



PEST CONTROL



RODENT

MANAGEMENT GUIDE

LIPHA **TECH**



Why do we need to control rodents?



1. DISEASE

Food Poisoning, LCMV (*Lymphocytic Choriomeningitis Virus*), Hantavirus and Asthma. Rodent borne diseases spread through rodent feces

2. CONTAMINATION


Approximately 20% of the world's food supply and 4% of stored rice and grain are contaminated by rodents each year

3. PROPERTY DAMAGE

Estimated that 1/5th of world's fires caused by unknown origin are caused by rodents gnawing on electrical wires.

Identify the rodent species

To put a successful program in place you must identify the species of rodent as each one needs to be treated differently.

	HOUSE MOUSE	ROOF RAT	NORWAY RAT
			
WEIGHT	20g	250g	350g
TOTAL LENGTH	18cm	40cm	45cm
SEXUAL MATURITY	Reached in 1 month	Reached in 2-3 months	Reached in 2-3 months
GESTATION PERIOD	19 days	22 days	23 days
NUMBER PER LITTER	5-6	6-8	6-12
NUMBER OF LITTERS	Average 8 per year	Average 4-6 per year	Average 4-7 per year
DAILY FOOD	3g	25g	30g
LIFE SPAN	15-18 months	18 months	18 months

Rodent signs

To help determine the size of the infestation and the species you are dealing with you can look at the number, shape and quantity of droppings.

- New - shiny and putty-like texture
- Old - hard and crumbly
- Varying sizes of droppings indicate adult and young are present in same area so you are dealing with a breeding population
- Many droppings can also suggest large infestation

Other indicators of a rodent problem are rub marks and gnaw marks. Rub marks are basically greasy spots from their oily coats where they have rubbed along a track that they consistently use. Gnaw marks can also be found on most hard surfaces as they have to gnaw on something each day as their teeth grow at a rate of 12 inches a year if they don't keep them down from gnawing on hard surfaces. On average mice will gnaw small, clear cut holes approx. 1-2 mm width and rats gnaw rough torn edges 4 mm in width.



Rodent behaviour

How a rodent behaves is very important to best control them. Rodents are considered to be the most abundant mammal in the world, both in the number of species which exist and the number of individuals. Many rodent species are highly adaptable and can inhabit a range of different environments and climates by modifying their behaviour. The rodents with the most varied behaviours are often the most aggressive and successful pests as they can quickly adapt to changes in their environment. Some of the most important behaviours that can occur are:

- **Changing food sources throughout the year**
 - Require protein/sugar/fat so vary baits and attractants
 - Some like chewing on hard and soft baits so provide both
- **Using different areas within a site during different periods**
 - Inhabit roof/wall/boxes/pipes so place traps in different areas
- **Feeding during different periods**
 - Mice - multiple times for shorter period
 - Rats - fewer times for longer
 - Ensure enough bait is always available
- **Having separate feeding and nesting sites**
 - Mice can have home radius of 1 m or 100m dependant on situation
 - Rats can have home radius of 1m to 1km
 - Place stations and traps at correct intervals and runways
- **Using specific areas of a site to avoid predators/competitors**
 - Concentrate control in these areas

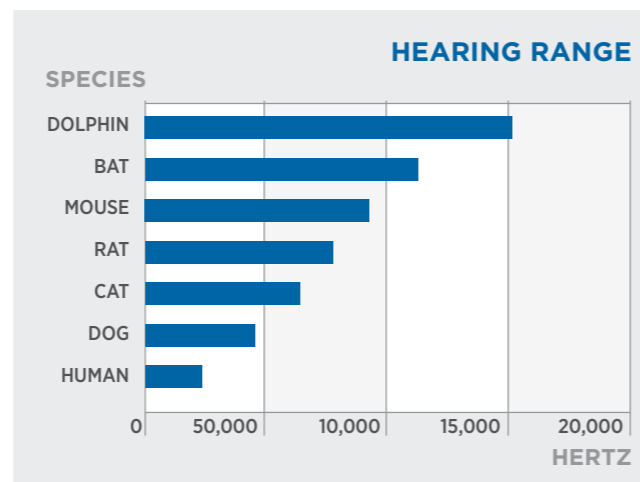




Rodent's senses

- SMELL**
 Approx. 1% of rat's genes are involved in sense of smell. Pheromones are how rodents communicate (colony status, reproductive behavior etc.)
- TASTE**
 Can taste up to 250 parts per billion (humans can taste 40 ppb) so very sensitive to different tastes. Food Preferences- Newborns taste mother's diet through her milk and prefer the foods she ate when they grow up. Taste Aversions- react negatively to foods that made them feel ill. (Single Occurrence) Dietary Needs- deprived of a certain nutrient, they learn which foods fill that need and prefer those until need is met.
- TOUCH**
 Rodents have Vibrissae on their face which are whiskers used to help them move around and determine distances from a surface. Rats average 8 sweeps per second and mice average 12 sweeps per second which paints a 3rd picture in rodent's brain. Vibrissae are most prominent on face but also located throughout the body.

