



R.A.S.C.A.L.S.

RATS ARE SWEET CUTIES AND LOVABLE SOULS

We Love our Rats ♡
**The South African Rat
Fan Club**

Tel : 083 311 2427/074 104 6788 **Maureen**
Rescue : 011 760 3728 or 083 311 2427
Tel : 083 702 0007 **Paula**
Fax : 086 689 0274
E-mail : Saratfanclub@wol.co.za
Website : www.rattyrascals.co.za



The Care of domestic Rats (Rattus Norvegicus domesticated)

This information leaflet is designed as a guideline to minimum care standards for domestic rats. The environment, handling, and diet of domestic rats are discussed, and common health problems specific to these animals are explored. If you have any questions, be sure to ask us via the contact details above.

Diet and water

Good quality food and clean, fresh water should be available at all times for domestic rats. Typical maintenance diets should contain :

1. 14% protein and 4 to 5% fat
2. Diets for growth and reproduction should contain 17 to 19% protein and 7 to 11% fat.

While many rats do prefer sunflower based diets to pellets, seeds are low in calcium and high in fat and cholesterol. When fed exclusively seed-based diets it can lead to obesity and nutritional deficiencies. It is best to give the domestic rats seeds only as a supplement to a balanced diet, or as a treat.

Many factors can affect a rat's food intake. Such factors may include :

1. Environment
2. Temperature
3. Humidity
4. Food quality
5. Breeding status
6. Health status

On average, an adult rat will consume 5 g of feed and 10 ml of water per 100g body weight daily. These measurements relate to normal conditions and it should be noted if there is less food or water that the animals are in unsatisfactory conditions. Water should be provided in bottles equipped with sipper tubes and not in open bowls (that are normally contaminated in a sawdust environment). Tubes should be positioned low enough to allow the rats easy access.

Inadequate water consumption can result in :

1. Dehydration
2. Lower body weight
3. Death

Water bottles must be properly cleaned and refilled at the very least on a daily basis.

Handling

Domestic rats will become tame and seldom bite if they are properly restrained and accustomed to being handled often. Always exercise caution when approaching a nervous or frightened rat. Some rats are very protective of their environments. Coax the rat to walk into your hand rather than just picking it up. Rats can be easily picked up by scooping them into a can or cupped hands in order to move them out of their territory and into a neutral area. Never pick a rat up by it's tail as the tail can deglove



(above) Picture of degloved tail from www.ratguide.com

Cage/enclosure

Rat care minimum standards SUMMARISEDPage 2 of 10Note that mice and rats and other rodents should never be housed together. Cages should be equipped with tunnels, and nest boxes because these accessories will contribute to the animal's psychological well being as well as their physical need for activity

Rats easily chew through wood and thin plastic, recommended caging materials are :

1. Wire (must not be rusting or have sharp edges)
2. Stainless steel (coated with safe material)
3. Durable plastic
4. Glass.

****Note**** Care should be taken when using glass and plastic enclosures because they can restrict air circulation and may lead to temperature or humidity problems and the aggravation of Mycoplasma. If using these materials, at least one side of the enclosure should have air holes drilled into it to ensure proper ventilation. Overcrowding in these types of enclosures is particularly bad.

Bedding

Rats thrive in solid-bottom cages with deep bedding and ample nesting materials.

Bedding should be :

1. Clean,
2. Nontoxic
3. Absorbent
4. Dust-free

Pelleted paper, shredded paper or organic pelleted products (nontoxic and digestible) are all acceptable beddings. Bedding should also be free of mould, mildew, or other contamination. Avoid using cedar chips, pine shavings, or scented shavings; these products have been linked to both respiratory and liver disease. Cotton (but beware of loose threads it can become entangled around feet) shredded tissue paper make excellent nesting materials. At least one inch of nesting material should be provided to allow for normal burrowing behavior. Bedding should be clean and not soaked in urine (average urine measurement per 100g body weight = 16.5ml – 44ml per adult male rat and 13.75ml – 22ml per adult female rat per day) and should be changed based on the .

