information are brought under our attention.

According to our knowledge, this is the only colour chart for Madagascar Lesser Tenrecs available in a formal document at the time of publication. Not only in South Africa, but world wide. If there is an existing document prior than this, we humbly apologize!

**Black:** Black is caused by eumelanin pigmentation that causes skin and quills to be dark. This is a dominant genetic trait. The dominant black eumelanin began as neurological signal, that is sent to the pituitary gland that releases a hormone who communicates with the Agouti gene, and the end-result is a very dark or black tenrec.

*Jennifer Griffith Ayers, Vulcan Exotics*



Short Description:

Eyes: Black

Nose: Black

Mask: Black- light to dark black

Spines: Black

Skin: Black

**Grey:** Grey is a diluted or faded form of the black. Grey colours come's in different hues / shades of grey. To make it easier to identify, we split the colour Grey into Dark Grey, Silver Grey and Light Grey.

**Dark Grey:** It is easy to identify a dark grey as they have relatively dark facial features but lighter quill-colour than black. Their whole appearance is grey.

*Jennifer Griffith Ayers, Vulcan Exotics*



**Short Description:**

Eyes: Black

Nose: Dark grey to black

Mask: Dark grey to light brown-grey

Spines: Dark Grey banded with white on the tips.

Skin: Light to medium grey.

**Silver Grey:** Light Grey tenrecs has a silver appearance that separates them from the regular grey. They are also known as Light Grey

*Jennifer Griffith Ayers, Vulcan Exotics*



Short Description:

Eyes: Black

Nose: Medium brown to grey

Mask: Light brown or light grey

Spines: Average medium grey quills

Skin: Liver to light grey.



**Grey:** The standard grey is a diluted form of the dark grey, much lighter in appearance, the level of darkness of greys can change seasonally.



*Madelein Coetzee- Axl*

*Angelique du Plessis- Zeus*

Short Description:

Eyes: Black

Nose: Medium brown to grey

Mask: Light brown or light grey

Spines: Medium grey quills with white tips

Skin: Liver to light grey.



**Copper:** This can be described as a reddish rich brown colour. Available in South Africa, but considered rare. Copper carries Chocolate genes.

*Jean Folscher- Jean`s Hedgehogs and Tenrecs- South Africa*



Short Description:

*Ruth Smith- Sweetie Pie- South Africa*

Eyes: Black

Nose: Liver brown to warm brown

Mask: Liver to light brown

Spines: Reddish brown to dark brown

Skin: Pale brown to liver.

**Dark Red:** This colour looks like rust and have an overall rusty appearance that can be easily distinguished between other brown colours and copper. This colour is very rare and carrying black genes. SAHBA could not verify the existence of one in South Africa at the time of publishing.

*Jennifer Griffith Ayers, Vulcan Exotics*



Short Description:

Eyes: Black

Nose: Dark brown / liver

Mask: Deepest form of brown.

Spines: Deep rusted red-brown with a pale tint and black tips.



**Chocolate:** This colour is a warm rich colour. It was noted that a copper-coloured hedgehog can develop a more darker chocolate colour over time.

*Jennifer Griffith Ayers, Vulcan Exotics*



Short description:

Eyes: Black

Nose: Liver brown to warm brown

Mask: Liver to light brown

Spines: Rich dark brown with black tips

Skin: Pale brown to liver.

**Brown:** Brown colours come in different shades of brown. To make it easier for first timers, we have separate brown into 3 easily recognisable colours. Brown, Light Brown and Pale Brown.

**Brown:** This is a regular brown, in South Africa, a very common colour, not rare at all.

*Lizl van Vreden- Awesome Krimpvarkies*



Short Description:

Eyes: Black

Nose: Light to medium liver brown.

Mask: Light to medium brown.

Spines: Medium brown colour, banded with white tips.

Skin: Nude to dark brown.



**Light Brown:** Pale light brown quills that gives the tenrec a Welsh oak appearance. This colour is fairly common in South Africa.

