



Endangered Species Protection Program As It Relates To Pesticide Regulatory Activities

Report To Congress



Bald Eagle, Animals Animals/R.F. Head



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REPORT TO CONGRESS
ON THE
ENDANGERED SPECIES PROTECTION PROGRAM
AS IT RELATES TO
PESTICIDE REGULATORY ACTIVITIES

OFFICE OF PESTICIDE PROGRAMS
REPORT TO CONGRESS
ON THE
ENDANGERED SPECIES PROTECTION PROGRAM

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1.0 INTRODUCTION

1.1 Purpose of this Report

On October 7, 1988, Congress passed amendments to the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.). Section 1010(c) of the amended act directs the Administrator of the United States Environmental Protection Agency (EPA) to submit a report to Congress on the results of joint efforts undertaken by EPA, the United States Department of Agriculture (USDA) and the United States Department of the Interior (DOI). As described in Section 1010(b), these efforts are to identify reasonable and prudent means to implement an endangered species protection program as it relates to pesticide regulatory activities. (Hereafter, it will be referred to as the Endangered Species Protection Program or the program.) The program would comply with the ESA while ensuring that the nation's agricultural productive capacity would not be significantly diminished and allowing continued production of food, fiber, and forest products. In this program EPA, DOI, and USDA would work cooperatively to accomplish the following:

1. Analyze means of implementing the Endangered Species Protection Program or alternatives to such a program that would:

promote conservation of endangered or threatened species;

minimize impacts to persons engaged in agricultural food and fiber commodity production and other affected pesticide users and applicators.

2. Investigate the best available methods to develop maps as the means of identifying geographic areas where certain pesticide uses may be restricted;
3. Investigate the best alternatives to mapping;
4. Identify alternatives to prohibitions on pesticides use, e.g. alternative pesticides and application rates/methods, other agricultural practices; and
5. Identify methods to improve coordination among EPA, USDA, and DOI in administration of the program.

1.2 Legal Authority

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended (7 U.S.C. 135 et seq.) governs the regulation of pesticides in the United States. Under FIFRA, a pesticide

product may be sold or distributed in the United States only if it is registered or exempted from registration by EPA. Before a product can be registered unconditionally, it must be shown that the pesticide can be used without causing "any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of the pesticide [FIFRA Section 2(bb)] when used in accordance with label directions."

Congress passed the ESA to provide protection for animal and plant species that are threatened or endangered of becoming extinct and to conserve the ecosystems upon which they depend. Such threatened or endangered species are referred to as listed species. The ESA institutes certain prohibitions against the "taking" of listed species.

Section 7 of the ESA (15 U.S.C. 1536) requires all Federal agencies to ensure that any action authorized, funded or carried out by the agency will not be likely to jeopardize the continued existence of a listed species or to result in the destruction or adverse modification of the critical habitat of a listed species. This duty extends to licensing activities such as the registration of pesticides by EPA. In other words, EPA in registering pesticides must ensure that its actions are not likely to harm listed species.

The 1988 ESA amendments (Public Law 100-478, Oct. 7, 1988) directly address EPA and its activities affecting pesticides. The ESA amendments require that EPA work jointly with USDA and DOI to identify appropriate alternatives for implementing a program to protect listed species from pesticides, while allowing agricultural food and fiber commodity production to continue. The ESA amendments require EPA to investigate the best available methods to develop maps, alternatives to mapping, and to identify alternatives to prohibitions of pesticide use. The ESA amendments also require EPA to inform and educate fully those engaged in agricultural production of the elements of any proposed pesticide labeling program and to provide an opportunity to comment on the elements of such a program.

2.0 BACKGROUND OF THE ENDANGERED SPECIES PROTECTION PROGRAM

2.1 The ESA Consultation Process

The ESA consultation process begins when a Federal agency makes a determination that its authorized or funded action may affect a listed species or its critical habitat. As used in this report, listed species that require consultation include those that have been proposed for listing in a Federal Register notice. In the case of registration or reregistration of pesticides, EPA conducts an assessment of the potential effects of pesticides on listed species. If a particular pesticide "may affect" a listed species or its critical habitat, EPA requests a Biological Opinion from DOI's Fish and Wildlife Service (FWS), the agency responsible for administration of ESA for most species. FWS develops a Biological Opinion that indicates whether use of the pesticide in question is likely to jeopardize the continued existence of a listed species or destroy or adversely impact a critical habitat. The Biological Opinion may contain reasonable and prudent alternatives to pesticide use to avoid the likelihood of jeopardy as well as measures to reduce the possibility of incidental take of listed species.

2.2 Initial Development of the Endangered Species Protection Program

Originally, EPA's efforts to protect listed species were based on consultations conducted on individual pesticide registration actions as they were submitted to the Agency. This case-by-case approach was slow and generally did not consider older and often more toxic pesticides. Since newer pesticides were being reviewed routinely as part of the registration process, they were more likely to be referred to the FWS. The result was both inadequate protection for listed species and potential market inequities among registrants of different pesticides for the same uses.

In 1981, EPA in cooperation with FWS adopted the "cluster" approach to requesting consultations. Using that approach, all pesticides registered for the same use pattern were addressed at the same time. Each pesticide in a cluster was then evaluated independently for its toxicity and expected exposure to listed species. The individual evaluations were grouped together and referred to FWS for consultation as a cluster. This approach enabled the Agency to accelerate the review of a larger number of pesticides that could affect listed species, to treat new and old pesticides consistently, and to eliminate market inequities by reviewing pesticides with similar uses as one group.

During the period 1982-85, EPA received Biological Opinions from FWS on four clusters: rangeland or pastureland, forestry, mosquito larvicides, and eight selected crops. EPA developed an implementation plan to protect endangered species in 1986 that would require affected pesticide product labels to instruct users that they must comply with limitations on use. The label referred users in certain specified counties to bulletins that detailed use limitations.

In May 1987, EPA issued Pesticide Registration (PR) Notices 87-4 and 87-5. They required all registrants of pesticide products identified in the clusters as causing jeopardy to listed species to modify their product labeling. The purpose of the modification would be to provide pesticide users with the information necessary to protect listed species. Labels for forestry and mosquito larvicide products would provide the user with a FWS telephone number to obtain further information. Labels for crop and rangeland/pastureland pesticides would list the counties in which use limitations applied and would refer users to the bulletin for the county in which the product was to be used. The bulletins also would contain a map of the county identifying the area in which there were pesticide use limitations to protect listed species. Based on FWS information on the location of listed species, EPA drafted maps of species locations for use in county bulletins.

In October 1987, EPA invited states to develop alternative plans to protect listed species. The state-initiated plans could include changes in pesticide application rates, timing, methods, or any other measures that would protect listed species. The measures would be subject to the approval of both EPA and FWS. State-initiated plans would provide EPA with recommendations to achieve compliance with the ESA in the state through a program tailored to local conditions and needs. Further, state-tailored programs would be expected to reduce the potential adverse impact on the user community within that state.

