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The Probe, Issue 215 – March/April 2001

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Experimental Pocket Gopher Control Device

Jeff Schalaus, Agent, Agriculture & Natural Resources, Cooperative Extension, Yavapai County, Arizona

Author's Note: This article is a report of a field test to examine the effectiveness of using a blower device to distribute gasses through two pocket gopher burrow systems. The source of gasses used in this test was highway flares (fusees). Highway flares were selected as the source of gasses in order to replicate the conditions reported to the author from the original source of this procedure. It must be noted that highway flares are not federally registered for use as rodent burrow fumigants and therefore cannot be recommended as the source of gas to be distributed by this device.

Introduction

This experimental gopher control device uses a small fan to distribute a fumigant throughout connected burrow systems. The device appears to work quite well in preliminary testing this year. The device was brought to my attention by an Extension Master Gardener, Vic Heinz of Cottonwood, Arizona. He had used this device in California. The device can be made from readily available materials and is easy to construct. Depending on where the gopher systems are located, the fan can either be powered by 110 volt AC (common household current) or 12 volt DC (car or tractor battery).

Experimental Fumigant

Rather than using standard gas cartridges, Vic recommended using safety flares (fusees). I was able find Orion brand 15 minute flairs for \$1.29 each at a local auto parts store. After reading the Material Safety Data Sheet on the Orion web site, I learned that the flares produce sulfur oxides, nitrogen oxides, and carbon monoxide. The smoke generated is definitely heavier than air. Once ignited, these flares are also a serious fire hazard and proper precautions should be taken before use.

Materials List

- 1 - 5 gallon plastic bucket
- 1 - 3 inch electric "pancake" type fan (120V AC or 12V DC)

- 4 - machine screws, washers, and nuts to attach fan to bucket

Tools List

- saber saw (for hole in bucket)
- drill (for screw holes)
- screwdriver

Fumigant

- several highway safety flares

Assembly Instructions

Place the plastic bucket upside down on the ground with the fan on the center of the bottom of the bucket. Trace the outline of the circular portion of the fan, the screw holes, and the circular opening of the fan onto the bucket. Using a saber saw (or sharp knife), cut only the circular hole where the air passes through. Mark and drill holes to attach the fan. Use machine screws to attach the fan to the bucket making sure the air blows into the bucket when the power is on.

Procedure

A probe was used to locate the main runway in the burrow system. Soil was excavated to expose enough of the runway to allow the insertion of the flares. The fan was started and two lighted flares were placed in the runway - one in each direction. The bucket was immediately placed over the excavated hole and soil was used to seal the lip of the bucket over the hole. Gray smoke was observed emerging from nearby mounds. The mound emitting smoke provide an indication of the extent of the burrow system. As with all fumigants, the inhalation of smoke was avoided.

In a manner similar to using wire traps, flares were placed near active mounds at one or two locations per burrow system at each treatment. After the flares burned out, the residue was allowed to cool and the flares were removed. The excavated soil was then replaced and the ground leveled.

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CALENDAR OF UPCOMING EVENTS

May 1-3, 2001: Urban Wildlife Management Conference, Arbor Day Farm/Field Conference Center, Nebraska City, NE. How to Balance the Needs of People and Wildlife in Urban and Urbanizing Landscapes. For more information contact National Arbor Day Conference Services at 402-474-5655, or visit

<http://arborday.org/programs/uwmNatlConfBrochure.html>

August 27-30, 2001: 3rd Combined Bird Strike Committee USA/Bird Strike Committee Canada Conference. The Westin Calgary, Calgary, Alberta, Canada. Presentations at the conference have included papers, posters and demonstrations on wildlife control techniques, new technologies, land-use issues, training, engineering standards, and habitat management. Presenter proposals are due by April 2, 2001. Early Bird registration are due by June 1, 2001. For information contact Bruce MacKinnon by e-mail, mackinb@tc.qc.ca, phone (613) 990-0515, or fax (613) 990-0508.