*Jennifer Griffith Ayers, Vulcan Exotics*



Short Description:

Eyes: Black

Nose: Light brown / light liver

Mask: Light medium brown

Spines: Light brown / oak brown colour with white tips

Skin: Nude to light brown.



**Pale Brown:** This is the lightest form of brown you can get. Slightly darker than Dirty Blonde, with the difference that a pale brown gave a golden image with a light brown undertone.

*Madelein Coetzee- Molly*



Short Description:

Eyes: Black

Nose: Light liver brown

Mask: Nude

Spines: Tan colour or very pale brown with white tips

Skin: Nude, can be tan or pale brown.

**Blonde:** This colour comes in two shades, blonde and dirty blonde. This is the palest form that tenrecs can get. The colour shades of blonde may vary a bit from yellowish to creamy, and a dirty creamy look.

**Blonde:** Pale creamy quills with very light brown tinted banding. The light brown almost has an orange hue to it.

*Madelein Coetzee- Spike*



Short Description:

Eyes: Black

Nose: Light brown / light liver

Mask: Pale to light brown mask

Spines: Pale quills with light brown-orange banding

Skin: Nude to pale brown.

[sabreeders4@gmail.com](mailto:sabreeders4@gmail.com)

<https://southafricashedgehogbreedersas.com>



**Dirty Blonde:** This colour indeed looks like a blonde tenrec that is dirty. The creamy quills has a more brownish appearance than the “orange” hue the regular blonde has.

*Jennifer Griffith Ayers, Vulcan Exotics*



*Melanie Duvenhage- Monkey*

Short Description:

Eyes: Black

Nose: Brown nose

Mask: Brown mask

Spines: Creamy pale quills with a brownish banding. May have dark tips.

Skin: Light brown.

## 7. Tenrec Breeding

Before we jump into breeding, we first need to establish if we have a male or female.

### Sexing of tenrecs:

Because of their cloaca it is difficult to determine the sex of a baby tenrec. Cloaca, in other words, it's an anus, genitalia, and urethra all in one, and in females it also serves as the depository for sperm.

Only after their first torpor, when they reach sexual maturity, will there be a few visible things that will assist with identifying males from females.

### Males:

They have enlarged rings around the eyes, which are caused by eye glands.

They generally have a shorter, broader head.

### Females:

Adult females often show clearly visible teats. Four pairs of teats.

Females have longer, narrower faces.

### **There are different ways to identify if your tenrec is male or female:**

- Unsexed animals can be paired with a male - the reaction (copulation or aggression) often shows the sex. Males that are placed in with a female will have its eyes turn milky. Males also have a distinct odour, which can be recognized with a bit of experience.
- By applying pressure to the lower part of the tenrec's body, if it is a male, the penis will protrude from his cloaca. But, if it is still a juvenile, his male organ might still be too small to protrude.
- Vets can do a DNA sexing test.
- Experienced owners mostly distinguish between them by looking at facial features.



Their breeding period is seasonal, normally after torpor. Males often show a milky white liquid discharging from eye. During mating, which can last longer than an hour, the female mostly squeaks and the male puffs from time to time. The frequency of mating attempts decreases after 2 to 3 weeks, after which you need to separate the animals again.

Gestation period is around 63 days, and 3-9 babies can be expected. The pregnancy of a female becomes visible through increased body weight, swelling of the abdomen and (shortly before birth) the teats, particular interest in food and nest building. She will appear to be constantly hungry and will even eat food that she normally won't eat.

A new-born tenrec weighs about 5-10 g, the quill tips are under the skin, the eyes and ears are closed. After a few days already the young are covered with quills, the eyes open around day 9. About a week later (or a little earlier) they start to leave the nest temporarily. At 3 weeks the first of the young start to take in solid food, at 4 weeks at the latest all young eat solid food. At this time, it is especially important to provide a varied diet. From day 35 on the mother will no longer provide milk and they can be separated from the mother.

