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1997

## "VERTEBRATE PESTS OF AGRICULTURE, FORESTRY AND PUBLIC LANDS" 1997 ANNUAL MEETING

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WCC-95

“VERTEBRATE PESTS OF AGRICULTURE,  
FORESTRY AND PUBLIC LANDS”

1997  
ANNUAL MEETING

(MINUTES, ABSTRACTS, AND SELECTED  
SUPPLEMENTARY MATERIALS)

NOVEMBER 18-20, 1997  
RENO, NEVADA

**MEETING -- WCC-95 Committee  
Vertebrate Pests of Agriculture, Forestry and Public Lands  
November 18-20, 1997  
Reno, Nevada**

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**1997 OFFICERS**

**Chair:** Larry Sullivan  
325 Bio-Science East  
The University of Arizona  
Tucson, AZ 85721

**Vice-Chair:** Desley Whisson  
Department of Wildlife, Fish and Conservation Biology  
University of California  
1 Shields Avenue  
Davis, CA 95616

**Secretary:** Ray Sterner  
USDA/APHIS/WS  
National Wildlife Research Center  
1716 Heath Parkway  
Ft. Collins, CO 80524-2719

**Administrative Advisor:** Grant Vest, Associate Director  
Agriculture Experiment Station  
Utah State University  
Logan, UT 84322

**Arrangements:** John O'Brien  
Nevada Division of Agriculture  
350 Capitol Hill Avenue  
Reno, NV 89502

**PROPOSED AGENDA**

***Tuesday, November 18***

1:00-1:15 pm Welcome, Introductions, and Agenda Update. Larry Sullivan

1:15-1:30 Administrative Advisor Comments. Grant Vest

**Presentations:**

1:30-2:00 New approaches to reducing gnawing and digging behaviors in the northern pocket gopher. Ray Sterner

2:00-2:30 A comparison of zinc phosphide and strychnine oat baits for the control of the northern pocket gopher. Monty Sullins

2:30-3:00 Commercial use of methyl anthranilate (Bird Shield Repellent) on cherries, blueberries, grapes and turf (Title change -- see abstract). Leonard Askham

3:00-3:30 Break

3:30-4:00 Efficacy of selected commercial deer repellents (Title change -- see abstract). Dale Nolte

4:00-4:30 The effects of ungulate grazing on biodiversity (Title change -- see abstract). Gary Witmer

4:30-5:00 Deer-northern white cedar interactions and implications for management in conifer swamp deeryards of the Great Lakes region. Timothy VanDeelen

***Wednesday, November 19***

8:30-10:00am WCC-95 Business Meeting

10:00-10:30 Break

**Presentations:**

10:30-11:00 Use of firearms hunting, sharp-shooting, and archery hunting to manage overpopulations of deer in urban areas (Title change -- see abstract). Ernie Wiggers

11:00-11:30 Teaching with drama - making wildlife damage management come alive. Dallas Virchow

- 11:30-Noon      Dealing with the media in wildlife damage management. Chris Healy  
(No abstract submitted)
- 12:00-1:30pm    Lunch
- 1:30-2:00        California trap initiative - status and strategies. Gary Simmons & John Steuber
- 2:00-2:30\*      Video -- "Balancing Nature"
- 2:30-3:00        Exploring the wildlifer's lament: Can we really educate the public? (No  
abstract submitted) Robert Schmidt
- 3:00-3:30        Break
- 3:30-5:00        Group Discussion, Research Progress and Updates

***Thursday, November 20***

**Presentations:**

- 8:30-9:00am\*    Tools and techniques in wildlife damage management (Title change -- see  
abstract). Monty Chandler
- 9:00-9:30\*      Damage from silviculture treatments by dusky-footed woodrats in second  
growth redwoods (Title change -- see abstract). Greg Giusti
- 9:30-10:00\*     Chlorophacinone and diphacinone standard mouse laboratory tests.  
Geraldine McCann
- 10:00-10:30\*    Break
- 10:30-Noon\*     Research Progress and Updates
- Noon              Adjourn

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\* Note.-- Wed.: The showing of the videotape "Balancing Nature" was at the request of R. Schmidt; this altered the Proposed Agenda.

Thurs.: Allotted time for presentations was altered (8:30-10:00am - M. Chandler, 10:00-10:30am - "Break", 10:30-11:00am - G. Giusti, 11:00-11:30am - G. McCann, 11:30-Noon - Research Progress and Updates).

**MINUTES**

**Number and title of the regional project:**

WCC-095 Vertebrate Pests of Agriculture, Forestry and Public Lands

**Location and dates of the meeting:**

Reno, Nevada  
November 18-20, 1997

**Participants/attendees (n = 33, plus 1 student visitor\*):**

**Project participants**

<b>Name:</b>	<b>Representing:</b>
P. Gorenzel	University of California, Davis, CA
B. Hazen	Wilco Distributors Inc., Lompoc, CA
W. Howard	University of California, Davis, CA
R. Marsh	University of California, Davis, CA
G. Miller	California Dept. of Food and Agriculture (CDFA), Sacramento, CA
J. O'Brien	Nevada Division of Agriculture, Reno, NV
R. Schmidt	Utah State University, Logan, UT
R. Sterner	National Wildlife Research Center (NWRC), Fort Collins, CO
M. Sullins	Montana Department of Agriculture, Billings, MT
L. Sullivan	University of Arizona, Tucson, AZ
N. Svircev	HACCO Inc., Madison, WI
J. Thompson	HACCO Inc., Madison, WI
T. Van Deelen	Illinois Natural History Survey, Champaign, IL
G. Vest	Utah State University, Logan, UT
D. Whisson	University of California, Davis, CA
G. Witmer	National Wildlife Research Center (NWRC), Fort Collins, CO

**Attendees**

<b>Name:</b>	<b>Representing:</b>
L. Askham	Bird Shield® Repellent Corp., Pullman, WA
R. Baker	California State Polytechnic University, Pomona, CA
J. Baroch	Genesis Laboratories, Inc., Fort Collins, CO
C. Fox	Animal Protection Institute, Larkspur, CA
D. Freeman	RCO, Inc., Junction City, OR
G. Giusti	University of California Cooperative Extension, Ukiah, CA
T. Hagen	South Dakota Department of Agriculture, Pierre, SD
E. Marshall	Lipha Tech, Inc., Milwaukee, WI



<b>G. McCann</b>	<b>National Wildlife Research Center (NWRC), Fort Collins, CO</b>
<b>D. Nolte</b>	<b>National Wildlife Research Center (NWRC), Olympia, WA</b>
<b>J. Pickle, Jr.</b>	<b>Loveland Industries, Madison, WI</b>
<b>G. Simmons</b>	<b>USDA-APHIS-WS, Sacramento, CA</b>
<b>J. Steuber</b>	<b>USDA-APHIS-WS, Sacramento, CA</b>
<b>D. Virchow</b>	<b>University of Nebraska Agriculture Extension, Scottsbluff, NE</b>
<b>S. Wager Pagé</b>	<b>USDA-APHIS-PPD, Riverdale, MD</b>
<b>E. Wiggers</b>	<b>University of Missouri, Columbia, MO</b>
<b>E. Beaver*</b>	<b>University of Reno, Reno, NV (student visitor, Tues. pm 11/18/97)</b>

**Adopted agenda:**

*Tuesday, November 18, 1:00-5:00pm*

**Welcome, Introductions, and Agenda Update**

**Administrative Advisor's Comments**

**Presentations:**     **New approaches to reducing gnawing and digging behaviors in the northern pocket gopher. Ray Sterner**

