

MINUTES
VERTEBRATE PEST CONTROL RESEARCH ADVISORY COMMITTEE MEETING
Four Points By Sheraton, 1050 Schooner Drive
Ventura, California
October 7, 2009

Members Present

Dan Spangler, Chairperson
Ellen Des Jardins-Hirth
Dale Huss
Mark Novak
Dennis Bray
Edward Meyer
Victoria Hornbaker

Members Absent

Robert Timm
Art Foster
Paul Stapp

Visitors

Charmaine Canlas
Jennifer Gordon
Scott Parker
David Goldade
John Eisemann
Roger Baldwin

Terrell Salmon
Stephanie Shwiff
Katherine Horak
Henry Gonzales
Daniel Martin

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. Dan Spangler 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 April 22, 2009 meeting with corrections. The motion was seconded by Dennis Bray and passed unanimously.

FINANCIAL REPORT UPDATE

Ms. Victoria Hornbaker provided the Committee with information on the program budget, revenue, expenditures, and projections. Last year's program budget for 2008/09 was authorized at \$998,872 and the program spent approximately \$712,000 with encumbrances. The

administrative budget for FY 08/09 was set at \$244,000 and total expenditures were \$221,820.33. The administrative budget for FY 09/10 was approved by the Committee at \$244,000. A summary of revenues was presented for FY 08/09, and the total revenue was \$406,354, which is approximately \$20,000 less revenue from last year. The current reserve is at approximately \$1.5 million, which includes encumbrances. Research expenditures for FY 09/10 to date are approximately \$391,000. The first quarter revenue for FY 2009/10 was \$177,857, which is about \$27,000 more from the first quarter from the previous year. As of August 2009 for the current fiscal year, total expenditures to-date are at \$30,554. The furlough program has slightly lowered operating costs by 14 percent.

Mr. Dan Spangler stated that the Committee has to figure out a way to cut back on research or increase revenue in order to sustain services. Mr. Dale Huss suggested considering increasing the assessment rate to increase income. Mr. Dennis Bray would prefer to have the Committee focus on research and bait labels and keep the assessment rate as is. Ms. Hornbaker mentioned that Integrated Pest Control Branch Chief Larry Bezark suggests dipping into the operating reserve, if necessary, and that prudent spending is ok.

Ms. Hornbaker then asked the Committee to approve the financial reports.

Motion: Dale Huss moved that the Committee accept the Financial Reports as presented. The motion was seconded by Ellen Des Jardins-Hirth and passed unanimously.

COMMITTEE MEMBERSHIP: CONSIDERATION AND RECOMMENDATION FOR NEW MEMBERS

Ms. Hornbaker stated that newly appointed California State University Committee member, Dr. Paul Stapp, is sick and could not attend the meeting.

Ms. Hornbaker mentioned that retired Committee member Edward Tully's industry position is still vacant. She has been in contact with Matt Burns from the California Cattlemen's Association, and has asked for names of possible interested members, but has not been successful in getting a response back. An advertisement for the vacant position could be placed on the CDFA website, if necessary. Ms. Hornbaker is doing outreach in order for VPCRAC to be more exposed to the industry, and would like to create a tri-fold for the program as an educational material source. This could help the industry to be more aware of VPCRAC and spark interest for others to join the Committee.

COMMITTEE MEMBER RECOGNITION

Ms. Hornbaker ordered plaques for former members, Duane Schnabel and Ed Tully, and showed them to the Committee. The plaques will be mailed to Mr. Schnabel and Mr. Tully. However, the program is no longer allowed to purchase recognition plaques through State funds for the Committee. Mr. Dennis Bray stated that he has a contact person for plaques for approximately \$40 each, and suggests getting donations from the Committee members for future plaque purchases.

Ms. Ellen Des Jardins-Hirth expressed that she would like to retire from the Committee. A replacement for her position has still not been found.

STATUS OF THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY'S RISK MITIGATION DECISION FOR TEN RODENTICIDES

Ms. Hornbaker provided a quick update on the status of the United States Environmental Protection Agency's Risk Mitigation decision for ten rodenticides. Currently, Ms. Hornbaker is still trying to see how the move to restricted-use rodenticides will impact the Program.