From two weeks you may start handling the babies to ensure that they get used to human handling.

#### **Mother and baby care:**

This is a very important part of tenrec care when you are a breeder.

Care taking of mother and babies is crucial. Pregnant females should get extra nutritional food throughout the pregnancy and while nursing the babies. It is important for females to receive probiotics and vitamins throughout this period. It might be difficult with tenrecs that are on an insect diet but do try to offer other food. Your female might just surprise you.

Extra treats to be put out, such as proteins (meaty stuff), to ensure that the mother will not lose weight, become malnourished in this time. It is just another extra precautionary measure taken. The better the mother is taken care off, the healthier the babies will be. The better the condition the female are in, the more milk she will have. Ample supply of mother's milk results into bigger and healthier babies. If the female fears that she won't have enough milk, she might kick out the smallest or weakest baby. Please note that even well-fed females can have small or weak babies.

Mothers must never be stressed out as well during this time. Besides risking of killing babies, a stressful environment can result into a lack of milk.

When the babies are 2 weeks old, you can start handling them daily. Check and inspect babies regular to see if there are any deformities or issues. From 4 weeks of age, you can put extra soft food in the cage, babies will start exploring and being curious, will start tasting on food. Babies at 6 weeks of age can eat everything that an adult eat. It was noted that babies younger than 5 weeks started eating mealworms.

#### Female kicks out a baby, or does not have enough milk:

Never take away babies from the mother, unless if it is absolutely the only way. Mother Nature is best when it comes to raising babies.

If you must hand raise, the resort is then kitten formula milk.

Royal Canine Kitten Formula or Kitty Milk. There is also a milk replacement recipe, as often these type of crises does not come at normal times. As for registered breeders, it pays off to keep a tin of formula milk in stock, but because it is expensive and can expire, it is cheaper to keep a tin of Ideal Milk in your house during breeding season. Another method to get you through a night or weekend, is to soak cat pellets and liquidise it, add in probiotics and feed that watery mixture to the baby.





Babies need to be fed around the clock; every hour 0.5 ml. Never overfeed them, as it causes bloating and most of the time it is bloating that causes babies to die. Never held the baby on its back while feeding, the milk can get into the lungs.

Important part of the feeding is that babies must be stimulated before and after feeding. Use an ear bud or cotton ball for that purpose. The cotton ball /earbud must be soaked with luke-warm water to imitates the mother's tongue. Babies must be always kept warm while being hand raised. 27 degrees being ideal temperature. It is best to keep them in a small carry-on basket if you don't have a proper nursing bin. Be careful not to place basket with baby in the sun, they can die easily of heat exhaustion as well. You need to always have a warm water bag underneath a blanket in the basket. Water bag to be covered to prevent burn injuries.

If you have a nursing bin, put a heat pad inside at the bottom, ensure that it is completely covered. Babies can crawl underneath something and get burnt easily. Weigh the babies daily to monitor progress. Never hand raise babies with the idea of them being more friendly and tame. That is a bad practise, as the hand reared baby doesn't get that natural immunity that mothers milk provides, and personality is not guaranteed.

If you have the case of a large litter and, some babies are falling behind, you can partially hand raise some of them. In such a case, you take the strongest and biggest babies away for 12 hours and leave the weakest with the mom, as they are more in need of mother's milk than the stronger ones. Put back the babies after 12 hours and take perhaps another 2. With this rotation you ensure that the partially hand rear babies still gets mothers milk and the weaker ones have a better chance at the milk.

This you can only do this if your female has a gentle kind of nature and no risk of killing babies.

Two reasons why raising by the mother is the better choice:

They gain natural immunity from mother's milk that formula milk doesn't have.

They learn certain skills and instinct from the mother that a human never can provide.