September 9-14, 2001: 3rd European Vertebrate Pest Management Conference, Kibbutz Ma'ale Hachamisha Guest House, Israel. Abstracts and posters for the conference are invited and due by March 2001. For further information, contact Conference Secretariat: Ortra Ltd., P.O. Box 9352, Tel Aviv 61092, Israel, email <vert@ortra.co.il> or visit web site <http://www.ortra.com/vertebrate>.

September 16-21, 2001: 3rd International Congress of Vector Ecology, Winterthur Conference Center, Barcelona, Spain. The program will include papers, symposia, workshops, and poster sessions on vector ecology and control. For further information visit the Congress web page at <http://www.sove2001.org>

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Your contributions of articles to *The Probe* are welcome and encouraged. The deadline for submitting materials is the 15th of the month prior to publication. Opinions expressed in this publication are not necessarily those of NADCA.

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Experimental Pocket Gopher Control Device

Monitoring Effectiveness of Control

After control efforts were completed, all remaining gopher mounds in that system were flattened. This provided a means to detect any new mound building activity that might occur after treatment.

Experiment One

I tested this device at my home during August of 2000. Here, I had gophers eating the root systems of young fruit trees growing in very rocky soil. The difficulties here two fold: 1) not disturbing the young trees root systems, and 2) finding gopher burrows among rocks in the soil (traps are very hard to use under these conditions). After two treatments with this device, no new gopher mounds were seen for the remainder of the growing season. There was no noticeable decline in growth of the trees due to smoke contacting the gopher damaged roots. In addition, no evidence of gophers has been noted five months following treatment.

Experiment Two

The device was also tested on the lawn at the Prescott, Arizona Cooperative Extension Office where gophers appeared to be eating roots of Siberian elm. The gopher(s) present were very active pushing up a new mound every other day. After deploying the device, smoke was first noticed rising from a mound 34 feet away. Shortly thereafter, smoke was coming from a burrow 62 feet away. A second deployment was done near what appeared to be a separate burrow system 30 feet away, but smoke immediately began to rise from the first deployment area. Four days later, no new activity was seen.

Discussion

These preliminary data show that this device may provide an effective means to distribute fumigant through gopher burrow systems. However, I have no conclusive evidence that gophers were actually killed. They may simply have been repelled by the smoke and residue (the fusee leaves a whitish film on soil surface inside the burrow). I strongly suspect that the smoke residue will deter further occupation by pocket gophers for a limited period of time.

Although not evaluated in this test, it is quite possible that this method of providing positive pressure to distribute burrow fumigants would produce similar results with registered fumigants, such as gas cartridges or aluminum phosphide.

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The Northeast Wildlife Damage Management Research and Outreach Cooperative

*Paul Curtis, Cornell University and Gary San Julian,
Penn State University, Co-Directors*

During the last decade interest in wildlife has increased, and wildlife seems to be an almost universal object for concern, a symbol for environmental issues, and a central focus for resource management. However, encounters with wildlife are frequently characterized as a nuisance or are associated with outright damage and unwanted costs. Across the country it has been estimated that vertebrate pests cause a loss of at least \$12 billion in production annually, and state wildlife agencies must respond to these conflicts. Improved coordination and collaboration among wildlife agencies, universities, and other cooperators are needed to promote consistent multi-state approaches to stakeholder concerns.

State wildlife agencies and land-grant institutions are uniquely positioned to conduct additional research on the integration of the biological and social dimensions of wildlife damage management issues. The Northeast Wildlife Damage Management Research and Outreach Cooperative (WDM Coop) was recently formed as a multi-state partnership for addressing important wildlife damage issues. Base funding is provided by member states of the Northeast Association of Fish and Wildlife Agencies. Priority projects will link state agencies and universities involved in wildlife research, as well as the industries and social entities that need solutions or provide constraints on them. The WDM Coop will provide many benefits including coordination of activities, manpower and strengths, sharing of expertise and facilities, and cost-sharing.

