SUBJECT TO PROTECTIVE ORDER

No. 19-70115

UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

NATIONAL FAMILY FARM COALITION, *et al.*,

Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, *et al.*,

Respondents,

and

MONSANTO COMPANY,

Intervenor-Respondent.

ON PETITION FOR REVIEW FROM THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

PETITIONERS' OPENING BRIEF (REDACTED)

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CORPORATE DISCLOSURE STATEMENT

Pursuant to Federal Rule of Appellate Procedure 26.1, Petitioners National Family Farm Coalition, Center for Food Safety, Center for Biological Diversity, and Pesticide Action Network North America certify that they have no parent corporations and that no publicly held corporation owns more than ten percent of the Petitioners.

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JURISDICTIONAL STATEMENT

This petition seeks review of the October 31, 2018 decision by the United States Environmental Protection Agency (EPA) to continue the new uses registrations of the pesticide dicamba on dicamba-resistant cotton and soybean, Excerpts of Record (ER)0001-0024 ("Registration Decision for the Continuation of Uses of Dicamba on Dicamba Tolerant Cotton and Soybean"). This Court has jurisdiction under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which provides for review in the courts of appeals of "any order issued by the [EPA] Administrator following a public hearing." 7 U.S.C. § 136n(b).[1] EPA's October 31, 2018 decision is a continuation of the new uses initially approved by EPA in 2016.[2] ECF 1-6 at 2-3; ER0003.[3] Petitioners timely filed this petition for review. 7 U.S.C. § 136n(b), 40 C.F.R. § 23.6.

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[1] *United Farm Workers of Am. v. Envt'l Prot. Agency*, 592 F.3d 1080, 1082-83 (9th Cir. 2010).

[2] Petitioners submitted comments to the agency in 2016, ER1238-1306; ER1325-1328; ER1329-1355; ER1226, and again prior to the 2018 continuation decision, along with hundreds of other stakeholders. ER0005, n.1; ER0006-7; ER0509-514.

[3] Petitioners have standing. *Friends of Earth, Inc. v. Laidlaw Envt'l Serv. (TOC), Inc.*, 528 U.S. 167, 180-81 (2000); *Hunt v. Wash. State Apple Advert. Comm'n*, 432 U.S. 333, 343 (1977). The approval threatens to directly injure Petitioners' members' environmental,

ISSUES PRESENTED

1. Whether EPA violated FIFRA by authorizing the registrations without prerequisite findings and required data, and without supporting its decision with substantial evidence; and

2. Whether EPA violated the Endangered Species Act (ESA) by failing to consult the expert wildlife agencies concerning XtendiMax's effects on threatened and endangered species and their critical habitats, despite ample evidence and the agency's admissions that its approval decision "may affect" them.

STATEMENT OF THE CASE

This case concerns a pesticide Intervenor Monsanto developed, "XtendiMax with VaporGrip Technology" (XtendiMax), containing the weed-killing active ingredient, dicamba. ER0003-4.[4] While dicamba has existed since 1967, XtendiMax is a "new use" registration because it is

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vocational, agricultural, recreational, aesthetic, and economic interests. Bentlage Decl. ¶¶ 2-17; Buse Decl. ¶¶ 1-13; Crouch Decl. ¶¶ 2-14; Faux Decl. ¶¶ 1-17; Griffith Decl. ¶¶ 1-9 ; Ishii-Eiteman Decl. ¶¶ 1-11; Kimbrell Decl. ¶¶ 6-12; Newman Decl. ¶¶ 1-18; Pool Decl. ¶¶ 1-26; Suckling Decl. ¶¶ 2-11; Zulke Decl. ¶¶ 1-18. The declarations are contained within the attached Addendum of Declarations (A80-163).

[4] The registration also covers the competitor dicamba varieties approved by EPA for the same uses. ER0004-5, tbl.2; ER0121-ER0210. We use XtendiMax for simplicity.

an entirely novel use of dicamba: direct, "post-emergent" application to cotton and soybeans that Monsanto genetically engineered (GE) to survive being sprayed with dicamba. ER0005.

I. XTENDIMAX AND GENETICALLY ENGINEERED CROPS.

Dicamba is extremely toxic to conventional cotton and soybean. Its use was previously restricted to before planting ("preplant") to clear a field of early-season weeds, and once again at season's end (preharvest) for soybeans (and postharvest for cotton), but never sprayed during the critical crop growing periods. ER0005; ER0051-52, 0057. Genetically engineering soybean and cotton with resistance to dicamba enables "over-the-top" or "post-emergent" spraying much later in the season. ER0003; ER0059-61. Monsanto markets patented GE dicamba-resistant seeds, which are also resistant to its Roundup herbicide, together with XtendiMax, as the "Roundup Ready Xtend Crop System." ER1710-1711.

For 20 years, Monsanto sold Roundup and seeds genetically engineered to resist Roundup's active ingredient, glyphosate. This "Roundup Ready" crop system dramatically increased the overall pesticide output into our environment. *Ctr. for Food Safety v. Vilsack*, 718 F.3d 829, 841 (9th Cir. 2013); ER1754-1759. It also caused a related

problem: weed resistance. ER1066-1067; ER1296-1297; ER00014. As with overusing antibiotics, Roundup overuse generated an epidemic of glyphosate-resistant "superweeds" infesting about 100 million acres of U.S. cropland. ER1348-1349.

EPA and Monsanto (Respondents) touted XtendiMax's ability to kill glyphosate-resistant weeds as the approval's primary benefit, but after just two seasons of the approved use, weeds have developed resistance to dicamba, making them more intractable, as many experts predicted.[5] XtendiMax exacerbated the resistant-weed epidemic and massively increased use of dicamba, roughly *12-fold in just one year*.[6] This dicamba use has caused widespread damage to conventional crops and plants, potentially jeopardized hundreds of endangered and threatened species and their habitat, and significantly injured farmers and the environment.[7]

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[5] ER1160-1162; ER1155-1156; ER1157-1159; ER1346; ER1228-1237.

[6] In 2017, soybean and cotton dicamba use increased to nearly 10 million lbs., vs. the 2012-2016 average of 768,000 lbs., with "significantly more dicamba" expected in 2018. ER0477.

[7] *See infra* at pp.7-12.

II. THE 2016 APPROVAL.

EPA was well-aware of XtendiMax's potential to harm crops and other plants due to dicamba's spray drift and volatility.[8] ER1765-1766, 1771-1775; ER1714-1715, 1718; ER1573-1577; ER1229-1230, ER1233-1234; ER1307-1320; ER1748-1750; ER1760-1770. Farmers, scientists, and conservationists supplied EPA with studies, expert opinions, and practical evidence warning of devastating impacts from dicamba's notorious tendency to drift off-site. ER1226-1380. EPA knew the new uses could dramatically increase crop injury by sharply increasing and shifting dicamba use to later in the season, when hot conditions increase volatility and crops are more susceptible to damage. ER1309-1310; ER0753-757. These warnings were prophetic. *Infra* pp.7-12.

EPA was also informed the new use might harm hundreds of endangered species and their critical habitats and the environment

[8] Vapor drift is largely a function of the pesticide's volatility and weather conditions, beyond a farmer's control. ER1063-1064. Volatile pesticides like XtendiMax evaporate from soil and plant surfaces hours to days after application, forming vapor clouds that damage plants far from the application site. *See* ER0959-0963; ER1060; ER1309; ER0753-757. Spray drift (pesticide droplets blown by the wind during application) also cannot be entirely prevented. ER0753-757. "Drift" when used alone means either vapor drift, spray drift, or both.

generally. ER1329-1343; ER1245-1253. The registration allows application on millions of acres in 34 states, and EPA knew that ESA-protected animals, such as the whooping crane, feed in sprayed crop fields, ER1966-1975, and that hundreds of other endangered plants and animals found near those fields would be threatened by drift. ER1830-1835.

EPA nonetheless approved registration in November 2016, ER0211-246; ER0003, based on the supposition that XtendiMax is less volatile than prior dicamba formulations. EPA approved a lengthy label containing use restrictions, such as wind direction, buffers, spray boom height, and temperature and humidity adjustments, which the agency claimed would "effectively limit" any impacts. ER0240-246; ER0247-258; ER0259-269.

Tellingly, the Agency imposed a 2-year automatic expiration on the registration (Nov. 9, 2018) "because of the concerns about resistance and off-target movement," ER1072, "unless EPA determines before that date that off-site incidents are not occurring at unacceptable frequencies or levels." ER0245.