Area per animal

The housing system should:

1. Provide space that is adequate, permits freedom of movement and normal postural adjustments, and have a resting place appropriate to the species.
2. Provide a comfortable environment
3. Provide an escape proof enclosure that confines animal safety
4. Provide easy acces to food and water;
5. Provide adequate ventilation
6. Meet the biological needs of the animals, *e.g.*, maintenance of body temperature, urination, defecation and reproduction

As a guideline, Adult rats need at least 260 square centimeters (40 square inches) of floor space and a minimum of 30 Centimetres (11.8 inches) cage height. These measurements are the very bare minimum required per adult animal. Breeding rats will require a much larger area per rat than this.

Cage and enclosure maintenance

Cages and accessories should be thoroughly cleaned with a non-toxic disinfectant and rinsed thoroughly at least once a week (more often for enclosures with more animals). The only exception to this schedule would be when newborn babies are present. In this case, wait at least 10 days following birth before thoroughly cleaning the cage. Cages should be sanitised with hot water and nontoxic disinfectant or detergent, then thoroughly rinsed. Water bottles and food dishes should be cleaned and disinfected daily (not weekly). Food must be checked daily as sometimes the food husks make the food container appear full. Food containers should be kept above the ground level to avoid contamination with urine and faeces.

Environment/temperature and humidity

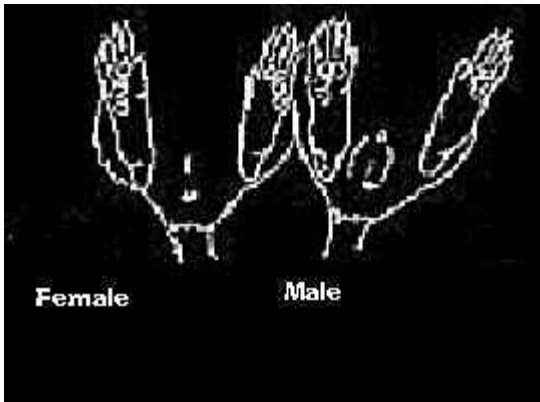
The optimal temperature range for rats is between 19°to 25°C with a relative humidity of 40 to 70%. Twelve-hour light cycles are preferred, although most rats are more active during the night.

Social structure

Domestic rats can be housed singly or in same sex groups or breeding pairs, although rats are colony oriented by nature. Occasionally, an overly aggressive rat may have to be caged by itself. Territorial disputes also develop when cages are overcrowded or when a rodent is deprived of food or water by its cage mates. In order to avoid this scenario, group cages should be equipped with multiple food and water sources.

Breeding

It is relatively easy to distinguish male rodents from female rodents. Neonatal male rodents have a one and-half to two times greater distance between the anus and urogenital opening than their female counterparts.



Sexually mature male rodents exhibit a prominent scrotum and large testicles, while females can be identified by their more prominent bilateral rows of nipples. Male rat's tails have a scaly appearance than females. Female Domestic rats become sexually mature at about 65 days of age. They have an estrous cycle of approximately every 4 to 5 days throughout the year. Breeding usually occurs at night. Rats also have a fertile postpartum estrus and can be bred within 48 hours after giving birth. The female should not share her enclosure with any males so the males should have been removed from the cage prior to the birthing process. Adult male rats can and are prone to injure their young. Pregnancy lasts about 3 weeks in rats. Litter size averages 6 to 12 pups, but smaller litters are common. The female and her litter should not be disturbed for the first few days after birth.

Signs of disease

Signs of disease in the rat can be broken down into several groups:

➤ **Skin problem signs**

Excessive hair loss may be one of the first signs of a skin abnormality. Rough hair coat can indicate several situations from old age to disease. Rats housed together have a tendency to tail bite. Care should be taken for an swelling or mass in or under the skin. It could be an abscess or a tumor. Any abnormal temperatures or humidities, especially rapid changes, can induce injuries

➤ **Gastrointestinal Signs**

Diarrhea is seldom seen in rats. Slobbering in rats is associated with suffocation, heat stress, and malocclusion.

