



United States
Department of the Interior

Fish and Wildlife Service

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In Reply Refer To:

Your Reference:

SEP - 9 1987



Mr. Michael Slimak
Chief, Ecological Effects Branch
Hazard Evaluation Division
U.S. Environmental Protection Agency.
Washington, D.C. 20460

Dear Mr. Slimak:

Subject: Formal Endangered Species Act Consultation on the
Use of Ethoprop (Mocap) on Grapes and Brussel
Sprouts (Case No. 1-1-86-F-48)

This Biological Opinion responds to your February 12, 1986, request for formal consultation pursuant to Section 7(a) of the Endangered Species Act of 1973 (Act), as amended, on the proposed use of the insecticide/nematocide ethoprop on grapes and brussel sprouts, and its possible effects on federally-listed species.

Your request was received on February 20, 1986. By letter of May 9, 1986, we requested, and you concurred with, an extension to the consultation period to allow for further coordination with our other Regional Offices.

Included with your consultation request was a copy of the Environmental Effects Branch ethoprop review, proposed labels, and a copy of the cluster Biological Opinion on corn which previously evaluated use of ethoprop on this crop. This information, and information in our files provides the basis for this Biological Opinion.

Biological Opinion

It is our biological opinion that the proposed registration of the insecticide/nematocide ethoprop, for use on grapes and brussel sprouts, is likely to jeopardize the continued existence of the desert pupfish, unarmored threespine stickleback, woundfin, Ozark cavefish, Santa Cruz long-toed salamander, San Francisco garter snake, Yuma clapper rail and yellow-shouldered blackbird. It is not likely to jeopardize the continued existence of the gray bat, Colorado squawfish, humpback chub, and light-footed clapper rail.

Proposed Action

The Environmental Protection Agency proposes to register ethoprop (Mocap) as an agricultural nematocide and insecticide for use on brussel sprouts and grapes. It is applied only once per growing

season at a rate of 6 to 12 pounds per acre as a granular (10G) or spray mixture (EC) and is immediately incorporated into the soil to a depth of about 1-inch. The spray formulation is prohibited in California. Fields are treated with ethoprop no more than 2 weeks before planting and irrigated within 48 hours of planting. Label restrictions prohibit application within 140 feet of inland freshwater habitats and, along the Atlantic seaboard, no application within 850 feet of brackish water habitats.

Effects of the Proposed Actions

Data summarized in your reviews clearly show that ethoprop is highly toxic to fish and wildlife. Moreover, we evaluated (Mocap) in our corn cluster consultation and concluded it would likely jeopardize some listed species (Environmental Protection Agency-83-2, May 18, 1983). Animals can be exposed to ethoprop either directly by consumption of granular ethoprop, or indirectly through ingestion of invertebrates exposed to ethoprop. Relatively high residues of ethoprop were found in earthworms from study plots treated with ethoprop (Stromborg personal comments). Ethoprop apparently caused earthworms to leave the soil and die on the surface. Other soil-dwelling invertebrates may behave similarly.

Ethoprop degrades in aerobic soils fairly rapidly; half-lives of 3 to 56 days have been determined in laboratory and field studies. Ethoprop is very mobile in coarse-textured soils. Your agency has yet to determine whether significant amounts of ethoprop will reach aquatic environments and affect organisms therein. Metabolites of ethoprop are not a toxicological concern.

Based on the analysis of possible hazards to wildlife and the distribution of grape and brussel sprout fields, we have determined that the following species may be affected by this use of ethoprop.

Species Accounts

Woundfin

The present distribution of the endangered woundfin (Plagopterus argentissimus) extends about 40 miles above and 40 miles below the Virgin Narrows on the Virgin River, Washington County, Utah. The prime limiting factor for woundfin today is modification and loss of habitat. The building of dams and associated reservoirs, water diversion structures, canals, laterals, aquaducts, dewatering of streams, and the return of physically, chemically, and biologically (i.e., exotic species) polluted water to the main channel are the main contributors to this problem. Water

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diversions are so extensive that some parts of the Virgin River (the Narrows) are intermittent because of upstream withdrawals. The quality of the water returned to the river after being used for irrigation must be considered suspect since the potential for pesticide contamination is very high.

