

MINUTES

VERTEBRATE PEST CONTROL RESEARCH ADVISORY COMMITTEE MEETING
Residence Inn by Marriott, 38305 Cook Street
Palm Desert, California
April 16, 2008

Members Present

Dan Spangler, Chairperson
Ellen Des Jardin-Hirth
Dale Huss
Mark Novak
Duane Schnabel
Dennis Bray
Robert Timm

Members Absent

Art Foster
Edward Tully

Visitors

Reyes Triviso
John Usher
Mohammad Bari
Cheryl Wilen
Sherlan Neblett
Victoria Hornbaker

Terry Salmon
Tom Schmit
John Johnston
Tom Primus
Scott McCalley
Charmaine Canlas

INTRODUCTIONS

Chairman, Mr. Dan Spangler, called the meeting to order at 8:00 a.m. followed by introductions of Committee members and guests.

BAGLEY-KEENE OPEN MEETING ACT AND VERTEBRATE PEST CONTROL RESEARCH ADVISORY COMMITTEE COMPLIANCE

Mr. Duane Schnabel and the Committee acknowledged the Bagley-Keene Open Meeting Act and the Vertebrate Pest Control Research Advisory Committee (VPCRAC) compliance.

APPROVAL OF MINUTES

Motion: Dale Huss moved that the Committee approve the minutes of the October 17, 2007 meeting. The motion was seconded by Ellen Des Jardin Hirth and passed unanimously.

FINANCIAL REPORT UPDATE

Mr. Duane Schnabel provided the Committee with information on the program budget, revenue, expenditures, and projections. Last year's program budget for 2007/08 was authorized at \$1,007,881 with an administrative budget authorization of \$252,000. The 2007/08 administrative program expenditures were \$169,247 and encumbrances are \$556,491.

Mr. Schnabel then asked the Committee to approve a budget for the 2008/09 fiscal year.

Motion: Dale Huss moved that the Committee approve a \$1,000,000 program budget for the 2008/09 fiscal year. The motion was seconded by Dennis Bray and passed unanimously.

Motion: Dale Huss moved that the Committee approve an administrative budget for the program in the amount of \$244,000 for the 2008/09 fiscal year. The motion was seconded by Ellen Des Jardin Hirth and passed unanimously.

COMMITTEE MEMBERSHIP: CONSIDERATION AND RECOMMENDATION FOR NEW MEMBERS

Mr. Duane Schnabel announced that there are two vacancies on the Committee for one California State University representative and one public interest member. Mr. Dennis Bray recommended to the Committee to consider the appointment of retired Contra Costa Agricultural Commissioner Edward Meyer as a public member due to his extensive background in rodent control.

Motion: Dennis Bray moved that the Committee recommend, to the Secretary, that nominee Edward Meyer be appointed as a member to the Vertebrate Pest Control Research Advisory Committee. The motion was seconded by Duane Schnabel and passed unanimously.

Mr. Schnabel stated that Ms. Victoria Hornbaker will contact possible interested parties who may consider filling the California State University member vacancy.

STATUS OF THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY'S ECOLOGICAL RISK ASSESSMENT AND REREGISTRATION ELIGIBILITY DECISION FOR RODENTICIDES

Mr. Schnabel updated the Committee on the January 2007 USEPA proposal for non-agricultural usage of anticoagulant rodenticides for commercial and residential-use. Provisions on the proposal placed restricted use on anticoagulants stating that any product used in a residential or commercial setting had to be used in pre-packed wax bait block formulations sold in tamper resistant bait stations. Due to comments, criticism, opposition from a variety of stakeholders, and a flawed economic analysis, the USEPA placed the proposal on hold and considered creating a new proposal that will include the impact on agricultural use and economic impacts for consumers. Mr. Schnabel stated that as of August 2007, USEPA had dropped the proposal, no new formal proposals have been created, and no contact has been made since then.

CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION'S REEVALUATION OF SECOND GENERATION ANTICOAGULANT BAITS

Mr. Schnabel briefed the Committee on the Status of the Department of Pesticide Regulation's (DPR) reevaluation of second-generation anticoagulants. DPR is holding off on the reevaluation to consider ways to address the hazards associated with the use of these materials at the request of the Department of Fish and Game. DPR is currently waiting for USEPA to put forward a reasonable proposal before considering any action.

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE REGISTRATION ISSUES

Mr. Schnabel provided an update on the California Department of Food and Agriculture's (CDFA) current registration issues regarding Zinc Phosphide labeling. Chlorophacinone, an anticoagulant, has been the sole active ingredient available for meadow mouse (vole) control in artichokes for many years. In recent years, based upon efficacy reports from growers and lab research by the University of California, it became apparent that voles were becoming resistant to chlorophacinone and possibly other anticoagulants. Recent research funded by the Committee confirmed the presence of resistance in voles to chlorophacinone. As a component of the research, alternative control methods were explored. Zinc Phosphide, an acute toxicant, proved very efficacious in lab and field studies with 90% to 100% reduction in vole populations under various conditions. CDFA has worked with the USDA to amend the current label to include the use of zinc phosphide to control voles in artichokes. The application for registration was submitted to USEPA on February 2007 and was finally approved and received registration from DPR in March 2008. Along with this registration were three components: the discontinuance of the current artichoke bract registration and use up the current supply of chlorophacinone from Kleen Globe; the amendment of the Liphatech registration chlorophacinone pellet for year-round use; and the new registration for zinc phosphide use on artichokes. Mr. Schnabel and Ms. Hornbaker will be meeting with artichoke growers in Castroville on April 22, 2008 and will attend various meetings to discuss field implementation and issues regarding the roll-out of the new product.

LEGISLATIVE AND REGULATORY UPDATES

Ms. Hornbaker briefed the Committee on Assembly Bill 222 (Emerson). This bill would authorize a state or local agency, such as Animal Control, to capture and relocate stray and undomesticated burros from private lands upon request of the landowner. AB 222 was passed and signed by the governor on July 27, 2007.

Ms. Hornbaker briefed the Committee on Assembly Bill 2602 (Smyth). This bill would prohibit colleges and universities from funding or supporting any hunting and/or trapping of wildlife. This is problematic for university researchers in vertebrate control, for this bill will prohibit any funding for research for hunting or trapping activities. AB 2602 was just introduced to legislation in February 2008 and will continue to be monitored.

Ms. Hornbaker briefed the Committee on Assembly Bill 2763 (Laird). This bill would require the Department of Food and Agriculture to create a list of invasive animals, plants, and insects that have a reasonable likelihood of entering California for which an eradication or control program might be appropriate. For each invasive on the list, the department would be required prepare a written assessment on the most appropriate method of eradication or control, as well as notify various public agencies and hold public hearings. Specifically, the Vertebrate Pest Control Program will be responsible to look at vertebrate pests and bird species that might enter California. AB 2763 was introduced to legislation in February 2008 and will continue to be monitored.

UNIVERSITY OF CALIFORNIA, VERTEBRATE IPM POSITION UPDATE

Dr. Terry Salmon provided the Committee with an update on the Vertebrate IPM position that the University is advertising. The IPM Pest Management Advisor position is currently under recruitment. The Vertebrate Pest Council Committee is meeting later this month to discuss the candidate pool from those that have sent in applications. According to Dr. Salmon, at least three

or four candidates are qualified for the position, and interviews have been scheduled until early May. Filling the vacancy soon seems promising at this time.

RESEARCH UPDATE

University of California

Dr. Terry Salmon provided an update on the research project entitled, "Evaluation and Control of Wild Turkey Damage in California Vineyards." The objectives for the first quarter of this project were to obtain a recording of a turkey distress call, continue field tests of existing calls and new calls, begin preparations for the 2008 field season, and make follow-up calls to farm advisors regarding the online survey. Attempts to obtain an effective wild turkey distress call have proven to be difficult, and there are no available known recordings of distress calls. Therefore, consideration was made to record distress calls from domesticated turkeys, which have the same vocabulary as wild turkeys. With the assistance from a commercial turkey grower in Petaluma, Dr. Salmon stated that plans will be made to visit the production facility and attempt to record calls from domesticated turkeys. Possible research sites for field studies still need to be examined and determined.