Instead of consulting the expert wildlife agencies about potential harm to endangered plants and animals and their critical habitats, EPA made the unprecedented finding the registration would have absolutely "no effect" on any of hundreds of species or habitats. ER0233-235; ER1960-1961; ER1796-1797; ER1581.

III. 2017-2018: TWO SEASONS OF CATASTROPHIC CROP DAMAGE.

Farmers began using XtendiMax in 2017. By the end of July 2017, 2.5 million acres of soybeans alone was officially reported as damaged by dicamba drift, ER1133; rising to over 3 million acres by August 2017, ER1061-1062, with numerous reports of ongoing extensive damage. ER1153; ER1149 (50% of the non-dicamba-resistant soybeans injured in Illinois).

Other crops and plants were also damaged, including grapes, tomatoes, melons, tobacco, vegetables, and fruit and nut trees and shrubs; the flower and nectar of many of these plants being vital food for pollinators. ER1106-1113; ER1114-1115; ER1146; ER0952; ER0958-963. According to expert Dr. Bradley, "[w]e have never seen anything like this before … in our agricultural history." ER1097.

Dicamba drift threatens farmers' livelihoods by slowing soybean growth and reducing yields, costing farmers millions. ER0887-889; ER0891-894; ER1148-1151; ER1061-1065; ER1100-1102. Farmers were pressured to purchase patented GE dicamba-resistant soybean seeds at a premium (ER1058; ER1063) just "to protect themselves" from dicamba drift. ER0768-0769; ER0667-669; ER0967; ER1120; ER1138. The damage tore apart rural communities. University of Tennessee's Dr. Steckel said dicamba damage has divided agriculture "like nothing I've seen," pointing to "angry" growers whose fields have suffered drift damage multiple times. ER1151.

University scientists affirmed volatility, or vapor drift, as "one of the major routes" of dicamba drift injury, based on "air sampling data, field volatility studies and field visits." ER1100. EPA received extensive test results showing that, contrary to Monsanto's claims, XtendiMax volatilized "for as many as 3 or 4 days following the application." ER0998-1050; ER1097-1100; ER1062-1065.

State and academic experts told EPA the label restrictions did not work because they did not address volatility. ER1148-1151; ER1136-1137; ER0998-1050; ER1114-1115; ER1080 (professional applicators

report drift damage common up to a mile from field); ER1066-1067 (similar, 3 to 5 miles); ER0686 ("vapor drift occurred in all directions from applied fields"). Experts opined that "there's nothing we can do for a volatile product as far as label changes," ER1093; ER1099-1100.[9]

Faced with unprecedented damage reports, in fall 2017 EPA briefly considered experts' recommendations to prohibit use after a spring "cutoff date" to mitigate vapor drift damage, but rejected it after Monsanto and the pesticide industry opposed it. ER1057; ER0971; ER0995.[10]

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[9] For more, *see National Family Farm Coalition v. Environmental Protection Agency*, No. 17-70196 (9th Cir., Jan. 20, 2017) (*Dicamba I*), ECF 70, at 5-11 and record citations therein.

[10] When EPA finally acted, it took its orders not from the states or their experts, but from Monsanto, repeatedly meeting with its representatives and letting them dictate what label changes EPA would make. ER1786-1788; ER0955-957; ER0953-954; ER0910 (EPA official to Monsanto: "like I said, no surprises."), ER0908-909; ER0905-907.

Faced with EPA's inaction and catastrophic losses, several states passed restrictions to address vapor drift, such as spray cut off dates and temperature limits. ER0884-886 ("Most of the state-by-state changes are being made, they stated, because the federal EPA labels do not address herbicide volatility."); ER0597-610.

Instead Respondents amended the registration and added Monsanto's proposed changes, which included more training, greater record-keeping burdens, and a ban on spraying dusk to dawn—none of which addressed the key issue numerous experts had pointed to: volatility and vapor drift. *Dicamba I*, ECF 57-2; ER0282.

The 2018 season demonstrated the futility of EPA/Monsanto's 2017 label changes, as damage reports climbed throughout the planting season. ER0616 ("As we near the end of the 2018 growing season, many states continue to report significant complaints from the movement of dicamba from the target site."). Illinois and Indiana were once again "overwhelmed," Kansas "overrun" with dicamba drift complaints. ER0652-655; ER0612-614; ER0734.

In fact, the number of official dicamba damage reports *was even higher than 2017* in leading soybean-production states like Iowa, Illinois, Indiana, Ohio, Nebraska and North Dakota. ER0529-531. Although many soybean farmers were forced to prevent another disastrous season by switching to Monsanto's dicamba-resistant soybeans, growers of other plants and crops were left defenseless. ER0737-744 (damage to "cypress trees, tomatoes, gardens, a vineyard");

ER0751-752 (university scientists and states finding majority of dicamba damage to "specialty crops, vegetables, and ornamental, fruit and shade trees"); ER0628-636 (vineyards); ER0747-749 (trees); ER0717-723; ER0709-710; ER0737-744; ER0532-539. Dicamba drift damage to flowering plants is one suspected cause of beekeepers' dramatic decline in honey production. ER0515; ER0750; ER0777.

The damage was so severe that by late July 2018, the U.S.'s fourth largest soybean seed seller wrote to EPA urging prohibition of over-the-top applications of dicamba. ER0711. As one university expert told EPA, the 2018 season demonstrated "that minimizing the off target movement of dicamba to a reasonable level is NOT possible. … [The] level of [dicamba] movement is completely unacceptable." ER0724-25.

Volatility remained a major concern, both in new field tests and real-world farming experiences. ER0879 ("Volatility continues to be a significant contributor to off-target movement of dicamba during the summer months."); ER0619-620 (Illinois applicator association survey finds volatility is main cause of dicamba damage); ER0627 (South Dakota Department of Agriculture emphasized dicamba's volatility in soybean damage). Again university scientists, state pesticide regulators,

seed companies, and professional associations urged EPA to limit dicamba usage to pre-plant, or with early cutoff dates, to prohibit XtendiMax applications in volatility-enhancing heat. ER0617; ER0655; ER0643-649; ER0711-712; ER0528; ER0620, ER624-625.

Two years of XtendiMax use have proven disastrous: over 4,200 official complaints and more than 4.7 million acres of soybeans injured, as well as scores of other plants and crops, including valuable specialty crops. *See supra* pp.7-11; ER529-531 (total dicamba complaints in 2017 (2,708) and 2018 (1,526)); ER0890; ER0732; ER0751-752. And these figures are substantial underestimates, since only a small fraction of drift damage episodes are reported. ER0989 (likely only 1 in 10 incidents reported in Indiana).

IV. 2018 REGISTRATION DECISION.

Despite overwhelming evidence of unacceptable dicamba drift damage, and despite EPA's own assurance that it would not continue the registration beyond November 2018 in such instance, on October 31, 2018, EPA nonetheless continued the new use registration. ER0003, 24. And, despite public calls from experts demanding that EPA impose an early-season cut-off date, *supra* p.9, EPA did not, instead again adding

more meaningless conditions and continuing the registration to expire on December 20, 2020. EPA acknowledged that many of its latest label amendments "represent[] no change" or would have "minimal" impact, raising the question of how EPA reached it decision to continue the approved uses. ER00020-21.

While admitting "effects to non-target terrestrial plant offsite from the treated fields," ER00012, rather than complying with its ESA duty to consult the expert wildlife agencies, EPA once again proceeded on its own, using methods and assumptions contrary to the ESA, unilaterally declaring that a 57-feet buffer (in addition to pre-existing the 110-foot downwind buffer) would be sufficient to protect endangered species. ER00021-22.

V. PROCEDURAL HISTORY.

Petitioners challenged the 2016 registration in January 2017. *Dicamba I,* ECF 1-5. After EPA amended the registration in 2017, Petitioners amended their petition to encompass the amended EPA decision. *Id.,* ECF 62; 68; 70; 92; 102; 133 (briefing). On August 28, 2018, the parties presented oral argument to this Court. After EPA

continued the registration in 2018, this Court dismissed that petition as moot, but expedited this case. *Dicamba I*, ECF 157, 160-1, 173.

Dicamba I contains relevant facts, argument, and supporting materials, not all of which Petitioners had space to duplicate here, but which this Court may find informative. The entirety of the administrative record of that case is the record in this case, plus the additional 2018 materials added by the agency.