The WDM Coop has several important functions, including: (1) Developing new techniques for reducing conflicts between people and wildlife, assessing wildlife damage in agriculture and urban landscapes, and integrating the biological and human dimensions of wildlife management concerns to enhance the adoption of effective control strategies; (2) Coordination research and outreach efforts of participating universities, wildlife agencies, and private industry in the Northeast; (3) Provide a clearing house for wildlife agencies, universities, and cooperators to access cutting edge wildlife damage research information and publications; and (4) Developing a better understanding of beliefs, attitudes, and preferences of key wildlife stakeholder groups to foster community-based approaches to wildlife damage management.

The WDM Coop has supported printing and distribution of deer and beaver management technical guides. A publication concerning the human dimensions aspect of wildlife management is in preparation and will be published in 2001. Collaborative research projects are underway to examine

suburban deer and Canada goose management concerns. For more information about WDM Coop activities or programs, contact Kathy Bell (kmb21@psu.edu), administrative assistant in the School of Forest Resources at Penn State University.

— from *Wildlife Damage News, Cornell Cooperative Extension, Wildlife Damage Mgmt. Prog., Vol. 1, Spring 2001* (<http://www.dnr.cornell.edu/ext/wildlifedamage/>)

Get a Free "Web Presence" at the Internet Center for Wildlife Damage Management (ICWDM)

Dallas Virchow, Project Coordinator Distance Education, Wildlife Damage Management, University of Nebraska

The ICWDM, located at <http://wildlifedamage.unl.edu> now has a new feature for wildlife damage control businesses. NWCO's and others can have a free web presence simply by selecting the menu item "Register your Wildlife Control Business". On the "vendor registration" page, one can enter his own unique name and secure password. Then, on the "administration" pages, the wildlife control business operator can complete as many fields as appropriate, including business name, telephone, fax, web page, and special product or service areas. There is even a field for describing the business where one can provide great detail for products or services offered. Vendors are registered immediately and all fields are instantly searchable.

By selecting "Search for a Wildlife Control Business" any visitor to the ICWDM can find businesses, products, and services, even in their home town. Our search engine is powerful, finding and matching every word with those in the database. Examples of ways to search include by location or name of business, general product line, specific product name, or even telephone number. Searchers are actually able to manage their "results". The search engine can alphabetize any column of text, including company name, city, and state.

Check out this new feature as well as the current events and other timely pages at <http://wildlifedamage.unl.edu>

Wildlife Damage Management in the News

Cornell Offers New Wildlife Damage Information Resource

Cornell Cooperative Extension is now providing an electronic version of Wildlife Damage News (<http://www.dnr.cornell.edu/ext/wildlifedamage/>). This electronic newsletter will address issues of concern to county extension educators, home owners, gardeners, farmers, municipalities, foresters, private landowners, nuisance wildlife control operators, and others.

Take 2 Tylenol®..... And Don't Call

The brown tree snake (*Boiga irregularis*) is a native of New Guinea which was accidentally introduced, probably aboard a freighter, to Guam in the mid-1950s. Lacking any natural predators and with a rapid reproduction rate, this snake has become firmly established across the island. Up to 13,000 snakes per square mile can be found in some forested areas of Guam. Brown tree snakes have to date eliminated at least 12 species of native birds and threatens several others. Frequent power outages on Guam are caused by brown tree snakes crawling on electrical power lines. The mildly venomous snake also poses a threat to infant humans and other small mammals.

The difficult task of eliminating the brown tree snake from Guam continues and some recent research has caused some excitement. Department of Agriculture research has found that acetaminophen, the active ingredient in some over-the-counter painkillers, may provide a cure for this major

Continued in next column

NADCA Members

The NADCA membership directory for the year 2000 accompanies this issue of **THE PROBE**. Due to some logistical problems and this editor's lack of computer skills it wasn't sent out with the Jan/Feb issue as is the usual procedure. Those members who have joined NADCA in 2001 will be listed in the 2001 directory.

