

CLASSIFICATION  
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

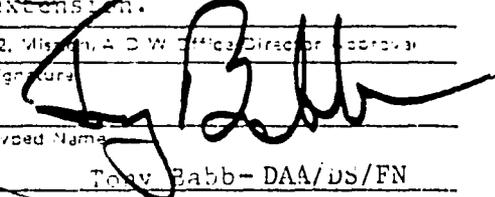
1. PROJECT TITLE CONTROL OF VERTEBRATE PESTS (PROJECT #931-0473)			2. PROJECT NUMBER 931-0473	3. MISSION/AID/W OFFICE DS/AGR
5. KEY PROJECT IMPLEMENTATION DATES			4. EVALUATION NUMBER Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) <u>81-22</u>	
A. First PRO-AG or Equivalent FY <u>73</u>	B. Final Obligation Expected FY <u>81</u>	C. Final Input Delivery FY <u>81</u>	<input type="checkbox"/> REGULAR EVALUATION <input checked="" type="checkbox"/> SPECIAL EVALUATION <u>Dec. 1980</u> <u>5/11/81</u>	
6. ESTIMATED PROJECT FUNDING			7. PERIOD COVERED BY EVALUATION	
A. Total \$ <u>6,761</u>			From (month/yr.) <u>Dec. 1979</u>	
B. U.S. \$ <u>6,761</u>			To (month/yr.) <u>Dec. 1980</u>	
			Date of Evaluation Review <u>Dec. 16-18, 1980</u>	

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
(1) Prepare a new five (5) year project paper for a <u>technical assistance project</u> as recommended by the review team. (Project manager recommends that this be accepted by AID.)	Denver Wildlife Research Center	April 30, 1981
(2) Conduct a benefit/cost economic analysis of the Project by the U. S. Department of Interior Economists. (Project manager concurs in this.)	Denver Wildlife Research Center	Sept. 30, 1982
(3) Encourage Regional Bureau and Mission to fund country and regional centers. (This action has been largely accomplished over the past two (2) years. Currently DS provides support only to DWRC Staff for backstopping and the Philippines. All other field activities, including out-reach travel are funded by the Missions or Regional Bureaus.) See recommendation from the Project Manager in (4).	J.W.Walker/ DWRC	On going
(4) Project Manager recommends that DS/AGR/W terminate central funding to country and regional activity, effective September 30, 1982. After this date central funding used only for DWRC back-up.	J.W.Walker/ DS/AGR	September 30, 1982
(5) Conduct participant training with country or regional bureau funding, except DWRC instructors and facilities. (Project manager concurs in this action.)	Denver Wildlife Research Center/ Regional Bureaus	On going
(6) Develop package programs of communication media for use in other countries. (Project Manager concurs)	Denver Wildlife Research Center	July 1, 1982
(7) In the future this Project should be categorized as technical assistance not primarily research. (Project manager concurs.)	Donald R. Fiester/ DS/AGR	Effective on approval of this PES
(8) See attached for further comments from Project Manager.		

\* EVALUATION RECOMMENDATIONS WILL BE CONSIDERED - ALSO WITH FUNDING CONSTRAINTS - DURING PREPARATION OF FY-83 ABS.

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS			10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT	
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____	A. <input type="checkbox"/> Continue Project Without Change	
<input type="checkbox"/> Financial Plan	<input checked="" type="checkbox"/> PIO/T	<input type="checkbox"/> PAF	B. <input checked="" type="checkbox"/> Change Project Design and/or Change emphasis to technology transfer from research mode. Approved for 5 year extension.	
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____		
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P			

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER BANKING PARTNERS AS APPROPRIATE (Names and Titles)		12. Mission, AID/W Office Director Approval	
John W. Walker, Project Manager	Mańy Mozynski, Program Analyst	Signature	
Richard Hughes, Deputy Director	DS/AGR/AP: DButchart	Typed Name	Tony Babb - DAA/DS/FN
DS/AGR/AP: JMyohe	DS/AGR: JWalker	Date	5/11/81
DS/PO: ASilver	DS/PO: MReichgl		

COMMENTS BY PROJECT MANAGER

The review team documented that worldwide demand for greater food production and better nutrition increases world concern for protection of animals, crops, and stored products from depredations by bats, rats, other mammals, and noxious birds. The current project has stressed the feasibility and cost effectiveness of increasing the food supply through protection of food stocks by means of vertebrate pest control (VPC).

The Denver Wildlife Research Center (DWRC) uses a team approach for the most effective means of transfer along with problem-oriented research by DWRC staff to back-up field programs in LDCs.