UPDATE ON MEETINGS WITH THE CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION REGARDING THE IMPACT OF RESTRICTED USE DESIGNATION ON FIELD USE RODENTICIDES FOR SMALL FACILITIES "RANCHETTES"

Ms. Hornbaker stated that she has been trying to partner with the Department of Pesticide Regulation to see if the Program can get support to make a new exam. In the past, diphacinone and chlorophacinone baits were under non-restricted use, but as of December, amended labels will be submitted and will change the baits from non-restricted to restricted-use products. In order to purchase and use the newly restricted baits, users will now have to be certified applicators, whether commercial or private applicators. This causes a concern because most applicators currently using the baits are non-certified users, especially ranchettes, and will not have access to the products anymore. CDFA has been trying to work with DPR to provide certification for users on ranchettes. A presentation was given at a DPR Pesticide Review and Evaluation Committee meeting in July and Ms. Hornbaker provided an overview of rodenticides, anticoagulants, and acute toxicants. The dangers of rodenticides and economic impacts, disease and health issues, and concerns about misuse were also presented. DPR expressed many concerns regarding the economic impact to their programs, having to update their website, the security of exam questions, and the costs of the kiosks. CDFA has not yet heard back from DPR at this time. Mr. Dennis Bray stated that they will be on the agenda at the PMAC meeting in February 2010 because the interest from and priority from DPR is non-existent. Mr. Dan Spangler stated that the ranchettes are a huge market for rodenticide sales and the demand over time will be high. Mr. Spangler urged Ms. Hornbaker and Mr. Bray to keep presenting and pushing the issue, and will eventually get the support and attention the concern needs.

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

Ms. Hornbaker provided a brief update on the California Department of Pesticide Regulation's reevaluation of second generation anticoagulant baits. Ms. Hornbaker talked to Ms. Denise Webster, and she stated that nothing new has been done at the State level at this point. There has been no action from DPR and is predicting DPR will most likely go along with EPA's direction.

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE REGISTRATION ISSUES

Ms. Hornbaker provided an update on the zinc phosphide label amendment to control voles in artichokes. As mentioned at the last meeting, efficacy was not seen with the zinc phosphide treated bracts. The chlorophacinone bract bait label has been reinstated and the label has been amended. The chlorophacinone treated bracts will be available until April 2010. Until that time, CDFA will revisit the issue with DPR to see if they can maintain the product for another year. DPR expressed that they would like the Program to do more research on the lack of efficacy of

the zinc treated bracts since it is a Section 3 registration. CDFA will then consider either maintaining the chlorophacinone treated bracts on a yearly basis and possibly remove the zinc phosphide treated bracts if data does not support the efficacy. Ms. Hornbaker submitted a proposal for specialty crop block grant money to get funding for more research with the issue with voles and artichokes and develop an integrated pest management plan. CDFA is hoping to find out by November 2009 if the proposal will be funded.

Ms. Hornbaker stated that the Program was granted re-registration on three labels last Fall but requires extensive label changes. A copy of the currently registered chlorophacinone bait label was provided as well as a draft, amended label. A PowerPoint presentation was also shown to the Committee that illustrates the changes to the chlorophacinone bait label. Specific changes included the expansion of environmental hazards to the precautionary statement, revisions to first aid directions, the deletion of deer mice and house mice to the directions for use, and the addition of bait acceptance trials. The labels must be submitted to EPA by December 2009.

LEGISLATIVE/REGULATORY UPDATE

Ms. Hornbaker briefed the Committee on the status of Senate Bill 481 (Cox). This bill would amend the California State Fish and Game Code to address management of wildlife hazards at public use airports. The bill gives Federal authority to the USDA Wildlife Services and provides the USDA more leeway on dealing with wildlife issues at airports and takes away State authority. Currently, the bill has passed through the Assembly and Senate.

Ms. Hornbaker briefed the Committee on the status of Senate Bill 709 (Hollingsworth). This is a spot bill that would make technical, nonsubstantive changes to the existing violation of taking or possessing birds, mammals, fish, amphibians, and reptiles. Nothing has happened at this time, and the bill will have no impact to the Committee or CDFA.