Dr. Terry Salmon provided a final progress report to the Committee on the VPCRAC web site project. In 2007, the website was completely revamped to be more user-friendly to the public, researchers, and the Committee. Some of the major components of the new website now include standardized templates for all grant proposals, project reports, and final reports that are funded through VPCRAC. A calendar system and electronic reminder system have also been implemented to assist researchers and the public to be updated on current VPCRAC issues and events. A "Featured Research" box displaying various projects and related photos also now appears on every web page, which helps bring attention to a number of interesting projects to the public. Eventually, an entire database of all VPCRAC funded research projects and reports will be online in a searchable database with full text search capability.

Dr. Terry Salmon provided a final progress report to the Committee on the Vertebrate Pest Control Handbook Revision Project. The project ended last June, and the text and final edits have been completed. The final layout edits are underway and the handbook should be submitted to CDFA by the end of April. There are issues that CDFA need to resolve before the handbook is made public. This includes revising and updating outdated laws and regulations and determining the role of agricultural commissioners in vertebrate pest control.

Dr. Terry Salmon provided an update to the Committee on the research project entitled, "Establishing Baselines and Monitoring Anticoagulant Resistance in California Ground Squirrels." Due to staffing issues and the inability to find an able person to manage the project, Dr. Salmon proposed to turn back the project. Money that was set aside for this project will be put back into the research funds.

Dr. Terry Salmon provided an update to the Committee on the research project entitled, "Efficacy of Oat and Pellet Anticoagulant Baits Combined with Pretreatment of Oat and Pellet Zinc Phosphide Baits and Implications for Secondary Hazard Management." The goal of this project is to treat with zinc phosphide pellets or oats, and then follow treatments with anticoagulants pellets or oats. This should result in less anticoagulant secondary hazard risk, although there is a possibility that the study could be impacted by bait shyness. Dr. Salmon proposed to change his original field protocol from using a standard EPA evaluation to a new protocol that uses the same broadcast treatments but treats relatively large squirrel sites that

have been identified with zinc phosphide. Squirrels on the sites will be identified after 48 hours, and the plots will be treated on day one and day five. On days 18-24, the presence of squirrels will be determined on each plot. Fieldwork will start in May 2008 in the Paso Robles vicinity.

Dr. Terry Salmon provided a brief progress report to the Committee on Vertebrate Pest Control Training and Certification using an interactive computer kiosk system. The objective of this project was to develop an interactive kiosk including a testing/certification component. The kiosk will also be capable of printing out general information and test results. A San Diego-based server will be Internet-linked to the kiosk system, allowing easy access to gather data from visitors, such as determining the most visited or least visited sites on the interactive system. Tentative sites for the kiosk units are currently being researched, more specifically in heavy agricultural-based counties such as San Diego, Fresno, Kings, Monterey, and Alameda. The goal is to have the units in place by March or June of 2008.

Dr. Cheryl Wilen provided an update to the Committee on the research projects entitled, "Development of Gopher Control Demonstration Videos for Online and Kiosk-Based Training" and "Vertebrate Pest Control Continuing Education and Outreach for Licensed Trappers and Others Dealing with California Wildlife." With response to comments from the Committee, it was requested that uniformity be achieved in developing these two grant projects. Therefore, the two projects were harmonized. Control method education outreach tools will be developed for vertebrate species such as California ground squirrels, pocket gophers, meadow voles, roof rats, and rabbits. Templates were developed to illustrate program content including media (tutorial videos and still images), written handouts, and links to related material (Vertebrate Pest Control Handbook).

