No Wizards, Just Patient Teachers

by Bart Weetjens [APOPO] and
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APOPO is a Belgian-African nongovernmental organization that trains rats to be at new mine-detection tool. The authors describe the basic idea behind this unique concept.

The presence of landmines all over the world is an issue the United Nations, governments and other world organizations are trying to address. But the difficult question lies in how to find metal-based landmines using metal detectors because the iron-containing, laterite soils in sub-Saharan Africa trigger the detectors indiscriminately. Since every signal has to be checked, this method is not very useful in certain soils. One organization, APOPO, utilizes a unique approach to finding landmines. In Tanzania and Mozambique, mine-detection rats are now being used.

Rats show much promise in furthering mine detection. Like mine-detecting dogs, they have a highly developed sense of smell. APOPO trains its rats to detect mines in the field using vapor-detection technology. Since landmines emit a vapor from the explosives within them, the rats are able to use their

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Alfredo Adamo and his baby rat.

keen sense of smell to detect the mines, but it is not as simple as it sounds. It depends on a lot of climatic factors as well.

APOPO was founded in 1997 and has since discovered African giant-pouched rats can detect explosive samples. It soon found that mine-detection rats can also find hidden samples of TNT buried in sand. However, it was not until 2003 that MDRs were used in a real minefield.

Alfredo Adamo, who currently works for APOPO as an MDR trainer, says, "When I started working for APOPO, I only saw fully trained animals … that had been trained in Tanzania. It was the first time MDRs were brought into a real minefield, and we were all pretty excited and nervous. We work now with 18 MDR teams, all tested and accredited."

Adamo has been working with APOPO and its MDR program for three years. On average, Adamo works with 12 rats daily.

Originally from Limpopo, Mozambique, Adamo has progressed from working with fully trained rats to learning to train baby rats himself. APOPO recently invited Adamo to learn how to train baby rats in Tanzania. He says that during the three months he will be in Tanzania, he will be taught "to train two babies from clicker training[1] up to a level where they can walk on a leash in the open, searching [independently] for training targets in a sandbox. … This training provides me with sufficient skills on how to handle the whole training process, and to teach others how to train rats." According to Adamo, the purpose of the Tanzania training course is to "learn the finesses of rat training. The idea is to [one day] create an independent Mozambican MDR capacity. To reach that goal, APOPO gives us the opportunity to learn all the aspects of an MDR program, especially the preparatory training stages, which we lacked so far in Mozambique."

Rats are also easy to train and tame, which is useful in detecting mines quickly. According to Adamo, "Rats work quite independently from their trainers. [They depend less] on their trainer's personal affection" than dogs do, which allows the animals to be easily directed by multiple handlers. In addition, due to the small size of the rats, they are less likely than dogs or humans to trigger an undetected mine or unexploded ordnance. They are also less costly to maintain.

In a real minefield, trained giant pouched rats can usually process 100 square meters (120 square yards) within a half hour. Two trainers guide a single rat on a leash. While one trainer rewards a rat for correct indication or behavior, the other trainer will note the rat's behavior to ensure that the rat has indeed located a mine or piece of unexploded ordnance. MDRs show that they have located a mine or UXO by scratching the soil surface in the vicinity of the mine.

Adamo thinks APOPO trainers must be patient above all else when it comes to training these animals. "You don't need to be a wizard to train rats. You merely need a lot of patience. And in case one of my animals has a problem that I don't know how to deal with, there are always more experienced trainers around to help me out," he says.

For additional references for this article, please visit http://maic.jmu.edu/journal/10.1/weetjens/weetjens.htm/#addlrefs.

See Endnotes, page 112

Alfredo Adamo looks to see what interests his baby rat.

Bart Weetjens initiated the idea of using rats for landmine detection. His focus is the development of the direct detection concept and the coordination of the Tuberculosis Project.[2] Weetjens is a product development engineer and a practicing Zen monk.

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