

UC Agriculture & Natural Resources

Proceedings of the Vertebrate Pest Conference

Title

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Permalink

<https://escholarship.org/uc/item/0bd7r8q9>

Journal

Proceedings of the Vertebrate Pest Conference, 25(25)

ISSN

0507-6773

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Publication Date

2012

DOI

10.5070/V425110690

VPC: Fifty Years of Progress?

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ABSTRACT: This paper reviews the Vertebrate Pest Conference's beginnings, why it started, and assesses its success in meeting the goals articulated during the opening Conference in 1962. Probably more so than any other state, California has a diversity of agriculture that gives every vertebrate a chance to become a pest, even those that didn't originally live in the state. This, and the hard work of Conference founders, made California a logical place to develop a first-rate Conference on all aspects of vertebrate pests. At the first Conference, over 80% of attendees were from California. At the 24th Conference, this had changed with over 40% attendees from other states and almost 10% from other countries. During the first Conferences, the presentations were mostly about current control methods for various vertebrate pests. Now, the topics have shifted to deal more with specific aspects of control such as non-target impacts, pesticide metabolism, etc. The Conference Proceedings have evolved from a collection of 25 "how-to" papers in the first Proceeding to over 75 peer-edited papers in the 24th. Many of these papers, especially in the more recent Conference Proceedings, are cited throughout the international vertebrate pest control literature. Another trend has been the publication of multiple-authored papers. This represents the important goal of the Conference of getting people together to discuss and work on understanding all aspects of vertebrate pest control. It is clear, just by looking around at the audience and reviewing the program for the 25th Conference, that the VPC is doing exactly what the founders envisioned, and in my opinion, it is an unconditional success!

KEY WORDS: attendance, authorship, conference, Land-Grant Universities, Morrill Act, proceedings, Vertebrate Pest Conference

Proc. 25th Vertebr. Pest Conf. (R. M. Timm, Ed.)
Published at Univ. of Calif., Davis. 2012. Pp. 3-6.

The Vertebrate Pest Conference (VPC) officially began in 1962. Many people were involved in its creation (Howard 1962), and they should all be recognized and congratulated for their foresight, diligence, and hard work in making the first Conference a success. But it was more than just a conference or meeting—it was a vision, one that has been sustained and grown these past 50 years. There is one person that was, and is still the real driver for this Conference, and that's Dr. Walter E. "Howdy" Howard. At the 10th VPC in Monterey, Howdy shared an excellent account of the early beginnings of the Conference (Howard 1982). In 2008, Rex E. Marsh did an extensive accounting of the 1st through the 23rd Conferences, including details on attendance, topics, and Proceedings (Marsh 2008). So, the hard work of detailing the Conference, how it began, and what it has been like, has already been done. What I want to do is look at why this Conference was established and how, or if, it has been successful in accomplishing its goals.

In 1962, Howdy Howard articulated a clear set of objectives for the Conference. They were to:

- Get acquainted with others interested in vertebrate pest control
- Discuss vertebrate pest control methods
- Review problems of vertebrate diseases and pesticides
- Publish a Proceedings

Since we are here in Monterey in 2012, some 50 years and 25 Conferences later, it's pretty clear that these objectives have been met. But these things, by themselves, don't necessarily mean the Conference has been successful.

To measure the Conference's success, I think we need

a little understanding about vertebrate pest control and its historical relationship to agriculture and public health in the United States. First, why start something like the VPC in California? You might be thinking that it was simply because Howdy Howard was *in* California. For any who know Howdy and his drive and determination, it's obvious why the Conference originated and has remained in his state. Howdy made it happen, but the stage for success was set by factors even beyond his control.

First, California was ripe for studies dealing with vertebrate pests. Probably more so than any other state, California has a diversity of agriculture that gives every vertebrate a chance to become a pest, even those who didn't originally live in the state. A quick look at the topography shows forests, rich and fertile river and coastal valleys, rolling foothills, and hot deserts—all places where agriculture can flourish, especially if water is made available (Figure 1). California farmers have cultivated most places in the state, and the many irrigation and flood control projects have helped immensely in making California a \$35+ billion agricultural engine (Figure 2). So, clearly the stage was set for Howdy and his colleagues to exploit the needs of farmers and others to develop better and more effective information on dealing with vertebrate pests. But how did agriculture become so successful in this state?