**A comparison of zinc phosphide and strychnine oat baits for the control of the northern pocket gopher. Monty Sullins**

**Efficacy of Turf Shield® Repellent to reduce goose and duck use of grass areas adjacent to ponds, lakes and rivers. Leonard Askham**

**Efficacy of selected commercial deer repellents. Dale Nolte**

**The effects of ungulate grazing on biodiversity. Gary Witmer**

**Deer-northern white cedar interactions and implications for management in conifer swamp deeryards of the Great Lakes region. Timothy Van Deelen**

*Wednesday, November 19, 8:30am - 5:00pm*

**Business Meeting:**

- (I) Call to order
- (ii) Approval of minutes from last meeting
- (iii) Old business
  - Facilities and fees
  - USFWS biological opinion and county bulletins
  - WCC-95 informational brochure
  - Other old business
- (iv) New business
- (v) Other matters, announcements, discussions
- (vi) Election of officers
- (vii) Next meeting (dates, location & facilities, registration fees)
- (viii) Adjourn

**Presentations:** Use of firearms hunting, sharp-shooting, and archery hunting to manage overpopulations of deer in urban areas. Ernie Wiggers

Teaching with drama -- making wildlife damage management come alive.  
Dallas Virchow

Dealing with the media in wildlife damage management. Chris Healy

California trap initiative -- status and strategies. Gary Simmons

Video -- "Balancing Nature"

Exploring the wildlifer's lament: Can we really educate the public?  
Robert Schmidt

**Group Discussion, Research Progress and Updates**

J. Pickle, Jr. Norway rat control (beef/dairy); product development (efficacy protocols?).

G. Miller Summaries of CDFA reregistration studies now available; P. Gorenzel set up database of summaries (see supplementary materials); County Bulletins address Endangered (ES)/Threatened Species (TS) issues of USFWS Biological Opinion (see 1996 WCC-95 Supplementary Materials); VPC Handbook on the Internet; training guides for pesticides-ES-TS issues available from CDFA.

- G. Witmer**            **Some NWRC highlights; personnel/facilities/projects/field stations.**
- D. Whisson,  
L. Sullivan,  
R. Schmidt**            **Communications issues; E-Mail; information about Wildlife Damage List-server (~250 users), Univ. of Nebraska web site; security.**
- R. Baker**            **WCC-95 Meeting security (sunshine laws vs. confidentiality of communications).**
- R. Schmidt**            **IPM issues**

*Thursday, November 20, 8:30-Noon*

- Presentations:**        **Tools and techniques in wildlife damage management. Monty Chandler**
- Dusky-footed woodrats and redwoods: Habitat relationships, responses to silvicultural prescriptions and damage impacts. Greg Giusti**
- Chlorophacinone and diphacinone standard mouse laboratory tests. Geraldine McCann**

**Group Discussion, Research Progress and Updates**

- R. Schmidt**            **Research updates at The Berryman Institute/Utah State.**
- L. Sullivan,  
J. Pickle, Jr.,  
J. O'Brien**            **Wildlife Damage Management curriculum materials for youth/public; USDA -- Living With Wildlife; D. Rollins -- "Predators in the Classroom"; puzzles/coloring books; safety & health information; teacher workshop (NV) -- "Ag in the Classroom".**
- T. Hagen**            **Update on SD wildlife damage management (handouts provided).**
- J. Thompson,  
E. Marshall,  
G. Miller,  
S. Wager-Pagé,  
R. Baker**            **Registration updates; REDs; economic-loss data; perspectives of EPA; SLNs for sites & other; Section 3s; "boiler plate" labels (see General Discussion).**

**Action items/assigned responsibilities/deadlines/target dates:**

D. Whisson agreed to manage an E-mail list for any WCC-95 Participant/Attendee wishing to contact specific individuals or to distribute WCC-95-related materials over the web. **Target date:** Immediate [Contact D. Whisson (see 1997 Officers)].

R. Sterner will compile minutes, abstracts and supplementary materials; L. Sullivan, G. Vest, and D. Whisson will review. R. Sterner and NWRC Administrative Staff will copy/distribute to participants and attendees. **Target date:** January 31, 1998.

**Summary of the discussions: (Note.-- Presentations/discussions followed the adopted agenda; however, for brevity/simplicity, comments on several topics that were revisited multiple times during the sessions have been condensed under single topics.)**

***Convening of Sessions (Tuesday 18 November)***

The Committee Chair, Larry Sullivan, welcomed participants/attendees to the sessions at 1:00pm (MST), Tuesday 18 November, 1997. Attendees then provided verbal (self) introductions and stated their affiliations.

The Chair then turned the opening session over to Grant Vest, Administrative Advisor, who reviewed several administrative details affecting WCC-95. Key points of The Advisor included:

-A sheet was circulated to obtain current names, addresses, and updated phone/E-mail information.

-This was the second year of the authorized 3-year period for this Committee (WCC-95); if participants are interested in continuing the meetings, a new petition will have to be submitted in 1998 for continuance in 1999; Agricultural Research Service (ARS) requires that these types of committees be current in terms of justification. Continuance will entail revision/refocus of the WCC-95 Petition and resubmission of Appendix H forms by participants (Principal Investigator Contribution to WCC).

-Attendees listed as participants in the 1996 Minutes/Abstracts/Supplementary Materials had completed the required "Appendix H". Anyone wishing to be listed as a participant for the next meeting was urged to complete "Appendix H" and send it to The Advisor.

-Several incorrect mailings had occurred for the 1996 Minutes/Abstracts/Supplementary Materials; The Advisor reiterated the need for up-to-date accurate mailing data on participants/attendees.

-The Advisor recognized D. Whisson for her timely, detailed preparation of the 1996 Minutes, Abstracts, and Selected Supplementary Materials, and both R. Sterner and NWRC for handling the reproduction/distribution of those Minutes/Abstracts/Supplementary Materials.

Upon completion of G. Vest's comments, L. Sullivan acknowledged The Advisor and thanked him for his support and assistance in handling the administrative activities of The Committee.

Six presentations completed the Tuesday agenda (see Adopted Agenda and Abstracts).

***Business Meeting (Wednesday 19 November)***

Call to order:

The Chair called the business meeting to order at 8:30am, Wednesday 19 November, 1997.

Approval of minutes from 1996 Meeting:

L. Sullivan noted that the minutes of last year's meeting were transcribed and circulated to each attendee; he then asked if members found any issues/discrepancies in the 1996 Minutes as circulated. No comments/corrections were noted. R. Marsh then moved that the 1996 Minutes be accepted as printed/circulated; W. Howard provided a second to this motion. The 1996 Minutes were accepted unanimously.

Old business:

*Facilities and fees* -- J. O'Brien provided a brief financial statement for 1996-97. A \$199.80 balance remained from the 1996 Meeting [registration fees (\$30.00/attendee) yielded \$720.00, with costs of \$520.20 (meeting room, some markers/paper, etc.)].

Although actual fee collections and expenses for 1997 would not be known until Thursday (i.e., based upon total attendees, refreshments, miscellaneous expenses), John felt that a \$30.00 registration fee was appropriate for covering expected costs; the surplus afforded a small "buffer" in the event that attendance drops in any subsequent year. John stated Circus-Circus had remodeled its meeting rooms in the hope of attracting some "training-/meeting-type" business; however, the hotel had raised its charges and John expected to pay about \$820 for room/refreshment charges this year.

