Department of Natural Resources' Bureau of Endangered Resources, as well as other qualified biologists.

Issue 9—What determines the extent of the area that will be covered by the listing? It would seem that the area should be defined as narrowly as reasonable to protect the dragonfly but not overly broad so that mosquito and other insect control work could continue as usual. This would be especially important in a large urban area like Chicago and its suburbs with its wide diversity.

Service Response—This listing will protect the Hine's emerald dragonfly in those areas it currently occurs. Within that distribution, the specific areas that need to be protected will be determined on a case-by-case basis. The Service will work with State and local insect control agencies to determine how the listing will affect their activities.

Issue 10—It is unclear what mosquito control strategies could be used within the protected habitat areas. It would be important that restrictions on the use of various pesticides and other control methods be specific and narrow, enough to protect the dragonfly but not so broad as to prevent control of mosquitoes. In particular, Bacillus thuringiensis ssp. israelensis (Bti) and methoprene have been shown to control mosquitoes with little effect on non-target organisms. It is our hope that materials like Bti, methoprene, and others with little nontarget effects could continue to be used in protected habitats, and that materials be restricted only if they have a proven detrimental effect on the dragonfly nymph.

Service Response—Mosquito control measures that are known to affect only target organisms are not likely to be affected by this listing. Control measures that are not known to affect dragonflies in the Order Odonata are also not likely to be affected by this listing. Other measures will have to be evaluated on a case-by-case basis. The Service will work with State and local insect control agencies to determine how the listing will affect their activities.

Issue 11—In the event of a public health emergency, like a St. Louis encephalitis (SLE) outbreak, it would be important for escalated mosquito control measures to be instituted. These would likely include restricted measures such as mosquito adulticiding. Could some restrictions be temporarily lifted to maintain the public's health? If so, who would make those decisions and how would they be made?

Service Response—The Act includes provisions for handling emergencies. The Service will work with the

Environmental Protection Agency and appropriate States and local government agencies to outline those provisions and to establish procedures for handling emergencies that might arise.

Issue 12—What effect will the regulations have on agricultural practices?

Service Response—One practice that may be affected is pesticide use in apple and cherry orchards near the Hine's emerald dragonfly habitat. The Service, in consultation with the Environmental Protection Agency, will need to evaluate the effects of pesticide use on the Hine's emerald dragonfly.

Issue 13—This is the largest land grab

Issue 13—This is the largest land grab in Door County, Wisconsin. Not opposed with preservation measures for the dragonfly, but it amounts to extraterritorial zoning, i.e., control of the use of another person's land without compensation.

Service Response—The Hine's emerald dragonfly is known to occur on six sites in Door County, Wisconsin. Two of those sites are currently managed by the State of Wisconsin, two of those sites are private lands managed for conservation purposes by non-profit agencies, and the remaining two sites are under private ownership. All of the sites represent aquatic habitats that are currently under the jurisdiction of the Federal Clean Water Act and State water quality law, which are intended to protect these aquatic habitats from water quality degradation and activities like dredging or filling. This listing does not change current land ownership patterns and is not likely to create additional constraints on the activities of private land owners. Instead the listing focuses attention on improvements that might be made to existing regulations. The listing will allow the Service to work with other Federal agencies to ensure that their activities do not further jeopardize the continued existence of the Hine's emerald dragonfly.

## **Summary of Factors Affecting the Species**

Section 4(a)(1) of the Act and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal lists. A species determined to be an endangered or threatened species may be endangered or threatened due to one or more of the five factors described in Section 4(a)(1). These factors and their application to Hine's emerald dragonfly are as follows:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. Populations of Hine's emerald dragonfly

are apparently extirpated from its historic range in Ohio and Indiana (see "Background"). No new populations were found during a 1991 status survey in Michigan. Although populations have been found in Illinois and Wisconsin, the habitats are restricted and very fragmented.

The greatest threat to the species in Illinois and Wisconsin is habitat destruction and degradation. In Wisconsin's Door County, land development by agricultural, tourist, and recreational interests pose various threats to Hine's emerald dragonfly sites. Pesticide drift and run-off from Door County's apple and cherry orchards is a potential threat. Contaminated groundwater-to-surface recharge and contaminated surface runoff may carry pesticides and other contaminants to the species' sites. Gypsy moth control has been instituted in Door County and the control measures include mass trapping and spraying of Bacillus thuringensis. Although detrimental effects of these measures are not presently known, they could affect Hine's emerald dragonfly populations. There is an open highway salt storage area within 100 feet that could affect one Hine's emerald dragonfly stream site in Door County. A solid waste transfer station is being considered for development near another site. Beaver are common in both Door County and Illinois, and their impoundments may possibly alter the microhabitat of the aquatic dragonfly nymphs. Studies will need to be conducted to determine the impacts.

In Illinois, the remaining sites for the Hine's emerald dragonfly are located in Cook, DuPage, and Will Counties. These three counties are in the Chicago metropolitan area and represent the fastest-growing counties in that area. The sites in these counties are already highly fragmented and are further threatened by urban and industrial development. Industrial development in the immediate vicinity of the sites includes a petroleum refinery, a sewage treatment plant, rock quarries, an electrical power plant, and an asphalt plant. These types of facilities have the potential to degrade surface water, ground water, and air quality in the vicinity of Hine's emerald dragonfly sites. Degraded ground water quality is a particular concern because the sites that support the dragonfly receive water from seeps and springs. A proposed quarrying operation that would eliminate an entire population, the proposed highway FAP-340 (an extension of Interstate 355), and other roadway expansion activities in the Hine's emerald dragonfly foraging sites