Fifty percent of the population of this fish is found below the area where agricultural runoff is returned to the river. Because the woundfin depends to a large extent upon the return of irrigation water to the river, it is important to ensure that the water is not contaminated with pesticides toxic to fish. Brussel sprouts are not currently grown in Utah near woundfin habitat. If grapes are grown near the Virgin River, the woundfin could be exposed to ethoprop through runoff and drift (with the spray formulation). Because the distribution of this species is very restricted, we believe the use of ethoprop in Washington County, where runoff/drift could contaminate the Virgin River, is likely to jeopardize the continued existence of the woundfin.

Colorado Squawfish and Humpback Chub

The primary reasons for listing the Colorado squawfish (Ptychocheilus lucius) and humpback chub (Gila cypha) as endangered were the modification and loss of riverine habitat from the development of water resource projects.

The present range of the Colorado squawfish is restricted to the Upper Colorado River Basin. It inhabits about 360 miles of the mainstem of the Green River from the mouth of the Yampa River to its confluence with the Colorado River. Its range extends 108 miles up the Yampa River and 150 miles up the White River, both of which are tributaries of the Green River. In the mainstem Colorado River, it is found from above Lake Powell and extends 200 miles upstream. The squawfish is also found in the lower 33 miles of the Gunnison River which is a tributary of the Colorado River.

The humpback chub exhibits a more restricted distribution than the Colorado squawfish with only nine known locations in the Colorado River between Lake Powell, Utah, and the Salt Creek confluence in Colorado. Currently, the two major populations of humpback chub, both in the Colorado River, occur near the Utah-Colorado border, 35 to 50 miles downstream of the confluence of the Gunnison River. Humpback chubs have also been found in deep river areas of the Green and lower Yampa Rivers but only sporadically.

Because ethoprop is very toxic to aquatic life, exposure of either the squawfish or humpback chub to ethoprop would adversely affect these two species. However, because the squawfish is relatively widespread and the humpback chub is normally found in deep and swift waters, we believe that ethoprop would be rapidly

diluted before it could adversely affect a significant portion of the squawfish or chub population. It is therefore our opinion that while a few squawfish or chub could be harmed by this pesticide, its use is not likely to jeopardize the continued existence of either species.

Desert Pupfish

The endangered desert pupfish (Cyprinodon macularius) inhabits shallow, slow-moving waters in Imperial and Riverside Counties, California. This species has been observed in agricultural drainage ditches, Salt and San Felipe Creeks, and at the Whitewater River mouth. This species feeds on a variety of aquatic plants and small animals. Ethoprop could adversely affect the pupfish through ingestion of contaminated prey, reduction of its prey base, and contact with water-borne ethoprop.

Due to the highly toxic effects of ethoprop on aquatic organisms and the location of irrigated cropland upstream from critical habitat of the pupfish on San Felipe Creek, we conclude that use of ethoprop is likely to jeopardize the continued existence of the desert pupfish. Runoff from crop land could reach San Felipe Creek via drainage ditches and negatively affect both the pupfish and its invertebrate prey base.

Unarmored Threespine Stickleback

The endangered unarmored threespine stickleback (Gasterosteus aculeatus williamsoni) inhabits the upper portions of the Santa Clara River system in Los Angeles County, and San Antonio Creek in Santa Barbara County. This species occupies quiet backwaters and side streams where it feeds on benthic insects. Potential effects of ethoprop on the stickleback include direct contamination through water-borne ethoprop and indirect impacts through ingestion of contaminated prey and reduction in its insect prey base. The Unarmored Threespine Stickleback Recovery Plan identifies agriculture within the Santa Clara River Basin as a potential threat to the population. Our information indicates that vineyards occur within the watersheds of both San Antonio Creek and the Santa Clara River. If ethoprop entered the river system, the effects on the stickleback could be severe, resulting in large declines in the species' numbers. Therefore, we believe that the use of ethoprop would likely jeopardize the continued existence of the unarmored threespine stickleback.