L. Sullivan thanked John for his coordination of hotel arrangements and visual-aid equipment for the current sessions; many attendees voiced their thanks also. At this point, a short discussion of the next meeting's dates/location occurred. Roughly the same week (pre-Thanksgiving) was favored. The Chair then asked J. O'Brien to handle set up of a Circus-Circus Hotel, Reno, NV Meeting during November 17-19, 1998. He agreed.

Although participants/attendees favored similar arrangements for 1998, G. Witmer admonished Circus-Circus for charging Monday (Nov. 17) night arrivals a non-conference rate and billing the

1st-night charges to the respective credit card company upon confirmation of the "conference-rate" reservation. He asked that J. O'Brien look into either specifying the prior night's arrival as a conference date or having Circus-Circus include the night before the meeting at a reduced rate. J. O'Brien agreed to pursue these issues with the Hotel's Reservation/Marketing Department.

[**Note.**— During the Business Meeting (Wed. Morning), the issue arose of how the treasury activities were to be handled within the Committee. After some discussion, L. Sullivan appointed J. O'Brien to maintain the fiscal accounts. John agreed to perform these duties.]

[**Note.**— On Thursday morning (Research Progress and Updates), the budget was discussed a final time. J. O'Brien stated that 33 attendees paid their registration fees of \$30.00, yielding a total of \$990.00 for 1997. These collections (added to the 1996 residual of 199.80) gave a total cash on hand of \$1,189.80. Expenses for 1997 were: Circus-Circus Catering/Sales = \$796.63 (room/refreshments/visual-aid equipment), Kinko's = \$17.60 (copies of materials for The Chair), and Siri Office Supply \$16.04 (purchase of a "receipts" book). Thus, costs for 1997 totaled \$830.27; payment of these bills left a new balance of \$359.53 (carryover for 1998). He concluded by stating that he preferred someone to act as monitor or auditor of the funds. After a short discussion, it was agreed that officers of each year's Committee will review the financial records at the end of respective meetings.]

*USFWS biological opinion and county bulletins* — Only limited discussion of this issue occurred. The Chair commented that this was an issue of great concern in 1995-96; he asked if anyone wanted to revisit the topic. R. Marsh commented that many of these issues had already been dealt with by state agricultural agencies and that the need for WCC-95 involvement was past. He also mentioned that this had been dealt with in California effectively via the issuance of County Bulletins which provide explicit "section-by-section" geographical areas of endangered species habitat and mitigation measures needed during pesticide applications. No further discussion ensued; the topic was closed. [**Note.**— See 1996 Presentations, Abstracts, and Selected Supplementary Materials — Protecting Endangered Species — Interim Measures for Use of Rodenticides in Fresno County, EPA, Pesticides and Toxic Substances (H-7506C), Sacramento, CA, pp. 15.]

*WCC-95 informational brochure* — [No action was taken on this Action Item of 1996 (i.e., Produce informational brochure for distribution to attendees of national conferences. R. Schmidt to draft brochure, R. Sterner, R. Timm, J. O'Brien, and D. Whisson to review the draft. Target date: March 31, 1997.)]

The Chair asked R. Schmidt to initiate discussion. R. Schmidt commented that, in reflecting upon this action and his role, he was unclear about the purpose which the 1996 Participants/Attendees intended a WCC-95 Brochure to serve — to inform Wildlife Biology Majors of WCC-95, to recruit students to pursue a career in wildlife damage management, to sway public opinion regarding use of pesticides, etc. He thought that more discussion/clarification of the brochure's

purpose/audience was needed. He also mentioned that the costs of such brochures and mailings could be sizable; how would distribution occur? R. Schmidt contended that WCC-95 is a diverse group. Although WCC-95 provides a unique forum for discussions regarding wildlife damage management affecting humankind's resources, "things don't get integrated very well" (i.e., discussions occur, then people go home and continue functioning as before). He indicated that he was willing to proceed with a brochure, if that is truly what the WCC-95 Participants/Attendees wanted.

These questions/comments led to open discussion of the goals/benefits of WCC-95 by several individuals -- an attempt to identify brochure content. J. O'Brien noted that it's hard to list accomplishments; the value [WCC-95 meetings] is communication and discussion of issues. L. Sullivan commented that he felt the "best" function of WCC-95 was to identify research needs, but added that "the purpose was not to solicit 300 people for membership" [group size is important to facilitating communication/discussion]. M. Sullins noted that [as a group] we need to think of "where are we headed?" and that WCC-95 Meetings had proved useful in sharing information regarding pesticide registration issues. L. Sullivan then asked G. Vest to identify the types of groups currently given USDA/ARS authorization. G. Vest cited WRCC-26 (Predators), WRCC-95 (Inner-city Youth), etc. as examples. R. Marsh commented that WRCC-42 (Field Rodents...) actually formed out of the regional recognition/concerns of these rodents to agricultural interests. G. Vest indicated that when (if) the group rewrites the Petition Document, the goal/purpose/function of the new project will have to be re-addressed.

R. Schmidt then concluded the discussion by saying that this issue would be appropriate following the afternoon showing of the videotape "Balancing Nature" and his presentation on "Exploring the Wildlifer's Lament: Can We Really Educate the Public?". With this, discussion was deferred until Wednesday afternoon.

*Other old business -- None.*

New business:

G. Vest reiterated that a key item of new business is the need to prepare for a rewrite of the ARS Petition. He commented that participants must decide if they want to function as a "Coordinating" or a "Research" Committee. In the past, this petition has served a coordinating function; we've published the minutes/abstracts of our discussions only. To decide the type of petition, participants should focus upon: (1) the nature of The Meeting's outcomes (communications, research needs, joint publications) and (2) whether education or research is a focus.

G. Vest also brought up the point that some committees have web sites on the Internet.

Other matters, announcements, discussion:

*Announcement* -- D. Whisson [Co-chair of the 1998 Vertebrate Pest Council's (VPC) Program Committee] announced that space may exist for several additional papers at the 1998 VPC Conference to be held March 2-5 in Costa Mesa, CA. Anyone interested in delivering a paper should contact Desley or P. Gorenzel regarding abstract submission/approval.

*Prior recommendations that need to be continued* -- In 1995, it was agreed that the annual business meeting will be held sometime on Wednesday to afford the greatest attendance of participants/attendees at the meeting. In 1996, it was suggested that the proposed agenda and topics be sent to participants/past attendees before the next meeting (this occurred in 1997).

*Agenda for the next meeting* -- M. Sullins suggested that impacts of endangered species and their reintroductions would be of interest. L. Sullivan suggested that wildlife-caused, economic-loss studies/data might be useful to registrants. Ideas for other discussion topics and presentations should be sent to the 1998 Committee Officers.

*Between meeting information exchange/development information* -- Again, all committee participants and meeting attendees will be provided with a copy of addresses/telephone numbers of those attending the meeting; this will facilitate information exchange between individuals interested in attending WCC-95.

Election of officers:

As in 1996, R. Schmidt noted that, by precedent, the Vice-chair moves to the position of chair and secretary to Vice-chair, but nominations for these offices would be accepted. R. Schmidt then moved, and R. Baker seconded, that D. Whisson (Vice-chair, 1997) be elected by acclimation to Chair. Motion passed.

J. O'Brien moved, and R. Marsh seconded, that R. Sterner (Secretary, 1997) be elected by acclimation to Vice-chair. Motion passed.