It was EPA's intent that the labeling/bulletin requirements would take effect in the 1988 growing season. It became clear, however, that implementation of the Endangered Species Protection Program would be far more complex and time-consuming than originally anticipated. Public response to the proposed program indicated concerns such as map inaccuracies, the need for more public review and comment on the program, and the necessity for additional education and training programs. Effective state-initiated plans would require more time to allow for coordination and cooperation among several groups. Consequently, in January 1988, EPA announced it was deferring implementation of the Endangered Species Protection Program and PR Notices 87-4 and 87-5 were rescinded. Deferral of the program was in keeping with congressional action as well. The 1988 Continuing Appropriations

Bill temporarily blocked expenditure of funds to implement or enforce the program as proposed.

Throughout 1988, EPA engaged in a number of activities to improve the Endangered Species Protection Program. Efforts included:

soliciting suggestions for revisions to the program from the public;

conducting a broad public-education effort;

refining the scientific data supporting the program; and working with involved federal and state agencies.

Through a Federal Register (FR) Notice published in March 1988, EPA reviewed its progress to date and invited public comment on the proposed program. Public meetings were held around the country to invite greater public participation in revamping the Endangered Species Protection Program. Over 600 written comments along with comments recorded at the public meetings were instrumental in guiding program development.

On July 3, 1989, EPA published a FR Notice (54 FR 27984) proposing a revised Endangered Species Protection Program. It reflects the results of the public consultation efforts as well as those of EPA, DOI, and USDA in addressing key concerns in program

implementation. EPA believes the results are a much improved program offering protection of listed species while avoiding unnecessary disruption of agricultural or other pesticide uses. Since the public comment period closed on October 2, 1989, EPA has been evaluating the comments. They indicate much broader support for the revised program along with a number of suggestions to consider when filling in the details of implementation. (See Attachment 1 for a summary of the comments.) It is anticipated that the FR Notice describing the final program will be published in 1991.

3.0 IMPLEMENTATION OF ENDANGERED SPECIES PROTECTION PROGRAM

Successful implementation of the Endangered Species Protection Program is dependent upon achievement of two goals. The first goal is to promote the conservation of endangered or threatened species. The second is to minimize impact of the program on persons engaged in agricultural food and fiber commodity production and other pesticide users. This section of the report will describe analyses being performed by EPA, USDA, and FWS to determine the best means of implementing the program in a way consistent with the two goals. A summary of key features will be presented followed by details of the supporting analysis.

3.1 Conservation of Endangered or Threatened Species

To provide the best protection for listed species and in response to public comments, EPA has abandoned the 'cluster' approach and developed a species-based approach to biological consultation. EPA will initially focus on the listed species that are the most vulnerable to pesticide threats and are the subject of existing Biological Opinions which have declared jeopardy. EPA, along with FWS, will then identify the counties in which these species are located and, with the assistance of USDA, determine the

agricultural crops and other pesticide uses that may occur in the vicinity of the species. The next step will be to identify the pesticides registered for use on these sites and evaluate all of their uses to see if any result in a 'may affect' determination. If after consultation with FWS, pesticide products are found to pose a threat to listed species, registrants will be required to provide on the product label a generic statement instructing pesticide users to comply with limitations described in a corresponding bulletin for the county where the pesticide may be applied. These bulletins will be developed by EPA in consultation with FWS, USDA, and the affected state and will tell the reader what species within the county must be protected and will provide all applicable use limitations. Bulletins will typically include county maps showing the location of listed species' habitats within the county along with the list of pesticides and the use limitations for each.

States have the option of developing their own recommendations for listed species protection through state-initiated plans. If EPA determines that the state proposal provides adequate protection and is administratively feasible, EPA will incorporate it into the program in place of the federal approach within that state. EPA will then consult with FWS to determine if the state's recommendations provide acceptable protection if the state-initiated plan proposes that EPA take actions different from those specified in existing FWS biological opinions. Even if a state

does not develop a plan, it may still make recommendations to EPA to be incorporated into the federal approach for the state. Such recommendations would most likely relate to species distribution.

During 1991, voluntary and pilot programs will be implemented. The enforceable program will be initiated in 1992 and implemented in 1992-1994. Enforcement of the use limitations imposed for pesticides included in this program will be carried out under the misuse and misbranding provisions of FIFRA.

3.1.1 Species-based Approach

EPA believes that the goal of protecting listed species from pesticides can best be achieved by focusing on the listed species themselves rather than on a cluster of pesticide use crop/sites. The main objection to the cluster approach has been called the 'corn/melon inequity'. This inequity occurs when within the same geographic location, a particular pesticide may continue to be used on a site not yet evaluated, such as melons. Meanwhile that same pesticide may not be allowed on a site, such as corn, that has been evaluated. Thus, a listed species has no protection against uses of products that have not been evaluated. This could give growers of some crops an advantage over growers of other crops. Further, it could also cause some growers to switch to melons, thus negating protection.

In contrast to the cluster approach, a species-based approach will give priority to those species most in need of protection from pesticides. This approach was the one favored in most of the comments on the March 9, 1988, proposal. Because voluntary protective efforts are essential to the success of any program designed to protect listed species, the species-based approach is therefore likely to gain more acceptance by pesticide users.

EPA is proposing to proceed with the species-based approach in several phases. In each phase EPA would consult with the FWS to obtain information on the necessary use limitations to protect listed species.

First, EPA would re-evaluate all pesticides for which there are existing biological opinions, and re-initiate consultation with FWS on those pesticides when necessary. Two major consultations are anticipated. Pesticides that may affect the most vulnerable species would be re-evaluated first. EPA has existing cluster or case-by-case opinions on about 148 chemicals and 250 listed species. All uses of these pesticides would be considered by EPA, and FWS would provide opinions on all listed species that may be affected.

In phase two, the proposed species-based approach would be applied to all remaining chemicals that may be used or transported

to outdoor environments. The number of chemicals is changing as reregistration proceeds and active ingredients drop out of the process. The evaluation would start with the most vulnerable species.

In the maintenance phase, new chemicals, newly listed species, and new information would be processed on a case-by-case basis. Overall, it is estimated that 400-450 species may be benefitted by the program.

3.1.2 Generic Labeling and Bulletins

EPA has proposed that the Endangered Species Protection Program be implemented through pesticide labeling which will refer users to county-specific bulletins. The label statement will be generic in that it will not list the counties in which limitations on pesticide use apply. Instead, the labels on affected products will require that users in all counties comply with use limitations, if any, in the bulletin for the county in which they intend to use the pesticide. This is a change from the earlier proposed program wherein labels would list affected counties and users in those counties would have to obtain a bulletin. In its July 3, 1989, proposal, EPA highlighted this as an area for additional public comment.

It is anticipated that pesticide use limitations to protect listed species will affect approximately 1,000 counties or one third of the total in the United States. For the remaining two thirds of the counties, generic bulletins will be prepared and distributed indicating that registered pesticide uses are unaffected by the requirements of the Endangered Species Protection Program.

