

EXECUTIVE SUMMARY

This draft Biological Opinion (Opinion) evaluates the effects of the Environmental Protection Agency's (EPA's) proposed national registration review of simazine on endangered and threatened species and designated critical habitat under U.S. Fish and Wildlife Service (Service) jurisdiction, in accordance with section 7(a)(2) of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et seq.). This Opinion also serves as a conference report for proposed species and proposed critical habitats.

There are currently five technical registrants of simazine that are considered applicants in this consultation: Syngenta, Drexel Chemical Company, Amvac Chemical Corporation, Winfield Solutions, and Sipcam Agro. There are 21 registrations of products with simazine as an active ingredient. Simazine is registered for use as a pre- and post-emergence herbicide that is intended to control broadleaf and grassy weeds. Simazine is registered for Section 3 use throughout the conterminous United States (CONUS) for a variety of agricultural use patterns, including pome fruit, stone fruit, tree nuts, citrus, berries, grapes, corn, and sod farms. The Section 24c (Special Local Need) registrations for simazine allow use in Oregon and Washington on alfalfa (grown for seed) and cole crops (grown for seed). Simazine is also registered for Section 3 use on the following non-agricultural use patterns within the CONUS: turf (lawns and golf courses), nurseries and ornamental ponds. Simazine is applied through ground applications only (i.e., no aerial applications). Simazine use is not permitted in Alaska, Hawai'i or the U.S. territories.

Simazine registrants previously modified product labels to narrow the geographic scope where simazine can be used and to require applicators to implement several conservation measures to limit the extent of simazine off-site transport and exposure to the environment (i.e., spray drift and runoff). Through consultation with EPA, we identified additional conservation measures to further minimize adverse effects to many listed species using EPA's Herbicide Strategy. The technical registrants have committed to adopting these additional conservation measures, including a 15-foot spray drift buffer and a minimum of three runoff mitigation points that are required for all agricultural uses in all locations where simazine is registered for use. EPA estimates these measures will further reduce the extent of listed species habitat that will be exposed to simazine and reduce exposure concentrations by 90-95%, minimizing adverse effects to many listed species. For listed species that, after incorporating these general label measures, we determined there was still a substantial risk of adverse effects, the registrants have committed to requiring an additional three runoff mitigation points (i.e., six points total) to further reduce exposure to those species. These additional measures will reduce exposure concentrations by up to 99% (i.e., two orders of magnitude) and contribute to reducing the risk of adverse effects. EPA will communicate where and for what specific simazine uses these additional runoff measures are required through their Bulletins Live! Two online platform.

Our analysis of the effects of the action considered the information on the simazine label and supplemental information that we received from EPA and the technical registrants, including conservation measures committed to by registrants prior to and during this consultation. In this draft Biological and Conference Opinion, we addressed 696 proposed and listed species and 265 designated and proposed critical habitats. We concurred with EPA's determination that the proposed action may affect, but is not likely to adversely affect, 346 listed and proposed species and 165 designated and proposed critical habitats. EPA determined there would be no effect from

the proposed action and we adopted this call for 610 listed species and 433 designated and proposed critical habitats, many of which were associated with geographic areas where simazine is no longer registered for use (e.g., Hawai‘i, Puerto Rico). In an associated Concurrence Appendix, we described EPA’s “no effect” determinations and our concurrence and agreement with EPA’s “not likely to adversely affect” determinations. We also explained our reasonings behind including several species and critical habitats in our draft Biological Opinion instead of the concurring with EPA’s “not likely to adversely affect” determinations.

Analysis and Methods

We followed an ecological risk assessment framework to determine effects to species and their critical habitats. We used information presented in EPA’s Biological Evaluation (BE) (e.g., pesticide exposure estimates and toxicological response data) and from the technical registrants, when applicable, to predict the resulting effects to species and critical habitats. We assessed toxicological effects related to the action, including anticipated general pathways of exposure to listed species taxa groups and their designated critical habitats (i.e., physical and biological features, or PBFs). We then described specific aspects of simazine (e.g., chemical properties, applications rates, routes of exposure), its use on the landscape (e.g., different types of usage data), and how it will impact species and critical habitats based on these properties. We described factors that influence exposure and effects and how we incorporated them into our analysis. Within the Integration and Synthesis section of the Opinion, we described our approach to the analysis for each of the taxa groups, which includes incorporating all aspects of the potential exposure to simazine for the different taxonomic groups within the context of the status of the species and critical habitat, environmental baseline, and cumulative effects.