True story of one of our breeders who hand raised a tenrec baby:

Rika Zietsman: The evening of 6/1/24 I was busy feeding my tenrecs and hedgehogs when I almost step on a baby. Luckily, I was bare foot. What a big surprise I had. The one female tenrec (Poplap) has given birth to 5 babies the previous night including the baby found on the floor, named Windgat.

What was amazing about this birth is Poplap was just over a year, deducted 2 months of pregnancy she was not even a year old when falling pregnant. Most Google researched will tell you it is not possible.

Because I had touched the baby, I was hesitant to put her back in the nest, for the risk of the mother killing her. We decided to take a change and raise her. I didn't have any kitten milk available and decided to

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soften the cat kibble. I soften it to a thick soup consistency and with an earbud we offered it to her. I fed her every 2 hours day and night for the first 2 weeks then started to extend the hours. At 5 weeks we introduced her to her first mealworm, and she proofed to me that eating insects are in her genes. Her first sand bath followed and again she proofed that even sand bathing is natural for tenrecs. Windgat is today a year old and still the only tenrec I would kiss on the stomach. Rasing tenrec babies is much easier than hedgehogs and their chances of survival is definitely higher. (Windgat means Cheeky Ass)

When breeding with tenrecs it is important to know that a lot of things can go haywire, losing litters for unknown reasons, and also females falling sick to reproductive related matters. For those reasons we decided to add more on the subject.

### **Environmental control versus successful breeding**

In 2024 Tenrec breeders in South Africa were alarmed regarding poor success rate of tenrec babies so far. The following months are based on South Africa`s seasons. We normally have our summer when other countries have their winter.

**We apologize for the confusion if you are from Europe or somewhere else.**

Here are some of the cases witnessed

- Some females had babies, but they died soon after birth.
- Some females died after giving birth.
- Some babies were killed immediately after birth
- Some females abandoned the babies
- Only one large litter recorded, where the others only had one or two babies.

### **Let's look at the basics we know about tenrec**

- They torpor 3 to 5 months per year
- Their cage temperatures need to be between 22°C to 26°C
- They breed once a year

### **Their normal life cycle:**

- October to March they are active
- Torpor starts from April / May to September
- Start wake up in September
- Eat to get their weight back to normal to help their body temperature and metabolism to go back to normal as well
- During October they start mating
- 63-70 days after mating that babies are born, weened and they prepare for torpor again (born November, December, January)

**To understand better of why the litter success rate were so poor, we must look at research studies for answers.**

### **Studies conducted by Eisenburg and Edwin Gould**

(Johns Hopkins University at Baltimore, Maryland, United States during the time of 1963 to 1968)

### **Their findings:**

During 1963, 1964 and 1965 minimum weights were achieved in September (after torpor) with maxima approximated in May & June (when torpor started). Under this rhythm births took place in the months of November, December and January.

In 1966 and 1967 they attempted to monitor this rhythm by depriving the animals of food during the months of July, August and September. In this way, maximum weights were maintained in April, May and June and minimums were achieved in January and February. This allowed them to control reproduction, and litters were produced in April and March of 1966 and in June 1967. It would appear that feeding and activity do operate in part on an endogenous rhythm but can be modulated by environmental conditions. Environment conditions in this case here refers to food availability and cage temperature.

When there is no food or the temperatures are low, the tenrecs prolonged their torpor until the conditions are better.

### **Conclusion for the lack of successful litters in SA summer of 2024:**

If we look at how unstable the weather conditions were when the tenrecs come out of torpor in September, it makes sense.

September weather temperature varied from 18°C max day time to 9°C min night temperature, 11 days with some rainfall, no heat or humidity. Then we had snow in October in some parts of the country.

This causes them to prolong their torpor instead of starting to eat and to return to their normal weight, heart rate, body temperature and metabolism.

This means in average their normal lifestyle was mixed up. The breeders who had more success with litters were the ones that had more positive cage environments, weather conditions etc.