Three individuals were then nominated for the vacancy of Secretary; these were: (1) W. Howard nominated M. Sullins, (2) J. O'Brien nominated D. Nolte, and (3) T. Hagen nominated J. Steuber. R. Marsh then motioned that nominations be closed, W. Howard provided a second to the motion; a written ballot was cast by all those present. M. Sullins received a plurality of the votes cast, and agreed to accept the Secretary's Office for 1998.



**Next meeting (dates, location & facilities, registration fees):**

<i>Location and Date --</i>	<b>Circus-Circus Hotel Reno, Nevada November 17-19, 1998</b>
<i>Responsible Individual(s) --</i>	<b>D. Whisson (Chair) R. Sterner (Vice-chair) M. Sullins (Secretary) J. O'Brien (Facilities arrangements)</b>
<i>Registration Fee --</i>	<b>\$30.00</b>
<i>Non-Committee Members to be Invited --</i>	<b>Inform the 1998 Chair, if you have suggestions.</b>
<i>Other relevant information --</i>	<b>Minutes drafted by R. Sterner (1/7/98). Reviewed by L. Sullivan, G. Vest, and D. Whisson (1/7-20/98). Revised by R. Sterner (1/20/98) and distributed (1/27/98).</b>

**Adjourn the business meeting:**

J. Thompson moved that the Business Meeting be closed; B. Hazen provided a second to this motion. The Chair then adjourned the Business Meeting at approximately 10:00am.

Presentation of 6 talks, plus the first of 2 Group Discussion and Research Progress sessions, completed Wednesday's activities.

***Final Activities (Thursday 19 November)***

Three presentations occurred on Thursday morning; these were followed by a final Group Discussion and Research Progress session and adjournment of the sessions at noon.

**General Discussions**

Similar to 1996, a primary topic for general discussion was education of the public about wildlife damage management. This actually developed from R. Schmidt's questioning of the goal/purpose of a WCC-95 Brochure. Consensus was lacking on the issue of educating the public. The video

**(“Balancing Nature”) on trapping was discussed as having yielded uncertain effects on viewers. R. Schmidt saw the tape as targeting housewives, and yielding questionable attitude change. G. Giusti alerted the group to discriminating between “trapping” and “hunting” activities; these groups have different interests. In general, Participants/Attendees were better informed of attempts by colleagues/peers in the Wildlife Society’s Wildlife Damage Working Group to develop educational programs for youth. No final decision concerning production of a WCC-95 Brochure for distribution at scientific conferences was reached.**

**Another key discussion topic involved the status of pesticide registrations/reregistrations (see Wednesday Group Discussion and Research Progress). A number of noteworthy points came out of these discussions: Registration Eligibility Documents (REDs) will have been issued for most pesticides undergoing reregistration by January 1998; these can be petitioned. Broadcast applications of pesticides will be “restricted use” applications. The EPA’s Reregistration Division is composed of many new staff who are unfamiliar with products/mitigation measures/etc. of registrants/products. EPA wants to form “stakeholder” groups to deal with pesticide issues. The CDFR-funded, UC-Berkeley Study to estimate agricultural losses attributed to rodents/predators/etc. concluded that between 44 and 155 million dollars in losses are sustained annually in California -- economic loss data is sorely needed by registrants to make the case for reregistrations with EPA.**

**PARTICIPANTS/ATTENDEES**

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**ABSTRACTS**

**NEW APPROACHES TO REDUCING GNAWING AND DIGGING BEHAVIORS  
IN THE NORTHERN POCKET GOPHER**

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**Abstract:** Research to find new, effective, repellent methods for reducing damage by northern pocket gophers (*Thomomys talpoides*) to agricultural crops/grasslands and underground cables was begun in 1996. Research is focused on three diverse technologies: (1) intra-species semiochemicals, (2) soil-injection, and (3) novel formulations of chemical repellents/irritants. Initial observations have shown: (1) using 2-choice tests of soils containing 5-25% moisture (gravimetric), 15 and 20% moisture yielded the longest duration digging responses compared to 0% (dry) soil, (2) applying 20 $\mu$ L quantities of 0.5-2.5% capsaicin oleoresin to the nares caused transitive increases in the duration of behavioral reactions (e.g., movement, grooming), and (3) during 5-day screening periods of continuous exposure to 2-in. sections of insulated cable,  $\approx$ 80% of northern pocket gophers displayed cable-gnawing behaviors under laboratory conditions. An ethogram of digging/gnawing behaviors in this species has also been prepared; unique behaviors observed to date include "incisor-honing", "soil-pushing" and "soil-tamping".

**A COMPARISON OF ZINC PHOSPHIDE AND STRYCHNINE OAT BAITS  
FOR CONTROLLING NORTHERN POCKET GOPHERS**

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**Abstract:** Plots treated with zinc phosphide and strychnine oats baits were compared for efficacy in reducing northern pocket gopher (*Thomomys talpoides*) activity. Baits were applied in criss-cross and parallel patterns using a mechanical burrow builder. The reductions in activity were 50 and 53 percent for the zinc phosphide plots and 57 and 63 percent for the strychnine plots. Amounts of bait and time for application were also reported.



**EFFICACY OF TURF SHIELD® REPELLENT TO REDUCE GOOSE AND DUCK  
USE OF GRASS AREAS ADJACENT TO PONDS, LAKES AND RIVERS**

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**Abstract:** Concentrations of ½ to 8 gal of Bird Shield® repellent were tested to assess their efficacy on Canadian geese and Mallard ducks, to determine their potential longevity under natural conditions and to develop strategies to control the bird's use of turf grass areas where they had become a physical, aesthetic or health problem to the resource's manager. During the first phase of the trials, each of the concentrations appeared to reduce the birds' use of the treated sites when compared with the non-treated, or control, sites. During the second phase of the trial, efficacy was more pronounced when a day use area at a state park was treated than when an adjacent campground was treated, even though the data suggest a pronounced reduction when both were compared with the control. The data also suggest that treating the first 11 feet of turf from the water's edge reduces the birds' activity over the remainder of the area, thus reducing the necessity for treating the entire area. The reduction, however, can be reduced by people feeding the birds while control is being attempted. While not a stated purpose of the research, it was found that a herbicide, 2,4-D, readily mixed with the repellent, did not adversely affect its properties and provided adequate broadleaf weed control where applied on the turf grass. More work needs to be done on the combination of these materials.

Two major problems were discovered with the introduction of the compound into the public market: application and perception. Most first time users did not have, or were unwilling, to use the proper application equipment. As a consequence, very few of the first users applied it at the recommended application rates. Once this was resolved, the compounds efficacy became apparent. The second problem is perception. Most users expect the birds to leave immediately after the first application. While some birds do, it generally takes several days to weeks to change their feeding behavior and then not completely if they are continually fed at the site.

**EFFICACY OF SELECTED COMMERCIAL REPELLENTS  
TO INHIBIT DEER BROWSING**

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**Abstract:** Several studies have been conducted at the NWRC Olympia Field Station to assess the efficacy of commercially available repellents to deter deer browsing of seedlings. Candidate repellents are generally selected for testing because the producer or potential users have requested efficacy data. Methods used in the studies are generally similar. However, comparisons across studies are not valid since they were conducted at different times and under varied conditions.

Though procedures vary slightly among tests, the general approach used to assess efficacy of repellents is described below.