Centers of expertise, established in the Philippines, Bangladesh, Sudan and Haiti/Dominican Republic, serve as regional and country models, and focus on problem evaluation and technology transfer relative to rodent and noxious bird problems in those and nearby countries. The team recognized that this project is basically technology transfer, but is vitally supported by the ongoing research staff and facilities of DWRC.

Travel costs associated with the out-reach program are paid by the missions or regional bureau.

Missions in additional countries (i.e. Egypt and Indonesia) have expressed an interest in control of vertebrate pests projects in the near future. These countries will rely upon the DWRC to get started and for technical back-up.

Because of the continuing long-range needs of the LDCs for reducing vertebrate pest depredations of world food supplies and the lack of a skilled vertebrate pest staff and well equipped facility similar to DWRC elsewhere in the world, the review team recommended the preparation of a new project paper by DWRC, emphasizing technology transfer. The review team also recommended that the new project be scheduled for up to five years.

The Project Manager recommends that DS accept the review team report with the following modifications:

- (1) Set up the new project for five years, but schedule DS funding for the Philippine Center to terminate on or about September 30, 1982. This would allow sufficient time for the Asia Bureau or Mission to determine whether it wishes to provide regional support and arrange funding. Hence, after September 30, 1982, DS would fund only the staff at DWRC to service the country and regional centers.
- (2) Require DWRC to step up preparation of a system of packaged training courses and aids (i.e. cassettes, 2 x 2 slide series, and other auto-tutorial materials) to be completed by July 1, 1982.
- (3) Require DWRC to implement a plan to establish more accurate benefit/cost economic analysis data no later than September 30, 1981 and to be completed no later than September 30, 1982.

*Approved*  
*April 9, 1981*

PROJECT EVALUATION SUMMARY (PES)

PART II

Control of Vertebrate Pests

Project: 931-0473  
Contract: PASA/ID/TAB-473-1-67

Contractor: USDI-FWS-Denver Wildlife  
Research Center  
Principal Investigator: John DeGrazio  
AID Project Manager: John W. Walker

Review Team:

Dr. William B. Jackson (Leader)  
Mr. William D. Fitzwater  
Dr. Douglas Butchart  
Dr. Walter E. Howard  
Dr. J. D. Montgomery  
Mr. Lynwood A. Fiedler  
Dr. John Walker (ex-officio)

15 January 1981

### #13 - Summary

The demand for greater food production and better nutrition increases world concern for protection of animals, crops, and stored products from depredations of bats, rats, other mammals, and noxious birds. The current project has demonstrated the feasibility and cost effectiveness of increasing the food supply and protecting food stocks by means of integrated vertebrate pest control (VPC).

This project began by emphasizing research into biology of vertebrate pests and continues with utilization and adaptation of research to the needs of lesser developed countries (LDC). The Denver Wildlife Research Center (DWRC) uses a team approach towards technology transfer along with problem-oriented research as a back-up to field programs in LDC's (appendix table 4).

Control of vampire bat rabies in Latin America, resulting from an extensive AID/DWRC research program, has been phased into local maintenance programs.

The Philippine center has become a focal training center for the dissemination of rat control programs in Asia, and trained personnel have spread into national programs in that part of the world. Centers of expertise, established in Bangladesh, Sudan, and Haiti-Dominican Republic, serve as models and focus on problem evaluation and technology transfer relative to rodent and noxious bird problems in those and nearby countries.

Identified additional needs include consultants to develop appropriate economic analyses, policies, and strategies for implementing integrated pest management programs and package programs of appropriate communications media for use in other countries.

#13 - Summary (continued)

The committee recognized that this project consists primarily of a program of technology transfer but is critically supported by the ongoing research staff and facilities of DWRC.

Because of the continuing long-range needs for reducing vertebrate depredations to world food supplies and the lack of a vertebrate pest research facility similar to DWRC elsewhere in the world, the committee recommends a 5-year extension of the present program. Also, the committee urges AID to continue support of the existing technology transfer project with DWRC and to supplement problem-solving research both at DWRC and elsewhere as needs are identified.

#14 - Evaluation Methodology

Open discussion and examination of DWRC exhibits by committee members and other participants indicated that technology transfer, with research components as needed, is descriptive of the future course of this project.