### **More info on the subject:**

Tenrecs are considered heterothermic, meaning their metabolism is highly plasticity but constrained by temperature and hypoxia (low levels of oxygen in the body tissue). They are also intolerant of extreme temperatures, with a limit of minimum 8°C or not higher than 34°C.

Tenrecs body temperature must be between 24,1°C to 34,8°C (Eisenburg studies showed in 1955)

During torpor their body temperature lower, as well as heart rate and metabolism to allow them to save energy and go through torpor.

During torpor when the tenrecs body temperature is lower it is interesting to know that their reproductive organs is kept warm with the brown fat that is clustered around it. They found the heat-generating protein in the tenrecs brown fat was just as potent as in a warm-blooded animal. The dissections revealed the tenrecs brown fat was not distributed over their neck and chest, like most modern mammals.

"The tenrec maintains a high body temperature only during reproduction" said study researcher Martin Jastroch of the Institute of Diabetes and Obesity in Germany. The distribution of brown fat around the reproductive organs suggests "ancient brown fat is there to incubate the reproductive cells" increasing the animal's chances of producing offspring.

Even when it is known that tenrecs only give birth once a year research showed that a second litter is possible if the babies died after birth. That can only be done if the female's weight is back to normal after a two-month resting period and the breeder must take in consideration what the age of the babies will be by the time it is winter. The

female must be in good condition for the torpor. In most cases it will be best to rather skip the year for breeding then.

### **Illnesses in females: before/during pregnancy or after birth**

During a ten years observation program at a zoological institution the following illnesses were recorded.

- Pyometra
- Metritis
- Retained foetal membranes & retained foetus
- Perinatal mortality
- Maternal neglect with subsequent successful hand-rearing of neonates

Treatment of these problems is complicated in tenrecs because of their small size and secretive behaviour. Some cases reported had successful resolution by ovariectomy or caesarean section.

### **Dystocia or Difficult birth:**

Should be suspected in tenrecs that have a history of breeding and present with vaginal discharge and lethargy. Tenrecs may be able to mask signs of systemic disease due to RFM (Reduced Foetal Movement) longer than other species, but they eventually develop complications such as pyometra.

### **Symptoms:**

- Prolonged labour
- Weak straining for more than 2 hours without delivery
- Too long time between babies to be born
- Babies get stuck in birth canal

### **Pyometra –**

Is a serious and potentially life-threatening infection of the uterus that causes it to fill with bacteria and pus.

### **Symptoms:**

- Vaginal discharge
- Lethargy
- Vomiting
- Poor appetite
- Increased thirst or urination
- Bloated tummy
- Frequent panting
- Unusual collapse

### **Causes:**

- Uterine or cervical malignancy (Uterine Cancer)
- Radiotherapy – a cancer treatment that uses radiation to kill cancer cells or stop them from growing
- Fibroid degeneration – happens when a uterine fibroid outgrows its blood supply and begin to die
- Endometrial polyps – a usually non-cancerous growth attached to the inner wall of the uterus.
- Senile cervicitis – inflammation of the cervix that can effect of any age including the elderly
- Puerperal infections – postpartum infections, also known as childbed fever or puerperal fever, are any bacterial infections of the female reproductive tract following birth or miscarriage
- Congenital cervical anomalies – rare condition that affect the cervix or cervical spine
- Genital tuberculosis – a chronic condition that affects the genital organs and can cause infertility

### **Treatment:**

The most effective treatment is surgery to remove the uterus and ovaries, also known as a spay or ovariectomy

### Metritis –

Is defined as inflammation of the uterus that develops in the immediate postpartum period and occasionally after abortion of breeding. Metritis may also be associated with retained foetuses or placentas. On physical examination, the uterus is distended, and a red vaginal discharge may be seen. It can be a serious condition that can lead to death.