ARGUMENT

I. EPA VIOLATED FIFRA.

To uphold the registration, the Court must find that EPA supported its decision with "substantial evidence" in the record. 7 U.S.C. § 136n(b).[11] Judicial review must be "searching and careful, subjecting the agency decision to close judicial scrutiny." *Containerfreight Corp. v. United States*, 752 F.2d 419, 422 (9th Cir. 1985). The agency's action may be upheld only on the " 'basis articulated by the agency itself.' " *Pollinator Stewardship Council v. U.S. Envtl. Prot. Agency*, 806 F.3d 520, 532 (9th Cir. 2015) (quoting

[11] All pertinent statutory and regulatory provisions are included in the attached Statutory and Regulatory Addendum (A2-75). 9th Cir. R. 28-2.7.

Motor Vehicle Mfrs. Ass'n of the U.S., Inc. v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 50 (1983)).

EPA violated FIFRA. The agency failed to make required findings and failed to meet data requirements to approve a conditional new use. Nor did it support the 2018 decision with substantial evidence. The 2018 changes will not fix the drift crisis; they still fail to address the crux of the issue: volatility. EPA hinged its decision on a flawed volatility assessment and on unrealistic and impossibly complex use directions, without analyzing their efficacy. Finally, the agency failed to weigh the true costs of its approval to farmers and the environment.

A. EPA Failed to Make the Required "Unacceptable Frequencies or Levels" of Drift Finding.

In the 2016 registration, EPA set forth that the registration was required to "automatically expire on November 9, 2018, unless EPA determines before that date that off-site incidents are not occurring at unacceptable frequencies or levels." ER0245. That is, EPA hinged any further registration on the agency making an express finding that off-field drift harms were not happening at "unacceptable frequencies or levels." Amending the registration in 2017, EPA reiterated that same prerequisite. ER0282.

As explained above, XtendiMax drift harms are happening at levels and frequencies literally unprecedented in the history of American agriculture, on millions of acres, levels the agency could not rationally defend as "reasonable." *See supra*. Yet whether the agency could defend such a finding is not before the Court because in the 2018 extension decision*, there is not a single word* about this required prerequisite finding the agency set for itself as a condition of continuing registration. The agency does not attempt to conclude, let alone support with substantial evidence, that drift in 2017-2018 did not occur at "unacceptable frequencies or levels." *State Farm*, 463 U.S. at 50 ("courts may not accept appellate counsel's *post hoc* rationalizations for agency action.") (emphasis in original).

The only mention is to kick the can down the road: EPA predicates any future continuation of the 2018 registration on the same "off-site incidents are not occurring at unacceptable frequencies or levels" requirement. ER00024. That does not meet the agency's burden to make that finding in *this* extension. ER0245. EPA's failure to explain how it purports to meet this requirement is reason enough to set aside the registration. *Sec. & Exch. Comm'n v. Chenery Corp.*, 332 U.S. 194,

196-97 (1947) ("If the administrative action is to be tested by the basis upon which it purports to rest, that basis must be set forth with such clarity as to be understandable.").

EPA's failure to make the required finding upon which the agency itself *predicated any further registration* renders the registration without substantial evidence in support. *Nat. Res. Def. Council v. U.S. Envtl. Prot. Agency*, 735 F.3d 873, 884 (9th Cir. 2013) ("Having established a rule of decision of less than *or equal* to 1,000, EPA cannot unmake it because its actual MOE is in the neighborhood. Nor can we revise EPA's assumptions, alter its rule of decision, or perform our own risk assessment. … EPA may wish to revisit its standards in the future, but it cannot ignore them.") (emphasis in original); *Pollinator Stewardship Council*, 806 F.3d at 531-32 ("EPA chose to set its level of concern at a measurement it now feels is overly conservative, but a court cannot alter the agency's own rule.").

B. EPA Failed to Meet the Conditional New Use Data Requirements.

FIFRA's unconditional registration standard applies unless one of three "special circumstances" for conditional registration applies. 7 U.S.C. §§ 136a(c)(5), 136a(c)(7); *Nat. Res. Def. Council v. U.S. Envtl.*

Prot. Agency, 857 F.3d 1030, 1036-37 (9th Cir. 2017). Here EPA applied the conditional "new use" exception in the 2018 continuation which permits EPA to register a new use "notwithstanding that data concerning the pesticide may be insufficient to support an unconditional amendment." 7 U.S.C. § 136a(c)(7)(B); ER00016. EPA must make and support with substantial evidence two findings: "(i) the applicant has submitted satisfactory data pertaining to the proposed additional use, and (ii) amending the registration in the manner proposed by the applicant would not significantly increase the risk of any unreasonable adverse effect on the environment." *Id.* § 136a(c)(7)(B); ER00016. In its rush to keep XtendiMax on the market before the existing registration expired, EPA failed to comply with either condition.

First, EPA granted the registration despite admitting it lacked multiple key data specific to the new use. While conditional new use can be registered to provide flexibility, the application cannot be missing data related new use's risks *specifically*. 7 U.S.C. § 136a(c)(7). EPA can issue such a registration "*only if*" the agency has determined that it has "*all data* necessary" as to the specific product, including "at a minimum,

data needed to characterize any incremental risk that would result from approval...” 40 C.F.R. § 152.113(a)(1)-(2) (emphases added).

Here, EPA did *not* determine it had “satisfactory data pertaining to the proposed additional use,” as required. 7 U.S.C. § 136a(c)(7)(B). EPA admitted it lacked key data in several crucial areas specific to the new use, and concluded “there is *uncertainty associated with the existing database* for the OTT [over-the-top] uses and how they relate to reported incidents in terms of species effects, field conditions, and primary and secondary off-site movement.” ER00019 (emphasis added). Thus, EPA concluded that multiple field studies “*are required* to address this uncertainty.” *Id.* (emphasis added). Similarly, EPA concluded that damage to perennials and enhanced volatility via tank mixing[12] also required further studies “to address this uncertainty.” *Id.*;

[12] Farmers rarely spray XtendiMax alone; they tank mix it with other herbicides, most often glyphosate, which the crops are also engineered to resist. ER1565-1567; ER1793; ER0289. EPA scientists recognized that tank mixing could exacerbate spray drift and volatility, and therefore EPA limited tank-mixing to “products that have been tested and found not to increase the likelihood of drift/volatility.” ER1566. However, the 2016 registration did not require any *testing* of XtendiMax tank mixtures for volatility. ER0273. Despite studies confirming that tank-mixing with glyphosate makes XtendiMax more volatile by lowering the pH, EPA once again failed in the 2018 registration

id. at 23 (requiring four types of studies). There is no way to square EPA's admission that it lacked required data with FIFRA's requirement that the agency have "satisfactory data pertaining to the proposed additional use" to issue a conditional registration under 7 U.S.C. § 136a(c)(7)(B); 40 C.F.R. § 152.113(a)(1)-(2).

Second, EPA's failure to ensure it had key data pertaining to the specific proposed new use means it also failed the second step: without it, the agency could not meaningfully conclude that the registration "would not significantly increase the risk of any unreasonable adverse effect on the environment." 7 U.S.C. § 136a(c)(7)(B). The missing data goes to critical aspects of the decision: off-site movement; temperature effects on volatility; ecological effects on non-target plants; and the effect of lower pH making XtendiMax "more prone to volatilization" in tank mixtures. ER00022-23. Without that data, EPA could have "no real idea," *Pollinator Stewardship*, 806 F.3d at 532, whether or not the 2018 registration will significantly increase the risk of any unreasonable adverse effects on the environment.

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continuation to require any testing of tank mixes for volatility. ER0471, 22, ER0353; ER0068, 72-75. EPA's failure to require volatility testing of tank mixtures of XtendiMax and glyphosate products violated FIFRA.

C. The 2018 Registration Is Not Supported By Substantial Evidence.

1. 2018 Changes Will Not Fix the Drift Crisis.

EPA again justified its 2018 XtendiMax registration—despite overwhelming evidence the last two seasons of off-site damage—on unanalyzed label restrictions. ER00016-18. EPA's conclusion that these changes will prevent unreasonable adverse effects off-site is not supported by substantial evidence. 7 U.S.C. § 136n(b).

