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EFFECTS OF IMPLEMENTING EPA'S ENDANGERED SPECIES PROTECTION PROGRAM ON NATIONAL FOREST SYSTEM LANDS

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ABSTRACT: In 1986, the U.S. Environmental Protection Agency (EPA) initiated an effort to comply more fully with the Endangered Species Act. This effort became their "Endangered Species Protection Program." The possibility of such a program was forecast in 1982 when Donald A. Spencer gave a presentation to the Tenth Vertebrate Pest Conference on "Vertebrate Pest Management and Changing Times." This paper focuses on current plans for implementing the EPA's Endangered Species Protection Program as it relates to the USDA Forest Service. It analyzes the potential effects this program will have on the agency, using the pocket gopher (Thomomys spp.), strychnine, and the grizzly bear (Ursus arctos horribilis) as examples of an affected pest, pesticide, and predator.

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BACKGROUND

The Forest Service Threatened, Endangered, and Sensitive (TES) Species Program includes habitat management for proposed, endangered, threatened, and sensitive species. Currently, 153 Federally listed threatened or endangered species occur on lands administered by the USDA Forest Service. Of these species, 41 are listed as threatened, 108 as endangered, 4 as endangered or threatened depending on location, and 9 are proposed for listing. Approximately one-third of the 495 species that have been listed by the Fish and Wildlife Service (FWS) or National Marine Fisheries Service in the United States are found on lands administered by the Forest Service. Forest Service managers place a high priority on the recovery of threatened and endangered species through maintenance and improvement of their habitat on National Forest System (NFS) lands.

The U.S. Environmental Protection Agency (EPA) was advised by an independent consulting firm (Center for Environmental Education) on September 2, 1986, that they were in noncompliance with the Endangered Species Act (ESA) with respect to the regulation of pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The ESA, which is administered by the FWS, requires Federal agencies to ensure that their actions do not jeopardize the continued existence of any endangered or threatened species. Under the ESA, agencies are required to evaluate potential risks and, when potential effects are identified, to consult with the FWS. If a formal Section 7 consultation is required and results in a biological opinion that establishes "jeopardy" to a threatened or endangered species, agencies are required to mitigate risks to the affected species. However, through FIFRA, EPA registers all pesticides used in the United States, and EPA's proposed Endangered Species Protection Program would extend beyond existing Federal agency protection programs.

Registration decisions by EPA are based upon evidence adequate to demonstrate that a pesticide's use will not pose unreasonable risks to people and the environment. Under the

ESA, EPA must ensure that the registered uses of pesticides in the range of endangered or threatened species will not place the species or their critical habitats at unreasonable risk. The registration of pesticides is considered an authorization for use, and thus is subject to the ESA. The report issued by the consulting firm cited two major problem areas associated with EPA noncompliance with ESA under FIFRA during the period 1980-1984:

- 1) EPA did not take sufficient action to address risks cited in FWS opinions. This arose both from a misinterpretation of ESA requirements by EPA and from inadequate communication between EPA and FWS.

- 2) EPA did not routinely conduct "may affect" analyses to determine if consultation with FWS was appropriate for certain types of pesticide regulatory actions.

As a result of the report's findings, EPA embarked upon an intensive effort to comply more fully with the ESA. This effort became their "Endangered Species Protection Program." As part of this program, EPA identified clusters of pesticides that could potentially affect endangered species. EPA's use of the word "endangered" includes both threatened and endangered species. The same definition will be used in this paper. The CLUSTER approach that EPA developed grouped similar-use pesticides into one cluster. For example, all the pesticides used in the production of alfalfa were put in a single cluster. This method was selected by EPA to prevent older and often more toxic pesticides from slipping through the evaluation process. In cooperation with EPA, the FWS identified Federally listed endangered species potentially at risk. Pesticide prohibitions and restrictions were then established by EPA under authority of FIFRA, as amended. Had EPA implemented this program, some of the proposed prohibited pesticides would have included: strychnine, glyphosate (Roundup), atrazine, paraquat, carbaryl (Sevin), diazinon, and Captan. EPA's initial actions were concentrated on four clusters: forest, rangeland and pastureland, mosquito larvicides, and cropland. Four additional pesticide clusters EPA had scheduled for later implementa-

tion cover rice, aquatic plants, alfalfa, and noncrop plants. The Forest Service is primarily concerned with two clusters: forest, and rangeland and pastureland.