#### Symptoms:

- Abnormal vaginal discharge
- Fever
- Reduced appetite
- Decreased milk production
- Enlarged, flaccid uterus
- Red vaginal discharge

#### Causes:

- Obstetric manipulation – baby is laying wrong and cannot enter birth channel. Or placenta is blocking entrance of birth channel
- Necrotic tissue in the uterus – dead tissue within the uterine wall
- Foetal or placental retention – a medical condition where part of the foetus or placenta remains inside the uterus after delivery
- Metabolic disorders – can occur during pregnancy include gestational diabetes, gestational hypertension, and insulin resistance. These disorders can impact both mother and baby.

After pregnancy include metabolic syndrome and gestational diabetes mellitus (GDM). These disorders can increase the risk of cardiovascular disease and other health problem

### Retained foetal membranes -

Occurs when a foetus doesn't pass when the final foetal membranes after giving birth. This can happen when the third stage of labour is incomplete

#### Symptoms:

- Restlessness
- Abdominal discomfort
- Poor appetite
- Brownish vaginal discharge
- Elevated body temperature
- Enlarged uterus

#### Treatment:

- Antibiotics – broad spectrum antibiotics are necessary to treat the infection
- Prostaglandin F2- Alpha: this medication can help expel the membranes
- Ovariohysterectomy – if all other treatments fail

#### Perinatal mortality:

Death that occurs during pregnancy or birth, or shortly after birth.

#### Fun Facts:

- 1) The oldest female to reproduce successfully was 10 years old.
- 2) While tenrecs have lower body temperatures than hedgehogs, they still have another magic trick to ensure for future generations. Tenrecs brown fat can only be found around their reproductive organs. The distribution of brown fat around the reproductive organs suggests the brown fat is there to incubate the reproductive cells. This increases the chances of producing offspring.



## 8. What does it mean to be a registered breeder?

Let's focus first on what an ethical registered breeder is **NOT**.

- 1) Getting rich quickly
- 2) Prestige title
- 3) Abusing animals for money
- 4) Greeder.

Other than what the public opinion is, being a registered breeder is far more than just a prestige title and getting easy money. On the contrary – responsible breeding won't make you rich. You will still need a day job to earn a living. Breeding and selling babies might help with paying your breeding pairs food bills, but on the long run it won't make much of difference in your budget.

### Pros and Cons of a Registered Breeder:

#### Credibility and accountability

As a registered breeder you earn credibility, status, but that privilege comes with accountability. Example: If you promised a specific baby to a client, you can't sell that tenrec to the next person who offers more money. You must honour your promises.

#### Visibility

As a registered breeder, you are in the public eye. Social media should be used wisely as it can sink your career as a breeder. Reality is, we are living in the "cancel-culture" era. One mistake and you can get named and shamed. Even a rude, judgemental attitude can bring bad publicity.

#### Responsibility

You are not only responsible for your own tenrecs, but responsible for the breed as well. Meaning, you also want's what is best for all Lesser Tenrecs. It's your responsibility to educate clients and members of public.

### Definition of a Registered Breeder:

*That is a person who officially is a member of a specific club / association of the breed / species he or she is breeding with.*

(In this case, Registered Breeder of Lesser Tenrecs and belongs to the South Africa's Hedgehogs Breeders Association)

### Actions of a Registered Breeder:

#### 1.1 Follows the Breeders Associations Ethical Declaration

See page 56

#### 1.2 Ethical breeders strive to provide healthy tenrecs.

To provide healthy, well socialised tenrecs are crucial. Tenrecs can deliver nasty bites and if the breeder does not interact enough with juveniles, it will lead to an unhappy client and unwanted tenrec who gets handed down from the one owner to the next.

### **1.3 Screening.**

Screening means to make sure breeding pairs of tenrecs are not related, and parents has no medical history of illnesses. If bought in from another breeder, collect all information available from parents and grandparents. Testing of genetics and health screens at an exotic vet is extremely expensive and not always possible in South Africa because of shortage of knowledge regarding tenrecs, and shortage of exotic vets. General health screens can go a long way, especially if you want to breed with a tenrec with an uncertain background. Typical tests to do for an acceptable health screen, that can even be conducted at a regular vet will be urine and faeces testing, x-rays for bone density, sonars for tumors and internal growths.

