

The Great Mouse Detective

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The legendary *Mus musculus*. PMPs all have stories of epic battles and certainly lost sleep these animals have caused. House mice owe their success to interaction with mankind. As man migrated around the world, so did the house mouse, beginning in Central Asia. Without us, they would find the world a very harsh and dangerous place. Living with us, however, they thrive and threaten our well being and property.

The house mouse is a tiny, unassuming and rather cute animal. It has spawned at least one very successful commercial enterprise and been the sassy partner in many duos. Adults weigh in from .5 to 1 ounce and measure 5.5 to 7.5 inches in length (the tail averaging about a half of that length.) The tail has a sparse amount of hair and is scaly in appearance on the flesh portions. The body fur ranges from light to dark gray with a lighter colored belly. The eyes appear black and bulge slightly from their sockets. In controlled captivity, mice have lived as long as six years. Under wild conditions, right along side us in our homes and businesses, they survive an average of one year.

They use the same five senses we do to survive. Their eyesight is poor and their preference for dark, quiet conditions renders this sense less essential to their survival. Mice tend to be nocturnal, but they can be active anytime during the day. Their other four senses—touch, hearing, smell and taste are excellent. They use these other senses to guide their activities as they move from harborage zones to feeding zones. Their body hairs and whiskers provide tactile guidance as they move from place to place. Muscle memory is superb and allows them to react to danger very quickly and escape. Hearing is in the ultrasonic range (as much as 100 kHz.) This level of hearing allows them to communicate with high pitched sounds humans cannot hear. Their sense of smell is highly developed and is enhanced through the use of the vomeronasal or Jacobson's organ located at the base of the nasal cavity. Pheromones detected by this organ give the mouse even more detailed information about its environment.

House mice mature quickly, actively searching for food and exploring their world about three weeks after birth. They will reach sexual maturity in 6 to 10 weeks. Female mice will average 5 to 6 pups per litter after a gestation period of 19 to 21 days. Females are ready to mate for another litter 48 hours after birth, so the numbers of mice that can be produced are staggering in an active population. In a 24 hour period, mice need to consume 10 to 15% of their body weight just to survive. We refer to them as nibblers because they might actually feed 15 to 20 times a day. Free water supplies are not as important since they need very little and can get most of what they require from their food. However, if water is available, they will consume it. For all practical purposes (from a pest control standpoint), mice can fly. They climb virtually any rough surface, travel upside down scabbling across wires or cables. They survive falls from heights as great as 12 feet and their jumping ability from a level surface is just over a foot high (higher if a ramp is available.) This is why, in many instances, we fail in control efforts—we stare at floors and shelves and forget to look up. Mice are very curious by nature with their environment. Even though their ranges tend to be extremely small, if the needs of food and harborage are met, they will explore every inch of it as it changes. This curiosity factor plays into the hands of a PMP trying to eliminate a mouse infestation.

Dealing professionally with a mouse infestation is not just a matter of saturating an account with traps and bait. The first task is to identify the distribution of the mice. This is done by assessing the site for the resources mice need to survive. They are: access, food, water and harborage. This short list has been discussed many times, but for some reason, is often forgotten. Knowing where to look is the next step. You need to identify mouse resources as well as signs of the mice themselves. Remember: underneath, around, behind and on top of—but it has to be more than just looking. We have five senses to bring into play: sight, hearing, touch, smell and taste. Four of them can be used very effectively. The fifth, taste, we can probably leave out of this discussion for obvious reasons. Always remember the famous question: “Where was the last place you saw (heard, smelled) any sign of the pest?” It helps a client, be they residential or commercial, focus and form a working partnership with you. Unless the client is part of the solution, you will fail in your efforts.

The assessment and evaluation process requires you to take notes and create records. This is best done with some type of map or diagram of the site. Sometimes, these documents are available as printed fire escape maps or

electronic files. Otherwise, you will have to draw the map yourself. In either scenario, the map is critical in understanding the distribution of the mice. Without it, you will forget important details or miss something that will set back the success of your program. Work through the site, assessing and taking notes as you go. Talk to your client and get their input, as previously mentioned, to aid in the process. Digital cameras are another very useful part of the process, if you have permission to use them.

This assessment process is impossible without a flashlight. It should be the absolute best you can afford backed up by another of the same. Spare batteries (rechargeable or not) must be on hand ready to use. UV LED lights allow you to check for signs of mouse urine and can be very effective in identifying the travel paths used by the pest population. Flashlight use is a learned skill and far more than just standing back and letting it shine on an area. Practice using it from different angles and ranges.

Once you have identified the distribution and resources of the mouse population, elimination can begin. Keep in mind the importance of the partnership you have established with your client. Pest control rodent processes such as baiting and trapping alone are not sufficient to remedy the issue. Without cleaning, sanitation, maintenance, and product rotation any efforts to deal with the mice will eventually fail. Then, what normally happens, is you (the current PMP), are replaced with another PMP, who, if they continue down the same path, will fail as well.

Trapping and bait interventions need to be tailored to the site where you are working. What worked in another location last week, may fail where you are today because you got the distribution pattern wrong or failed to establish one. Take note of what the animals are actually feeding on and what they are using for harborage. Place your interventions where the travel paths of the rodents dictate. Study these areas carefully, since being off only a few inches can cause the mice to miss your placement entirely. Remember these creatures are very small and what seems like no distance at all to us is huge for them. Whatever devices you decide to use, mix it up a bit with your placements. These animals are intensely curious about changes to their environment and will readily examine new items. If these new items are effective rodent interventions, you will be more successful. Don't be afraid to change up your plan as the work progresses--each change represents another opportunity for success.

Continually monitor and record the progress of the rodent elimination program. As items are identified for repairs, maintenance, or cleaning, ensure that these tasks are completed. Meet with the client to discuss the progress of these tasks. If the client is unable to complete them, have a backup plan in place with a trusted contractor that can bid for the work. In some cases, this work can be completed by a PMP with the proper skills and professional licenses. Keep in mind that, without the cooperation of your client, nothing you do as a PMP will achieve the desired result of a rodent free site. When the site is declared (through proper assessment and evaluation) to be rodent free, it must be kept that way. This portion of the job is where continual site assessments are planned, scheduled and conducted. In most cases, the pressures that brought on the problem in the first place are still present. These range from the habits of the rodents to the habits of the human beings using the site.

House mice are not an easy problem to rectify. They get out of hand quickly and, because of their secretive nature, we oftentimes don't see it until the situation is serious. With more aggressive scrutiny being paid to rodent concerns by regulatory officials, even one mouse dropping represents a potential financial disaster for your client. Bargain price pest control programs serve no good purpose in serious mouse elimination efforts. As a PMP, make sure your programs address the entire site and have a complete plan of execution. Programs of this type are not inexpensive, but are a tremendous value when they protect the lives, property and reputation of your clients.