First, all but one of the changes ignores the main culprit of off-field movement, volatility. ER00019-22; *supra* pp.5, 8-9, 11-12; *e.g.* ER0688 (volatility is primary factor for damage in Illinois applicators' survey). Second, EPA continues to presume that applicator error is to blame, not the pesticide, despite required training for nearly 95,000 applicators prior to the 2018 season. ER0588. Finally, EPA acknowledged the changes were "minimal" and would not eliminate the problem of XtendiMax moving off the fields. ER00020 ("These label changes are anticipated to result in a minimal reduction of the flexibility of growers … EPA recognizes the possibility that there may be additional factors which make it difficult to eliminate all off-target

movement of dicamba."). The record reveals how ineffective these amendments will be in real world conditions.

Certified Applicator Provision

The 2017 label restricted XtendiMax use to certified applicators or persons working under their supervision; the 2018 label allows only certified applicators to spray. ER00020. Even with XtendiMax-specific training, drift complaints continued in 2018. ER0588 (95,000 applicators underwent dicamba training prior to 2018 season); *see supra* pp.10-12. In Indiana, over 10,000 applicators were trained for 2018, but there was an *increase* in drift complaints: "Needless to say, the mandatory training was not successful in reducing drift complaints." ER0613-614; ER0529-531 (increase in complaints from 2017 to 2018). In Illinois, more than 11,000 applicators underwent training, but the number of complaints rose sharply from 245 in 2017, to 330 in 2018, ER0529-531, and the Illinois Fertilizer and Chemical Association told EPA "[dicamba] is very difficult to keep on target by even the most professional, experienced applicators." ER0662-665. EPA heard over and over from state and industry experts that training was ineffective in reducing off-field impacts. The American Association of Pesticide

Applicators told EPA that training was "only marginally successful" despite thousands of hours, the amount of off-target damage was "unacceptably high," and urged EPA to explore causes other than applicator training. ER0656. Iowa State University weed specialist Dr. Hartzler stated: "It is my opinion that the new label restrictions put into place by EPA following the 2017 growing season, and the training required for applicators of the new dicamba products, have failed to reduce off-target problems to an acceptable level." ER0621-626. The problem is not applicators; it is XtendiMax.

Days after Planting Spray Prohibition

EPA added a restriction on spraying 45 (soybean) or 60 (cotton) days or more after planting, ER00021, but the change was "expected to be minimal" as most spraying already occurs within these timeframes. *Id.* The problem with "days after planting" restrictions is that farmers may plant *later* than usual, such as when rain makes fields too muddy; hence, experts have always recommended clear calendar restrictions, rather than allowing over-the-top spraying late in the season when temperatures are high and drift more likely. ER0639-642 ("Date restrictions are viewed as more 'workable' than the current growth

stage restriction…"); ER0596 (showing efficacy and feasibility of state-specific cutoff dates); ER0655 (recommending cutoff date due to possibility of weather delays in planting and plant growth). The record does not support that this amendment will make any difference in later-season XtendiMax spraying or reduce drift damage.

Sunrise/Sunset Timing Restriction

EPA revised the 2017 instructions permitting spraying only from dawn to dusk—to "at least one hour after sunrise and two hours before sunset"—because temperature inversions happen most often at night, and contribute to off-target damage from dicamba, at farther distances. ER00021. EPA acknowledges this amendment does not address volatility, a main culprit of off-field damage. *Id.* EPA also included advisory language to avoid spraying during temperature inversions, but such weather conditions are frequent and hard to avoid, ER746, and the advisory language is unenforceable. ER0617 (EPA should "only include risk mitigation measures that are enforceable" as "states will have great difficulty enforcing" label prohibitions related to weather conditions); ER0522 (strongly recommending EPA "specify required

[documentation] to provide evidence than an inversion did not exist [when application is made]," because of this "unenforceability" issue).

Advisory Language/Best Management Practices

EPA also added advisory language on pH and identification of sensitive areas meant to reduce off-target movement. ER00022. Unenforceable advisory language has the effect of preventing states from effectively enforcing mitigation measures, while shifting liability for damage from Monsanto to applicators. ER0617; ER0522 (EPA should enact clear restrictions in place of unenforceable use language, which allows registrants to shift liability for drift to applicators). The changes EPA made to its 2016/2017 registration will not fix the problem, particularly of vapor drift, are not supported by substantial evidence, and render the authorization contrary to FIFRA.

2. The Volatility Assessment is Not Supported by Substantial Evidence.

EPA has known from the beginning that dicamba injures off-field plants via vapor drift. ER1574-1576 (in 2016, discussing incidents of dicamba vapor drift injury 2,800 feet and 2.2 miles from fields); ER1382; *supra* pp.5, 8-9, 11-12. Yet in the 2018 continuation, EPA still does not adequately assess or mitigate vapor drift. Two years of

massive, real-world drift damage contradict the Monsanto studies underlying EPA's 2016 volatility assessment, but it was on the basis of these studies that EPA eliminated the "110-foot omnidirectional buffer for volatilization" EPA had initially proposed to protect off-field plants. ER1213-1214; ER0228. Despite now admitting that the Monsanto study methods were deficient,[13] EPA has continued the new uses another two years based on similarly deficient studies.

Field volatility-flux studies and modeling were used to simulate XtendiMax "vapor drift" (the concentrations of dicamba vapor that drift beyond a sprayed field). Small plastic chambers ("humidomes") containing different dicamba vapor concentrations, together with soybean seedlings, were used to estimate the "plant harm threshold" (the minimum dicamba vapor concentration that harms sensitive plants). Monsanto relies on these studies to conclude that vapor drift at a field's edge is less than the plant harm threshold, making any volatilization buffer to protect off-field plants unnecessary. ER0345.

[13] ER0353-354 (Admitting the studies submitted—"flux-based vapor drift estimates using field flux data, the modeling and humidome studies"—do not account for observed harms during planting seasons).

However, fatal flaws in all three study types—field volatility-flux, modeling and humidome—invalidate the results.

First, *none* of Monsanto's field volatility-flux studies were conducted in major soybean-producing states (*e.g.* IL, IA, MN, ND, IN, MO, NE) where the bulk of XtendiMax is used, and non-dicamba-resistant soybeans were most injured, violating EPA test guidelines.[14] Because the environmental conditions that influence volatilization vary regionally, studies in areas where few soybeans were grown or injured—Georgia, Texas, Arizona and Australia (ER0345)—likely underestimated XtendiMax's volatilization potential where it matters most.[15]

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[14] U.S. Envtl. Prot. Agency, *Fate, Transport and Transformation Test Guidelines: OPPTS 835.8100 Field Volatility* (Oct. 2008), *available at* https://www.regulations.gov/document?D=EPA-HQ-OPPT-2009-0152-0030 ("Field volatility studies should be conducted in areas considered representative of major areas where the pesticide is intended to be used.").

[15] EPA is only now seeking to gain a better understanding of volatilization in soybean-growing regions by requiring drift-focused studies *in 2019*, ER0070, in violation of registration standards. *Supra* pp.17-20.

Second, the studies were far too small to simulate actual vapor drift in much larger commercial fields. All but one U.S. study were under 10 acres, ER0345-348, ER0417, and as EPA concedes, "[l]arge field studies [are] more reflective of what occurs in the environment." ER0376. The model employed partly to scale up drift estimates modeled only a hypothetical [redacted] ER2095, still far too small to represent greater vapor drift from real-world farms many times this size.[16]

Finally, the humidome studies fail to establish a reliable harm threshold, which is influenced by environmental conditions. In 2015, EPA requested volatility tests using "different sets of conditions, including those likely to cause volatilization," such as "high temperature and humidity . . . (over 80 F and 90% RH [relative humidity])." ER1709. But Monsanto never undertook such studies: the humidome studies utilized only 40% relative humidity, ER0353; ER1163, leaving "the influence of the atmospheric conditions . . . on the amount of volatilized dicamba . . . and the observed phytotoxic and

[16] U.S. Dep't of Agric., Econ. Research Serv., *Farm Size and the Organization of U.S. Crop Farming*, at 12 tbl. 2 (2013), *available at* https://www.ers.usda.gov/webdocs/publications/45108/39359_err152.pdf (midpoint acreage of corn (600 acres), soybean (490 acres), and cotton (1,090) farms).

height response uncertain." ER1166. In the real world, professional applicators found "heat and humidity correlated with [dicamba] symptoms and complaints," "hot weather and humidity was a big problem," and conversely that "low temperature and humidity" reduced drift. ER1075, 1089-1090. None of the registrant volatility studies—old or new—provide substantial evidence that support the 2018 registration's failure to address or mitigate vapor drift. *Pollinator Stewardship*, 806 F.3d at 532.