➤ **Respiratory Signs ** very common in unfavourable conditions**

Sniffing and a nasal discharge are associated with respiratory Mycoplasmosis commonly. A red ocular and nasal discharge (called Porphyrin) indicates many debilitating diseases and stress conditions. It may appear as if the rat's nose is "bleeding".

➤ Neuromuscular Signs

Lack of co-ordination, tilted head (to one side) and cloudy eye probable causes

1. Inflammation or infection of the inner ear (Otitis interna),
2. Pituitary tumour and inflammation of the brain (encephalitis)
3. Trauma, encephalitis, pituitary tumour, and otitis interna can lead to incoordination in rats.
4. Brain lesions, trauma of the spinal cord, malnutrition, and arthritis can produce limb weakness or paralysis.
5. Cloudyness in the eye can be related to irritation from food, bedding dusts, stroke or other injury or infection.

Common illnesses and conditions in domestic rats

❖ **Chronic Murine Pneumonia (Murine Mycoplasmosis)**

Mycoplasma pulmonis is difficult to isolate with standard laboratory tests so a presumptive diagnosis is made based on the signs that usually include :

1. Sniffing,
2. Sneezing,
3. Laboured breathing (sounding like bubbles being blown under water)
4. Squinting
5. Red-brown tearing around nose and mouth (Porphyrin)
6. Nasal discharge
7. Rough haircoat
8. Hunched posture

If the inner ear becomes infected, a head tilt and neurological signs may develop. In addition to respiratory signs, a genital infection may also occur. Manifestations of the genital form of this disease include :

1. Infertility
2. Miscarriage
3. Small litter size

****Note**** Compromise to the respiratory tract by other bacterial or viral infections or exposure to inhaled irritants can increase the severity of mycoplasmosis. The disease can also run a chronic course, which may result in death if not treated early. Antibiotic therapy is generally initiated at the first signs of infection. Due to the chronic nature of this condition, long-term treatment with antibiotics (usually the most effective antibiotics are a combination of Baytril and Doxycycline) may be necessary. Severely affected rodents may need injectable medications and extensive supportive care administered by a veterinarian. In addition, secondary infections are common and

sometimes lead to the use of additional medications. While the goal of the veterinarian should be to reduce the severity of signs of this disease, complete elimination of the organism is difficult. *Mycoplasma pulmonis* is highly contagious. The infection is spread from rat to rat through ordinary daily contact. A female can pass this disease to her unborn young via her birth canal when they are born. Other rats may also be carriers.

****Note****It is extremely important to restrict contact between new rodents of unknown health status. Any animal exhibiting even the slightest signs of respiratory illness should be kept in isolation and be examined by a registered veterinarian. It should also be noted that *Mycoplasma* may be aggravated by Pine and Cedar litters and can and by soiled litter soaked in Urine.

❖ **Ear mange** (crusts on ears and ears appear to have been bitten)

Demodex spp., and *Notoedres muris* (a sarcoptid-like mite), both transmit mange. *Demodex* spp. can be found anywhere on the skin but are primarily found on hair follicles and sebaceous glands of the ears. *Notoedres muris* (also termed the ear mange mite) burrows into skin, and presents as yellowish crusty appearing warts on edges of ears and nose (can look as if the ears have been bitten and the nose appears to be growing a horn), or can appear on other extremities as reddened bumps. Both of these are often seen in the domestic rat in South Africa. Should the rat be infested with a sarcoptic mite the infestation will continue until treatment by a veterinarian with Ivermectin 1 x per week for 3 weeks. The environment must be cleaned thoroughly to rid it of mites.

❖ **Tumours**

Rats are very susceptible to the development of particularly mammary tumors. Both male and female rats over 2 years of age have an 87% chance of developing tumors. Breast tumors in both male and female rats are the most common.