In affected counties, the bulletins will typically contain a county map showing the geographic area associated with each species of concern. (More information about maps will be covered in Section 4 of this report.) They will identify the pesticides that may harm these species and describe the use limitations necessary to protect these species. For those counties in which no limitations apply, the county bulletin will indicate that use of the pesticide according to label directions is appropriate. These bulletins will also provide general information regarding the protection of listed species.

Generic labeling reduces the frequency of changing labels as additions, changes, and deletions are made over time. Relabeling a product is expensive for the registrant and it takes approximately 2 years for a revised label to reach the end-user. During that relabeling period, protective measures for listed species would be delayed.

The burden shifts to EPA to keep bulletins up to date and continuously inform users of the existence or lack of use limitations in a county. EPA intends that bulletins will be available in advance of the time that pesticide labels are modified to refer users to the bulletins. If needed, the bulletins will be updated annually to add or delete limitations or to incorporate new information received from pesticide users, registrants, and other interested parties.

A generic labeling and bulletin approach relies heavily on a successful outreach program to reduce uncertainty or confusion to pesticide users. EPA will use many available avenues to ensure wide distribution of and easy access to the county bulletins. Distribution mechanisms currently exist through training and certification programs within the states, through USDA, and EPA regional offices. As the program is fully implemented, other avenues will be developed including pesticide dealers and distributors and FWS regional and field offices.

3.1.3 State-initiated Plans and Pilot Projects

State involvement has been an important aspect of the program because each state has its own unique situation and concerns regarding listed species. Some states are developing state-

initiated plans and are investigating the development of alternative approaches that would provide protection for listed species while still allowing the use of certain pesticides. Others are developing education and training programs specific to the needs of protecting listed species in their state. Additionally, state-initiated plans may suggest additional local factors that EPA can consider in making 'may affect' determinations. The guiding principle for all state efforts will be to ensure that EPA pesticide registration activities do not adversely affect the species.

When state-initiated plans are submitted to EPA for review and approval, EPA will consult with FWS to determine if the provisions of the plan will constitute reasonable and prudent actions to protect listed species within that state. If approved, EPA would incorporate the state-initiated plan and require through the bulletins that users comply with the requirements of the plan. State-initiated plans can be developed for all or a portion of the species affected in that state. Until the state-initiated plan is approved and implemented, however, the federally-initiated requirements are in effect.

In another aspect of state participation in the development of the Endangered Species Protection Program, EPA funded several special projects for 1989 and 1990. Five grants totalling nearly \$530,000 have been funded under the Enforcement Cooperative

Agreement Program administered through EPA's Office of Compliance Monitoring. By working through its regional offices and project states, EPA is exploring alternative methods to protect listed species and determine their utility to the federal Endangered Species Protection Program. A summary of the various grant activities follows.

The California Department of Food and Agriculture (CDFA) is developing a model for gathering local data on listed species and their habitats. Information to be collected includes local pesticide use, terrain, and climate. Measures will be developed to mitigate pesticide exposure, and habitat maps will be refined. Since CDFA's effort will address approximately 45 species, the information may be useful in other geographic areas where these species are found. Further, procedures for habitat analysis, mapping, and information-gathering may be incorporated into the final federal program and shared with other states. Finally, the CDFA project includes a small field survey to determine the adequacy of pesticide labeling precautions to protect listed species. The information derived from this work will be directly useful to EPA in evaluating its own labeling approach.

The Minnesota Department of Agriculture project provides an opportunity to evaluate a unique approach to protection of listed species: landowner protection agreements. While there may be few circumstances where habitat is as narrowly limited as in Minnesota,

EPA hopes to learn how to define clearly the types of situations that may lend themselves to such an approach. In addition, the one-on-one personal contact of the state with landowners provides opportunities for offering education and support and for monitoring good management practices.

The Puerto Rico Department of Agriculture project is designed to obtain pesticide usage and crop data, develop an experimental design for sampling, to collect and analyze samples, and to draw conclusions and recommendations regarding use of pesticides. One species will be chosen as the object of the effort. Again, lessons learned will be shared with other states and, if appropriate, incorporated into the final federal program.

The Inter-Tribal Council of Arizona pilot project involves development of a model Endangered Species Protection Plan. Maps of species habitat, enforcement matrices, and model ordinances will be developed. Again, the resulting recommendations may be applicable in other areas.

The Florida Department of Agriculture and Consumer Services has undertaken a project to develop advanced pesticide management techniques through use of a computerized Geographic Information System (GIS). More information about the project will be detailed in the section of this report dealing with mapping (Section 4.0).

The Florida experience will help EPA determine the feasibility of developing GIS approaches at the federal level and assess the technical and resource implications.

There is yet another aspect of state participation in the development of implementation strategies for the Endangered Species Protection Program: Federal Program Pilots. Working through the EPA regional offices, a group of states has volunteered to pilot the Federal interim voluntary program within all or part of their states. For county/species combinations for which acceptable maps have been developed, EPA will prepare the interim bulletins, fact sheets, and other information materials for distribution within the counties for voluntary use by pesticide users. By actively seeking user feedback, volunteer states can help EPA evaluate the usefulness of the bulletins and related information, distribution methods, and program impacts. Between 18 to 25 counties in six states may participate in the Federal Program Pilots.

In summary, EPA intends to rely heavily on the results of the variety of State-initiated plans, special pilot projects and Federal Program Pilots to refine the Endangered Species Protection Program implementation strategies. The results of these projects, along with public comments on the proposed program will identify the reasonable and prudent means to implement the final program.

3.2 Minimization of Impacts

EPA realizes that pesticide users' cooperation, a crucial factor in the success of the program, may be best achieved by minimizing impacts on them. Since deferral of the program in January 1988, EPA has analyzed the extensive public comments on impacts and revised the program accordingly. EPA believes that reducing the burden on pesticide users can be achieved through the use of a threshold application rate approach and consideration of different exposures resulting from various application methods. Extensive public participation is encouraged as a means of gathering the most accurate information about pesticide use and listed species habitat. While users must comply with the applicable use limitations, EPA has relaxed the requirement that users must acquire the bulletin itself in order to be in compliance with the program. Further, indoor uses of pesticides are exempt from the program requirements. Demonstrated public health emergencies can be accommodated by EPA's emergency exemption procedures in concert with FWS. Finally, in conjunction with FWS and USDA, EPA is conducting economic impact case studies to assess the costs of the program to users and registrants. Each of these factors is described in the sub-sections of the report that follow.

3.2.1 Threshold Application Rates

As one way to minimize impacts on pesticide users, EPA developed a threshold application rate approach in making its 'may affect' determinations. First, the highest allowed application rate is screened to determine if 'may affect' criteria are exceeded. If they are exceeded, a more thorough evaluation is conducted to determine the threshold or lowest application rate that may affect listed species. EPA will indicate threshold rates only when they are within the range of rates specified on the label for a particular use. Lower labeled rates are expected to be efficacious under some circumstances, but they may not be efficacious for certain soil conditions or geographic areas or for some pests that are harder to control.