Ozark Cavefish

The threatened Ozark cavefish (Amblyopsis rosae) is known to occur in Civil War Cave, Cave Springs Cave, Mule Hold Cave, Logan Cave, and Rootville Cave in Benton County, Arkansas. Missouri

populations are known from Barry, Christian, Greene, Jasper, Lawrence, Newton and Stone Counties. Oklahoma also supports population segments of the species.

Sinkholes found in the soluble limestone bedrocks in the recharge areas of these caves increase the potential that pollutants, such as insecticides, may enter cave stream systems. It is our opinion that the use of ethoprop is likely to jeopardize the continued existence of the Ozark cavefish in Missouri and Arkansas. Oklahoma populations of the species are not likely to be jeopardized based on lack of expected use. Oklahoma grows no brussels sprouts and a very small amount (87 acres) of grapes.

Santa Cruz Long-Toed Salamander

The endangered Santa Cruz long-toed salamander (Ambystoma macrodactylum croceum) is known only from three localities in Santa Cruz County and four localities in Monterey County, all in the vicinity of Monterey Bay. It frequents coastal woodland and chaparral near ponds and freshwater marshes in which it breeds. Adult salamanders spend the dry months away from the ponds in rodent burrows and other subterranean retreats. During the winter and early spring the adults are active on the surface and migrate to and from the breeding ponds on rainy nights. The salamander eats a broad array of terrestrial and aquatic invertebrates.

Agricultural land surrounds all of the sites in Monterey County. Semi-rural and some agricultural land adjoins the breeding areas in Santa Cruz County. Most of the agriculture includes row crops such as broccoli, brussels sprouts, artichokes, strawberries, and some lettuce. Ethoprop bioaccumulates in potential prey of the salamander and may contaminate waters occupied by the salamander. Thus, its application is likely to jeopardize the continued existence of the long-toed salamander.

San Francisco Garter Snake

The endangered San Francisco garter snake (Thamnophis sirtalis tetrataenia) is endemic to the San Francisco Peninsula, and is known only from San Mateo County, California. The San Francisco garter snake is observed most often in the vicinity of standing water, chiefly ponds, lakes, marshes, and sloughs.

The principal prey of the snake includes red-legged frogs, Pacific tree frogs (Hyla regilla), immature California newts (Taricha torosa) and small fish such as the threespine stickleback (Gasterosteus aculeatus).

Brussels sprouts are grown in the vicinity of known or suspected habitats of the San Francisco garter snake. Since the snake is known from only a few localities in coastal San Mateo County, the

threat to the snake may be high, given the lack of data on ethoprop contamination in aquatic environments.

Therefore, ethoprop application in coastal San Mateo County is likely to jeopardize the continued existence of the San Francisco garter snake.

Yuma Clapper Rail

The endangered Yuma clapper rail (Rallus longirostris yumaensis) inhabits freshwater marshes containing primarily cattails and bulrushes. Suitable habitat occurs along the Colorado River south of Topock Marsh, in Riverside County along the Whitewater River and at its delta, and in Imperial County along the channels and at the deltas of the New and Alamo Rivers. Drainage ditches and irrigation canals occasionally provide marshy areas. The rail feeds primarily on aquatic invertebrates.

Transport of ethoprop into Yuma clapper rail habitat could be expected to occur via runoff from agricultural fields into drainage ditches and finally into the rivers and marshes. Runoff could result from standard irrigation practices or in the aftermath of heavy rain.

Because ethoprop is highly to very highly toxic to both birds and aquatic organisms, the Yuma clapper rail may be affected by its use in two ways. Consumption by the rail of prey species contaminated with ethoprop could lead to acute toxicity in the rail. Also, reduction in the abundance of aquatic prey species could negatively affect the survival of the Yuma clapper rail. Therefore, we conclude that the use of ethoprop is likely to jeopardize the continued existence of the Yuma clapper rail.