3. EPA Hinged its Decision on An Impossible to Follow Label.

Not only are the 2018 revisions insufficient to mitigate harm, they add even more complexity to an already impossible-to-follow label. In addition to the changes outlined above, the label permits spraying within a narrow wind speed range of 3 to 10 mph, prohibits use when rainfall is forecast within 24 hours, bars application during temperature inversions, requires a 110-ft "downwind" buffer, and a 57-foot omnidirectional ESA-buffer in limited areas that requires an internet search to identify. ER0038, 42-44.

EPA based its registration determination on a label so complex and contradictory as to be impossible to follow for even a well-trained

certified applicator. The record is replete[17] with applicators and state weed and pesticide experts' reports of the label being "very complex," "unrealistic," "contradictory," and the impossibility of making an "on-label application as the label is written." ER713-714; ER0988-989; ER0684-685; ER0613 (Indiana State Chemist: "One of the more prominent observations by regulators and educators alike has been that both the 2017 and 2018 dicamba label directions have been extremely challenging for a trained applicator to comply with completely," explaining 93% violation rate in 2017); ER0758-761 (Agricultural Retailers Association to EPA: "There doesn't appear to be any way for an applicator to be 100% legal in their application. What is an applicator to do in this no-win situation?"); ER0637-638; ER1373. Indeed, in Indiana the weather data showed legal applications by-the-label could only occur during about 47 hours for the entire *month* of June, 2018, when most post-emergent applications to soybeans would normally occur. ER0614.

[17] For more, *see Dicamba I,* ECF 70, at 30-33 and citations therein; ER1103-1105.

Something as common, likely, and impossible to predict as a shift in wind direction and/or speed can turn a legal application into an illegal one. The label limits applications to wind speeds between 3 and 10 mph, but experts demonstrated wind gusts *over* 10 mph with average wind speeds of just 5 mph. ER0715 (should limit applications to average wind speed of 3-5 mph "as long as wind gust over 10 is a label violation"); ER0684 (wind speeds/direction changes, weather constantly changing, a light breeze changes during application can "start a field on label, end[] off label"). Moreover, the spray prohibition when sensitive crops are downwind does not specify *distance* downwind. ER0044; ER0522. Thus, "there is really no way to use the products." ER0651.

The impossible-to-follow label use requirements, coupled with ambiguous directions, operate to place all the blame for drift harm on the farmer or applicator, not Monsanto. ER0522 ("registrants can continue to place blame on the applicator with the knowledge that state responders probably cannot piece together what actually occurred during application"); ER0560 ("The label is written to put all of the liability (both regulatory and civil) on the applicator"); ER0758-761; ER0691-692, 699 (mandatory training served to shift liability from

chemical companies to applicators). EPA cannot support its registration by placing blame for an infeasible label on applicators. And it cannot be the case that any imaginable restrictions on use—no matter how impracticable, infeasible, or complex—are sufficient for a label to pass muster and support a "not likely to cause unreasonable adverse effects" conclusion. Without a realistic assessment of mitigation measures' on-the-ground efficacy and practicability, risk cannot be predicted accurately and EPA's determination is not supported by substantial evidence. 7 U.S.C. § 136n(b); *Pollinator Stewardship*, 806 F.3d at 532.

4. EPA Failed To Weigh the True Costs and Inflated the Benefits.

The FIFRA "unreasonable adverse effects on the environment" definition requires EPA to analyze not just the pesticide's *benefits*, but also its environmental, economic, and social *costs*, and the agency must explain how any benefits outweigh those costs. 7 U.S.C. § 136(bb) ("[U]nreasonable adverse effects on the environment" means "any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide."). Despite overwhelming evidence from the disastrous 2017-2018 seasons, EPA failed to support by substantial evidence that the

claimed benefits of XtendiMax outweigh its historic and catastrophic costs to agriculture and environment. *Id.* § 136n(b).

EPA's cost-benefit analysis ignores critical information and fails to provide even a rough estimate of the registration's harms, let alone a concrete, quantitative assessment of the costs. Despite acknowledging a "record number of complaints alleging damage from off-target dicamba movement" in 2017 and 2018, ER0475, 479 (a more than 65-fold increase from before over-the-top dicamba use), EPA ignored extensive evidence of yield and associated economic losses attributable to dicamba drift. *Supra* pp.7-8, 11-12 (millions in losses); ER0491; ER0887-889 (200 Minnesota farmers damaged by dicamba drift estimate $7 million in collective losses); ER0895-904 (North Dakota farmer loss of yield due to dicamba vapor drift). FIFRA requires more than avoiding analyzing costs by referring to "uncertainties." *Pollinator Stewardship*, 806 F.3d at 531-32.

EPA also entirely ignored the social costs, including strife among farmers and communities due to drift damage; forced adoption of dicamba-resistant GE crops by farmers to avert damage, annulling their right to buy and plant crops of their choice and imposing

additional costs for the dicamba-resistance trait; and the irreparable threat to growers of hundreds of "sensitive" crops, including virtually all vegetable and fruit trees, for which no dicamba-resistant trait is available. ER0667-669 (farmers growing Xtend soybeans "in defense" of drift); ER0768-769 (similar); ER0717-723 (South Dakota vegetable farm destroyed; Tennessee gardens destroyed); ER0747-749 (gardens destroyed, commercial vegetable growers crops may be condemned, truck crop growers going out of business; "industry [has] no choice but to plant 100% of the soybean acreage to this technology"); ER0762-767 (year of Missouri public soybean breeding research lost as a result of dicamba drift); ER1100-1102; ER1096-1100; ER0491 (naming but not assessing these costs). Finally, EPA ascribes no environmental costs to the new XtendiMax registration, despite evidence of harm to pollinators via impairment of flowering plants. ER0750; ER0777; ER0658-659; ER0515.

On the other hand, EPA accepts two Monsanto-claimed benefits: an additional herbicide for weed control and resistance management for

other herbicides. ER0485-489.[18] The first is true of any new use, which by definition provides an additional means of weed control. But EPA contradicts itself by admitting that 14 and 9 other post-emergence herbicides, 36 and 30 overall, are available to control broadleaf weeds in soybeans and cotton, respectively. ER00015; ER0486 n.4. Second, EPA presents no evidence that XtendiMax will delay weed resistance to other herbicides, but admits it "will increase selection pressure [for] resistance to dicamba," ER0488-489, a process that is already beginning. *Supra* p.4; ER0484: (two dicamba-resistant weeds "across millions of acres of soybeans and cotton"). Given these dubious benefits and complete lack of any real costs assessment, EPA's cost/benefit analysis cannot support EPA's 2018 continuation. 7 U.S.C. § 136(bb).

[18] EPA properly rejected Monsanto's claim that XtendiMax is beneficial to conservation tillage or reducing yield loss from resistant weeds more effectively than other weed control programs. ER0489.

II. EPA VIOLATED THE ESA.

Unlike most agency actions subject to Section 7, pesticides are toxic by design. They kill their targets, but also harm endangered species that happen to be exposed. In 2018, EPA continued its pattern of circumventing compliance with the ESA's mandates and unilaterally declared that hundreds of endangered plants, animals, and habitats would be completely unaffected by spraying a toxic weed killer across millions of acres.

By 2018, after continued damage and academic studies documenting that damage, EPA could not continue to pretend that XtendiMax does not move off fields in every direction. It put in place a 57-foot buffer only where a limited number of endangered plants survive adjacent to fields and a handful of species have critical habitat. The 57-foot buffer is not supported by the record, especially in the context of the low consultation bar of "any chance" of affecting endangered species. Having erred in its assumptions about dicamba damage off the field, EPA still did not revisit any of its earlier determinations of "no effect," continuing to act contrary to the

controlling ESA "may affect" legal standards, scientific standards, and the record.

EPA violated the ESA if its failure to consult the expert wildlife agencies in connection with its XtendiMax registration was arbitrary, capricious, an abuse of discretion, or otherwise not in compliance with law. 5 U.S.C. § 706(2)(A); *Karuk Tribe of California v. U.S. Forest Serv.*, 681 F.3d 1006, 1017 (9th Cir. 2012).