It should be noted that, most commonly, pesticide threats to listed species will result from acute toxicity from direct exposure. Toxicological data on surrogate species is analyzed when 'may affect' determinations are made. They also may be made on the basis of chronic effects on surrogate species as well as effects on habitat or food supply of listed species. These evaluations will be based on a threshold application rate where test data on an appropriate surrogate species provides an actual no-observed-effect-level or one that can be extrapolated.

The threshold application rate approach is a change from the earlier practice of basing 'may affect' determinations only on the highest registered application rate. Application rates below the threshold application rate will not be part of the consultation with FWS.

This approach places the emphasis on reduced application rates in lieu of complete prohibitions of use. Consultation will be limited to the specific application rates and uses that may affect listed species. In this way, EPA will be able to refine the risk assessment, confine use limitations to where they are really needed, and simplify the instructions to users. For example, users would be instructed: do not use pesticide 'X' at an application rate greater than 1/2 pound per acre in currently occupied habitat.

3.2.2 Application Methods and Timing

When making 'may affect' determinations and to the extent data are available, EPA will consider other aspects of exposure such as application methods, timing of application, or changes in formulation. For example, in certain situations, a granule applied on the surface of the soil would not be allowed, but a spray or soil-incorporated granule would be acceptable. A pesticide registrant may amend a registration so that the pesticide would no

longer affect listed species. EPA will review 'may affect' determinations in light of the requested amendment.

3.2.3 Reasonable and Prudent Alternatives

As part of the 'may affect' determination process, EPA, USDA, and FWS are evaluating potential reasonable and prudent actions that can be proposed to FWS in consultation requests. These are actions that will reduce the burden on pesticide users while still providing adequate protection for listed species. In addition, EPA encourages users, registrants, and others to submit suggestions on ways to minimize the burdens on pesticide users. Registrants, for example, may amend a registration so that the pesticide would no longer affect listed species. Pesticide users may provide information on specific agricultural practices and pesticide usage that affords protection of listed species. For example, instead of a mapping approach, a survey for nesting colonies could be conducted to identify where use limitations would apply to protect the red-cockaded woodpecker. This was suggested to EPA by forestry pesticide users and was accepted by FWS. Submission of data early in the process will enhance EPA's ability to evaluate and, if appropriate, use the information effectively. More information on alternatives to pesticide prohibitions will be provided in Section 5 of this report.

3.2.4 Public Participation

EPA intends to build the Endangered Species Protection Program through an open and participatory process that encourages the involvement of states, counties, the agricultural and forestry community, registrants, environmental groups, and the many individuals and organizations concerned about this issue. The revised program proposed in the July 3, 1989 FR notice specifies several opportunities for public participation throughout the process. Once EPA has made a 'may affect' determination, the information will be available to the public. FWS biological opinions will also be made available to the public. Another opportunity for state and public participation is provided when habitat maps are produced. This will be described more fully in Section 4 of this report. Information from registrants as well as the interested public - often those with first hand knowledge of specific pesticide use and listed species habitat - will help EPA tailor the program and minimize the impacts on users.

As noted in Section 2 of this report on the background of the Endangered Species Protection Program, public participation has been an essential element of the process of revising the program. Also in keeping with the ESA amendments, public outreach and education efforts have been undertaken. A newsletter, information brochures, and species fact sheets are being developed and

distributed. An extensive mailing list has been built. The goals are to help the public understand the effects of pesticide use and the need for endangered species protection efforts.

3.2.5 Generic Labeling and Bulletins

As noted earlier in this report, EPA favors the generic labeling/bulletin approach for a number of reasons. Of course, some disadvantages have been identified as well and EPA has proposed to take the following actions to mitigate them.

First, the generic statement would not require a pesticide user to obtain a bulletin, but instead would require the user to comply with the limitations in the bulletin. This modification would permit pesticide users to determine whether they need to have the information without going out of their way to locate the bulletin itself. For instance, a user could place a phone call to his/her pesticide retailer, local USDA representatives, or EPA to determine whether limitations apply within the county. EPA is currently investigating the feasibility of a toll-free telephone number that users may call for information.

Second, EPA will work with representatives of the pesticide industry during the 1991 Interim Program period to determine an effective method of distributing bulletins and information about

which counties are affected and which are not. EPA is conducting an economic impact analysis comparing generic labeling to county-specific labeling. The analysis is described in Section 3.2.7 of this report. If an effective information distribution system cannot be developed that minimizes the potential burden and economic impacts on the pesticide users in the many counties in which limitations do not apply, EPA will seriously reconsider the option of listing counties on the labels of affected products.

3.2.6 Exemptions

The program proposed in the July 3, 1989, FR Notice provides for several exemptions. It is proposed that indoor uses of pesticides be exempt from program requirements.

In the case of a public health emergency where expeditious control of disease vectors such as mosquitoes and fleas is required, a state agency or the U.S. Public Health Service/Centers for Disease Control may obtain a public health emergency exemption or may invoke a crisis exemption under Section 18 of FIFRA. EPA strongly encourages public health agencies to contact FWS as soon as possible - preferably prior to any problems occurring - to develop options protective of listed species in the event an emergency or crisis exemption is necessary. This will permit a more rapid emergency consultation to be undertaken with FWS by EPA.

Federal agencies using pesticides are not exempt from the program. However, in many cases, such federal agencies consult directly with FWS on specific programs or operations in a particular area. Often, these consultations are fairly narrow in scope or area and, therefore, can be more tailored than EPA's national program. In such cases, the more specific formal consultation will take precedence over EPA's program. For example, the Animal and Plant Health Inspection Service (APHIS) may consult directly with FWS on a grasshopper control program for a particular geographic area. APHIS should abide by the results of their consultation with FWS. Where another federal agency has not formally consulted with FWS, it must follow EPA's program.

EPA has proposed deletion of the homeowner exemption that had previously been proposed. Since home owners may have listed species on or near their property, home and garden uses of pesticides could affect them.

3.2.7 Economic Impact Analyses

EPA acknowledges that limitations on pesticide use may impose some burden on registrants because of relabeling costs and on pesticide users, particularly where few or no alternative pesticides or management practices are available. To address those

concerns, economic impact analyses are being conducted. One deals with the impacts of the full program. A second one focuses on the issue of generic versus county-specific labeling.

EPA is working with USDA and FWS on an Interagency Impacts and Alternatives Task Group to conduct economic impact studies of the Endangered Species Protection Program. The related analyses are based on case studies in the following areas: specialty crops in Florida and California, field crops, public health, and forestry. They are related to the biological opinions and pesticide use limitations available to EPA in 1987. The task group is joined by the California Department of Food and Agriculture, the Florida Department of Agriculture and Consumer Services, and selected pesticide applicators/users.

The task group has gathered relevant data in several counties in California and Florida. These site-specific data will be used to determine the potential impacts to growers of fruit and vegetable specialty crops. In general, the task group will focus on the extent to which listed species' habitats overlap with areas used for agricultural production. Once this has been determined, the impacts of potential pesticide use limitations will be estimated. Impacts will be expressed in terms of foregone agricultural productivity and/or increased cost of production.

The field crop analyses will include estimates of the impacts on the following: corn, cotton, sorghum, wheat, barley, soybeans, oats, and rye. The methodology used to analyze the impacts on field crops will be consistent with the analytical methodology applied to specialty crops.