The evaluation team was made up of the following:

Dr. William B. Jackson, Chairman, Bowling Green St. Univ., Bowling Green, Ohio 43403 (419/372-0207)

Dr. Douglas Butchart, AID/AFR/ARD/DR; Representing Technical Program Committee for Agriculture (TPCA), Wash. D.C. 20523 (202/632-8716)

Lynwood A. Fiedler, National Crop Protection Center, DWRC/USAID Manila, APO-San Francisco - 965528

William D. Fitzwater, Director, bioLOGIC consultants, 3919 Alta Monte, N.E., Albuquerque, N.M. 87110 (505/883-9249)

Dr. Walter E. Howard, Dept. of Wildlife, Fisheries, and Biology, Univ. of California, Davis, Calif. 95616 (916/752-2564)

Dr. J. D. Montgomery, Representing the Research Advisory Committee (RAC), Harvard University, Cambridge, Mass. (617/830-2148)

The following AID staff members participated in the evaluation:

Essie S.R. Brown, DSB/AGR/AP (AID) - Program Person

Allan Hankins, ASIA/TR (AID) - TPCA (Member of subcommittee for VPC Project) Washington, D.C. 20523

Victor Lateef, NE/TECH (AID) - TPCA (Member of subcommittee for VPC Project) Washington, D.C. 20523

W. Phillip Warren, LAC/DR (AID) - TPCA (Member of subcommittee for VPC Project) Washington, D.C. 20523

#14 - Evaluation Methodology

The following U.S. Fish and Wildlife Service staff members participated in the evaluation:

John DeGrazio - Chief, Section of International Programs, DWRC,  
Denver, Colorado

Dr. Clyde Jones - Director, DWRC, Denver, Colorado

Richard Smith - Associate Director of Research, U.S. Fish and Wildlife Service, Washington, D.C.

#15 - External Factors

The successful operation of this project in the mode established over the past 13 years emphasized nine major changes in the working context of vertebrate pest control (VPC):

- (1) There is no diminution in total demand for technical assistance in VPC despite increased capabilities in such countries as the Philippines and Bangladesh, Sudan, Dominican Republic/Haiti, and others over the next three to five years.
- (2) Growing experience with different sets of national problems has suggested the desirability of developing a standard "package" for analyzing country needs and determining optimal technological mixtures for different situations.
- (3) One country (the Philippines) that has developed national capabilities in VPC already has provided regional services to other nations (e.g., Samoa, Bangladesh, Venezuela, Thailand, Nepal, and Korea). This experience suggests the importance of working through regional centers of expertise to provide technical assistance in countries that cannot be accommodated within the limited staff and budgets of DWRC. Special attention might now be paid to the possibility of working with CGIAR institutions.
- (4) Such regional centers will need additional inputs beyond technical assistance and individual training programs that include the capacity to serve institutional requirements for programs. Planning such efforts could be considered at Asia and Africa/Latin America workshops (see appendix table 3 for details).

## #15 - External Factors (continued)

- (5) Programs dealing with vertebrate pests in many countries rarely have achieved a steady state of continuous control. Usually the pattern of action begins with a crisis project in response to large-scale animal damage to crops, followed by neglect of the problem once the losses are reduced to tolerable levels. The resulting policies follow the "boom-or-bust" model rather than one of "maintenance of control," which calls for different organization, technical assistance, research strategies, and models of American assistance than is followed in more standard agricultural operations (e.g., development of high yielding varieties or insect control). Thus the DWRC project must be prepared to respond to crises by providing technical assistance and backstopping as well as by supporting infrastructure development in LDCs.
- (6) That vertebrate pests cause significant and sometimes greater crop losses than do insects has not been recognized by international agencies, ministries of agriculture, or animal biologists in spite of the data generated by this project. Demonstrating dimensions of the problem and the increasing capabilities for dealing with it call for new strategies of technical assistance on the part of DWRC and AID.
- (7) The R&D achievements of DWRC have produced a "bankroll of technology" that can be drawn on in many countries that now have no access to it. These achievements include the use of radiotelemetry, tracking methods, capture and marking techniques, damage assessment procedures, and combinations and uses of rodenticides and repellents. Further experience with VPC in different

#15 - External Factors (continued)

settings will provide a basis for identifying future R&D requirements and opportunities.

- (8) The trend toward multi- and intercropping and continuous harvest farming (e.g., "rice gardens") creates greater vertebrate pest problems and requires development of new control techniques, especially for small farmers.
- (9) With changing agronomic methodologies and greater crop and cultural diversification, concern for integrated pest management (IPM) is apparent.

## #16 - Inputs

The committee perceived no need for altering the present campaign for reducing food losses by pest vertebrates except for adding these additional technologies to countries not now able to utilize them. Additional activities to facilitate technology transfer are needed but are beyond the immediate scope and budget of the present project. These needs included:

- Use of economic consultants (especially from host countries) to work with projects in developing crop loss/damage estimates, project improvement data, and cost/benefit ratios.
- Use of management consultants to evaluate strategies (criteria) for the establishment of vertebrate pest programs and effective technology transfer. After such criteria had been defined, major research might be needed for large-scale implementation.