Because female rats have such widely distributed mammary tissue beneath the skin, it is not unusual to find tumorous lumps behind their front legs, along the sides, in the flanks, and along the underside of the body. Tumors of both the breast and mammary glands can be removed surgically by a registered veterinarian, but often recur. If not surgically removed, these masses continue to enlarge, ulcerate, and become infected. Early surgical removal allows for the best outcome with the least chance of complications or recurrence.

❖ **Red-Brown Tears (Porphyrin)**

Rats are prone to a condition in which they secrete red tears from a gland behind their eyes. This is a normal secretion of porphyrin pigments produced by the Harderian gland. These tears are often mistaken for blood. They usually appear during stressful situations such as an illness. The eyelids, nose, and forepaws may be smeared with the pigment. When present, the underlying cause of stress should be sought and relieved.

❖ Ring tail

Low humidity and high temperatures may result in ring tail in young rats. Ring tail presents as constrictive bands along the tail. Other factors that have been implicated in this condition include the vascular stricture of the tail, the presence of endotoxins, and a diet high in fat. Treatment involves correcting the environmental conditions that may lead to this condition.

Surgery on rats

Surgery on rats needs to be performed in a very specialized way. The best (and recommended) anaesthetic agent is Isoflurane. Care should be taken to keep the animal warm during and after the operation.

Euthanasia practices

****Note **** In South Africa Euthanasia should be performed only by a [qualified inspector with Animal Welfare Assistant \(AWA\) status which includes euthanasia](#) or a registered veterinarian experienced in the euthanasia of small animals.

SUMMARY OF BIOLOGICAL FACTORS

Facts on this table have been proven and recorded by the persons in the last column.

<u>Normal weight</u>		
Birth	5-6 g	Pass and Freeth 1993
Weaning	30-55 g	Pass and Freeth 1993
Puberty	150-200 g	Pass and Freeth 1993
At 12 weeks: males	200-400 g	Pass and Freeth 1993
At 12 weeks: females	150-270 g	Pass and Freeth 1993
Adult: males	300-800 g	Pass and Freeth 1993
Adult: females	250-400 g	Pass and Freeth 1993

Developmental and life history events

Hair coat	9 days	Pass and Freeth 1993
Incisors erupt	8-10 days	Addison and Appleton 1915
Eyes open	12-14 days	Pass and Freeth 1993
Ear canal open	12-14 days	Pass and Freeth 1993
First leave nest to explore	14-16 days	Nelson 1995
First molars erupt	19 days	Addison and Appleton 1915
Second molars erupt	21 days	Addison and Appleton 1915
NB Weaning age	21 days (after 2nd molars erupt)	Pass anFreeth 1993
Faint yellow pigment appears on upper incisors	21 days	Addison and Appleton 1915
Faint yellow pigment appears on lower incisors	25 days	Addison and Appleton 1915
Descent of testes	15-50 days	Pass and Freeth 1993
Third molars erupt	35 days	Addison and Appleton 1915
Puberty: males	39-47 days	Engelbrect J. T. <i>et al.</i> 2000, Chappel and Ramaley 1985, Korenbrot <i>et al.</i> 1977
Puberty: females	34-38 days	Engelbrect J. T. <i>et al.</i> 2000
Social maturity	160-180 days (5-6 months)	Adams and Boice 1983

Menopause (females)	450-540 days	Durbin 1966
<u>Reproduction</u>		
Oestrus cycle	4-6 days	Pass and Freeth 1993
Gestation	21-22 days	Pass and Freeth 1993
Litter size	6-14 pups (varies according to maternal age)	Pass and Freeth 1993, Mohan 1974
Maximum milk yield	12-14 days postpartum	Pass and Freeth 1993
<u>Normal Food consumption</u>		
Daily food consumption	5 g/100 g body weight	Pass and Freeth 1993
Daily water consumption	8-11 ml/100 g body weight	Pass and Freeth 1993
<u>Urine measurements</u>		
Urine output per day	5.5 ml/100g body weight	Pass and Freeth 1993