UPDATE ON THE THEOBROMINE/CAFFEINE PREDATOR TOXICANT

Mr. John Eisemann from the National Wildlife Research Center provided an update on the theobromine/caffeine predator toxicant project on coyotes with the effort to create a product towards registration. Various formulation strengths were tested. When a formulation of 100 percent caffeine was used, symptoms of death were unacceptable. A formulation of 100 percent theobromine showed acceptable symptoms of death, but time to death was slow. A 13:1 ratio of theobromine to caffeine was developed, and symptoms and time of death were acceptable. However, a 5:1 ratio was deemed the most appropriate formulation into a CLOD. A sodium benzoate synergist was used to see if there could be an enhance in toxicity. A significant toxicity was enhanced in rats, but there was no change in coyotes. After evaluating various attractants, a wax attractant and corn syrup-based reward had a high activation rate of 50 percent compared to the gelatin attractant and meat-based reward of only 20 percent. The wax bait attractant also had a significantly lower non-target activation rate of only 5 percent, compared to 50 percent for the gelatin attractant. DNA analysis showed that from 3,526 CLODs sampled, 757 yielded DNA and 20 percent yielded complete genotypes (25 individual samples from McLaughlin and 12 individuals from Hopland). Coyotes were lured to 96 percent of the CLODs. In a simulated field study in Idaho, CLODs containing 25 percent 5:1 ratio of theobromine to caffeine, 37.5 percent dog food, and 37.5 percent corn syrup were offered to 11 coyotes. Results show that 9 out of the 11 (81 percent) coyotes ate the CLOD contents and seven of the 9 coyotes that ate the contents died. This resulted in a 64 percent overall mortality rate. However, a 70 percent mortality rate is needed for registration for DPR. In September and

October 2008, various flavors were tested on CLODs, including lard, dog food, corn syrup, and thixin. A decision was made to pursue the corn syrup formulation to ease the registration process. The NWRC is committed to product development, so an EPA experimental use permit was issued. The target submission date is October 2009 with a target field study date for February 2011, which will be a one-year study in three states at nine field sites. The NWRC has committed \$107,000 for 19 contracted toxicological and product chemistry studies. Efforts are still underway and the NWRC is committed to the continued development and registration of a caffeine predacide. A reservoir anchoring system, formulation palatability, marker dyes, lures, and field efficacy testing will continue to be studied.

QUALITY ASSURANCE/QUALITY CONTROL PROGRAM

Ms. Hornbaker provided the Committee with information regarding the Quality Assurance/Quality Control Program (QA/QCP). Ms. Hornbaker performed sampling at all the mixing facilities and the samples were submitted to the lab for testing. A final report from the lab is still pending. Although, a contact from the lab was contacted and all chlorophacinone and diphacinone formulations were within the certified limits. There were issues noted with the zinc formulations and the lab will re-test the samples. Ms. Hornbaker will review all the mixing protocols and revising the vendor list to make sure all the facilities are in unison and the protocols the same.

RESEARCH UPDATE

University of California

Mr. Scott Parker provided an update to the Committee on the research projects entitled, "Development of Gopher Control Demonstration Videos for Online and Kiosk-Based Training." Previous progress of this research project included shooting footage for use in instructional videos related to gopher control, editing footage for use in a multiple media setting, and placing the video clips on the UC IPM website. The current quarterly results included the editing of gopher video clips to be placed on the IPM kiosk and the UC IPM website, modifying video clips for accuracy, providing additional videos to UC IPM staff to be placed on the website, and submitting the final video clips to APUNIX for placement on the IPM kiosks. Future plans for the project will be to distribute the IPM kiosk update, which includes two instructional gopher videos, for downloading statewide on all kiosks. Additional footage will also need to be taken and modified for a third gopher control demonstration video.

Dr. Terry Salmon provided an update to the Committee on the VPCRAC web site project. The new website is located at www.vpcrac.org. The Vertebrate Pest Control Handbook has been placed on the website and information has been hyperlinked for easier and specific searches throughout the site. A hyperlink to all the current research projects has been created. In addition, all of the VPCRAC's funded research project summaries are now online and available in a PDF format. The contract for this project ends in April 2010.

Dr. Terry Salmon provided a final report to the Committee on the research project entitled, "Vertebrate Pest Control Continuing Education and Outreach for Licensed Trappers and Others Dealing with California Wildlife." A web-based training program was developed to provide flexible multimedia, education, and outreach to growers. Two hours of DPR Continued Education Credits are offered for each program on ground squirrels, pocket gophers, and meadow voles, totaling up to six hours of DPR education credits. A minimal cost of \$10 is

required for registration to take the training course, which includes study guides, quizzes, and a final exam for DPR credit. All the video clips from the web-based training program are available for download. Accounts have also been created on Twitter, Facebook, and YouTube. The final report for this project has been completed.