DWRC has provided services in more than 35 countries. Some of these have been responses to acute needs with little or no follow-up. Others have been joint efforts with other agencies. The capability for such responses, especially for follow-through operations, is important and should be retained.

Increasingly the concept of integrated pest management (IPM) is a part of program rationale and planning. This concept requires linkages with other agricultural specialists and planners. Concern for planting schedules, irrigation engineering, intercropping, and weed control must be involved. Also concern for reduction of post-harvest losses, especially, deserves high priority attention.

The committee considered that a formal external advisory committee to DWRC would be highly desirable to provide ongoing reaction and support to plans and operations and to provide linkages to other research activities and users.

17 - Outputs

Progress toward the major goal of increasing the available human food supply and protecting food stocks by reducing losses from bats, rats, other mammals, and obnoxious birds has been found to justify expenditures made and is expected to fulfill ongoing objectives. Some examples of significant outputs of this project's problem-oriented research-training-extension activities include:

- 1. Developing suitable damage assessment analysis techniques;
- 2. Determining the economic losses caused by vertebrate pests to several agricultural crops (see Appendix 1);
- 3. Confirming the significant economic gains in certain agricultural crops resulting from application of newly developed control methodology and from training host country counterparts (see Appendix 1);
- 4. Developing significant improvements in technology/methodology for studying necessary aspects of the ecology, behavior, population dynamics, and control of problem species of birds and rodents;
- 5. Closing the project's Mexico vampire bat control methodology station when its missions was accomplished;
- 6. Extending the vampire bat control methodology in outreach programs to 18 Latin American countries;
- 7. Continuing operation of field stations in the Philippines and Sudan (DSB funded) and research-training bases in Bangladesh (Mission funded) and Haiti-Dominican Republic (LAC funded);
- 8. Institutionalizing rodent control in rice in the Philippines and extending the rodent control model through outreach to other Asian countries (appendix table 2); and
- 9. Investigating non-lethal control methods of protecting small grain from birds.

#17 - Outputs (continued)

10. The program planning in a comprehensive pest management project in Sudan for 1981 and Indonesia proposed for 1982 incorporated a component for reducing losses caused by vertebrate pests. Experience has shown that increasing crop production by involving irrigation and seed improvement cannot progress unless control of pests is included as a component of the project.

#18 - Purpose

The project aims to develop safe, effective, and economical vertebrate pest control methods that are appropriate for use by small farmers and acceptable in the broader context of agricultural development and environmental protection.

There has been continued progress toward this purpose. Self-sustaining, in-country programs are the expected end result of the project. Considering the wide diversity of ecological and cultural conditions under which vertebrate damage occurs, and the variety of species involved, the End of Project Status (EOPS) is difficult to define except on an individual country basis. The vampire bat-rabies field station in Mexico, for example, has been terminated because its mission was accomplished, while rodent control stations are just being introduced in Bangladesh.

The evaluation team does not accept AID's rather inelastic EOPS criteria for evaluating this type of project. A more realistic approach would consider country variations and program variables in establishing a causal linkage between project inputs, outputs, and purpose. Defining the EOPS in a more adequate time-frame than previously applied suggests a 5-year period for the project renewal.

## #19 - Goal/Subgoal

The project goal is to increase the available human food supply in developing countries by reducing the risk of severe losses to agriculture caused by bats, rats, other mammals, and noxious birds.

This goal is being achieved through the development and application of:

- (1) Safe, effective, and economical control methods.
- (2) Self-sustaining, in-country programs and monitoring of these methods and implemented programs.

Progress to date includes the successful development of control methods to reduce losses in cattle due to bats; in rice, corn, wheat, and coconut, due to rats. In-country programs that have incorporated these control methods include 16 South and Central American countries (vampire bat control) and the Philippines (rat damage in rice). Maintenance activities, which include monitoring of the damage levels, also exist in these countries.

Methods developed for rodent control in corn and coconut have been incorporated into national programs to a limited extent.

## #20 - Beneficiaries

Most segments of human society benefit when the food supply becomes more adequate, especially when it results in modest food prices and still produces a satisfactory return on farmers' investments. The technologies being developed to protect food against loss to vertebrate pests tend to be labor-intensive rather than capital-intensive, and they are well-adapted to dissemination by extension services to small farmers.