The composition of the 187, year 2000 members by how they selected their occupation or principle source of income, when given only one choice from a NADCA designated list was:

USDA/APHIS WS (40) Agriculture (8) Foreign (1)
ADC Equipment/Supplies (7) Other (14) Retired (23)
Pest Control Operator (4) State (13) Trapper (9)
Nuisance Wildlife Control (50) University (14)
Cooperative Extension (4)

— The editor

headache. "Two 300 mg tablets in a dead mouse, ingested by a brown tree snake, kills the snake within 3 hours," said Mike Pitzler, a scientist with the U.S. Department of Agriculture.

Further research is needed before the household painkiller can be used indiscriminately across Guam. The acetaminophen apparently kills the snake by causing massive internal bleeding. Researchers must now determine if other species, such as carion-eating wildlife, would be similarly affected.

Pitzler said 2 to 5 years of research still lie ahead before acetaminophen could be widely used to eradicate this wildlife headache.

— excerpted from "An Invader Worse Than a 'B' Movie", by Ken Burton. *Endangered Species Bull. Sep/Oct 2000, Vol. 25, No. 5, p. 11*

J.T. Eaton Voluntarily Ceases Production of Several Products In Wake of EPA Inquiry

In mid-January, J.T. Eaton and Co. announced that the company decided to suspend the sale of certain rodenticide, bird and insecticide products, prompting some in the industry to speculate that the company was the target of an EPA investigation.

While representatives of the EPA's Regional Counsel Office (Region 5) would not confirm or deny any action against J.T. Eaton, in mid-February the company released a statement that the product suspension came as a result of an Agency "inquiry into three products in which various reports and samples were provided to the EPA." In the meantime, the company voluntarily ceased manufacturing all of its EPA-registered product until further review.

According to the company, no mandate was issued by EPA to stop the manufacture and sale of the products. Instead J.T. Eaton is conducting a self-compliant audit of all registered products. The company hopes to return several of the affected products to the marketplace in the near future, although no specific timetable has been announced.

The company's line of mechanical traps, glue traps and bait stations are unaffected by the EPA audit.

— from *PCT E-Newsletter* (www.pctonline.com) March 23, 2001

Ever Wonder?

How do rodents react to new objects, such as bait stations or traps, in their environment?

Most animals will be somewhat wary of new objects in their environment. This wariness or fear is referred to as neophobia (neo = new, phobia = fear). This neophobic reaction seems to not only vary with species but also between individuals of the same species. In terms of neophobic reactions, Norway rats and house mice have been studied more than others

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Wildlife Damage Management in the News

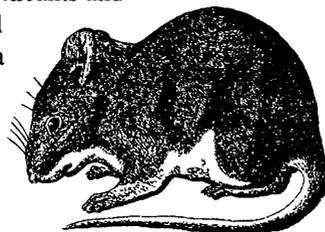
species. Commensal rodents routinely explore their home ranges primarily using their senses of taste, smell, and touch. These repetitive travels become memorized and the mouse or rat become so familiar with every element of their environment that they are able to travel through their home range “kinesthetically”. That is, each time they travel through their home range, they repeat the same sequence of muscle movements. This “muscle memory” becomes a “kinesthetic sense” which in the event of danger can quickly guide them to a hiding place even in total darkness.

These animals explore their home ranges frequently and intensely and will become aware of any new items in their environment. The response to an encounter with new item appears to be a combination of curiosity along with wariness or fear. The balance between curiosity and fear will determine the resulting behavior, or reaction to the new item.

This reaction to new items varies with species. Norway rats are considered to be more neophobic than house mice. In fact house mice, although wary, will readily investigate new items in their environment. The reaction can also vary between individuals of the same species — male house mice are more prone to enter traps than are females. Some individuals within a population are trap-shy and may never succumb to a trap. Others within that same population may be trap-prone and easily caught. This generally holds true with any new object, be it a bait station, a trap, an unfamiliar food source or bait, or even an item such as a box or piece of furniture has been moved. It has been noted that Norway rats that have been feeding in bait stations, refused to feed in the same stations for several days after the stations were moved a short distance.