Public health analyses, on the other hand, will focus primarily on the availability, comparative cost, and efficacy of alternative, non-jeopardy pesticides. Analysis will be limited to areas which are most affected by the Endangered Species Protection Program.

Within the task group, USDA's Forest Service has taken the lead in providing estimates of potential impacts to forestry. These estimates will be presented primarily in terms of foregone timber production. Once again, the task group has narrowed the focus of the study by analyzing the impact of use limitations in certain representative forests.

EPA will consider the economic costs and risk reduction achieved under three options regarding use limitations. The three types to be analyzed are:

Outright prohibition of affected pesticides in currently occupied endangered species habitat and buffer zones;

Allowing continued use of affected pesticides below certain threshold rates of application; and

Allowing use of affected pesticides when species are not present, i. e., migratory species.

The case studies were chosen because they are representative of potentially affected pesticide use sectors. Specific states or forests, however, were analyzed based on certain assumptions regarding use practices and pesticide availability. For example, EPA expects that these areas represent locations where there is a relatively high overlap between species' habitats and pesticide use areas. Minor crops have been chosen for analysis since they tend to have the least number of effective alternatives available. Therefore, the sites/geographic areas tend to represent locations where the greatest magnitude of economic impacts is anticipated.

EPA is conducting an additional economic impact analysis comparing generic labeling to county-specific labeling. Under generic labeling, pesticide users would have to take the time to determine if use limitations apply in the county in which they plan to use the pesticide. This factor will be analyzed in terms of the cost of additional time required to comply with the program. In contrast, county-specific labeling would impose additional label

modification costs on pesticide registrants, but may cost the user less time. The analysis is designed to weigh the increased opportunity costs of time for generic labeling against the increased label modification costs of county-specific labeling. The potential of both approaches to disseminate information to the user community and resulting reduction of risk to listed species will also be considered in the analysis.

EPA anticipates completing the economic impact analyses after review by USDA and FWS. The results will be considered in developing the final program and will enable EPA to estimate the level of impacts and potential location of affected areas. In addition, tools to mitigate economic impacts on affected communities will be identified.

4.0 ENDANGERED SPECIES HABITAT LOCATION IDENTIFICATION - MAPS AND ALTERNATIVES TO MAPPING

An essential element of the Endangered Species Protection Program is determining the location of listed species at risk from pesticide use and effectively communicating location information to affected pesticide users. The ability to produce clear, accurate maps or other methods to communicate location information is critical to the success of the program. EPA, the FWS, many State and local government officials, and the interested public have devoted a great deal of effort and resources to this matter. This section of the report will first describe the best available methods to develop maps. This will be followed by descriptions of the best available alternatives to mapping as the means of identifying circumstances in which pesticide use may be limited.

4.1 Methods for Developing Accurate Maps

EPA believes that county bulletins with species location maps are the best method for communicating with pesticide users about areas where pesticide use should be limited. EPA has an obligation to develop the most accurate maps and distribute them to affected users. The basic principle behind accurate mapping is to have

federal, state and local experts review maps and suggest improvements. In January 1988, EPA began that process.

As a first step, based on species location information provided by FWS, EPA prepared draft maps of several hundred counties in 28 states where listed species have been designated as jeopardized by pesticide uses. To ensure thorough review by knowledgeable parties, EPA distributed the draft maps to EPA regions, USDA Headquarters, FWS Headquarters, and the states. States were requested to further distribute the draft maps to state-level pesticide coordinators, agriculture departments, fish and game departments, and endangered species or heritage programs. The state-lead agencies were asked to compile the state's comments on maps and send them to EPA. USDA and FWS also were asked to provide comments to EPA.

Comments received on the maps are of two general types. Some comments are related to style or geographical features and are incorporated as appropriate and necessary to make the maps more understandable. Comments also focus on the actual distribution of species. Where comments identify distributions other than that provided by FWS, EPA works with FWS and the commenters to resolve conflicts and come to a mutual agreement. After a resolution is achieved, EPA again revises the maps. Depending on the extent of the revisions, the maps may be sent out for an additional review.

The new maps will be incorporated into county bulletins to be distributed once again to EPA's regions, USDA, FWS, and states and made available to the public on an on-going basis. The initial distribution (1990/1991) will be to a minimum of 65 counties in nine states. EPA will encourage the public to use the information in the bulletins on a voluntary basis and to provide comments to EPA on improvements on maps or other aspects of the bulletins where appropriate. Using FWS as the final concurrence authority on location information, EPA will revise maps annually as the need arises.

Currently, EPA is using Computer Aided Design (CAD) technology to develop maps for inclusion in bulletins. At present, the CAD techniques allow for greater 'artistic' freedom for development of map features aimed at the user community. Accuracy in depicting species boundaries is pre-eminent in the map production process as well as readability and usability by the average user.

Parties that commented on the initial Endangered Species Protection Program suggested that EPA explore the use of computerized Geographic Information Systems (GIS) as a method for developing more accurate maps. To that end, current maps are developed in a way that will permit conversion to a GIS format if feasible and necessary. EPA is working with the U.S. Geological Survey and its National Mapping Program. In addition, EPA is fortunate to have the cooperation of the state of Florida in

exploring this possibility. The Florida Department of Agriculture and Consumer Services has undertaken a project to develop advanced pesticide management techniques using GIS. The work is being performed under the Enforcement Cooperative Agreement Program referenced in Section 3.1.3 of this report.

GIS allows many distinct data bases to be superimposed and displayed graphically. It also offers decision-makers an opportunity to view and evaluate multiple geographic parameters (soil type, land use, etc.) concurrently. In the Florida project, GIS will be used for identification and graphic display of geographic zones where groundwater protection and listed species protection zones overlap agricultural and other land-use data. It is also helpful for targeting compliance monitoring and enforcement efforts. Assuming a successful outcome, EPA will assess the feasibility of developing GIS approaches at the Federal level and incorporating them into the implemented program.

4.2 Alternatives to mapping

EPA is not limiting itself to maps as the only way to identify species location. If other descriptive information or other methods are available, they will be used. The goal is to provide as much information as possible to affected pesticide users.

As parties commenting on the initial program pointed out, maps may not fully portray the habitat of highly mobile species or a unique habitat within a broad range. In those cases, habitat description information will be used in lieu of or as a supplement to maps. Landmarks such as streets and roads as well as township/range/section names will be used to designate areas where protective measures are needed.

Another alternative to mapping was explored by EPA during the initial efforts to protect listed species: instructing pesticide users to contact regional or field offices of FWS. Using phone numbers available on county bulletins or in widely distributed advisories, the pesticide user would call their local FWS office and describe the pesticide they intend to use and the location where it would be applied. The FWS staff would advise them if the product could be used in that location or if protective measures should be taken. This concept was tested on two of the clusters of pesticides - mosquito larvicides and forestry uses. While it appeared to be convenient for users, it met with only limited success. FWS did not have sufficient resources to fully disseminate information on the program to FWS field staff or to handle the volume of calls. In the future, however, when the program is fully implemented and field staff are fully informed of the features of the program, this may be a practical alternative for a limited number of species. This may be especially effective

when revealing location information could result in illegal collection of the listed species.