Dr. Terry Salmon provided an update to the Committee on the research project entitled, "Assessing Some Potential Environmental Impacts from Agricultural Anticoagulant Uses." This project focuses on the potential residues of anticoagulants in the livers of raptors, primarily hawks. Livers from 96 raptors, which have been primarily submitted for West Nile Virus testing, were used for this project and sent to the University of California, Davis for complete anticoagulant analysis (53 livers came from San Diego County and 43 came from the Central Valley). Analysis from the lab reports discovered the identification of exposure to detectable and traceable anticoagulants. For the second generation materials in San Diego, 92 percent of the livers tested had a detectable or traceable amount of brodifacoum, bromadiolone, and difethialone. Samples from the Central Valley had a 72 percent outcome of detectable and traceable exposure. Only two percent of the liver samples showed traceable first generation anticoagulant exposure (chlorophacinone). Data from a map showing where each of the raptor carcasses was found was recently received and they are currently studying the information to see if there is a relationship of exposure with agricultural/rural areas versus urban areas. There is definitely a lot of exposure out there. Rodent anticoagulant levels were also studied in mice. Of 26 liver samples obtained, trace amounts of brodifacoum, bromadiolone, difethialone, and diphacinone were identified during testing in four of the mice. There are approximately 105 more mice specimens available for testing, but there is no funding available due to high costs per sample. Data from this project will continue to be analyzed and assimilated.

Dr. Terry Salmon provided an update to the Committee on the research project entitled, "Developing a Vertebrate Pest Control Digital Library." The project has not yet started, and there is nothing to report at this time.

Dr. Terry Salmon provided an update to the Committee on the research project entitled, "Food Safety and Rodent Control in Leafy Green Crops – Amended Per VPCRAC Request." This project, which is based in the Salinas area, focuses on the issue of rodents contaminating leafy green crops with salmonella. The objectives of this project are to develop monitoring techniques for rodents in leafy green crops and to develop training materials on managing rodents in and around those crops. Test items include standard mouse traps (snap traps), non-toxic feeding blocks, and wax tags. Field surveys consisted of sampling from iceberg lettuce and spinach fields in which two transects were placed along the edge of the field and the "wild" edge, each with 20 traps, 20 wax blocks, and 20 wax tags. Samples were taken twice per field and stations were visually checked to record any catches. After the field survey, 33 mice were caught for the study. This project has just begun, and work will continue in the field.

Dr. Roger Baldwin provided an update to the Committee on the research project entitled, "Vertebrate Pest Research 'Needs Assessment' for California." The project has just received funding three weeks ago. This research project came about due to a problem with vertebrate pests causing extensive damage to agricultural crops in California. Stricter environmental guidelines are continually being enacted to control vertebrate pests; however, time and funding are limited for research focused at solving these issues. The objective of this study is to develop and distribute a survey to assess important research needs for vertebrate pests in California, which will be focused on county agricultural commissioners and farm advisors so they can be used to provide recommendations for structuring future surveys. To date, the researchers have met with National Wildlife Research Center personnel to gather ideas on what the structure of the survey should be. The development of the survey, which will include questions on wildlife

damage and diseases, has already begun using Survey Monkey, and feedback is currently being gathered from project cooperators. The next step will be to submit the survey for a “test run”, disperse the survey to active participants, and analyze the results.