A resident deer herd at the NWRC Olympia Field Station is equally divided among several enclosures. These enclosures then serve as replications to assess the response of deer to seedlings treated with selected repellents. Enclosures vary in size from .75 to 2 ha with natural habitat consisting of Douglas-fir and alder and associated under-story vegetation. Although natural forage is readily available, animals are also provided free access to deer pellets and water throughout the study.

Repellents are obtained directly from the manufacturer or purchased through a commercial dealer. All repellents are prepared and applied according to the label or directions provided with each product.

Seedlings are planted in test plots immediately prior to treatment. Number of seedlings within a block varies between 9 and 12. Western red-cedar, Douglas-fir- and ponderosa pine have been used in trials. Western red-cedar is readily browsed by deer, thus it is good indicator of efficacy.

Seedlings are examined for browsing damage at 24 and 48 hours after treatment and then at 1 week intervals for the duration of the test. Damage to the terminal bud and the number of lateral bites is recorded for each seedling. Lateral bite counts are limited to a maximum of 25, because after 25 bites the seedlings are virtually defoliated. Seedlings pulled out of the ground are regarded as completely defoliated and thereafter recorded as having terminal damage and greater than 25 bites. This evaluation criterion provides an accurate assessment of: (1) the number of damaged seedlings; (2) the number of seedlings with terminal damage; (3) the mean number of lateral bites taken; and (4) the number of completely defoliated seedlings (25 bites).

Efficacy tests indicate that several of the products (BGR-P, Plantskydd, Deer Away) that contained active ingredients which probably produce sulfurous odors reduced deer browsing for

several (10 to 14) weeks. A capsaicin product (Hot Sauce) worked well initially but efficacy declined after 2 to 3 weeks. Bittering agents (Ro-Pel, Tree Guard) and garlic (Plant Pro-Teck) were less effective at inhibiting deer from browsing seedlings. These results are consistent with other experiments that tested the efficacy of similar active ingredients to repel herbivores.

**THE EFFECTS OF WILD AND DOMESTIC UNGULATE GRAZING ON THE  
VEGETATION, BIRDS, AND SMALL MAMMALS ON BRIDGE CREEK  
WILDLIFE AREA, NORTHEASTERN OREGON**

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**Abstract:** There has been an increasing concern by resource managers of the impacts of overabundant wild ungulates on plant communities and biodiversity. Wild ungulates can serve as keystone species and alter otherwise stable states of vegetation. This, in turn, can thoroughly affect plant succession, other animal species, and trophic-level interactions. In the United States, impacts have mostly been documented for areas in central and eastern states, and mainly for plant species, although some impacts on bird communities have been noted. In the west, impacts to plants and birds have been documented for cattle and wild ungulate grazing on rangelands, and in particular, for riparian habitats.

We sampled the vegetation, birds, and small mammals in 3 upland exclosures (20-40 ha, 5-15 years old) and 3 paired, nearby grazed areas in the Blue Mountains of northeastern Oregon. The dry area has a history of overgrazing by cattle, although a 7-pasture deferred rest-rotation grazing system was put in place in 1964 after purchase of the area by the State of Oregon. The area also supports a wintering elk population of about 2,000 animals. T-tests were used to compare the data from each grazed and ungrazed pair. Small mammal abundance, species richness, and diversity were higher on the 3 ungrazed sites. Bird abundance, species richness, and diversity varied substantially across areas, but tended to be very similar for each pair (grazed and ungrazed) of plots, perhaps because of the greater mobility of birds. Shrub cover, species richness, and diversity were consistently higher on the ungrazed sites as was organic litter cover. No consistent trends for herbaceous cover, biomass, species richness, or diversity were found. Overall, few significant values ( $P < 0.05$ ) were obtained. It appears that the effects of grazing on vegetation, birds, and small mammals may be a function of multiple factors such as habitat type, grazing history, and years of recovery. Well-replicated studies are necessary to accurately determine the effects of ungulate foraging on biodiversity. Additionally, there are many difficulties in the management of overabundant wild ungulates, including: (1) declining hunter numbers, while hunters want more deer/elk to harvest, (2) fewer areas open to public hunting, (3) less public approval of hunting, (4) adverse effects of overgrazing are not noticeable to the average person, (5) not enough methods are available to reduce impacts, (6) traditional approaches (tree tubes,

fencing small areas) are not effective at the ecological level, (7) wildlife and resource managers are inadequately funded to solve the problem, and (8) appropriate indicator species are needed to track and monitor the problem.

Site	Mammals		Birds	
	Species (Max. #)	Aver. Number Indiv./Site	Species (Max.)	Aver. Number Indiv./Site
Upland Exclosures (3 sites)	4	31	23	98
Upland Grazed (3 sites)	3	11	26	120
Riparian Areas (2 sites)	6	53	28	139

**(Note.— Riparian areas were at lower elevations and had substantial tree and shrub cover; one had cattle and elk grazing; one had deer/elk grazing only.)**

**DEER-NORTHERN WHITE CEDER INTERACTIONS AND IMPLICATIONS  
FOR RESOURCE MANAGEMENT IN CONIFER SWAMP DEERYARDS  
OF THE GREAT LAKES REGION**

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**Abstract:** In addition to valuable timber, the conifer swamps of the Upper Great Lakes region contain unique, late-successional plant communities and provide important wintering areas (known as deeryards) for white-tailed deer (*Odocoileus virginianus*). Unfortunately, intense browsing associated with winter concentrations of deer may be impacting conifer swamp plant communities a problem best illustrated in the conservation literature by poor recruitment of northern white-cedar (*Thuja occidentalis*) seedlings after cutting. In the context of cedar management, I use a case history of deer-deeryard interactions in northern Michigan, to argue that current management of conifer swamp deeryards requires three assumptions about deeryard interactions that may not be justified. These are: (1) deer abandon the deeryards during summer and thus are not around to browse cedar seedlings, (2) deer confine themselves to areas of thick cover during winter such that cedar seedlings in clearcuts are not vulnerable, and (3) winters severe enough to confine deer are sufficiently frequent to allow cedars to grow beyond the reach of deer. This approach is instructive because the inability to regenerate cedar, a species valued for its timber and contributions to deer habitat, illustrates a broader inability to adequately conserve late-successional plant communities in the Upper Great Lakes region at current deer densities. Short of managing for greatly reduced deer densities over large parts of the northern forest, future efforts at resources management in the face of intense deer herbivory should focus on landscape level patterns of habitat used by discrete populations of deer.

**USE OF SHARP-SHOOTING, FIREARMS HUNTING, AND HUNTING TO  
REDUCE DEER OVERABUNDANCE IN URBAN COMMUNITIES**

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**Abstract:** White-tailed deer (*Odocoileus virginianus*) are overabundant in many urban communities across its range, and as a result many communities are considering various deer removal programs to reduce deer numbers and their associated negative impacts. Most removal programs involve some combination of firearms hunting, sharpshooting, and archery hunting. However, the effort, cost, and effectiveness of these programs have not been well documented. We discuss the case history for 2 communities that have ongoing deer removal programs and present information on the effort, cost, and effectiveness of their deer removal programs.