To supplement the proposed pesticide label changes for products in these clusters, EPA created bulletins and range maps. The bulletins were to alert pesticide users about counties within which specific pesticides would be prohibited and the endangered species at risk. Range maps were intended to depict the currently occupied habitat, or potential habitat, of each endangered species, by county, for each prohibited pesticide. Bulletins and range maps were prepared for the rangeland and pastureland, and cropland clusters, but not for the forest and mosquito larvicide clusters. For the latter clusters, users were to check the product label to determine whether they needed to consult FWS personnel. A FWS information phone number was to be provided on the pesticide product label.

The Forest Service routinely consults with the FWS about threatened and endangered species before using pesticides. The agency has been in compliance with the ES A since its passage in 1973. Because ES A requires that the FWS must be consulted for all proposed Federal projects that might affect a threatened or endangered species, the Forest Service requested a Federal exemption from the EPA's Endangered Species Protection Program. To date, no exemption has been granted.

CURRENT SITUATION

EPA's controversial Endangered Species Protection Program developed rapidly. But because of recent inter-agency discussions and concern expressed by public groups about the inadequacies of this proposed program, EPA decided to defer the implementation of label changes for all clusters until February, 1989, or later. Before announcement of this action, Congress required, in the Appropriation Act of December 1987, that EPA work with the States and not seek to enforce the Endangered Species Protection Program before September 15, 1988. Meanwhile, EPA has provided the States an opportunity to develop their own State plans to implement all or portions of the program.

A Bill (HR1467) recently passed the House that included amendments to the ES A. If these amendments are passed by Congress, they will direct EPA to thoroughly review the proposed Endangered Species Protection Program.

ILLUSTRATION OF IMPACT TO FOREST SERVICE MANAGEMENT PRACTICES

In 1982, Donald A. Spencer presented a paper on "Vertebrate Pest Management and Changing Times." In it he discussed restrictive labeling, forecasting its far-reaching effects, and cited an example of the use of pesticides being restricted in "areas where threatened and/or endangered animal species might be adversely affected. Each applicator shall be issued a map which clearly indicates such areas." Six years ago the use of range maps, similar to what EPA recently proposed, was being discussed. He also stated that there would be "cries of anguish and an all-out effort to maintain

the priorities some score of environmental laws have provided." This is what we see happening today.

If EPA implements the recently proposed program, everyone will lose numerous effective chemical tools. To illustrate the impact that the implementation of this program could have on Forest Service management practices and vertebrate pest programs, let's examine control of pocket gopher (*Thomomys* spp.) damage with strychnine, and its relationship to the management of an endangered species, the grizzly bear (*Ursus arctos horribilis*).

As herbivores, gophers are extremely adaptable in their feeding habits. Their diets may consist of the whole plant—bark, roots, shoots, and stems. The primary damage they cause for the Forest Service is to seedlings in reforestation areas. The two most common forms of tree damage by gophers are root pruning and a combination of stem girdling and clipping.

The most effective Federally approved chemical tool used in pocket gopher damage control is strychnine. Strychnine is a natural pesticide. It is an alkaloid derived from the seeds of a plant, *Strychnos nux vomica*, grown in southern Asia. Its salts have a bitter taste and although ingested strychnine is quickly absorbed, absorption through skin contact is not common. Acute toxicity symptoms appear 5-30 minutes after ingestion and are characterized by increased reflex excitability of the spinal cord. Death usually occurs from a tetanus-like arrest of respiration in the course of a major convulsion.

The standard method of using strychnine to control pocket gopher is to apply a 0.5 percent solution of strychnine to steam-rolled oats. The treated oats are placed underground where they have a limited period of protectors, cultural practices, etc., if practical, in preference to direct population reduction by baiting or trapping.

The Forest Service also makes specific recommendations regarding control of pocket gopher damage when a search of a proposed treatment area reveals grizzly bear sign or indicates that a grizzly bear might occur on the area during the treatment period. Decisions to proceed with strychnine baiting must be approved by the Regional Forester, after appropriate informal/formal consultation with the FWS.