Thus, although on a per-acre basis costs of maintenance programs are less for large than for small-scale application, these benefits may be increased by cooperation among farmers or by uniform applications arranged through government programs. The expectation, therefore, is that the distribution of benefits from vertebrate pest control will reach the poor elements of a population.

The demonstrated outreach/expansion of the newly developed vertebrate pest control technology as applied to vampire bats in Latin America and rats in the Philippines indicates the global nature of the project benefits.

## #21 - Unplanned Effects

The development of the control methods at the research stage takes into account social, environmental, economic, and other potential effects. When these methods have been incorporated into national programs, the ecological effects have been as predicted. No unplanned, undesirable effects have been observed.

A desirable, unexpected effect of this project is the attitude and response of host countries to it. For example, the Government of Haiti recognized the need for vertebrate pest control and has scheduled valuable external and internal resources for the project because of the expected high payoff for funds invested. In addition, the Haitians feel that VPC is their project, because they have been involved from the beginning in its planning and operations. By its very nature, VPC can start small and not overwhelm the local government system. As the personnel acquire experience and funds, the project can very expeditiously and painlessly be expanded as circumstances dictate.

#22 - Lessons Learned in Response to Problems and Issues

A. General

Recent advances in rodent control technology, inroads on bird damage with technology, success of the vampire bat program, and development of numerous supportive techniques argue against AID reducing support to this project in the near future. This project deals with problems that remain and will continue to have a significant influence on agricultural productivity. It functions through a series of small individual country projects based on commitments from host governments to support DWRC's technology transfer effort.

B. DSB vs. Mission vs. Regional Bureau Funding

These projects are jointly planned from the beginning, with the host country assuming full and early responsibility for each project. A previous review team has suggested that US AID missions should replace central sources as a basis for funding many of these efforts, but this review confirmed the advantage of the present approach. Contracting through US AID missions would be difficult and less efficient, because it would tend to fragment DWRC's effort. Considering the wide diversity of ecological and cultural conditions under which vertebrate damage occurs, and in view of the variety of species involved, management methods need to be constantly evaluated and modified by a centralized, highly specialized staff as new information is received and more suitable techniques are developed.

C. Technology Transfer vs. Research

This project combines technical transfer and research. The benefits of linking research to support technical transfer or assistance are well known to development practitioners from US AID missions, even though there

## #22 - Lessons Learned in Response to Problems and Issues (continued)

are administrative difficulties in dealing with such combined projects. This centrally funded project has succeeded in keeping the technical assistance and research in balance, with a heavy but declining emphasis on research that yields greater success in technical assistance as knowledge becomes available. This tie between applied research and technical assistance, together with early and effective involvement of LDC scientists in all planning and implementation, appears to be an effective use of funds for VPC.

### D. Three-Year vs. Five-Year Extension and Funding

The reasons for continuing this activity with AID funding are more obvious now than when the project was initiated. Bats, rats, other mammals, and noxious birds are a continuing agricultural problem. Although this project has produced impressive advances in certain of those problems, much is left to be accomplished. AID should view VPC technical assistance and supporting research not only as a high priority item but also as one requiring a much longer time frame than has been previously presented in the project documents reviewed in this evaluation. A longer term (five years) commitment to this project by AID would strengthen this capability.

### E. Role of Denver Wildlife Research Center (DWRC)

The reviewers recognize the significance of the "team approach" as practiced by the Denver Wildlife Research Center and the importance in its technical backstopping of worldwide activities. Professional staff assigned abroad are dependent on this backstopping competence and capability. US AID mission projects in the field need the Denver Center backstopping. This centrally funded project helps maintain the continuity

#22 - Lessons Learned in Response to Problems and Issues (continued)

of the professional staff of the Center and their availability for international assignments.

F. Seeking Out, Identifying, and Applying New Techniques

See item (7) in section (15) External Factors.

G. LDC Adoption of VPC Techniques

See items (3,4,5) in section (15) External Factors.

#23 - Special Comments

Depredations by pest vertebrates to our supplies of food and fiber is a problem of continuing global proportions. We are in a period of transition, building on research achievements, testing discoveries, and recognizing the importance of the ecology (both biologic and social) of the pest. The future will require extensive R&D to continue developing innovative approaches. Technological breakthroughs, significant in bat rabies and some insect control programs, have not occurred in the bird and rodent management programs.

Host country personnel for VPC programs often have been developed by retraining entomologists and other agricultural or public health workers. Direct new training also is required, both in the U.S. and the third-world countries.