### **1.4 Honesty and transparency**

Encourage prospective owners to visit where the tenrecs are bred and raised, meet the litter and preferably both parents (but at least one). Let the new owners see your set-ups, that will help them as well in terms of setting up their own cages. Also, it shows that you have nothing to hide. Provide accurate and reliable health, and pedigree information. Prepare a purchase contract in plain language that spells out the breeder's responsibilities, new owner's responsibilities, health guarantees, and return policy.

### **1.5 Registered breeders are required to be different from any other type of breeder**

Registered breeders offer support to clients in terms of care taking, aiding in rehoming the animal if needed, or taking back. You are required to refund a client if the client is not happy or offer an exchange for a different tenrec. For those reasons contracts are crucial to have. Care packages that you give with your tenrec put you in a different league and offer a pleasant experience to clients. Care packages mostly consist of Care Taking Guides, Pedigree Document, Birth Certificate and perhaps a small food sample.

### **1.6 Professional and skilled**

You are required to act professional when dealing with members of public, and to have knowledge and skills in terms of all aspects possible of tenrecs are crucial to be a successful registered breeder.

### **1.7 Responsible breeders care about the welfare of ALL tenrecs.**

All tenrecs matter. If you are able to provide assistance or advice to a member of public, even if the animal was not bred by you, it is expected of Registered Breeders to provide a service. The welfare of the tenrecs you have bred will always be yours. If you are knowingly selling animals to someone who does not have their best interest at heart, it will put you in the back yard breeder's class.

### **1.8 Always have the species best interest at heart.**

Ethical breeders want to improve the species, not harm them. Expanding genetic pools are most important. In the case of Lesser Tenrecs, we want to compile proper data gathering with factual information on our tenrecs. There is none currently in South Africa, and by taken up this course and becoming a registered Tenrec breeder, you are part of that journey and changing the future for tenrecs.

### **1.9 Always grow and learn.**

Never stop educating yourself in terms of tenrec care, health matters, new products on the market. Learn from other tenrec owners. Use cases of sick or injured tenrecs as a learning curve for yourself, even if it is not your tenrec. Don't be the dinosaur in the room.



## South Africa's Hedgehogs Breeders Association

### Ethical Declaration

I, ..... hereby declare that I agree to the following:

Practise ethical and responsible breeding at all times. Ethical Breeding includes not breeding with under-aged tenrecs (less than one year of age), sick or injured tenrecs. Not to over breed females (Breeding allowed between ages of 1 year and 6 years of age)

I agree to only to breed with tenrecs that comes from a reputable background. Always be supportive to clients in terms of advice, taking all possible measurements to ensure that pedigreed tenrecs bred by me do not end up in a rescue shelter. To maintain proper record keeping of all tenrecs born and sold / rehome, as well as tenrecs. Always be professional when dealing with members of public, aim to be a true ambassador for the Breeders Association. By maintaining high standards in terms of tenrec keeping, cage management and breeding increases credibility to all members of the Association, not only myself. I will never knowingly sell a sick or unhealthy tenrec. Never sells a tenrec that might display a genetical disorder.

When not being able to assist a client who requested a tenrec, rather refer the client to another member of the Association first before referring clients to private breeders. Registered breeders to support one another. Healthy tenrecs are the aim, and to remove unsuitable tenrecs from breeding lines are the ethical thing to do.

I also declare that all information provided on the Application Form are true and accurate. I understand that by failing to adhere to conditions or being dishonest when submitting registries, it may cause for disqualification as a Registered Breeder.

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NAME AND SURNAME

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DATE

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SIGNATURE

## 9. Customer Care

This module is all about your service to your clients. It is much more than just providing them with a healthy registered tenrec.