In 1882, the U.S. Congress passed the Morrill Act. This act established the Land Grant college system in the United States. Basically, the Act granted federal land to states proportional to their population. The state used the proceeds from the sale of this land to establish a college focused on agricultural and mechanical arts. The University of California was established in 1868 as California's Land Grant college. And since its beginning, UC has con-



Figure 1. General topography of California showing many potential areas for agricultural production.

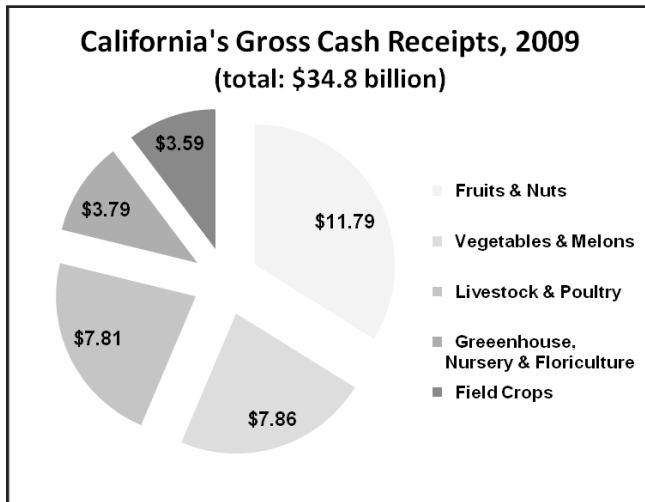


Figure 2. California is a \$34.8 billion dollar operation (2009) with crops and livestock for every vertebrate pest (total may not add, due to rounding).

tributed much to all aspects of agricultural science. This led to faculty and researchers, in fact courses of study, focused on vertebrates and their relationship to agriculture and public health (Aldrich 1962).

While important work was happening at UC, other entities outside California were also interested in and pursuing aspects of vertebrate pest control. The U.S. Department of Agriculture, in their 1909 Yearbook, stated that many animals and birds were causing depredations to agricultural crops (Jacobson 1962). It identified a need to better

understand the food habits of wild animals and birds, to identify effective methods of reducing pest numbers, and do all that is necessary to prevent these animals and birds from ravaging agriculture. During the early 1900s, the U.S. Biological Survey was busy devising ways to solve vertebrate pest problems (Jacobson 1962). They identified potential approaches including the use of diseases for controlling prairie dogs, squirrels, and voles. Their efforts were not successful, so they turned to finding poisons and toxic gasses that might be used to control vertebrate pests. During their quest for solutions, they followed the principle that no harm should come to beneficial species.

So, Federal agencies had identified a need to understand and solve vertebrate pest problems, and some were even doing research and studies to better deal with these pests. California was also hard at work to protect agriculture from pest animals and birds. In 1909, the California Agricultural Commissioners were given the power to control ground squirrels, a major agricultural pest throughout the state. And in 1913, field crews were established to control rodents in National Forests (Jacobson 1962). These efforts started large-scale control programs with expectations for success. Since control methods were limited at the time, these efforts led both university and state researchers to work on improving existing, and developing new, vertebrate pest control methods. One of the most significant activities that put vertebrate pest control into the forefront in California was the ground squirrel control campaign of 1917-18. This was a statewide effort coordinated and conducted by the County Agricultural Commissioners (called "horticultural commissioners" at that time). As you can see from the campaign posters (Figure 3), this was an all-inclusive effort, even involving school children. Not only did this lead to less damage to important agricultural crops, but it also solidified the roll of state and local agencies in dealing with this important vertebrate pest. And, more people involved meant more questions about control methods, and more demands for effective solutions. While ground squirrels (*Spermophilus beecheyi*) were the focus of these efforts, the entities involved, especially the Agricultural Commissioners, were keen to solve other rodent and bird pest problems. Since that time, the Agricultural Commissioners and the California Department of Food and Agriculture (CDFA) have manufactured rodent and bird baits, conducted research and demonstrations to develop new and improve existing control materials, and have served as local experts to farmers, public health officials, and others. More recently, CDFA has provided leadership in registering and maintaining rodenticides for use in California's huge agricultural enterprise (Timm et al. 2004).

So it's not too much of a stretch to see why the VPC was so important for California, and why the universities, state, and local organizations were eager to support the Conference as a way to help them do their jobs more effectively (Aldrich 1962).