In 1991, the city of Bloomington, MN began a deer management program that included removing deer using a combination of 4 methods including an alternative deer control program (ADC) and sharpshooting either using conservation officers (CO), county park employees (CP), or police officers (PO). The goals of the programs were to reduce deer density within the 6,000 ha greater Bloomington area from about 14/km<sup>2</sup> to about 6/km<sup>2</sup> and reduce deer/vehicle collisions. The ADC was a controlled hunt using licensed hunters shooting shotgun slugs from elevated stands. This program was used on the 2 larger tracts of open, public land (1,335 ha). Sharpshooting by conservation officers shot deer opportunistically while on their normal patrols. Hennepin County Park employees shot deer over bait from elevated stands within the 809 ha Hyland Lake Park Reserve. The Bloomington police shot deer over bait from stands or vehicles in 300 ha of other public, open lands within the city. Between 1991 and 1993, 1,251 deer were harvested (230 using the ADC, 212 using the CO, 355 using the CP, and 454 using the PO methods). On average, one deer was harvested were 0.25 deer/hr, for CP sharpshooters 0.58 deer/hr, and for PO sharpshooters were 0.51 deer/hr. Total costs were \$125, \$108, \$121, and \$194 per deer killed for the ADC, CO, CP, and PO methods, respectively. Aerial flights in 1995 indicated a deer density of about 6/km<sup>2</sup> which was within the target density set by the community. Deer vehicle collision in 1993 was 30% below the peak in 1992.

Fox Chapel Borough, PA is mostly residential community with about 36% of its 2,163 ha in woodland cover. In 1993, the Borough began an archery hunting permit program to removed overabundant deer. This program is closely supervised by the Borough's Police Chief who selects the 60-65 archery hunters who participate in the permit program each year. Prior to the archery deer hunting season, the police chief assigns archery hunters to landowners who are interested in having deer removed from their property. The archery hunter meets with the landowner and is given information on property boundaries and acceptable locations for hunting stands. Archery hunters are allowed to harvest one buck and an unlimited numbers of antler less deer by purchasing antler less tags through the state's wildlife management agency. Since 1993, archery

hunters have removed 731 deer from the Borough. An additional 64 deer were removed using police sharpshooting. The number of deer/vehicle collision was reduced by 50% from 1993 to 1996.

Both communities were able to measurably reduce their deer herd using somewhat different approaches. When removal is done by municipal employees, the costs may be substantial due to administrative labor and logistical expenses such as deer carcass removal and processing. If licenced hunters are used, then the associated labor costs are reduced and the hunters are responsible for the removal of harvested deer. Although the ADC program cost \$125 per deer killed, we did not account for the money these hunters put back into the community through purchasing hotel rooms, food, and other supplies. The harvest success rate for archery hunters is often less than for firearms hunting and many biologists do not believe that archery hunters can harvest the number of deer needed to reduce a population. However, in an urban area where deer are concentrated in patchy habitats and archers have the opportunity to harvest multiple deer, this form of hunting can be used successfully to reduce deer overabundance. There was no public safety related problems reported for any of the harvest techniques.



**TEACHING WITH DRAMA!  
MAKING WILDLIFE DAMAGE MANAGEMENT COME ALIVE**

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**Abstract:** This presentation describes a successful drama that has been presented since 1994 to over 4000 elementary students in Nebraska's Panhandle. It covers elements, such as risk-taking, comedy, and other styles, that make drama work or not work for the young student. Character portrayal is shown as a way to encourage students to identify with the actor and accept, remember and adopt a presentation's objectives.

Drama allows one to "put on" a character and create images or relate ideas that are not otherwise available to the person in science. It is also fun to perform.

To best use drama, one needs to know the cognitive level of the young student. Children gradually learn what is reality and what is make-believe. Youth, ages 7 to 11, make a gradual transition into the age of reason.

To maintain better discipline, use comedy sparingly and develop a rapport with your audience early in the presentation. Select a romantic historical or fictional figure to make an emotional connection. Make pre-event contacts with the teacher to identify the needs, expectations and particular characteristics of your audience. A visit to the site, allows you to visualize the physical set in which you will perform.

Have only one or two main objectives for the drama. Present one or two simple wildlife damage management principles by building all script and action around these. Avoid unnecessary dialogue that requires much memorization and side-tracks your objective.

To aid memory, use cue cards on backs of props or pictures. Restrict a drama to twenty or thirty minutes. If more time is required to present the principle, follow up with a demonstration or other more traditional presentation.

Keep props and costumes simple to create, use, and carry. Use props to enhance the action. One can use a dozen props within a twenty-minute presentation. When using props, don't digress from objectives by using props as exhibits or demonstrations.

Keep the action flowing by using motion in your character, set or dialogue. Allow some action to develop off-stage or in the audience. Even better, create action that involves the audience. Enlist volunteers, or pre-selected students to carry the story or stage surprise events. The students are best selected by the teacher at an appropriate time before the performance.

**Rehearse in front of a video camera and play back to learn how you appear to the audience. Enroll in an amateur theater group or course. Relax by knowing that most audiences do not expect professional actors and perfection. Missed lines or action is seldom known and oopses! can be incorporated into a comedic scene.**

## **CALIFORNIA TRAP INITIATIVE - STATUS AND STRATEGIES**

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**Abstract:** California like many other states is experiencing an increasingly significant number of citizen initiatives on every ballot. In some states, citizen initiatives are limited to constitutional amendments. In California, initiatives may cover anything from a constitutional amendment to a new or modified agency regulation. This latitude provides the citizens of California complete and direct access to the legislative process outside of the normal legislative arena. While this is a constitutionally valid right of the people, the process poses many challenges to our basic form of government and the legislative process throughout our country.

In California, to place an initiative on a ballot, the sponsor must submit the proposed language to the Secretary of State who titles and summarizes the proposed initiative before a petition for signatures can be circulated. Once the proposed initiative has been titled and summarized, the sponsors have 150 days to gather the required number of valid signatures in order for the initiative to qualify for the ballot. The petition drive for the California Trap Initiative was launched on September 8, 1997. The sponsors have set a goal of obtaining 700,000 signatures to ensure that they obtain the 434,000 valid signatures currently required to qualify an initiative for the ballot. According to literature distributed by the sponsors, they had reached 50,000 signatures on October 30, 1997. The deadline for gathering the required signatures for this measure is February 4, 1998.

The initial sponsors of the proposed initiative are Alan Hugh Berger of the Animal Protection Institute and A. Aaron Medlock. A number of animal rights groups have formed a committee called ProPAW (Protect Pets and Wildlife -- California). The committee is sponsored by the American Society for the Prevention of Cruelty to Animals, The Animal Protection Institute, The Ark Trust, Inc., the Doris Day Animal League, The Fund for Animals, Inc., The Humane Society of the United States, and The International Fund for Animal Welfare. If the initiative measure qualifies for the ballot, it will be submitted, along with the summary, arguments, and analysis, to the voters on the November 1998 ballot.

Opponents of the initiative have formed a coalition called Californians for People, Pets, and Wildlife. The coalition is made up of livestock producer groups, sportsmen groups, and other concerned organizations and individuals.

The proposed initiative measure has been titled "Wildlife. Body-Gripping Traps Ban. Animal Poisons." If approved by the voters, the measure would add a number of sections to the Fish and Game Code.

The Legislative Counsel of California analyzed the initiative language in October 1997 in response to an Assemblyman's request. The Counsel's assessment indicated that the measure, if approved by the voters, would not violate the California Constitution or the United States Constitution.

The initiative would eliminate all commerce in raw furs and ban the use of steel-jawed leghold traps. Padded-jaw traps could only be used in those "extraordinary" situations where the otherwise outlawed trap is the only alternative for the protection of human health and safety. Sodium fluoroacetate (Compound 1080) and sodium cyanide would also be specifically prohibited. No exemptions are included for federal, state, or other government employees or programs. Additionally, no provisions are included to cover the necessity of protecting listed threatened and endangered species from predation.