National Wildlife Research Center

Dr. John Johnston provided an update to the Committee on the research project entitled, "Development of a Pharmacokinetic Computer Model to Assure the Continued/Expanded Use of Anticoagulant Rodenticides." The major hurdle for the continued use of anticoagulant rodenticides is the non-target secondary hazard. The current risk analysis approach used by the USEPA overestimates anticoagulant rodenticide risks to non-target species. This research project proposes that the CDFA and USDA take the lead in rodenticide risk assessment development and incorporate physiologically based pharmacokinetic (PBPK) modeling into the risk assessment process. This approach uses currently known anticoagulant tissue residue data to estimate residues of anticoagulants in any animal tissues using computer-modeling techniques and then extrapolates these tissue residues to other species. The Food and Drug Administration has been using this approach to determine risks from drugs to humans using laboratory animals as surrogate species. Currently, the research project has focused on the development of the PBPK model for anticoagulant rodenticides that uses calculus to estimate the residues of anticoagulants in various animal tissues. Dr. Johnston then discussed the research goals of this project, which is to develop a PBPK model for two anticoagulant rodenticides and two species. Phase I, which has been completed, involved conducting dose versus mortality studies for warfarin and diphacinone in rodents and birds. The project is in the middle of Phase II, consisting of administering sub-lethal doses at multiple time intervals to determine and establishing a relationship between blood clotting time and rodenticide tissue concentrations. Liver, muscle, and blood diphacinone residue analysis is currently in progress. Remaining objectives for Phase II include determining clotting time and residue levels versus post dosing time. Phase III of the project is to develop a physiologically based pharmacokinetic-pharmacodynamic model to predict the probability of mortality and tissue residues of warfarin

and diphacinone in rodents and birds. Lastly, Phase IV is proposed to validate the model by developing a small-scale study with wildlife avian species.

Dr. John Johnston provided an update to the Committee on the research projects entitled, “Determining the Source of Primary and Secondary Rodenticide Exposure – Agriculture vs. Commensal Application” and “Pharmacokinetic Studies with Kestrels and Owls for Validating the CDFA/USDA Rodenticide PBPK Model.” Both projects are currently in the contract process and pending approval from CDFA. There is nothing to report at this time.

Ms. Victoria Hornbaker provided an update on behalf of Ms. Stephanie Shwiff to the Committee on the research project entitled, “Economic Impacts of Rodent and Bird Damage to Vulnerable Crop/Commodity-Producing Counties.” This study has been separated into two distinct methodological analyses. First, this study estimates the direct economic impact of bird and rodent damage to California producers and consumers compared to the estimated agricultural output if there was no damage for individual agricultural markets. These individual effects will then be aggregated to estimate the direct economic impact to California. Second, using Input-output modeling techniques the total economic impacts (the direct, indirect, and induced costs) to ten important agriculture counties in California will be projected. Two economic impacts of bird and rodent damage are: pest damage decreases the producer’s yield per acre which, in effect, increases the cost of production for a particular yield per acre; and because pest damage exists, the producer has incentive to spend money on pest control. While pest control decreases the amount of pest damage that would have existed without control, pest control does have a monetary cost per acre. Data on damage estimates, pesticide use and costs, crop acreage, crop prices, and supply and demand elasticities are currently being compiled. Ten counties have been identified for this project based on total agricultural production, cash receipts from targeted crops, and highest percentage or concentration of targeted crops.