EPA violated the ESA numerous ways. First, EPA applied an unlawful legal standard throughout: it imported a FIFRA standard and risk assessment process, which tolerate harm, to its ESA duties, which require consultation when there is any chance the authorization may affect ESA species or their habitats. Second, EPA manipulated the action area, to categorically eliminate hundreds of endangered species from any consideration despite overlap with dicamba-sprayed soybean and cotton fields. Third, the big reveal of 2018, a new 57-foot buffer, only applies to a small subset of ESA species, is eight-fold smaller than EPA scientists believed it should be, and still fails to consider multiple crucial impacts. Fourth, EPA applied an unlawful standard for potential impacts to designated critical habitat, improperly tying that

independent duty to species' effects as well as applying far too high a threshold.

A. EPA Applied the Wrong Standard.

The issue is whether EPA erred in concluding the dicamba use it authorized can have absolutely "no effect" on hundreds of species or their critical habitat or, conversely, whether EPA should have consulted because its registration of XtendiMax meets the low bar that it "may affect" species or habitat. By applying the FIFRA standards and assessment, EPA ignored the ESA's requirements and very low trigger for consultation, in violation of Section 7 of the ESA. 16 U.S.C. § 1536(a)(2).

1. ESA Standards Are Different from FIFRA Standards.

The ESA "reveals a conscious decision by Congress to give endangered species priority over the 'primary missions' of federal agencies." *Tennessee Valley Auth. v. Hill*, 437 U.S. 153, 185 (1978). Unlike FIFRA's cost-balancing, in the ESA Congress made it "abundantly clear that the balance has been struck in favor of affording endangered species the highest of priorities." *Id.* at 194.

Section 7 is the "heart" of the ESA, one of its most crucial protections. *California ex rel. Lockyer v. U.S. Dep't of Agric.*, 575 F.3d 999, 1018 (9th Cir. 2009). It mandates each federal agency "insure" its actions—here, the XtendiMax authorization—are not likely to either jeopardize any species or adversely modify any designated "critical" habitat. 16 U.S.C. § 1536(a)(2). Section 7 establishes a process to insure agencies like EPA meet their substantive ESA duties: evaluation of the authorization's effects "in consultation with and with the assistance of" the agencies Congress designated as having special expertise in determining effects on endangered species: the Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) (hereafter "FWS" for simplicity). *Id.* § 1536(a)(2); 50 C.F.R. §§ 402.14(a), 402.01(b). Thus, the ESA grants action agencies like EPA no special authority: unlike FWS, they have no particular expertise in protected species' survival and recovery, nor in interpreting and applying the ESA's standards. *City of Tacoma, Washington v. F.E.R.C.*, 460 F.3d 53, 75 (D.C. Cir. 2006) ("This interagency consultation process reflects Congress's awareness that expert agencies (such as the Fisheries Service and the Fish and Wildlife Service) are far more knowledgeable

than other federal agencies about the precise conditions that pose a threat to listed species.").

EPA *must* consult with FWS if its authorization "may affect" any listed species or designated critical habitat. 50 C.F.R. §§ 402.14(a), 402.01(b). The "may affect" or "no effect" determination is known as "Step 1" in the Section 7 process. The "may affect" standard is extremely low: "[A]ctions that have *any chance of affecting* listed species or critical habitat—even if it is later determined that the actions are 'not likely' to do so—require at least some consultation under the ESA." *Karuk Tribe*, 681 F.3d at 1027 (emphasis added).

The agency must also apply the "best scientific and commercial data available." 16 U.S.C. § 1536(a)(2). That mandate "prohibits [an agency] from disregarding available scientific evidence that is in some way better than the evidence [it] relies on." *Kern Cty. Farm Bureau v. Allen*, 450 F.3d 1072, 1080 (9th Cir. 2006).

FIFRA and the ESA have different legal standards that reflect different policies, and, consequently, assign different duties to EPA, but EPA must comply with the ESA using its standards, not FIFRA's. *Washington Toxics Coal. v. EPA*, 413 F.3d 1024, 1033 (9th Cir. 2005)

(EPA must separately comply with the ESA in pesticide registrations). The ESA "may affect" standard that triggers consultation to protect species on the brink of extinction is a low bar and legally distinct from the FIFRA registration standard of no "unreasonable adverse effects" that includes cost-benefit analysis. *Karuk Tribe*, 681 F.3d at 1027 ("*Any possible effect*, whether beneficial, benign, adverse or of an undetermined character.") (emphasis added and quotations omitted).[19] *See, e.g.*, *W. Watersheds Project v. Kraayenbrink*, 632 F.3d 472, 496 (9th Cir. 2011); *Lockyer*, 575 F.3d at 1018-19.

The ESA's intentionally very low threshold for consultation reflects the overarching congressional intent of "institutionalized caution." *Cottonwood Envtl. Law Ctr. v. U.S. Forest Serv.*, 789 F.3d 1075, 1091 (9th Cir. 2015) (quoting *Hill*, 437 U.S. at 194). Hence the

[19] In *Karuk Tribe*, the plaintiff challenged the Forest Service's failure to consult before issuing notices to conduct mining activities in ESA-protected salmon critical habitat. Mining interests argued the record contained no evidence "so much as a single endangered fish or fish egg [was] ever injured by this [mining] activity." *Id.* at 1028 (quotations omitted). This Court rejected the arguments to make the agency's procedural consultation duty dependent on actual harm evidence, ordering consultation and emphasizing that any risk triggers it. *Id.*

expert agencies' definition of the "may affect" threshold as "the appropriate conclusion when a proposed action *may pose any effects* on listed species or designated critical habitat . . . ." U.S. Fish & Wildlife Serv. & Nat'l Marine Fisheries Serv., *Endangered Species Consultation Handbook: Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act*, at E-13 (Mar. 1998) (hereinafter "*Consultation Handbook*")[20] (emphasis added); *accord* 51 Fed. Reg. 19,926, 19,949 (June 3, 1986). And strict enforcement of the process is vital to meeting the substantive protection mandate: "[T]he strict substantive provisions of the ESA justify *more* stringent enforcement of its procedural requirements, because the procedural requirements are designed to ensure compliance with the substantive provisions." *Thomas v. Peterson*, 753 F.2d 754, 764 (9th Cir. 1985) (emphasis in original).

In sharp contrast to the ESA low "may affect" consultation trigger, the FIFRA pesticide registration standards ask whether the pesticide

[20] *Ctr. for Biological Diversity v. U.S. Bureau of Land Mgmt.*, 698 F.3d 1101, 1113 (9th Cir. 2012) (repeatedly relying on the Handbook). FWS is entitled to deference, whereas EPA's ESA decisions, as merely an action agency, are entitled to none.

will "cause an unreasonable adverse effect," weighing costs and benefits. 7 U.S.C. § 136(ee). The courts resoundingly rejected an earlier EPA attempt to substitute its FIFRA standard and framework for its ESA duties:

> *The risk framework of FIFRA (no unreasonable adverse effects) does not equate to the survival and recovery framework of the ESA*. The risk framework is driven by laboratory tests, models of exposure and occasionally some monitoring information. The ESA framework is an integration of status of the species, environmental background condition, the extent of the action within the action area, as well as laboratory and field testing, modeling and field validation. All of this information feeds into an analysis to support the purpose of the ESA to conserve ecosystems upon which threatened and endangered species rely.

Washington Toxics Coal. v. U.S. Dep't of Interior, Fish & Wildlife Serv., 457 F. Supp. 2d 1158, 1184 (W.D. Wash. 2006) (quoting a NMFS scientist) (emphasis added); *see also id.* at 1185 ("EPA's risk assessment, designed to answer a question posed by FIFRA (*i.e.*, whether unreasonable adverse effects would result from use of the pesticide), was not designed to answer the question posed by the ESA (*i.e.*, whether an action may be considered 'not likely to jeopardize[.]'")).

2. EPA Unlawfully Applied Its FIFRA Standard and Risk Assessment Process to Arbitrarily Conclude "No Effect."

Instead of applying the ESA's "may affect/no effect" standard, as defined by this Court and the expert agencies, EPA unlawfully applied its FIFRA "unreasonable adverse effect" standard and risk interpretation tool, imported into the ESA context. ER0228-229.

Specifically, EPA concluded "no effect" whenever its "risk quotient" (RQ), which is the measure of harm or mortality when a species is exposed to a certain amount of pesticide, did not exceed its own "level of concern" (LOC), which represents an arbitrary level of harm or mortality acceptable to EPA. ER1960 [redacted] ER1777-1778, 1782-1783. EPA employs self-created RQs and LOCs in the FIFRA context to determine "when a pesticide use as directed on the label has the potential to cause *adverse effects* on non-target organisms." ER1782 (emphasis added). EPA describes its FIFRA RQ/LOC scheme as "interpretive policy" of a level of adverse harm EPA is willing to tolerate as a cost. *Id.*; ER1579-1580 (applying it in this case); ER00010

(maintaining previous determinations for vast majority of species). However, RQ/LOCs are levels of tolerable harm that were not designed to support compliance with the ESA, but rather contain "methodologies and protocols that are intended to provide data to inform regulatory decisions under . . . FIFRA."[21] ER1713 (citing toxicity tests upon which EPA relies); ER1777-1778.