First Base customer care begins with when the client contacted you for booking a baby and ends on the day they receive their baby. Second Base -Your responsibility never ends. Up until the tenrec passes, you will always be expected to provide support and assistance to the client.

Customer care includes the following:

- 1) Preparing customer for their new pet
- 2) Keeping client updated throughout the time the baby is still in the nest
- 3) Training / show and tell
- 4) Legal aspects
- 5) The handover
- 6) Follow up

### Preparing Customer:

This is a very important part of the process. Preparing customer is when you inform your client exactly what it means to have a tenrec as a pet. The good and the bad part. Tenrecs are not only cute, but there are also negative points as well. Example: They are nocturnal, they can be smelly, especially males, new owners must not be squeamish to feed insects, having a tenrec is a 10 year plus commitment, veterinary bills can be expensive if their tenrec becomes ill. Getting the proper cage setup is costly. For those reasons clients must be informed prior than owning a tenrec what they are in for.

### Keeping Client updated:

When babies are born, you can notify the client. Keep in touch with the client and once the babies are old enough to be handled send regular (once a week) progress updates photos or videos to the client. Weigh the babies regular and inform the client about this. Most new owners are very interested and eager to be part of their baby's growing progress.

### Training / show and tell:

If it is possible, and the client can visit you before they collect their baby, use the opportunity to show them around, let them handle older tenrecs. Show them the nail trimming process. This can also be done on the day they collect their baby. If your client is living too far away for this, you may make use of tutorial videos. Even `n WhatsApp video call can work. For this you most likely had to put your phone on a stand or something for the client to watch what you are doing.

### Legal Aspects:

This includes your contract with client and permits, if needed. This must be done prior than handing over the baby. The client must know what areas requires permits and the fact that you have a contract for clients in place. This information must be shared with the client on the first day when booking arrangements are made.

If you are staying in a province where permits are required, you must inform the client and help with the application of such permits. If you sell a baby to someone staying in an area where permits are required, you should also inform them of such and give them the necessary information to apply for the permits. You should make sure that the client did apply for the permit. The client can only apply once their setup is in place. For this reason, you must make sure that your client's setup is 100% correct and that they have all the necessary caretaking information. Your

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communication with your client is your proof that you have informed them of such. (Please confirm the process within your area, as it might differ from area to area.) Some areas it would be best to apply first for the permit, then get the tenrec. This is for the risk of Department of Nature / Wildlife confiscating the animal.

### **The handover:**

On handover day, take the opportunity to go over important aspects again with your client. Sometimes they are so eager and exited while waiting, that they tend to forget some things. If you do give a giftpack with the baby, this is normally the opportunity to use to give them the package. During the handover you should make sure that the client is comfortable with the baby and know how to handle the baby.

### **Follow up**

You must follow up with your clients on a regular basis regarding the wellbeing of the baby as well as the new owner.

It is important to make sure the baby pick up weight, that the baby is relaxed and eat and drink well. It is also important to make sure that the client is relaxed and familiar with the handling and care taking of the baby and don't have any questions.

It is important to check in the next day after hand over to follow up if the baby have eaten and then after that at least once a week for at least the first month.

### **What do you need to give the client?**

1. Quotation-this should include your price and specify what you are including in the package, expected delivery date and age of baby. (This should be done when you start your negotiations.)
2. Invoice with your detail, client's detail and hedgehogs' detail and total paid.
3. Contract between you and the buyer.  
This should include the following:  
Your name, address, telephone number as well as the Clients details.  
Tenrec's details – name, colour, date of birth, colour, registration number, weight at delivery plus date of delivery.  
Your guarantee and return policy if any.
4. Birth Certificate and pedigree certificate.
5. Care sheet – which include the following info – basic care of the hedgehog, food and food list, cage and accessories requirements, bonding, vitamins etc.
6. Something to take tenrec home in.
7. This is optional, and the breeder's choice if he/ she wants to include a giftpack.

**The End.**