- SIGHT**
 Blurred vision with very limited colour. Their weakest sense.
- SOUND**
 Sonic and ultra sonic range but not great at pinpointing the location based on sound. Can determine the difference between two human languages.
- 6TH SENSE! KINESTHETIC**
 The sensation of bodily position, presence, or movement resulting chiefly from stimulation of sensory nerve endings in muscles, tendons, joints.



IRM - Integrated Rodent Management

The definition of IRM is to go back to the basics of IPM or a common sense approach from a PCO view and provide effective, low risk and environmentally friendly services to the customer.

Any integrated pest management job must start with a thorough inspection before you can even think about treatment options. You must first identify the species of rodent as there is no point only baiting on the ground if you have roof rats! Then carefully analyze the site for signs of rodent runways (such as rub marks and droppings) plus any entry and exit holes. Remember: A rat can get through a hole the size of your thumb and a mouse the size of your pinky!



In order to carry out an inspection, you must have the following basic tools: torch with black light capability, pencil and notepad, expandable probe, scraper, carpet tack puller and a digital camera (very good for showing current activity or damage and station placement)



4

PRINCIPLES OF DENIAL

The four principles of denial apply to any pest control job - if you can manage all 4 then you will have success.

- DON'T LET THE RODENTS EAT**
 Maintaining good sanitation, remove food waste and trash, proper food storage etc.
- DON'T LET THE RODENTS DRINK**
 Eliminate moisture sources by proper ventilation, repair defective plumbing, roof leaks, dripping AC. On the exterior, tend to over-water.
- DON'T LET THEM COME IN**
 Prevent entry and exclude pests. Caulk, seal, screen and patch exterior pest entry points, trim vegetation.
- DON'T LET THEM HIDE OUT**
 Prevent shelter and harborage, reduce clutter and conducive conditions. Maintain a plant, weed and pest-free zone around the structure exterior.

Harborage reduction and rodent proofing

DOMESTIC SITUATIONS

- Keep grass and vegetation short.
- Keep overhanging trees cut back from the roof.
- Eliminate clutter and debris outside
- Maintain a 1m wide barrier of cement or rock around the home
- Keep bins closed and away from doorways
- Make sure that areas around pipes and utility lines are sealed to prevent rodents from entering.

COMMERCIAL SITUATIONS

- Bins should be large enough to prevent spillovers
- Bins should have tight sealed lids and should be stored 10-20m from the exterior of the structure if possible
- Control clutter by palletising products
- Provide a light source to the floor so no dark areas to hide and travel
- Install self-closing devices on doors
- Install vinyl or rubber sweeps
- Ensure flashing is intact
- Drains and vents must be tightly sealed and in good condition

RODENT PROOFING MATERIALS

- Steel Wool
- Hardware Cloth - 19 gauge or heavier
- Perforated Metal - 24 gauge thickness
- Sheet Metal (galvanized) - 26 gauge thickness or heavier
- Cement Mortar - 1:3 mixture or richer



Options for IPM

BAITS

The best bait to choose will depend on:

- Severity of Infestation
- Environmental Conditions
- Site Variables
- Type of Rodent
- The two most important considerations when selecting a bait are site location and palatability.



MAKI ORIGINAL - BROMADIOLONE

- Single-feed bromadiolone blocks
- 20g blocks
- Registered for the control of Mice, Norway and roof rats in/ around buildings
- Palatable formulation
- Highly weather resistant (very good mould resistance)



MAKI WRAPPED - BROMADIOLONE

- Single-feed bromadiolone blocks wrapped in plastic
- Wrapping stops insects and snails and slugs from eating all the bait before the rodent
- Wrapping has label details for identification of bait
- Registered for the control of Mice, Norway and roof rats in/ around buildings
- Highly weather resistant (mould resistance especially)



GENERATION BLOCK - DIFETHIALONE

- Single-feed bromadiolone blocks
- 20g blocks
- Registered for the control of Mice, Norway and roof rats in/ around buildings
- Palatable formulation
- Highly weather resistant (very good mould resistance)



GENERATION FIRST STRIKE - DIFETHIALONE

- Grain and vegetable oil
- Difethialone
- Bittering agent
- NO wax
- NO nut ingredients
- Special paper allows aroma to escape



Options for IPM (continued)

BAIT STATIONS

Stations must be:

- lockable
- made from durable materials
- contain rods to hold bait
- securable to a structure or the ground
- be versatile enough to hold a trap or bait

AEGIS RP



AEGIS STATIONS

- Built tough for the Australian environment
- Double locking system for safety
- Can secure bait vertically or horizontally
- Options with rat trap secured in station
- Mouse stations have clear lid or black lid