For species that EPA determined were “likely to be adversely affected” by the proposed action or that the EPA determined were “not likely to be adversely affected” and we did not concur, we assessed the species’ overall vulnerability and conducted a risk analysis. The risk analysis included metrics of exposure and expected magnitude of adverse effects. We used the percent overlap between the species’ ranges and the action area (i.e., simazine use sites and areas of off-site transport through spray drift or runoff). When available, we used metrics for past herbicide usage (i.e., U.S. Department of Agriculture’s Census of Agriculture, CoA; and California’s Department of Pesticide Registration’s California Pesticide Use Report, CalPUR) and estimated simazine usage (i.e., EPA’s National and State Summary Use and Usage Matrix, SUUM) to assess potential future exposure to simazine. Finally, we compared estimated environmental concentrations that EPA generated to reference toxicity thresholds to determine the expected magnitude of adverse effects to individuals and necessary resources, including critical habitat PBFs when applicable. Depending on the species, toxicological effects could be mortality, growth inhibition, reproduction loss, reduction in habitat, or prey loss. We used this information to generate the anticipated risk of adverse effects for each species in this draft Opinion.

Results

Animals

In total, we considered 392 proposed and listed animals and 194 proposed and designated animal critical habitats in our Opinion that either EPA determined were likely to be adversely affected

by the proposed action or that the EPA determined were "not likely to be adversely affected" and we did not concur. We do not expect simazine to kill animals from acute exposure, but it may result in adverse sublethal effects. In both terrestrial and aquatic animals, toxicity studies indicate that simazine may lead to growth and reproductive effects at a range of exposure concentrations. For more detail, see the *Effects of the Action on Animals* section of the Opinion. After considering the conservation measures incorporated into the action, extent of exposure, magnitude of expected impacts to individuals and their resources, vulnerability analysis, environmental baseline, and cumulative effects, we concluded that the proposed action is not likely to jeopardize 365 proposed or listed animal species and is not likely to destroy or adversely modify 182 proposed or designated critical habitats for animal species.

Plants

In total, we considered 304 listed plants and 71 proposed and designated plant critical habitats in our Opinion that either EPA determined were likely to be adversely affected by the proposed action or that the EPA determined were "not likely to be adversely affected" and we did not concur. Simazine has demonstrated adverse effects on growth to plants, which is expected because simazine is an herbicide. After considering the conservation measures incorporated into the action, extent of exposure, magnitude of expected impacts to individuals and their resources, vulnerability analysis, environmental baseline, and cumulative effects, we concluded that the proposed action is not likely to jeopardize 300 proposed or listed plant species and is not likely to destroy or adversely modify 70 proposed and designated critical habitats for plant species.

Conclusions

All species in this consultation and concurrence benefit from general label conservation measures. Some species in the consultation and concurrence were included in Pesticide Use Limitation Areas (PULAs) to further reduce off-site transport for various reasons (e.g., their habitats are more likely to have high concentrations of simazine), as noted in the appropriate appendices. In addition, we expect that for some species, implementation of conservation measures, including those on the general label and within species-specific PULAs, as applicable, will reduce simazine exposure to a degree that we no longer expect any adverse effects to individuals; these species are noted in the concurrence (Appendix A) with their assigned PULA.

In our draft Biological Opinion, we focused our analyses on 1) species with low expected exposure to simazine (due to low overlap, usage, or conservation measures adopted prior to consultation), and 2) species with more than low levels of exposure that benefited from conservation measures identified through the Herbicide Strategy that aimed to reduce off-site transport of simazine (i.e., listed plants and listed animals that depend on plant resources). Consideration of these measures in our analyses of species and critical habitats in this draft Opinion, which combines vulnerability and risk analyses with each species' environmental baseline and cumulative effects, was adequate to conclude the proposed action is not likely to jeopardize 665 proposed or listed species or destroy or adversely modify 252 proposed or designated critical habitats. For 32 other listed and proposed species and 13 designated and proposed critical habitats, further analysis is required to determine the extent of effects, if any, and the resultant risk to these listed species and critical habitats. We intend to continue coordinating with EPA and simazine registrants between the release of this draft Opinion and the

transmission of the final Opinion to gain information regarding the exposure and effects of simazine registration, as proposed, to these species and critical habitats. As such, we have not yet made determinations for these 32 species or 13 critical habitats.

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