Finally, as another alternative to mapping, the state of Minnesota has proposed to develop and enter into 'protection agreements' with landowners. The work is another of the special project pilots funded under EPA's Office of Compliance Monitoring Enforcement Cooperative Agreement Program. This technique is appropriate in limited circumstances: when species are found in isolated areas mostly on privately owned land with resident owners. Landowner-protection agreements will be site-specific management plans. Protection may be afforded by such activities as posting signs, monitoring listed species population at least annually, and reporting problems to FWS. A key element of this approach is the one-on-one personal contact of the state with the landowners and the resulting opportunities for offering education and support, and for monitoring good management practices. Through information gathered under the Minnesota grant, EPA hopes to better define the types of situations that may lend themselves to landowner protection agreements within the context of the federal program. Project completion is scheduled for July, 1991.

5.0 ALTERNATIVES TO PROHIBITIONS ON PESTICIDE USE

Once EPA and FWS have determined that listed species need to be protected from certain pesticide uses in a particular location, the next step is to determine what alternatives may exist to prohibition on use. Several approaches can be employed: use of alternative pesticides, changes in pesticide application rates or methods, and non-pesticidal pest control methods. In addition, the 1990 Farm Bill provides several programs that address cropland that overlap with potentially sensitive habitats. A description of each approach is provided in this section of the report.

5.1 Alternative Pesticides

EPA only refers pesticides for consultation with FWS if they exceed the 'may affect' criteria for particular groups of species such as birds, fish, or plants. Those pesticides that do not exceed the criteria can then be considered as potential alternatives that may be used within the habitat of listed species. Some pesticides that may be a hazard to only one group of species such as birds, may be able to be used as alternatives within the range of other listed species, such as fish. EPA has developed a preliminary list of alternative pesticides based on the initial

program. These lists will be supplemented as the program matures. Information on alternative pesticides must be further refined by consulting with USDA and the states to determine their efficacy. In addition, states will be instrumental in evaluating location-specific conditions of pesticide use as well as species characteristics to identify efficacious pesticides that do not harm listed species and their habitats.

5.2 Changes in Use of Pesticides

As a second approach, it may be possible to avoid prohibitions of use of affected products by modifying the ways in which the pesticide is used. Within the range of registered uses, changes in the timing, application method, or using a different formulation may result in protection of listed species. For example, switching from a dust to a granular formulation may reduce exposure caused by drift. In some cases, timing of the application can be tailored to when the species is not present or an appropriate crop stage is reached and the species is not likely to be exposed. Using an example of a migratory species, it may be possible to use a pesticide when the species is absent to avoid or reduce exposure. When considering crop stage, a pesticide might be used to control pests prior to emergence of a crop. If an endangered animal feeds directly on the crop or on insects that feed on the crop, its food

supply may not be affected by the harmful pesticide. Application rates can be adjusted to label rates below the threshold level that triggered the 'may affect' determination. It is essential that the information gathered to support this approach is very specific to the affected species, crops, and geographic location. Again, this is an area where close coordination and cooperation among EPA, USDA, states, and registrants will greatly aid the program.

In the process of developing biological opinions in response to EPA's requests for consultation, FWS provides EPA with reasonable and prudent actions to take to protect listed species. In the old cluster program, FWS typically specified that the pesticides found to jeopardize listed species not be allowed for use within or adjacent to the species' habitats. In their most recent biological opinion, however, FWS has provided EPA with a variety of examples of reasonable and prudent actions. Some actions were specific to pesticide types or individual pesticides, while others applied to particular species. These alternatives (see Attachment 2) reflect the substantial refinements that have been made in the program resulting from ongoing discussions among EPA, FWS, and USDA. As more pesticides and species are evaluated, comparable or additional alternatives will be compiled.

5.3 Non-Pesticidal Control Methods

The third approach considers non-pesticidal pest control methods such as those being considered under the concept of low input sustainable agriculture or LISA. USDA's assistance in research, education and outreach on LISA will be invaluable in the implementation of the program. There are some effective biological and mechanical controls and there will undoubtedly be more in the future as a result of research underway within USDA, state agricultural experiment stations, and in private industry. While some may be labor intensive, they can result in reduced pesticide use and related expense and frequently would be necessary only in small areas. Again, these methods must be carefully tailored to geographic areas and agricultural practices. Since the applicability of these methods cannot be generalized, they will be developed as species-based consultations are completed and species location information has been gathered.

5.4 Programs Available in 1990 Farm Bill

The 1990 Farm Bill offers several promising approaches to endangered species protection in the estimated 500,000 to 600,000 acres of cropland that are located in endangered species habitat. There are two programs which pay farmers to take land out of

production in areas where nonpoint sources of pollution have been documented to pose a significant threat to listed species or the quality of their habitat. One is the Environmental Easement Program which enables farmers to permanently enroll cropland. The other is the Conservation Reserve Program which allows for temporary enrollment. Another possibility is the Wetland Restoration Program which will pay farmers to restore 1,000,000 acres of cropped wetlands. In situations where pesticide use poses a threat to listed species, these programs could reduce disruption to agricultural activities. They could also reduce EPA compliance costs provided habitat do not overlap with high value fruit and vegetable cropland. In those places, the subsidy payments may not be high enough to compensate for setting the land aside. EPA, FWS, and USDA could work closely to determine the habitat locations, value of the land, the cost-effectiveness of participating in these programs. Finally, farmers may also participate in the Water Quality Incentive Program which compensates them for employing best management practices for reducing pollutant loading in sensitive areas including endangered species habitat.

All the approaches described in this section of the report are greatly dependent upon good research efforts, thorough communication, and willing compliance by pesticide users. A strong cooperative effort between EPA, FWS, USDA, States, users and the public is essential to discovering practical, innovative approaches to pest control and protection for endangered species.

6.0 IMPROVED COORDINATION AMONG EPA, USDA, AND FWS

The administration of the Endangered Species Protection Program relies on the expertise of FWS with responsibility for implementation of the ESA; EPA with responsibility for pesticide regulation; and USDA with its expertise in agriculture and knowledge of pesticide users. This section of the report will describe efforts undertaken to improve the coordination and communication among the three organizations.

In reviewing the history of the Endangered Species Protection Program, it is apparent that the first attempts to design and implement the program were not fully successful. Efforts of USDA, FWS, and EPA were not well coordinated and public participation efforts were inadequate. The parties most affected by the requirements of the program did not fully understand the ESA largely because it was not adequately communicated.

Since late 1987, EPA, FWS, and USDA have been working more closely on the Endangered Species Protection Program. A significant change is that EPA has promoted communication between FWS and USDA. The benefit is that each agency has learned far more than before about protecting listed species and the practical

realities of field implementation. While serving as a bridge between USDA and FWS, EPA also gained valuable insights on implementation responsibilities including improved communication and outreach to pesticide users in the field. An unexpected benefit is that the lessons learned can be applied to field implementation of other EPA pesticide programs directed toward users such as groundwater protection and farm worker safety.