In three years the world will not be significantly different; if the VPC project supported by DSB were to be terminated three years hence, probably the Philippine program could continue with direction and leadership coming from its indigenous staff and financing from the Philippine government. It is questionable whether this could occur in Bangladesh. More recently created project centers, operating as models through outreach programs to countries seeking to begin modest programs, likely would not continue. With a 5-year extension, the scenario would be considerably more favorable. However, even then, problems will not all have been solved; and the need for some form of continued support will exist. As Roger Revelle indicates (Science 30(11): 727, 1980), Biology "is a most promising field for international scientific cooperation because of the wealth of both applied and fundamental problems to be solved, the unique ecologies of the tropics, and the many short paths between fundamental research and practical application".

Table 1. Examples of assessed and estimated crop losses to rodents.\*

Country and crop	Year	Total crop yield (metric tons, millions)	Percent damaged by rats	Metric tons lost (thousands)	Income lost by farmers (\$ million)
<u>Field surveys</u>					
Philippines--Rice	1975 (traditional control)	6.5	4.6	340	68.7
	1978 (new programs effected)	6.9	0.7	49	9.7
Bangladesh--Wheat	1979 (traditional control)	0.642	12.1	78	16.0
<u>Preliminary estimates</u>					
Philippines--Coconuts	1979 (traditional control)				299**
	19__ (with best control)				0

\* For more details and documentation, see:

Jackson, W. B. 1977. Evaluation of rodent depredations to crops and stored products. EPP0 Bull. 7(2):439-458.

Jackson, W. B. and S. S. Jackson. 1977. Estimates of bird depredations to agricultural crops and stored products. EPP0 Sr. B (84):33-43d.

De Grazio, J. W. 1978. World bird damage problems. Proc. 8th Vertebr. Pest. Conf. 8:9-24.

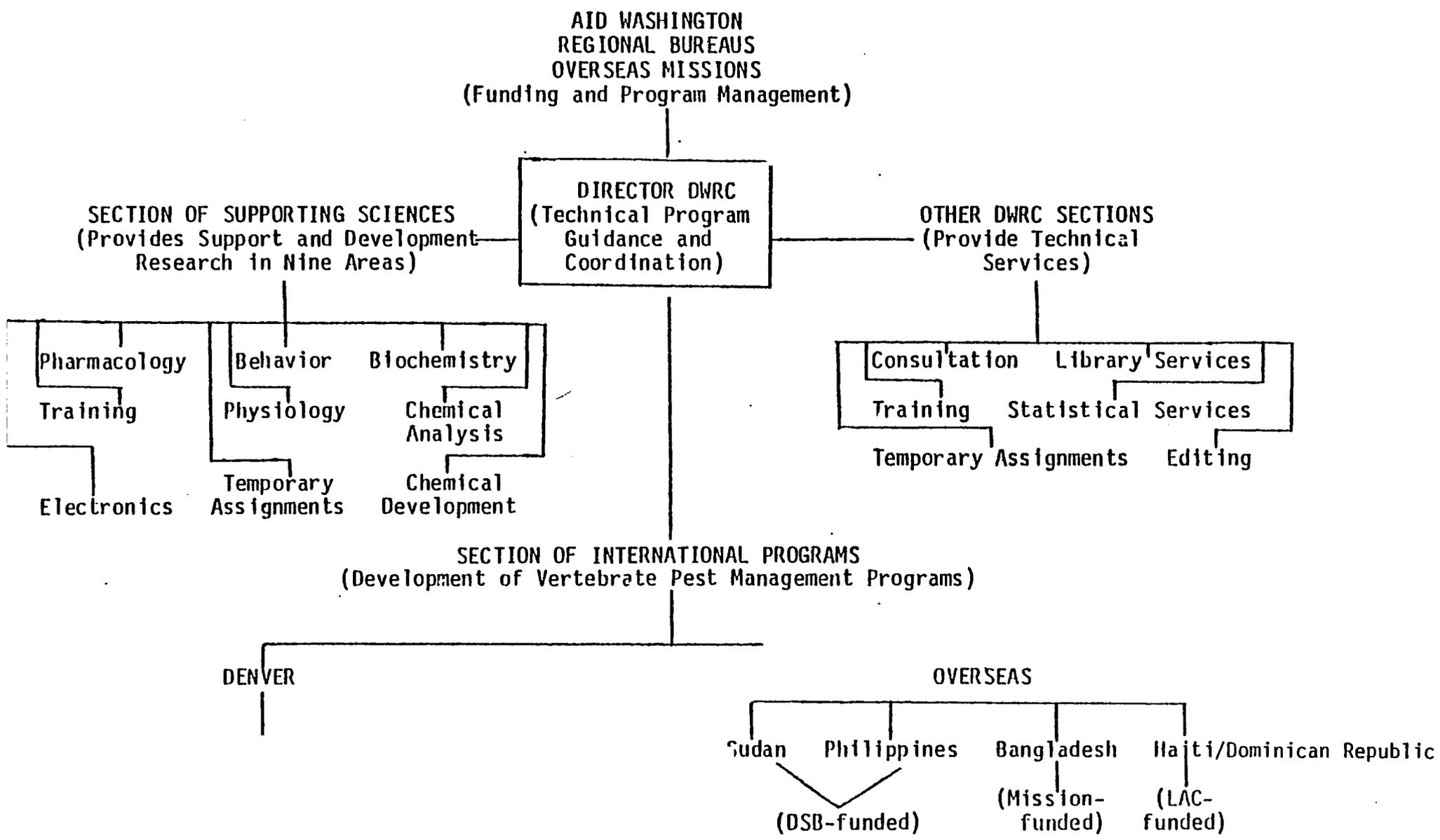
Bruggers, R. L. (ed.) 1979. Vertebrate damage control research in Agriculture. Ann. Rep. Denver Wildlife Research Center, USFWS. 106 pp.