But back to the central question. It's clear that the VPC was a solid success in the beginning but has it made progress during the past 50 years? First, let's look at Conference attendance. Attendance has remained relatively even at about 300. It certainly hasn't increased significantly, and some might describe this as a lack of progress. But,



Figure 3. California had an extensive ground squirrel control campaign during 1917-18 that helped shape vertebrate pest control in the state.

it's also clear that the Conference has expanded to include national and even international participants. At the 1st Conference, over 80% of attendees were from California. About 18% were from other states, and less than 1% were

from foreign countries. At the 24th Conference this had changed, with over 40% attendees from other states and almost 10% from other countries. So I say the Conference has progressed from a mainly local group to an international event, and I'm going to call that success.

Remember that during the first VPC, it was a stated goal to discuss control methods including problems of diseases and pesticides. To see if the VPC has made progress on these topics, I reviewed the Proceedings of the 1st, 5th, 10th, 15th, 20th, and 24th Conferences. I classified each presentation (by the title only) into 5 categories:

- Solving problems
- Understanding problems
- New/improved techniques
- Social issues related to vertebrate pest
- Pesticides and legal issues

When you compare the topics from the 1st with those of the 24th, it's obvious the VPC has moved from an emphasis on general problem solving to more detailed approaches of understand the vertebrate problem and improving control techniques. I should add that these are really subsets of solving problems, a topic that dominated the 1st Conference. The difference is the depth in how problems are solved. During the first Conferences, the presentations were mostly current control methods for various vertebrate pests. The topics have shifted to deal more with specific aspects of control such as non-target impacts, pesticide metabolism, etc. I call this progress, since the goal is to solve problems, and scientists and others keep digging deeper to make that happen.

Now let's look at the Proceedings of the 24 Conferences to see if in fact they can be an indicator for progress, or lack thereof. I looked at the Proceedings from the same years as above. Without reading and critically evaluating each paper, it's hard to say if quality has improved. I know that through the efforts of the Proceedings editor, Robert Timm, the technical quality of the papers has definitely increased, since all are reviewed by at least one professional in the field. My analysis did reveal a striking trend in the Proceedings, however, that I think does suggest some qualitative improvements. First, the overall number of articles published has increased from about 25 in the 1st Proceedings to over 75 in the 24th. Clearly, one of the goals of the Conference was to publish work in vertebrate pest control, so this increase is a success. But another trend that developed steadily and continues through this Conference is the publication of multiple-authored papers. While maybe not a sign of success, it does represent another of the goals of the Conference, to get people together to discuss and work on understanding all aspects of vertebrate pest control. Again, another success for the Conference.

Another stated goal of the Conference was to improve methods and materials for vertebrate pest control. From attending the VPC since 1978 and working in the field of vertebrate pest control, I know that the Proceedings have been extremely valuable as references for many problems I encountered during 33 years as a Cooperative Extension Wildlife Specialist. There are many examples that highlight the changes since the 1st VPC and demonstrate progress. For example, at the 1st VPC, Richard Dana (1962) gave an excellent review of ground squirrel control

in California. The accepted methods included toxic baits containing Compound 1080, strychnine, thallium sulfate, zinc phosphide, or anticoagulants. Fumigants and trapping were also mentioned. For anticoagulants, he stated they were used where other materials were considered too hazardous, but labor costs were high. In a quick review of the 24th VPC Proceedings, there were at least 6 articles that directly dealt with ground squirrel control concerns. These ranged from toxicity studies of first-generation anticoagulants to non-target birds, the effect of bait type on squirrel control efforts, the impact of IPM approaches on risks, and web-based training for ground squirrel control. Clearly, topics at the Conference have continued to expand from those pioneering articles of 1962. Many other articles in the 24th Proceedings had good information pertinent to ground squirrel control as well. Just read Dana's original 1962 article and then those in the 24th VPC, and you too will say "...the Conference has been a success".

I could go on with many more examples in virtually every aspect of vertebrate pest control. But I think I will forego that, and I'll close by looking at and responding to the comments of Daniel Aldrich, Dean of Agriculture at UC Berkeley (Aldrich 1962). In an attempt to motivate the first Conference attendees at his banquet speech, he said:

We have had the same toolbox for 75 years.
We need to understand the biology of the pests.
We need damage assessments.
We need trained professionals.
We need teaching and research in VPC.

I think it is clear, just by looking around and reviewing the program for this Conference, that the VPC is doing exactly what Aldrich challenged us to do, and we are doing it successfully.

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