The key to improved coordination was formation of an interagency task force with the following membership: USDA's deputy assistant secretary for science and education, USDA's assistant secretary for natural resources and the environment, the director of FWS, EPA's assistant administrator for pesticides and toxic substances, and the deputy director of the pesticide program office. Starting with its first meeting in December of 1987, this high level policy group set the stage for development of the revised program. First, it formed three interagency staff-level task groups and assigned them specific responsibilities:

Technical Task Group - to provide the best available technical information on listed species, effects of pesticides, and mitigation practices and to identify research needs where current information is insufficient;

Outreach and Education Task Group - to identify educational needs, develop materials, and deliver them to the field; and

Impact and Alternatives Task Group - to investigate economic costs of the program to affected pesticide users and to suggest alternative pest control methods.

The policy group provided the early direction to the task groups on those aspects of the program that warranted further development or re-evaluation. Based on the results of the task group efforts, the senior officials reached agreement on the basic principles for the design of the Endangered Species Protection Program. These are reflected in the July 3, 1989, FR Notice that proposed the revised program.

Initial reaction to the revised program FR Notice could be viewed as a barometer of the success of EPA, FWS, and USDA in improved coordination and communication with the public. When considering the Endangered Species Protection Program, the focus is no longer whether to implement the program but how. Although FWS expressed a preference for the cluster-based approach, they agreed to consult on any reasonable approach including the species-based approach.

Senior officials from EPA, FWS, and USDA remain committed to full interagency cooperation and communication as they proceed with implementation over the next several months. Based on staff level analysis of comments on the July 3, 1989, FR Notice, economic

analyses, and other information, the task force will make decisions on the content of the final program. Final implementation procedures will also be determined.

Each agency/department will have responsibilities as the lead in its specific areas of expertise. The other two agencies/departments will provide advice and developmental assistance to the third as well as perform key review functions. Although responsibilities will not be detailed until after decisions are made on the final program features, the key roles can be generalized.

The FWS will continue its key role in the consultation process and resulting biological opinions. Because of its expertise on endangered species, its information is essential in interagency groups' efforts to rank species. It will lead in the review of EPA's "may affect" procedures and will validate models for estimating effects of pesticides on endangered species. It will also serve as the initiator of map information, a reviewer of state initiated plans, and as the primary resource on the biology of listed species.

USDA is uniquely qualified to provide outreach assistance to the field and to conduct research on impacts and alternatives. USDA's excellent network of county-level offices will be invaluable in distribution of informational materials such as county

bulletins. They can also help develop efficacy information for both alternative pesticides and alternative pest control methods. Another contribution is research to assess economic impacts and to encourage mechanisms to mitigate burdens on affected pesticide users. A supplemental agreement to the Memorandum of Understanding between USDA and EPA will ratify the final implementation decisions.

EPA will continue as the lead agency for the Endangered Species Protection Program and coordination point for USDA and FWS. Risk assessments, 'may affect' determinations and submissions for consultation, imposition of use limitations on registrants, and production of maps and county bulletins will continue as key responsibilities.

It is necessary for EPA to have an Endangered Species Protection Program to protect the environment and to comply with the ESA. EPA's previous attempt to implement a program demonstrated the need for many organizations to be involved if a program is to be successful. EPA, USDA, and FWS have benefitted from coordinated efforts on the program. Each organization has particular expertise and experience that must be considered and used by the other two if an adequately protective, yet not excessive, program is to be developed. The value of actively involving the states and the general public cannot be overstated.

EPA is committed, jointly with FWS and USDA, to developing a sound, practical program. Communication with the public is a key feature and one that is essential in promoting the willingness of pesticide users to cooperate in protecting our nation's valuable resource of endangered and threatened species.

Attachment 1

Summary of Comments on the July 3, 1989, Federal Register Notice proposing the revised Endangered Species Protection Program

The revised Endangered Species Protection Program was proposed in the Federal Register on July 3, 1989. Comments were received from a wide variety of organizations and individuals. The largest group of responders (53 comments) came from agricultural and forestry interests, including professional associations, farmers, ranchers, fruit and vegetable growers, and forest product industries. Another 15 comments were received from the pesticide industry; 13 from the environmental community; 28 from state agencies; 12 from cooperative extension services; and 39 comments were received from mosquito abatement and vector control associations.

One endangered species in particular-- the fat pocketbook pearly mussel--was the subject of 37 comments from farmers and Congressmen from Arkansas and Tennessee, as well as a letter signed by 216 individuals claiming that use limitations to protect the mussel would put their farms out of business. The commenters recommended the use of a particular buffer along the river instead.

General Comments

In general, comments were largely favorable to the new program. The species-based approach and the use of a threshold application rate in the "may affect" determination were applauded by the majority of commenters. Commenters were pleased with EPA's commitment to using scientific methods to determine vulnerability and impacts as well as to producing more accurate maps.

Some commenters urged EPA to implement integrated pest management in conjunction with or instead of the use limitations of this program, and to conduct more extensive research on the impact of pesticides on endangered species. On the other side, some commenters urged EPA to impose limitations on pesticide use unless there was factual evidence that a pesticide has already endangered a listed species, and to seek means of mitigating jeopardy short of prohibiting the use of a pesticide altogether.

Numerous commenters called on EPA to provide more detail on how the program will be implemented, including bulletin distribution procedures, educational plans, consultations, and the role of the states and the USDA Extension Service in implementing the program. Key points of controversy in the proposal remain in the areas of generic labeling, availability of bulletins, home and garden products, and public participation. Below is a sampling of comments on these topics. Note that the selection of comments does not imply EPA's endorsement.

Generic Labeling and Bulletins

EPA proposed the use of a generic label statement on affected pesticide products. The label would instruct users of the product to comply with any use limitations contained in a bulletin for the county where the pesticide will be used. The generic product labels would not, however, specifically list the counties where use limitations apply. Thus, pesticide users would not be able to tell from the label if use limitations apply in their county.

Comments by the pesticide industry and numerous organizations were generally favorable on the use of generic labeling. They noted that generic labeling would avoid the need for frequent label changes and delays in providing users with up to date information. Some industry commenters also pointed out that product labels already contain so many precautions that basic information on "how and where to use" the pesticide have had to be removed. Consequently, they contend that a bulletin, and not the label, is the appropriate place to present specific information on limiting risks to endangered species.

Farm organizations, however, warned that generic labeling would mean the program is not "user friendly" and called for more detail on how the bulletins would be made available. Environmental groups also opposed the use of generic labels, noting that the basic building block for regulating pesticides rests almost entirely upon label directions, precautions, and use restrictions. Therefore, any program that relies on other means of communication with users could not be expected to be effective.

States were generally mixed in their assessment of generic labeling. Some advocated specifying at least the state, if not the county, on the label, and pointed out that generic labels will mean thousands of unnecessary telephone calls and a large resource burden on state and/or county agencies. Some commenters from state agencies and environmental groups worried that the program would not require users to obtain a county bulletin when purchasing an affected product and have the bulletin in their possession, thus failing to send a clear signal that their compliance is required.