\*\* Net loss; costs of chemicals for best control (\$5,700,000) have been subtracted.

Table 2. Summary of countries involved in outreach activities by the Philippine Vertebrate Pest Control Project, 1968-1980.

Staff contact at international workshops and seminars	Short-term training at Los Banos (1-6 months)	Graduate training at Los Banos	Working visits or temporary assignments of Philippine-based staff	Workshops conducted in host countries by Philippine-based staff
Bangladesh	Bangladesh	Bangladesh	Bangladesh	Indonesia
Burma	Comoro Islands	Indonesia	Germany	Korea
Costa Rica	Indonesia	Pakistan	Great Britain	Thailand
Dominican Republic	Korea	Venezuela	Indonesia	Vietnam
El Salvador	Maldiv Islands		Korea	
Fiji	Nepal		Malaysia	
France	Nigeria		Maldiv Islands	
Germany	Pakistan		Nepal	
Great Britain	Sri Lanka		Pakistan	
Guatemala	United States		Sudan	
Haiti	(Peace Corps)		Thailand	
Honduras	Venezuela		United States	
India	Vietnam		Vietnam	
Indonesia				
Jamaica				
Japan				
Korea				
Laos				
Malaysia				
Mexico				
Nepal				
Nicaragua				
Pakistan				
Singapore				
Sri Lanka				
Taiwan				
Thailand				
United States				
Venezuela				
Vietnam				

Appendix Table 4  
AID/DWRC Interaction Chart



Appendix table 3. Cost Estimates for Policy-making Workshops held in the Philippines.  
(Prepared by Essie S.R. Brown, AID)

	Unit Cost	Total Cost
Transportation		
8 persons (LDC)	\$ 500	\$ 4,000
2 persons (DWRC)	1578	3,156
2 persons (AID/W)	1776	<u>3,552</u>
	Subtotal	\$10,708
per diem (@\$80 for 5 days)		4,800
	1-week workshop (total)	\$15,508
	2-week workshop (total)	\$20,308

Note: This does not include preparatory needs, special logistic costs, etc. Costs for a South America/Africa workshop might be considerably different.

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PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Life of Project: From FY 82 to FY 86  
Total U.S. Funding: \$3,000,000  
Date Prepared: April 10, 1981