The measure, if passed, will very likely contribute directly to the loss of several federally listed endangered species as well as untold numbers of livestock and pets.

The ProPAW affiliates are pressing their members and associates to gather the requisite number of signatures. They have recently stepped up their efforts to circulate petitions as evidenced by Bay Area media spots calling for additional volunteers from the public. If the necessary signatures are obtained within the allotted time limit, they will have to mount an aggressive media campaign to inform and persuade a majority of the voters in California that the measure should be passed. Since most of the voters in California reside in the urban areas of Los Angeles, San Diego, and San Francisco, presumably their campaign will center in these areas of the state.

Californians for People, Pets, and Wildlife only recently began as an organization. The organization will provide leadership and focus for a widely diversified partnership of groups and individuals who believe that damaging wildlife must be properly managed with effective and efficient methods and techniques. The group appears to be off to a good start but has much to accomplish. They will need to mobilize rapidly to collect the significant amount of funds and support necessary to successfully counter the ProPAW campaign.

Whether or not the proposed initiative is successful, it is providing a basis for pet owners, sportsmen, agricultural producers, endangered species advocates and others to band together to fight for a common interest. That in itself is quite an achievement!

## TOOLS AND TECHNIQUES USE IN WILDLIFE DAMAGE MANAGEMENT

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**Abstract:** Certainly, wildlife (both floral and fauna) is an integral part of our nation's natural resources, but wildlife innately has both positive and negative aspects. Wildlife is often responsible for causing or threatening to cause damage to resources and property, or creating hazards to human health and safety. Wildlife damage management (WDM) is often defined as a combination of science and art that is aimed at influencing environments, habitats, and the behavior of both wildlife and *people* to alleviate conflicts or the potential for conflicts.

Typically, WDM activities are conducted to protect:

- ▶ Human Health and Safety
- ▶ Facilities, Structures and Other Property
- ▶ Crops, Timber and Rangelands
- ▶ Livestock
- ▶ Wildlife and Other Natural Resources

WDM professionals provide assistance to cooperators using strategies of technical assistance or direct control assistance. Particularly in urban areas, the ideal goal of either strategy, is to provide some basic level of education to the cooperator about wildlife characteristics, and WDM techniques concerning specific damage situations. WDM professionals have the responsibility of determining if the situation can be handled by the cooperator following technical assistance or if there is the need to suggest that direct control be handled by a professional.

When providing technical assistance, WDM information is conveyed to cooperators through various means that may include: (1) personal and telephone consultations, (2) written letters and preprinted literature, (3) group sessions or presentations, and (4) media appearances, or public service announcements. Whereas, direct control assistance is usually provided when the cooperator lacks: (1) needed detailed knowledge of specific damage control methods, (2) the ability to use specific tools and equipment, (3) necessary licenses and/or permits, (4) or the capability to physically conduct the activities. The WDM professional is thus required to maintain knowledge of current technologies (both non-lethal and lethal) concerning the control of damage caused by wildlife and the safe use of equipment, tools, and pesticides to effectively conduct WDM activities.

WDM, particularly in urban areas typically includes, controlling damage or nuisance situations caused by animals such as: raccoons, squirrels, commensal rodents, skunks, opossums, various birds species, bats, and snakes (both poisonous and non-poisonous). Other wildlife species that

may cause damage in either urban or rural areas include: coyotes, foxes, beavers, pocket gophers, and rabbits. Exclusion techniques are very effective for handling problems associated with birds, bats, and snakes. Rodent control and the removal of potential harborage are important methods for controlling conflicts with snakes. Discouragement/harassment techniques (i.e., "Scare-eye Balloons", "Mylar" tape, bird distress recordings, and pyrotechnics) are also important control methods for controlling nuisance and potential human health hazards associated with bird activity. Cage trapping is another alternative commonly used to control pigeons that cause nuisances or create hazards to human health and safety. Sometimes, it is necessary for individuals to apply for federal and state permits to lethally take migratory birds causing damage (e.g., repeated structural damage to building caused by woodpeckers) when non-lethal techniques fail to solve the problem.

Many situations involving raccoons, skunks, opossums, and squirrels can be initially handled with non-lethal techniques. These techniques usually include: altering or limiting sources of shelter, food and water in the area where the problem exists. These activities are often conducted in conjunction with the use of barriers and discouragement techniques. Other situations may require the use of a cage trap to capture and remove the animal from the problem site. Before attempting to capture the animal, one should consult their local wildlife management official concerning what to do with the animal once it is caught. It is important to observe the evidence of the animal's activity when deciding on a course of action. When surveying a problem site consider, sources of what might be the animals major attraction (i.e., harborage, food, and water), access points, support structures that aid the animal's maneuverability, and travel routes.

Though non-lethal control techniques are initially considered, situations involving depredation or damage caused by wildlife such as beavers, bobcats, coyotes, foxes, and mountain lions might ultimately require lethal actions. Often non-lethal or husbandry (i.e., barricading or sheathing of trees, fencing, penning, use of a sheep herder and/or, guard animals) techniques may already be in use by a cooperator, but the situation may require the professional use of other equipment or methods to effectively solve a problem. Once the situation has been surveyed, it may be determined necessary to use various combinations of equipment and methods to solve a particular problem. These types of equipment and methods may include the following: (1) specialized cage traps (i.e., those used for beaver, pigeons, etc.), (2) leg-hold traps appropriate for the targeted animal, (3) snares, (4) conibear traps, (5) M-44s (i.e., a device primarily used for controlling predation on livestock caused by coyotes), (6) dogs (used for tracking or decoy methods), (7) calling and shooting, and (8) the use of a spotlight during projects conducted at night. The effectiveness of these tools and methods have been improved throughout the many years of their use.

Whatever the control method or combination of methods that are chosen, careful consideration should include: the appropriateness of the control method or tool, it's effectiveness and efficiency, public safety, and the degree of selectivity for the targeted animal. Professionalism is very important in WDM. Therefore, all aspects concerning a WDM situation should be examined and all possible control options carefully weighed before conducting any damage control project.

**DUSKY-FOOTED WOODRATS AND REDWOODS: HABITAT RELATIONSHIPS,  
RESPONSES TO SILVICULTURAL PRESCRIPTIONS AND DAMAGE IMPACTS**

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**Abstract:** Four field sites were selected on the Jackson Demonstration State Forest, Mendocino County, California to determine the extent of feeding damage caused by dusky-footed woodrats (*Neotoma fuscipes*) to regenerating stands of coast redwood (*Sequoia sempervirens*). A total of 2,529 redwood sprouts, redwood seedlings and whitewood seedlings were evaluated for animal damage across the four sites. Nearly 21% (n=526) of these sprouts/seedlings exhibited some evidence of animal damage. Damage included: (1) terminal bud damage caused by deer, (2) lateral and terminal feeding and barking by woodrats, and (3) sprout mortality caused by basal girdling from woodrats. Post harvest treatments of herbicides significantly increased woodrat feeding damage to redwood sprouts but not to seedlings.

The role of post-harvest herbicide treatments on woodrat habitats and their subsequent feeding responses to the retention of seedlings and sprouts was apparent. Future silvicultural practices and herbicidal treatments should consider the impact of vegetation management actions and their impacts on future tree crops.