A large number of commenters addressed the issue of the timely availability of bulletins. A variety of suggestions were made on how to disseminate information to users including the following:

- requiring manufacturers to provide the county bulletins through their distributors;

- requiring pesticide dealers to publicly list affected pesticides;

- having bulletins available through field offices of the USDA extension service and local conservation agencies;

setting up a national toll-free hotline to provide up-to-date county information; and

listing the toll-free number on pesticide labels along with a distinctive logo to attract attention.

Numerous commenters strongly endorsed the idea of having bulletins given to the purchaser at the time of sale.

Home and Garden Products

Despite the significant differences between agricultural and commercial pesticide uses and home and garden uses, EPA included home and garden products in the proposal because of the belief that there may be some uses that may affect listed species. EPA also specifically sought comments on how to implement the program with respect to home and garden products.

Numerous comments were received on this subject as well as on the issue of including home and garden products at all. Commenters supporting the inclusion of home and garden products agreed that relatively few products are likely to be affected by use restriction, but noted that homeowners often use higher rates of pesticides per acre. These commenters stated that endangered species must be protected wherever they occur. Commenters favoring an exemption noted the large burden that would be placed on homeowners for relatively little gain and the widespread confusion that would result. Several commenters noted that an exemption for home products could be devised through the incidental take provisions of the Endangered Species Act. Others suggested an exemption below 1 or 5 acres of use or below a certain quantity of pesticide purchase. Both sides on this issue noted the difficulty of making information available to homeowners and enforcing the program, and the consequent need to make bulletins and information available through supermarkets, nurseries, lawn care companies, local television gardening programs, and newspaper garden sections.

Public Participation/Implementation

Another theme raised by a number of commenters was the need for additional, specific opportunities for public participation. Commenters noted that the best information on habitat is frequently available from product users and better opportunities for making use of such information should be built into the program. Numerous commenters insisted that habitat maps should be available for public review and comment.

Commenters also called on EPA to actively solicit comments from state governments on consultations. Other commenters requested that EPA explain how it will evaluate state-initiated plans to protect endangered species, establish an appeals process for landowners and users, and provide a timetable for implementing each phase of the program.

Public Health Exemption

The proposed public health exemption was supported by the California Mosquito and Vector Control Association and other associations around the country who find that the program now gives due consideration to public health concerns. These commenters noted that with population growth and additional species being added to the endangered list, potential conflicts between vector control and endangered species can be expected to increase. At the same time, they noted that in some instances, endangered species benefit when pesticides are used to control vectors of certain diseases. For example, in the past, some bald eagles have died of avian malaria. The associations strongly recommend a greater role for the Centers for Disease Control and the U.S. Public Health Service. They were also concerned that once a public health emergency has been verified, that EPA grant an exemption without delay, and that FWS not have the power to delay or veto implementation of the exemption.

A formal summary of all comments received by EPA and a description of the amended program will be made available by EPA in the Spring. The public docket of comment is available for viewing at the Information Services Section, Office of Pesticide Programs, U.S. EPA, Room 246, 1921 Jefferson Davis Highway, Arlington, Virginia. Telephone: 703-557-2805.

Attachment 2

REASONABLE AND PRUDENT ALTERNATIVES (RPA)

The following are frequently adopted reasonable and prudent alternatives, cited by number in the individual pesticide profiles under the column titled RPA.

1. Prohibit use of the chemical within 20 yards of the water at sites of known populations or designated critical habitat for ground applications and 100 yards for aerial applications.
2. Prohibit use of the chemical within 40 yards of the water at sites of known populations or designated critical habitat for ground applications and 200 yards for aerial application.
3. Prohibit use of the chemical within 100 yards of the water at sites of known populations or designated critical habitat for ground applications and 1/4 mile for aerial applications.
4. Use only granular formulations or soil incorporation.
5. No ultra low volume (ULV) application within 1 mile of species' occupies habitat.
6. No application within identified aquifer recharge zones for cave/spring dwelling species.
7. Prohibit use of chemical within 20 yards of all caverns, sinkholes, and surface waters within the defined recharge areas of the species' habitat for direct application and 100 yards for aerial application.
8. Extend prohibited use buffer zone upstream 1/2 mile from known species' populations or designated critical habitat.
9. Extend prohibited use buffer zone upstream 2 miles from known species' populations designated critical habitat.
10. No direct application of mosquito larvicides to water within 1 mile upstream, 400 yards downstream from species' occupied habitat.
11. Prohibit use within a 1/2 mile radius of the species occupied habitat.
12. Develop program (see note for RPM 4) that would include the species' occupied habitat and designated buffer, if appropriate, in landowner agreements precluding use of the chemical. If, after one year of receipt of this opinion, this necessary protected area is not under agreement, consultation must be reinitiated.

13. Adjust maximum application rates to reduce hazard ratios to below one (1.0), using the appropriate model, for both freshwater fish and aquatic invertebrates.
14. Prohibit application, by any method, within 100 yards from the edge of the field being treated, except those borders contiguous to neighboring fields.
15. Prohibit use of chemical above 5,000 feet elevation within the occupied range of the New Mexican ridged-nosed rattlesnake.
16. Extend prohibited use buffer zone upstream 5 miles from known species populations.
17. Prohibit use of the chemical within 100 yards of known populations for round applications and 1/4 mile for aerial application.
18. Prohibit use of the chemical within 3 miles of known populations.
19. Prohibit use of the chemical within all identified wood stork rookeries, including a buffer extending 8 to 12 miles from the rookery to encompass essential feeding habitat, as depicted on the maps supplied.
20. Our biological opinion and reasonable and prudent alternatives, if any, from our prior opinion is reaffirmed. Pesticides as indicated are not to be applied within the occupied range of the listed species.
21. Applicators of the listed forestry use pesticides will be required to conduct a survey for red-cockaded woodpecker colonies prior to using these pesticides in forests containing pine trees over 30 years old. If any colonies are found, use of the listed pesticides shall be prohibited from the colony site including a 200 foot buffer around the perimeter of all woodpecker trees (i.e., start holes, inactive and active trees). This prohibited zone shall be no less than 10 acres. Surveys conducted up to five years prior to application will be acceptable, except in the case of an apparently abandoned colony. If survey results indicate an abandoned colony, a search shall be conducted that would encompass an area of 1 mile from the abandoned colony.
22. After periods of heavy rains (>10cm) do not apply chemical within a 100 yard radius of the known breeding sites of the Puerto Rican crested toad. Restrictions shall remain in place for 25 days.

23. Prohibit use of the chemical (as a burrow fumigant) within gophertortoise habitat in the currently occupied range of the eastern indigo snake.
24. Prohibit use of the chemical within a 20 mile radius of Laguna Atascosa National Wildlife Refuge.
25. Prohibit use of the chemical within a 10-mile radius of Laguna Atascosa National Wildlife Refuge.
26. Prohibit use within the range of the Sacramento Mountains thistle from May 1 through July 31.