Project Title & Number: Control of Vertebrate Pests in Agriculture; 931-0473

BEST AVAILABLE DOCUMENT

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS																														
<p>Program or Sub-goal: The broader objective to which this project contributes:</p> <p>To improve the standard of living in agricultural areas of participating countries through the development of vertebrate pest control technology.</p>	<p>Measures of Goal Achievement:</p> <ol style="list-style-type: none"> <li>1. Introduction of new technology results in greater crop yields, reduced losses, and increased incomes.</li> <li>2. Increased use of cost-effective technologies.</li> </ol>	<ol style="list-style-type: none"> <li>1. National agricultural and socio-economic statistics.</li> <li>2. Project data and records (i.e., pest species populations, pre- and postdamage surveys, etc.).</li> </ol>	<p>Assumptions for achieving goal targets:</p> <ol style="list-style-type: none"> <li>1. In-country support and maintenance of consistent agricultural development strategies and policies.</li> <li>2. Affected farmers will accept and use appropriate vertebrate pest technology.</li> </ol>																														
<p>Project Purpose:</p> <ol style="list-style-type: none"> <li>1. To provide the technology, training, and technical assistance required to successfully reduce the impact of vertebrate pests on agricultural production.</li> <li>2. To stimulate and strengthen in-country capabilities in becoming self-sustaining in the field of vertebrate pest management.</li> </ol>	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <ol style="list-style-type: none"> <li>1. Significance of vertebrate problems known to all sectors.</li> <li>2. Knowledge and methodology for crop loss incidence and magnitude improved and in use.</li> <li>3. Recommendation packages in appropriate pest control technology adapted for a variety of local conditions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Program survey and monitoring reports.</li> <li>2. Reports of field and laboratory evaluations.</li> <li>3. Participating country reports.</li> </ol>	<p>Assumptions for achieving purpose:</p> <ol style="list-style-type: none"> <li>1. Technologies developed are economically and socially acceptable.</li> <li>2. Participating government and DWRC personnel available to serve project adequately.</li> <li>3. U.S. and local government strategy includes crop protection components with appropriate institutional base.</li> </ol>																														
<p>Outputs:</p> <ol style="list-style-type: none"> <li>1. Basic laboratory studies developed for field use and testing.</li> <li>2. Evaluate cost effectiveness and suitability of field studies.</li> <li>3. Conduct ongoing biological and ecological laboratory and field studies.</li> <li>4. Recommendation packages adapted to local conditions available for major pests.</li> <li>5. Ongoing outreach programs from DWRC (training, extension, demonstration).</li> </ol>	<p>Magnitude of Outputs:</p> <ol style="list-style-type: none"> <li>1. Five completed annually; several continuous.</li> <li>2. Three completed annually; several continuous.</li> <li>3. Two completed annually; several continuous.</li> <li>4. Minimum of two per year.</li> <li>5. Minimum of five IDY's per year to participating countries coordinated to maximize outreach activities.</li> </ol>	<ol style="list-style-type: none"> <li>1. DWRC annual, trip, and progress reports; publications.</li> <li>2. Participating country reports.</li> <li>3. DWRC/USAID/Government onsite evaluations and technical reviews.</li> </ol>	<p>Assumptions for providing outputs:</p> <ol style="list-style-type: none"> <li>1. No unique obstacle to cost-effective technology.</li> <li>2. Adequate DWRC and participating country personnel available.</li> <li>3. Host government and AID support for program.</li> <li>4. Anticipate any proposed new Mission-funded in-country projects will require backstopping by DWRC expertise.</li> </ol>																														
<p>Inputs:</p> <p>U.S. Government</p> <ol style="list-style-type: none"> <li>1. Technical expertise and IDY support from DWRC.</li> <li>2. Technical support incl. equipment.</li> <li>3. Services, publications, and training materials costs.</li> </ol> <p>Host Governments</p> <ol style="list-style-type: none"> <li>1. Salaries and benefits for participating country personnel.</li> <li>2. Technical support facilities.</li> <li>3. Field sites for testing.</li> </ol>	<p>Implementation Target (Type and Quantity) (in million \$)</p> <table border="1"> <thead> <tr> <th></th> <th>FY-82</th> <th>FY-83</th> <th>FY-84</th> <th>FY-85</th> <th>FY-86</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>.60</td> <td>.56</td> <td>.57</td> <td>.53</td> <td>.56</td> </tr> <tr> <td>2.</td> <td>.25</td> <td>.17</td> <td>.16</td> <td>.14</td> <td>.16</td> </tr> <tr> <td>3.</td> <td>.02</td> <td>.02</td> <td>.02</td> <td>.02</td> <td>.02</td> </tr> <tr> <td></td> <td>.87</td> <td>.75</td> <td>.75</td> <td>.69</td> <td>.74</td> </tr> </tbody> </table> <p>Host government costs not quantified; dependent on local situations.</p>		FY-82	FY-83	FY-84	FY-85	FY-86	1.	.60	.56	.57	.53	.56	2.	.25	.17	.16	.14	.16	3.	.02	.02	.02	.02	.02		.87	.75	.75	.69	.74	<ol style="list-style-type: none"> <li>1. DWRC reports.</li> <li>2. DS, Mission, and DWRC records.</li> <li>3. Participating country reports and records.</li> </ol>	<p>Assumptions for providing inputs:</p> <ol style="list-style-type: none"> <li>1. All financing in place.</li> <li>2. Participating government and DWRC commitments fulfilled in a timely manner.</li> <li>3. Capable personnel available.</li> </ol>
	FY-82	FY-83	FY-84	FY-85	FY-86																												
1.	.60	.56	.57	.53	.56																												
2.	.25	.17	.16	.14	.16																												
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