Light-Footed Clapper Rail

The endangered light-footed clapper rail (Rallus longirostris levipes) inhabits saltmarshes along the Pacific Coast from Santa Barbara County south into Baja California. Although its principle food consists of aquatic invertebrates, fish and terrestrial vertebrates, and invertebrates are also occasionally taken. Because ethoprop has been shown to be highly toxic to aquatic organisms, the light-footed clapper rail could be adversely affected either directly by ingestion of contaminated food items or indirectly through reductions in its prey base. In addition to the counties mentioned in your review, ethoprop used on grapes in Riverside and San Diego Counties also has the potential to impact the rail.

At this time, the juxtaposition of grape and brussel sprout areas to light-footed clapper rail habitat seems to indicate that ethoprop would not adversely affect this species. If required incorporation practices are implemented and watercourses are

avoided by 140 feet, the use of ethoprop should not jeopardize the light-footed clapper rail. However, should grape production become established within the watershed of San Diego Creek in Orange County, the threat to the light-footed clapper rail would be greatly increased. San Diego Creek drains into Newport Bay, which supports the last large concentration of light-footed clapper rails in the United States.

Yellow-shouldered Blackbird

The endangered yellow-shouldered blackbird (Agelaius xanthomus) is endemic to Puerto Rico and nearby Mona Island. The population has declined sharply from the 1975 estimate of 2,400 individuals to the present estimate of 720 individuals, divided into 3 populations. Approximately 350 individuals remain in the southwestern population.

Yellow-shouldered blackbirds are known to forage in the United States Department of Agriculture Experimental Station and other farmlands in the Lajas Valley, but it is unknown if they use this vineyard. The vineyard is at least 9 kilometers from known blackbird nesting and roosting areas, but blackbirds are reported to travel as far as 11 kilometers to feed. During the nonbreeding season, small groups or isolated pairs disperse inland. This increases the possibility that yellow-shouldered blackbirds will use the vineyard to forage.

Although the species is omnivorous, the bulk of its diet consists of insects and other invertebrates. During the nesting season, young are fed approximately 90 percent arthropods. Repeated exposure to ethoprop and feeding of insects contaminated by sublethal doses of ethoprop to young could seriously jeopardize the reproductive success of this species.

Due to the high toxicity of ethoprop, data implicating this pesticide in avian kills, and the location of the vineyard, we believe the use of ethoprop in Puerto Rico is likely to jeopardize the continued existence of the yellow-shouldered blackbird. Because there is no agriculture on Mona Island, we foresee no problems there.

Gray Bat

Bats prey on flying insects, many of which have soil or aquatic larval stages. In fact, bats may feed upon the adult forms of several lepidoptera pests. When insect larvae that are exposed to sublethal doses of pesticides metamorphose, they may be ingested by bats. Since a single bat may consume as many as 3,000 insects per night, the potential for toxicity is high. Juvenile bats are particularly susceptible to the toxic effects of pesticides that are concentrated in their mother's milk.

Pesticide-related mortality in bats is associated with times of stress, such as migration and late hibernation, when fat reserves are metabolized. Recent studies have documented mortality and probable population decline in gray bats resulting from routine pesticide use.

We did not conclude a finding of jeopardy to the gray bat during our evaluation of pesticides, including ethoprop, used on corn, a widely grown crop. In contrast the acreage of brussel sprouts appears to be relatively insignificant within the range of this species. While the acreage of grapes is larger, and slowly increasing, it is still unlikely that this soil-incorporated product will be transmitted to aerially feeding bats.

Biological Opinion

It is our biological opinion that the proposed registration of the insecticide/nematocide ethoprop for use on grapes and brussel sprouts is likely to jeopardize the continued existence of the desert pupfish, unarmored threespine stickleback, woundfin, Ozark cavefish, Santa Cruz long-toed salamander, San Francisco garter snake, Yuma clapper rail, and yellow-shouldered blackbird, but is not likely to jeopardize the continued existence of the gray bat, Colorado squawfish, humpback chub, and light-footed clapper rail.