**CHLOROPHACINONE AND DIPHACINONE: STANDARD MOUSE  
ANTICOAGULANT LABORATORY TESTS**

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**Abstract:** The Vertebrate Pest Control Research Advisory Committee, through a cooperative agreement with the California Department of Food and Agriculture (CDFA), funded laboratory studies at the National Wildlife Research Center (NWRC). The objective was to obtain efficacy data for controlling house mice (*Mus musculus*) that would provide partial fulfillment of the requirements established by the Environmental Protection Agency (EPA) for the re-registration of the CDFA's 0.01% chlorophacinone, 0.01% diphacinone grain bait labels, 0.005% chlorophacinone wax, and 0.005% diphacinone wax bait labels. Swiss-Webster mice were placed on 15-day, 2-choice feeding and efficacy trials. The control treatment groups received 2 dishes each containing not less than 40 g of the Office of Pesticide Programs (OPP) designated standard rat and mouse-challenge diet. The treated groups received one dish of the standard OPP rat and mouse challenge diet not less than 40 g and a second dish of the treated grain baits: 0.01% chlorophacinone (2 groups of 20 animals, Groups II and III) or 0.01% diphacinone (2 groups of 20 animals, Groups II and III) grain bait not less than 40 g. The 0.005% chlorophacinone and 0.005% diphacinone wax bait block treatment groups each received a dish containing not less than 40 g of OPP rat and mouse challenge diet and one 0.005% chlorophacinone or 0.005% diphacinone wax bait block (2 groups of 20 animals, Groups II and III) or 0.005% chlorophacinone or 0.005% diphacinone weathered wax bait blocks (1 group of 20 animals, Group IV). Dishes or wax bait blocks were positioned on opposite sides of the cages, and their positions were reversed daily. Results from the treated groups of the 4 tests are reported.

**QA-506 Phase I-A:** 0.01% chlorophacinone grain bait on white mice. The theoretical lowest lethal dose (LLD) of treated bait ingested by the females in group II was 0.31 mg, while males in group II consumed a LLD of 0.43 mg. Group III LLDs were 0.44 mg and 0.21 mg (males and females, respectively). Mortality was 100% and 90% for female groups II and III, with 90% and 100% for male groups II and III.

**QA-506 Phase I-B:** 0.01% diphacinone grain bait on white mice. The theoretical LLD of grain bait ingested by the females in group II was 0.20 mg and males in group II was 0.23 mg. Group III females theoretical LLD ingested was 0.22 mg and males in group III was 0.29 mg. Female mortality in Group II was 90% and 100% in Group III. Male mortality was 90% in Group II and 100% in Group III.

**QA-506 Phase II A:** 0.005% chlorophacinone wax bait on white mice. The theoretical LLD of wax bait ingested by the females in groups II, III and IV (weathered wax groups) was 0.11 mg, 0.08 mg, and 0.12 mg respectively. The males theoretically ingested an LLD of 0.14 mg, 0.10



mg, and 0.12 mg (Groups II, III, and IV) respectively. Mortality for the female groups was 60%, 70%, and 70% (groups II, III, and IV) while male group mortality was 80%, 70%, and 80% (groups II, III, and IV).

**QA-506 Phase II B:** 0.005% diphacinone wax bait on white mice. The theoretical lowest lethal dose (LLD) of wax bait ingested by the female mice in Groups II, III, and IV was 0.07 mg, 0.09 mg, and 0.06 mg respectively. The theoretical LLD ingested by male mice in Groups II, III and IV was: 0.12 mg, 0.07 mg, and 0.16 mg respectively. Mortality in the female groups was 60%, 60%, and 40% respectively and male group mortality was 70%, 90%, and 80%. As in the 0.005% chlorophacinone wax test, the female mortality was less than the males.

In conclusion, the grain bait test mortality results were consistent between the sexes and met the suggested performance standard for the EPA Pesticide Assessment Guidelines. The females ate less than the males, but had the same mortality rate (between 90% and 100%). The results of the wax bait tests did not meet the 90% mortality rate—the EPA standard. The groups consumed approximately equal amounts of the wax bait and the efficacy ranged between 53% and 80%. It is recommended to do further testing with the wax baits to increase the efficacy.

*Supplementary Materials:*

**Status of USDA/APHIS reregistrations/registrations (K. Fagerstone) -- 2 pp. [Note.-- K. Fagerstone was unable to attend the 1997 sessions.]**

**REGISTRATION AND REREGISTRATION STATUS OF APHIS PESTICIDES,  
DRUGS AND VACCINES FOR WILDLIFE SERVICES**

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Overview

Wildlife Services (WS) manages wildlife/human conflicts by using an integrated approach employing some vertebrate pesticides. These are used in such small quantities that private industry cannot afford to register and produce them profitably. APHIS therefore maintains registrations for 7 active ingredients with the U. S. Environmental Protection Agency (EPA): Compound 1080 Livestock Protection Collar, DRC-1339 Concentrates (Starlicide), Gas Cartridges (carbon and sodium nitrate), M-44 (sodium cyanide), and Strychnine Alkaloid and Zinc Phosphide baits and concentrates. APHIS also maintains about 25 to 30 individual end-use products, 1 Experimental Use Permit, and 2 vertebrate drug active ingredients. The National Wildlife Research Center (NWRC) is responsible for meeting the data requirements imposed by the EPA for maintaining these products.

During 1997, the NWRC was also responsible for applying for a new registration for an end-use product with a new active ingredient (Mesurol), and applying for 2 Investigative New Animal Drug (INAD) authorizations for vaccines used as immunocontraceptives. In addition, NWRC coordinated 3 Consortia that have a combined responsibility for over 90 vertebrate pesticide registrations and is investigating APHIS participation in a new Consortium for Mesurol. NWRC personnel met with U.S. Environmental Protection Agency (EPA) and U.S. Food and Drug Administration (FDA) personnel twice during FY-97 to deal with registration issues for ADC pesticides, drugs or vaccines.

Reregistration Status and Activities

In 1988 Congress amended the Federal Insecticide, Fungicide, and Rodenticide Act, requiring reregistration of all older pesticides. Reregistration has had an extensive impact on the Wildlife Services Program. Nearly 433 studies, costing over \$13.6 million, were requested by EPA for APHIS products. Through negotiations with EPA, repackaging of old data, and requesting data waivers for inappropriate studies, NWRC personnel reduced data requirements to 258 studies costing \$3 million. In addition, the NWRC developed Consortia to generate funds to maintain strychnine and zinc phosphide products held by private industry and state agencies. APHIS is entering the final stages of the EPA reregistration process for WS vertebrate pesticides. Five active ingredients (carbon, sodium nitrate, sodium cyanide, Compound 1080, and DRC-1339) have been reregistered and data requirements (except data required for end-use products) have been met. In addition, data submissions required by the Data Call-In for strychnine have been completed for the Strychnine Consortium, and EPA issued the Reregistration Eligibility Decision

**(RED) for strychnine in March, 1997. Subsequent negotiations with EPA resulted in a significant reduction in the amount of remaining data requested, which should allow APHIS and the Strychnine Consortium to achieve reregistration for technical strychnine and strychnine end-use products in early FY-98. A reregistration decision is expected within the next year on zinc phosphide, the only remaining APHIS vertebrate pesticide awaiting reregistration. NWRC and Consortia personnel met with EPA personnel last fall to provide input for formulating the zinc phosphide RED; reregistration is not expected until 1998.**