National Wildlife Research Center

Ms. Stephanie Shwiff provided a final report to the Committee on the research project entitled, “Economic Impacts of Rodent and Bird Damage to Vulnerable Crop/Commodity-Producing Counties.” The first objective of this project is to determine the empirically reported nature and magnitude of damage caused by rodents and birds to major crops and commodities. Then provide a critical review and analysis of this literature. The second objective is to develop scenario-based projections of the magnitude of these economic losses within the state. And the final objective is to conduct an IMPLAN analysis of the job and revenue impacts attributed to the projected rodent and bird-caused losses of the impacted crops and commodities for the 10 leading agricultural counties of California. For the first objective, which has been completed, estimates of damage were calculated by doing extensive literature reviews of various journals, reports, and return studies. Field interviews with growers, county agricultural commissioners, county officials, and University of California faculty were also held from October 7-17, 2008. With completion of Objective 2, input-output modeling techniques were used to determine the total economic impacts (the direct, indirect, and induced costs) to ten important agriculture counties in California. 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. For the third objective, ten counties have already been identified for this project based on total agricultural production, cash receipts from targeted crops, and highest percentage or concentration of targeted crops. The input-output analysis modeled the economy and showed multiplier effects of bird and rodent damage as well as a loss to the economy, effecting county revenue and jobs. Crop damage within the 10 counties would cause a decrease in regional revenue between \$170 million and \$500 million. A loss in employment from reduced economic activity would be between 2,000 and 6,000 jobs across all sectors. The impact of pest control would be positive by generating jobs and revenue in the county economy. This is explained under the theory that pest control expenditures would be seen as insurance with marginal benefit and marginal cost. Results then show that bird and rodent damage has a substantial negative impact to California growers to the counties and statewide. The level of damage annually is significant and can be mitigated through pest control expenditures. For growers, production is arguably lower because they must expend resources on pest control measures. This is a negative to growers, but to the economy, these expenditures represent a positive. Pest control costs offer more of an economic benefit by preventing crop loss than stimulating the economy. The final steps are to: integrate the results of the report into the kiosks, providing a wider access of results to growers and other stakeholders; keep information updated every five to ten years and determine a system to keep the damage matrix current; and consider the need for another study to estimate the savings in crops due to pest control.

Dr. Katherine Horak provided an update to the Committee on the research projects entitled, “Development of a Pharmacokinetic Computer Model to Assure the Continued/Expanded Use of Anticoagulant Rodenticides” and “Pharmacokinetic Studies of Kestrels and Owls for Validating the CDF/USDA Rodenticide PBPK Model.” 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. Horak then discussed the research goals of this project, which is to develop a PBPK model for two anticoagulant rodenticides and two species, using rats and quails (mammal and avian models). Phase I, which has been completed, involved conducting dose versus mortality studies for warfarin and diphacinone in rodents and birds. For Phase II, this consisted of administering sub-lethal doses at multiple time intervals to determine and establish a relationship between blood clotting time and rodenticide tissue concentrations. Liver, muscle, and blood diphacinone residue analysis are currently in progress, which is a timely process. Phase III has been completed, which was the development of 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 proposes to validate the model by developing a small-scale study with wildlife avian species of interest. A study protocol by the United States Geological Survey Patuxent Wildlife Research Center has been completed and approved. Blood clotting times for quails dosed with diphacinone and warfarin are currently being tested. Concentrations for dosing for kestrels and screech owls are also being determined. Researchers are currently working on techniques (oral gavage, gelatin capsule, etc.) to dose kestrels and screech owls, and data is being used to populate the model. The development of clotting assays for use in birds has been completed using a semi-automated BBL Fibrometer. Preliminary results of the clotting assays have proven highly precise clotting times, and Diphacinone treatment prolonged clotting times. To determine the acute toxicity of diphacinone to kestrels, a study consisted of dosing kestrels by capsule or mixture in oil and hold in small cage for two hours. The kestrel would then be released to a flight pen and be held for observation for signs of toxicity three times per day for seven days. Problems were then encountered with this protocol. Diphacinone was regurgitated when birds were held in small cages for two hours after being dosed. So the study switched to revised protocol from the use of flight pens and holding cages to small pens. Small doses in small capsules minimized regurgitation. Preliminary results show that kestrels are susceptible to diphacinone at 118.6 mg/kg doses and quails have a larger window.

Dr. Katherine Horak provided a progress report to the Committee on the research project entitled, "Using Liver Microsomes to Assess Resistance of Chlorophacinone 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 were collected, in which the liver was 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 were 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 and evaluate synergism. The in-vitro experiments can generate data much more efficiently and multiple interactions can be studied much more effectively than with live animal studies. Meadow voles from chlorophacinone resistant and non-resistant populations were trapped last spring in Davis, where the non-resistant population existed, 35 voles were trapped and 36 voles were trapped in Castroville (resistant population) over a week-long period. Blood samples and liver microsomes from both sets of meadow voles were collected afterwards, and those microsomes were used to evaluate the metabolism of both chlorophacinone and diphacinone. A significant difference between the susceptible and resistant voles was noted. The voles from Castroville metabolized chlorophacinone and diphacinone and were much more resistant than the voles from Davis. This resistance can be evaluated and the synergism between anticoagulants and agents such as antibiotics can be evaluated to assess their impact on resistance. In summary, use of the antibiotic tetracycline hydrochloride reduces the dose of diphacinone required. Therefore, lower residues of diphacinone are present by up to four times. Lower proportions of metabolites are present on average due to the drug interaction between the antibiotic and the anticoagulant. Dr. Horak then spent time looking at what enzymes metabolized different drugs and ran numerous inhibitor studies with the leftover samples to discover which enzyme was responsible for most of the metabolism in the Castroville voles. Microsomes from the Castroville voles were incubated and inhibited with pomegranate juice which reduced chlorophacinone metabolism by 29 percent. It is possible to add juice to the chlorophacinone formulation for better effectiveness, which is a starting point for another research study proposal. Future studies are to be considered to cover and study a wider range of diphacinone and chlorophacinone concentrations in incubations and tie the results into whole animal bait acceptance and efficacy trials. The final report for this project is almost ready.