The Whooping crane provides one example of EPA's misappropriation of the "may affect" standard. The iconic crane is among the world's most endangered animals and a "flagship species…symbolizing the struggle for survival [of] endangered species worldwide." [22] There were as few as twenty-one in 1954, and conservation efforts have led to only a limited recovery; there are now a few hundred in the wild.[23] EPA acknowledged Whooping cranes [redacted]

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[21] U.S. Envtl. Prot. Agency, *Ecological Effects Test Guidelines OCSPP 850.2100: Avian Acute Oral Toxicity Test*, at i (May 10, 2012), *available at* https://www.regulations.gov/document?D=EPA-HQ-OPPT-2009-0154-0010.

[22] U.S. Fish & Wildlife Serv., *International Recovery Plan: Whooping Crane* (*Grus americana)*, at 1 (Mar. 2007), *available at* http://www.fws.gov/uploadedFiles/WHCR%20RP%20Final%207-21-2006.pdf.

[23] *Id*.

[redacted] ER1965. But rather than make the required "may affect" finding and consult FWS, EPA estimated the crane's field metabolic rate, guessed the amount of prey it was likely to consume, and guessed the amount of dicamba in hypothetical prey a hypothetical crane might consume. *Id.*

EPA used this collection of guesses to calculate acute and chronic RQs, and compared these with EPA's internally-generated LOCs. ER1965-1968. Because EPA's numbers fell below its LOC, EPA declared there would be "no effect." *Id.* But the RQ/LOC does not equate to no effect, *id.*, and therefore required a "may effect" determination as a matter of law. If EPA believed the exposure was nonetheless "not likely to adversely affect" the cranes, the ESA required EPA to engage in informal consultation and obtain FWS's written concurrence with this conclusion. 50 C.F.R. § 402.14(b); *Pac. Rivers Council v. Thomas*, 30 F.3d 1050, 1054 n.8 (9th Cir. 1994). EPA did not, violating Section 7.

EPA made the exact same error for multiple species, applying the LOC/RQ framework rather than consulting for every species it determined would be exposed in dicamba fields. ER1966-1982 ([redacted]

[redacted]); ER1407-1429 (8 species in 7 states); ER1584-1602 (6 species in 11 states); ER1174-1184 (4 species in 34 states); *e.g.*, ER1412 (Attwater's Greater Prairie Chicken: "An RQ of 0.08 does not exceed the acute LOC of 0.1; consequently a 'no effect' determination is concluded for the Attwater's greater prairie chicken."); ER1975-1977 (Gray Wolf); ER1977-1979 (similar, Indiana Bat); ER1979-1980 (Ozark Bat).

Nor did EPA change this fundamentally improper standard in any way in the 2018 assessment, discussed *infra*. That assessment was limited to some plant species surrounding fields, but otherwise offered nothing regarding the hundreds of species both in and surrounding the fields. ER00010 ("The conclusions from the previous listed species effects determinations made in the initial screening level risk assessments and the refined endangered species addenda…are maintained for all taxa except listed non-monocot plants that may exist near the treated field, where levels of exposure could potentially result in effects and any newly listed species of terrestrial animals that may be present on the treated field that were not previously assessed.").

Finally, FIFRA LOC's do not take into account all potential pesticide harms, including behavioral impacts, such as impairment of a fish's ability to escape predators. This mismatch means a "no effect" decision from EPA can actually have grave consequences. For example, EPA previously found "no effect" to listed salmon from pesticide exposures, but the expert agency found these pesticides could actually jeopardize the continued existence of the salmon.[24] This is why at least some consultation is required for "any chance" of effects. EPA has no authority to forgo consultation with FWS when the low "may affect" threshold is met, and its FIFRA processes, however elaborate and purportedly scientific, do not comply with the ESA.[25]

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[24] Nat'l Marine Fisheries Serv., ESA Section 7 Consultation Biological Opinion, EPA Registration of Pesticides Containing Azinphos methyl, Bensulide, Dimethoate, Disulfoton, Ethoprop, Fenamiphos, Naled, Methamidophos, Methidathion, Methyl parathion, Phorate and Phosmet (Aug. 31, 2010) (Item #3), *available at* https://www.fisheries.noaa.gov/national/consultations/pesticide-consultations.

[25] EPA's application of RQs/LOCs also violates the ESA's best science mandate. 16 U.S.C. § 1536(a)(2); *Kern Cty. Farm Bureau*, 450 F.3d at 1074. In 2013, the National Academy of Sciences addressed the outmoded "level of concern/risk quotient" (RQ/LOC) FIFRA process and metrics EPA applied here, concluding that it is "*not scientifically*

B. The Record Shows XtendiMax "May Affect" Hundreds of Endangered Species, Requiring Consultation.

EPA record statements repeatedly acknowledged there were potential effects that met the low "may affect" threshold and should have triggered consultation on hundreds of ESA-protected species and their critical habitats. But by transposing the FIFRA RQ/LOC risk assessment framework for determining whether impacts on non-target organisms are *"of concern"* to EPA, EPA erased all of these findings and converted them to "no effect" findings to avoid consultation.

Specifically, EPA in its risk assessments, ER1712-1745, admitted dicamba, applied at the allowed rate, may harm many protected plant and animal species. EPA admitted its screening analysis found "potential direct risk concerns could not be excluded for" any birds,

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defensible for assessing the risks to listed species posed by pesticides . . ." Nat'l Acad. of Sci., *Assessing Risks to Endangered and Threatened Species from Pesticides*, Nat'l Acad. Press (2013), at 15, *available at* https://www.nap.edu/catalog/18344/assessing-risks-to-endangered-and-threatened-species-from-pesticides (emphasis added); *id.* at 148-150 (criticizing the use of RQ/LOCs at length, as making assumptions that are "not reliable;" with "unpredictable performance outcomes;" and as "not appropriate for assessments for listed species"); *Daniels-Hall v. Nat'l Educ. Ass'n*, 629 F.3d 992, 998-99 (9th Cir. 2010) (agency documents available on U.S. government websites are judicially noticeable).

mammals, or terrestrial plants. ER1959; ER0336-337. And, "indirect effect risk concerns for all taxa were possible for any species that have dependencies (e.g., food, shelter, and habitat) on mammals, birds, reptiles, terrestrial-phase amphibians, or terrestrial plants." ER0337. This list included 322 ESA-protected species within 11 states, ER1583-1584, [redacted], ER1960, [redacted], totaling hundreds across the 34 states. ER0336-337.

In the 2018 decision EPA revised its Action Area because it found that off-field drift "*may have resulted in effects*" to species off-field. ER0340. EPA found that the "new information" from the 2017-2018 seasons showed that XtendiMax drift "*has resulted in effects*" to non-target plants offsite. ER00012. This should have led the agency to finally consult, but instead EPA "maintained" its previous "no effect" determinations "for all taxa except listed non-monocot plants that may exist near the treated field." ER0341; ER00012-13. Unsurprisingly, as discussed further below, EPA again unilaterally determined no effect.

These repeated EPA admissions of potential risk are more than sufficient alone to show that the low "may affect" bar was breached. In

Karuk, while the Forest Service did not dispute "may affect," the Intervenor Miners vigorously did, arguing that the record was " 'devoid of any evidence' that the mining activities may affect coho salmon" and placing the issue squarely before the Court. *Karuk Tribe*, 681 F.3d at 1027-28. This Court rejected the Miners' arguments, holding that there was "ample evidence" of "may affect" in the record: just like here, agency admissions of potential risk to endangered salmon were alone sufficient, as a "textual matter," to resolve the issue and make a "may affect" conclusion. *Id.* at 1028-29; *id.* at 1027 ("If the phrase 'might cause' disturbance of fisheries habitat is given an ordinary meaning, it follows *almost automatically* that mining pursuant to the approved NOIs 'may affect' critical habitat of the coho salmon.") (emphasis added).[26]

[26] *Kraayenbrink*, 632 F.3d at 496 (the "sheer number of acres affected" by agency decision can "alone suggest" it "may affect" listed species).