Dr. Thomas Primus provided a final progress report to the Committee on the research project entitled, “Using Liver Microsomes to Assess Resistance of Chlorphacinone and Diphacinone in Meadow Voles.” Rodenticide chlorophacinone was evaluated and found to be much less effective than when introduced about 20 years ago to control meadow voles (*Microtus californicus*) in artichoke fields within Central California. University of California researchers found that the baiting strategies used were likely to increase the chances of developing genetic resistance in the target population. Anticoagulant resistance in other locations has been linked to enzyme activity, which is carried out in the liver microsomes. A brief overview was presented on a two-week experiment on a rat treated with 50 ppm diphacinone bait with no tetracycline hydrochloride and a male Wistar rat treated with chlorophacinone. According to the study, chlorophacinone did not metabolize as well as diphacinone. Liver microsomes from voles will be collected, in which the liver will be cleaned with a saline solution to remove the blood contents, frozen, and then brought back to the lab to extract the microsomes using a centrifuge procedure. The in-vitro liver microsome experiments will be used to assess resistance to the anticoagulant chlorophacinone and to see if resistance can be assessed based on metabolism. This resistance can be evaluated and the synergism between anticoagulants and agents such as antibiotics can be evaluated to assess their impact on resistance. The in-vitro experiments can generate data much more efficiently and multiple interactions can be studied much more effectively than with live animal studies. Within the next two to four weeks, plans to trap meadow voles from chlorophacinone resistant and non-resistant populations and to collect their livers are to take place in Castroville and Davis. Liver microsomes from both sets of meadow voles will be collected afterwards, and those microsomes will be used to evaluate the metabolism of both chlorophacinone and diphacinone. This resistance can be evaluated and the synergism

between anticoagulants and agents such as antibiotics can be evaluated to assess their impact on resistance.

NEW RESEARCH PROPOSALS

Dr. Terrell P. Salmon, University of California, Cooperative Extension, San Diego County, presented to the Committee a research proposal entitled, "Assessing Some Potential Environmental Impacts from Agricultural Anticoagulant Uses." The proposed budget amount is \$96,385.

Dr. Terrell P. Salmon, University of California, Cooperative Extension, San Diego County, presented to the Committee a research proposal entitled, "Vertebrate Pest Research in California, Website for the VPCRAC." The proposed budget amount is \$58,580.

Dr. Thomas M. Primus, United States Department of Agriculture, National Wildlife Research Center, presented to the Committee a research proposal entitled, "Using Liver Microsomes to Screen Anticoagulant/Antibiotic Formulations for Ground Squirrels and Pocket Gophers." The proposed budget amount is \$55,055.

Dr. John Johnston, United States Department of Agriculture, National Wildlife Research Center, presented to the Committee a research proposal entitled, "Formulation Optimization for the Coyote Lure Operative Device." The proposed budget amount is \$68,891.

RESEARCH PROPOSAL DISCUSSION AND DECISION SESSION

Motion: Dale Huss moved that the Committee fund the research proposal from Dr. Terrell Salmon, University of California, Cooperative Extension, San Diego County, entitled, "Assessing Some Potential Environmental Impacts from Agricultural Anticoagulant Uses," in the amount of \$96,385. The motion was seconded by Dr. Mark Novak and passed unanimously.

Motion: Duane Schnabel moved that the Committee fund the research proposal from Dr. Terrell P. Salmon, University of California, Cooperative Extension, San Diego County, entitled, "Vertebrate Pest Research in California, Website for the VPCRAC," in the amount of \$58,580. The motion was seconded by Ellen Des Jardin Hirth and passed unanimously.

Motion: Dr. Robert Timm moved that the Committee fund the research proposal from Dr. Thomas M. Primus, National Wildlife Research Center, entitled, "Using Liver Microsomes to Screen Anticoagulant/Antibiotic Formulations for Ground Squirrels and Pocket Gophers," in the amount of \$55,055. The motion was seconded by Ellen Des Jardin Hirth and passed unanimously.

Motion: Dale Huss moved that the Committee fund the research proposal from Dr. John Johnston, National Wildlife Research Center, entitled, "Formulation Optimization for the Coyote Lure Operative Device," in the amount of \$68,891. The motion was seconded by Dennis Bray and passed unanimously.

NEXT MEETING

The meeting was adjourned at 5:00 p.m. The next Committee meeting will be held in Monterey, CA. The specific date for the meeting is October 29, 2008 from 8:00 a.m. until 5:00 p.m.

SUBMITTED,

Victoria Hornbaker
Secretary

Date