Because of neophobia, bait stations or traps may be totally ineffective until the rodent population becomes familiar with them. Therefore, pre-baiting bait stations with non-toxic bait substrate prior to using single-dose toxicants and leaving baited traps un-set for several days can help to overcome neophobia and enhance the success of rodent control programs.

— from *Rodent Pest Management*, by Ishwar Prakash, CRC Press



AVMA 2000 Euthanasia Report Available

The AVMA 2000 Panel Report on Euthanasia can be read in its entirety and a copy can be ordered at: <http://www.avma.org/>

Experimental Pocket Gopher Control Device

Feedback

I encourage interested readers to build one of these devices for use with registered fumigants and would welcome any information on the results or suggestion that readers could share. Please respond with comments, questions, and additional information by E-mail: jschalau@ag.arizona.edu or contact me at Yavapai County Cooperative Extension, P.O. Box 388, Prescott, AZ 86302, Phone (520) 445-6590, Fax (520) 445-6593.

For photos of the device and the treatment plots, see the Yavapai County Cooperative Extension website: www.ag.arizona.edu/yavapai/anr/hort/gopher/experimentaldevice.html

Editor's Comments: The author's notation that highway flares are not federally registered as rodent burrow fumigants is well taken. It should be noted that these flares are not exempted from regulation under the Federal Insecticide, Fungicide and Rodenticide Act.

The use of positive pressure to distribute fumigants through rodent burrow systems may prove to be efficacious with continuing research on methods used to provide pressure, the results produced by using different fumigants, and burrowing rodent behavioral responses to these fumigants.

Nolte, et al, experimented with using a blower system to move carbon monoxide, from gas cartridges, through both artificial burrows and vacated gopher burrow systems. They found that burning gas cartridges without the blower was not effective in distributing carbon monoxide. They determined that the most effective distribution of gas was obtained by burning two gas cartridges simultaneously and using a blower at low speed only while the cartridges were burning.

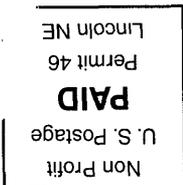
Subsequently, field trials were conducted using gas cartridges and a blower to reduce pocket gopher populations on reforestation sites. These trials did not demonstrate a reduction in pocket gopher activity. They speculated that existing burrow plugs or plugs rapidly formed by the gophers when they detected the gas prevented the distribution of lethal gas concentrations.

Reference: NOLTE, DALE L., KIMBERLY K. WAGNER, ANDREW TRENT, and STEPHEN BULKIN. 2000. Fumigant dispersal in pocket gopher burrows and benefits of a blower system. Proc. Vertbr. Pest Conf. 19:377-384.



The Editor thanks contributors to this issue: Jeff Schalaus, Paul Curtis, Gary San Julien, and Dallas Virchow.

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Membership Renewal and Application Form

NATIONAL ANIMAL DAMAGE CONTROL ASSOCIATION

Mail to: Arthur E. Smith, Certified Wildlife Biologist, Game Harvest Surveys Coordinator, South Dakota Department of Game, Fish & Parks, 523 E. Capitol Avenue, Pierre, SD 57501

Name: _____ Phone: (____) ____ - ____ Home

Address: _____ Phone: (____) ____ - ____ Office

Additional Address Info: _____

City: _____ State: _____ ZIP _____
Please use 9-digit Zip Code

Dues: \$ _____ Donation: \$ _____ Total: \$ _____ Date: _____

Membership Class: Student \$10.00 Active \$20.00 Sponsor \$40.00 Patron \$100 (Circle one)

Check or Money Order payable to NADCA

Select one type of occupation or principal interest:

- | | |
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| <input type="checkbox"/> USDA - APHIS - Wildlife Services | <input type="checkbox"/> Retired |
| <input type="checkbox"/> USDA - Extension Service | <input type="checkbox"/> ADC Equipment/Supplies |
| <input type="checkbox"/> Federal - not APHIS or Extension | <input type="checkbox"/> State Agency |
| <input type="checkbox"/> Foreign | <input type="checkbox"/> Trapper |
| <input type="checkbox"/> Nuisance Wildlife Control Operator | <input type="checkbox"/> University |