Reasonable and Prudent Alternative

The 1978 amendments to the Endangered Species Act include a mandate that "reasonable and prudent alternatives" be suggested when a Biological Opinion indicates jeopardy to a listed species. "Reasonable and prudent alternative" refers to alternative courses of action open to the Federal agency with respect to an activity or program that are technically capable of being implemented and consistent with the intended primary purpose of the activity or program. We believe the following restrictions will fulfill this mandate.

Product labeling should be amended to prohibit applications of ethoprop in the following areas for the indicated species.

Species	State/County	Location
Woundfin	Utah/Washington	40 miles above/below Virgin Narrows, Virgin River
Desert pupfish	California/Imperial	San Felipe Creek watershed
	Riverside	Salt Creek watershed

Unarmored three- spined stickleback	California/Los Angeles	Santa Clara River watershed
	Santa Barbara	San Antonio Creek watershed
Ozark cavefish	Missouri/Barry Christian Greene Jasper Lawrence Newton Stone	Entire county " " " " " "
	Arkansas/Benton	"
Santa Cruz long- toed salamander	California/Santa Cruz	West and south of Highway No. 1 from City of Santa Cruz to Santa Cruz-Monterey County border
	Monterey	West of Highway No. 1 from Santa Cruz- Monterey County border to the City of Moss Landing
San Francisco garter snake	California/San Mateo	Entire county
Yuma clapper rail	California/Riverside	Colorado River south of Topock Marsh
	Imperial	Whitewater River delta at Salton Sea
Yellow-shouldered blackbird	Puerto Rico	Municipalities in and around Lajas Valley

We are aware that some current product labels instruct applicators to contact the U.S. Fish and Wildlife Service prior to use of a chemical in areas where it is otherwise prohibited to avoid jeopardy to listed species. With the exception of recent interim operating agreements for mosquito larvicides and forest pesticides, we do not consider this a workable protocol for

ethoprop. The Fish and Wildlife Service has neither the funds nor staff to respond adequately to such requests. We have made every attempt to define the restrictions narrowly so that applicators can understand and comply with the prohibitions. Service personnel have no authority to alter such restrictions during phone conversations.

Incidental Take

Section 9 of the Act prohibits any taking, killing, harassment, or harming of listed species without special exemption. Under the terms of Section 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not a purpose of the Agency action is not considered taking within the bounds of the Act, provided that such taking is in compliance with the terms and conditions of this Incidental Take statement.

Any incidental take of listed species from the application of ethoprop is highly speculative. Given the widespread use of the product and lack of follow-up monitoring of hazards to non-target species, it is impossible to formulate any rational estimate of incidental take, either in "hard" numbers or other non-numerical estimate of losses. Beyond implementation of our reasonable and prudent alternative, we have no other measures to offer at this time to minimize incidental take.

Conservation Recommendations

In furtherance of the purposes of the Endangered Species Act [Sections 2(b), 2(c) and 7(a)(2)], which mandates that Federal agencies use their authorities to carry out programs for the conservation of listed species and conserve the ecosystems upon which they depend, we recommend that, to reduce the possibility of any adverse impact to the Colorado squawfish or humpback chub, we recommend that a 300-foot-wide no-application zone along the Colorado River in Mesa, County, Colorado, be established.

Other restrictions, as recommended or required in our corn cluster Biological Opinion should be implemented.

You should consider developing a supplemental labeling brochure for ethoprop, similar to the current program for the "cluster" consultation bulletins, that will describe use restrictions in detail.

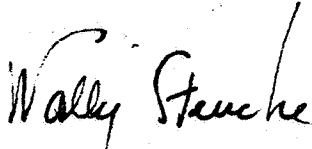
If any listed species is determined to be taken due to application of ethoprop, your agency should undertake an immediate special review of the registration.

Mr. Michael Slimak

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This concludes formal consultation on this project. If the proposal is significantly modified in a manner not discussed above, or if new information becomes available on listed species or impacts to listed species, reinitiation of formal consultation with this Service should be considered. We would appreciate notification of your final decision on this project.

Sincerely,

A handwritten signature in cursive script that reads "Wally Stauche". The signature is written in dark ink and is positioned above the typed name.

Acting Regional Director

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