Dr. Katherine Horak provided a brief update to the Committee on the research project entitled, "Using Liver Microsomes to Screen Anticoagulant/Antibiotic Formulations for Ground Squirrels and Pocket Gophers." Control sites are in place at pistachio and raisin farms. Squirrels have been trapped (one male and one female) from the sites, and in-vitro liver microsome incubations have begun. Field work will continue on October 10 to trap squirrels and gophers. Microsome incubations to screen for diphacinone and chlorophacinone will also continue. This study is still in progress.

Ms. Victoria Hornbaker provided a brief update to the Committee on the research project entitled, "An Investigation of the Effects of Vitamin K-Rich Plant Food on the Efficacy of Diphacinone on Voles." This project has just received funding. Vole trapping is currently in process.

NEW RESEARCH PROPOSALS

Dr. Terrell Salmon, University of California, Cooperative Extension, San Diego County presented to the Committee a research proposal entitled, "Amended Scope – Vertebrate Pest Control Certification, Education and Outreach." The proposed budget amount is \$84,803.

Dr. Roger Baldwin, University of California IPM Kearney Agricultural Center, presented to the Committee a research proposal entitled, "Reregistration of CDFA Baits for Control of Norway and Roof Rats in Agricultural Fields." The proposed budget amount is \$106,033.

Dr. Terrell Salmon, University of California, Cooperative Extension, San Diego County presented to the Committee a research proposal entitled, "Development and Evaluation of the

VPCRAC Website for Vertebrate Pest Research Information.” The proposed budget amount is \$45,819.

Dr. Roger Baldwin, University of California IPM Kearney Agricultural Center, presented to the Committee a research proposal entitled, “Development of and Integrated Pest Management Program for Vole Control in Artichokes.” The proposed budget amount is \$94,012.

RESEARCH PROPOSAL DISCUSSION AND DECISION SESSION

Motion: Dale Huss moved that the Committee fund the research proposal from Terrell Salmon, University of California, Cooperative Extension, San Diego County, entitled, “Amended Scope – Vertebrate Pest Control Certification, Education and Outreach,” in the amount of \$84,803. The motion was seconded by Ellen Des Jardins-Hirth and passed unanimously.

Motion: Edward Meyer moved that the Committee fund the research proposal from Roger Baldwin, University of California, Integrated Pest Management, Kearney Agricultural Center, entitled, “Reregistration of CDFA Baits for Control of Norway and Roof Rats in Agricultural Fields,” in the amount of \$106,033. The motion was seconded by Dale Huss and passed unanimously. Victoria Hornbaker abstained from voting.

Motion: Dennis Bray moved that the Committee fund the research proposal from Terrell Salmon, University of California, Cooperative Extension, San Diego County, entitled, “Development and Evaluation of the VPCRAC Website for Vertebrate Pest Research Information,” in the amount of \$45,819. The motion was seconded by Ellen Des Jardins-Hirth and passed unanimously.

Motion: Dale Huss moved that the Committee fund the research proposal from Roger Baldwin, University of California, Integrated Pest Management, Kearney Agricultural Center, entitled, “Development of an Integrated Pest Management Program for Vole Control in Artichokes,” in the amount of \$94,012 only under the contingency that the specialty crop block grant is approved and funded. The motion was seconded by Mark Novak and passed unanimously. Victoria Hornbaker abstained from voting.

NEXT MEETING

The meeting was adjourned at 5:00 p.m. The next Committee meeting will be held in Bass Lake, CA. The specific date for the meeting is April 14, 2010 from 8:00 a.m. until 5:00 p.m.

SUBMITTED,

Victoria Hornbaker
Secretary

Date