AEGIS
MOUSE

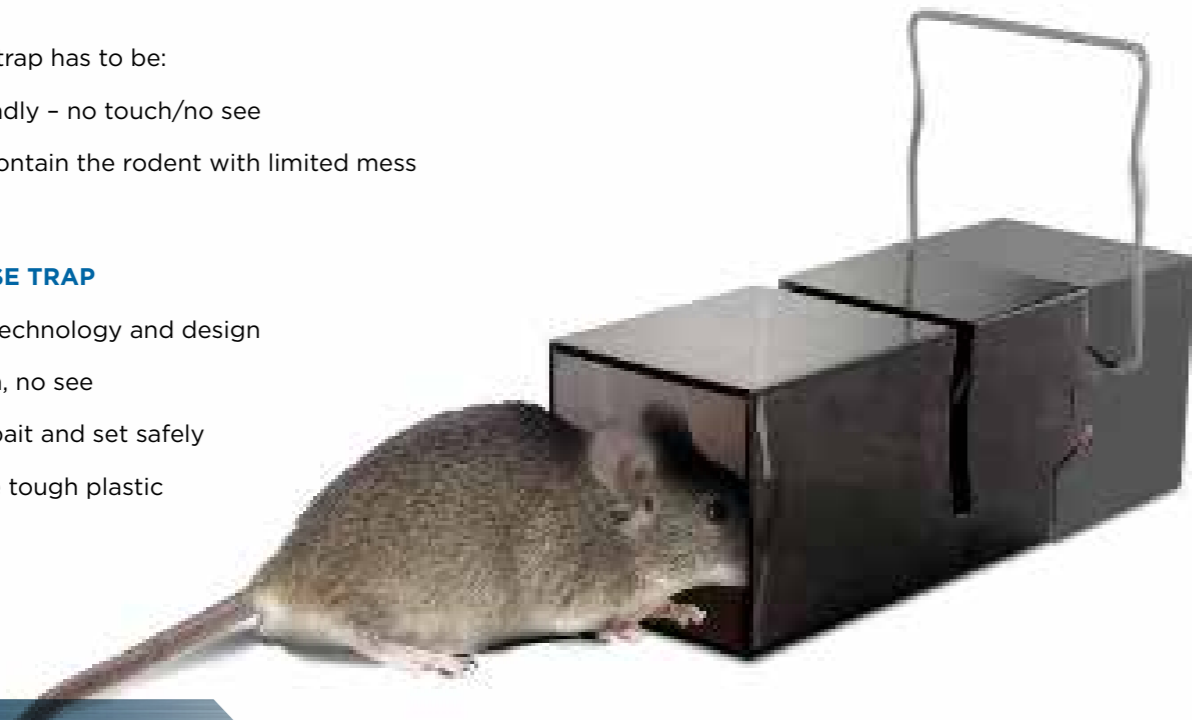
TRAPS

An effective trap has to be:

- user friendly - no touch/no see
- able to contain the rodent with limited mess

AEGIS MOUSE TRAP

- Newest technology and design
- No touch, no see
- Easy to bait and set safely
- Reusable tough plastic



Case studies



COMMERCIAL KITCHEN

SPECIES: Roof Rat (*Rattus rattus*)

LIMITATIONS: Can only bait in certain places in restaurant and wants a quick result

SOLUTION: The best way to treat a commercial site is to have multiple placements of bait in Aegis RP's every 20m around the outside of the building plus placements throughout the inside concentrating on the kitchen. As they want a quick result the best option is to use Generation First Strike as an initial clean out product to get feeding and kill immediately then add generation blocks for maintenance baiting once the population is under control. The bait should be checked weekly for first month then back to monthly or quarterly checks. Make sure enough bait is in each station as all stations must contain bait the entire time. Given it is a commercial kitchen and getting the rats to feed can be hard use First Strike as it is very palatable and more likely to get feeding in areas where food competition is high. If there are areas that get washed out frequently use Maki Original as it has a high level of mould resistance and will stand up well to high moisture and heat.



PRIVATE HOUSE

SPECIES: House Mouse (*Mus domesticus*)

LIMITATIONS: Home owner doesn't want to see or touch the mice

SOLUTION: In a home situation you will need to check for pets and other non-targets. If they have pets you should use Maki blocks inside the Aegis Mouse in the interior of the house as it has a lower chance of secondary poisoning to dogs and cats. You should also place Aegis mouse traps in the cupboards and behind fridges where the mice have been seen and bait with a food source or cotton wool and linseed oil to attract the mouse. The owner can check the traps and tip out the mouse and reset easily without touching the rodent. Place the traps near any signs of rodents. If you want to bait outside make sure the Maki is in Aegis RPs and they are secured to the building so any pets cannot get hold of the baits. The bait must be replaced as soon as it is eaten so the rodents know the food source inside the station is always there.



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