Although the grizzly bear is primarily an herbivore, it may also kill or consume carrion, mammals, or fish. In many locations, meat may not constitute a major part of their annual diet but may be vital on a seasonal basis. Because rodents can also supplement the grizzly bear diet, there is the possibility of bears being exposed to strychnine treated areas (Servheen, 1987).

Barnes, et al., (1985) found that when treated bait was placed underground pocket gophers died predominantly underground. No evidence was found that concentrations of poisoned animals were available to predators or scavengers. Using an assumed toxicity level of 0.33 mg/kg, the investigators concluded that these carcasses would not be a hazard to grizzly bears. The lethal dose for a 45 kg (99 lb.) bear at the assumed level of 0.33 mg/kg equates to the consumption of 94 pocket gopher carcasses having a mean strychnine

alkaloid content of 0.16 mg. Barnes, et al. also observed that "pocket gophers tend to occupy separate burrow systems and a bear would not be likely to consume enough carcasses during a period of continuous foraging to reach a toxic threshold. Strychnine is a fast-acting compound and mortality occurs from prompt ingestion of a lethal dose; prolonged consumption often leads to sublethal effects and learned aversion rather than death."

Alternatives concurrently used with baiting for controlling pocket gopher damage, as outlined in the Forest Service Animal Damage Control Handbook (1987), include:

- Vegetation Management
- Silvicultural Modifications
- Temporary Buffer Strips
- Site Preparation
- Stage Overstory Removal
- Early Planting
- Size of Planting Stock
- Tree Tubes
- Direct Control
- Trapping
- Chemical Control with Poisons

The method of timber harvest, prompt site preparation, and tree establishment greatly influence initial gopher populations. When done in an orderly fashion, pocket gopher damage can be limited. However, vegetation management is an alternative that also would be affected by EPA's proposed Endangered Species Protection Program, as many widely used herbicides also would be prohibited. Vegetation management is a key component of site preparation and its loss would severely inhibit reforestation programs.

SUMMARY

If EPA's proposed Endangered Species Protection Program were to be implemented in its current form, Forest Service pesticide users would be prohibited or severely restricted from using strychnine in areas that are occupied by Federally listed endangered species. For example, EPA's proposed restrictions not only limit the use of strychnine in seasonally occupied grizzly habitat, but restrict its use at all times, by all pesticide users, in designated counties. Forest Service use of strychnine to control pocket gopher damage occurs seasonally for a very short time and usually does not overlap with bear use in the same areas because of seasonal use patterns. No grizzly bear encounters with strychnine-killed gophers have been documented. And as stated in the Forest Service Grizzly Bear Conservation Program, great care is taken to prevent such situations. If it were to occur, bears would need to consume an exceedingly large number of gophers to ingest a fatal dose of strychnine. Therefore, in this example, we believe the need for blanket prohibition of strychnine use is unnecessary. Additionally, the increased cost of pocket gopher control and the loss of other viable control alternatives due to similar restrictions will limit reforestation programs. In the long run, it could reduce timber harvests on some National Forests. The potential impact from the EPA's Endangered Species Protection Program to the

Forest Service's management of pocket gopher damage is considered significant.

In addition to the Forest Service, EPA's program will affect other Federal agencies, State agencies, private industry, and the American farmer and rancher. States have been given the opportunity to write their own protection programs as long as they meet EPA's specifications. Some States are currently evaluating the expertise, organization, and funding needed to undertake such a task. Private industry has actively sought to delay this program. Unfortunately, EPA has made no allowances for redress on specific cases by private industry. The group that could be hit hardest by this program is American agriculture. Prohibited pesticide lists are so inclusive that very few efficacious alternative pesticides remain available for their discriminate use. Exact figures and total impacts have yet to be assessed, but the possibilities are enormous.

In 1982, when EPA began to initiate more detailed labeling action, Spencer (1982) anticipated the tremendous scope and far-reaching effects restrictions would have if all pesticides and endangered species were included. Six years later that forecast is coming true. By keeping apprised of the threatened and endangered species programs and by participating appropriately at EPA's public meetings during 1988. We can help EPA and the States develop worthwhile and supportable programs. Hopefully, then, we can reverse Dr. Spencer's 1982 closing comment from "it will be like undertaking a program designed to fail" to "it will be like undertaking a program designed to succeed."

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