C. EPA's Action Area Machinations Violated the ESA.

EPA determined that hundreds of species are "within the action area . . . ." ER1960, 1986-1989 ([redacted]); ER1796, 1828-1835 ([redacted]); ER1580, 1606-1613 (322 species in 11 states); ER1170 (70 additional species). However, instead of consulting EPA took several unlawful and unscientific steps to reduce the action area and eliminate species from further consideration.

1. EPA Unlawfully Restricted the Action Area.

When evaluating whether its action "may affect" any listed species or critical habitat, EPA must examine all effects within the registration's "action area." 50 C.F.R. §§ 402.02, 402.12; *Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 901 (9th Cir. 2002). ESA regulations define "action area" to be "all areas to be affected directly or indirectly by the Federal action and *not merely the immediate area* involved in the action." 50 C.F.R. § 402.02(d) (emphasis added). EPA violated this by unlawfully constricting the registration's "action area."

In the 2016 decision, despite initially finding overlap with hundreds of species and despite knowing dicamba was singularly infamous for drifting off fields, *see supra* pp. 5-7, EPA reduced the action area to just the crop fields themselves, eliminating hundreds of

species from ESA consideration. ER1962. Relying on mitigation, EPA concluded that "exposures that could potentially trigger risk concerns would be limited to the treated field." ER1169. In other words, EPA applied its FIFRA RQ/LOC "level of concern" approach to reduce the action area and conclude "no effect" for species outside the action area.

That decision violated the ESA definition of "action area," as well as sound science, farming realities, and the record evidence. And it was exposed as erroneous: EPA grossly miscalculated XtendiMax's vapor drift, thus exposing countless endangered plants and animals beyond field boundaries to the potent chemical. *See supra* pp.5-7.

EPA acknowledged that "new information" from the 2017-2018 seasons shows that drift "*has resulted in effects* to non-target terrestrial plants offsite." ER00012 (emphasis added). So EPA has tried again, now expanding the action area to a "reasonable distance" from field edges "which is reasonably protective of listed plant species." ER0380. EPA's action is improper as a matter of law because it is still based EPA's FIFRA thresholds of harm that EPA considers "reasonable" or tolerable.

Moreover, even based on the new 57-foot infield buffer, which is arbitrary and capricious and not supported by the record, *see infra*, EPA

admits that it has not eliminated effects off-field. The XtendiMax label mitigation would only effectively *reduce*—not eliminate—the likelihood of off-field impacts. ER0003 (new label restrictions will "further minimize the potential for off-sight movement" not eliminate); ER0005 (same "further minimize" language); ER0017 (mitigation will "limit any exposures beyond the treated field *to levels below thresholds that would trigger risk concerns,*" i.e., LOC); ER0020 (new label changes "are expected to further minimize the potential for off-site movement" and recognizing "possibility that there may be additional factors which make it difficult to eliminate all off-target movement of dicamba."). It is undisputed that some amount of XtendiMax will escape the fields through spray drift and runoff, despite the label mitigation and buffer.

Again, EPA was looking through the wrong lens: the Step 1 "no effect/may affect" standard is not just what EPA thinks is an "adverse," "toxic," "acute," "chronic," or "reasonable," but "*[a]ny possible effect*, whether beneficial, benign, adverse or of an undetermined character." *Karuk Tribe*, 681 F.3d at 1027 (emphasis in original). EPA did not look for these effects based on a limited action area and thus its "no effect" determinations were arbitrary and capricious.

2. EPA Arbitrarily and Capriciously Eliminated Most Species from the Crop Field "Action Area."

After unlawfully applying the FIFRA RQ/LOC approach to limit the action area to just the crop fields, many species ranges still overlapped with those crop fields.[27] Instead of consulting FWS as the expert agency, EPA looked at FWS's Recovery Plans "to determine whether listed species in these states would be *expected to occur in an action area encompassing the treated soybean and corn fields*." *See, e.g.* ER1581 (emphasis in original). Using this, EPA eliminated hundreds of species from this action area and categorically concluded "no effect," based on its unilateral, inexpert review of each species' habitat needs. ER1990-2056; ER1836-1939; ER1614-1697.

EPA does not have the expertise to reduce FWS's species' range information. For example, EPA eliminated Karner blue butterfly from the action area, even though EPA reports its habitat includes "open areas . . . along old fields, highway and powerline rights-of-way" with

[27] EPA's decision to not consult despite overlap was also contrary to the ESA's best science mandates. The National Academy of Sciences determined that because of pesticides' inherent toxicity, any spatial overlap between pesticide use and listed species' ranges or habitat should lead to a "may affect" determination and requires at least informal consultation with FWS. *See supra* n.25 at 9, 29, 32.

wild lupines. ER1615 (citing FWS Karner Blue Butterfly Recovery Plan (2003)). The Recovery Plan expressly states that "some Karner blue sites are near agricultural fields where insecticide or herbicide application could affect the butterfly."[28] Not only is the butterfly near fields, but Karner adults rely on nectar to survive, which may be growing on the fields. *Id.* at 1. Yet EPA said it did not expect overlap, eliminated it from the action area, and concluded "no effect."

In the 2018 assessment, EPA purported to include "any newly listed species of terrestrial animals that may be present on the treated field that were not previously assessed." ER0341. However, EPA does not identify the newly listed species, much less explain its rationale for concluding that they will not be present on the field. ER0385 ("No additional animal species were found to overlap with the treated field."). For example, FWS listed the rusty patched bumble bee as endangered in 2017. 82 Fed. Reg. 3186 (Jan. 11, 2017). Bumble bees are "generalist foragers," gathering pollen and nectar from a wide variety of flowering

[28] EPA relies on the Recovery Plan but did not include it in the record. U.S. Fish & Wildlife Serv., *Karner Blue Butterfly Recovery Plan*, at 90 (Sept. 2003), *available at* https://ecos.fws.gov/docs/recovery_plan/030919.pdf.

plants, and the rusty patched is "one of the first bumble bees to emerge early in the spring and the last to go into hibernation, so to meet its nutritional needs, the species requires a constant and diverse supply of blooming flowers." *Id.* at 3187. EPA's failure to discuss the bumble bee or any other newly listed species is arbitrary.[29]

Using this approach, EPA eliminated nearly all species from the action area and concluded "no effect." ER1963 (eliminating all but 10 of 183 listed species); ER1800-1801 ([redacted]); ER1584-1589 (eliminating all but 6 of 322 listed species); ER1171-1173 (overall only 27 species within the action area); ER0341, ER0385 (unknown number of newly listed terrestrial species not found to overlap treated field). EPA's sweeping elimination of hundreds of species from the action area based on its subjective review of species habitats is not within EPA's expertise or statutory mandate, is contrary

[29] EPA's inexpert conclusions are based on qualitative and subjective descriptions of habitat, which is also contrary to the ESA's best science mandate: the Academy concluded that qualitative descriptions of habitat are not as reliable as objective and quantitative "statistical characterization and delineation of habitat . . . ." *See supra* n.25 at 57, 79. EPA's focus on habitat ignores that some species may be present in fields for a considerable amount of time, either on the move from nesting to foraging habitat or traveling to find a mate.

to, let alone based on, the best available science, and fails to give the benefit of doubt to species on the brink of extinction, *Conner v. Burford*, 848 F.2d 1441, 1454 (9th Cir. 1988).

3. Reliance on Mitigation Means Consultation Should Be Compelled.

In the new 2018 assessment and decision, EPA candidly admits that, but for the new 57-foot buffer, its conclusion for all of the new species it analyzed in the 2018 addendum and new action area would have been "may affect." ER00013 ("69 species *would be may-affect with no additional mitigation*.") (emphasis added); *Id.* ("12 critical habitats would be "modification" with no additional mitigation"); ER0442-450 (listing all species as "May Affect" absent the new 57-foot buffer).

So EPA has predicated its no effect determination for nearly 70 plants—that it knows were at grave risk from its 2016 decision—on the efficacy of its new 57-foot buffer. What happened in 2017-2018 plainly shows that "may affect" is easily surpassed surrounding the fields and that drift is more than possible; it *has just occurred* in unprecedented amounts. This is exactly the type of decision that EPA must consult over, and cannot decide unilaterally.

Karuk Tribe held that agency reliance on mitigation like this "cuts against, rather than in favor of" having no duty to enter consultation and proceed to Step 2. 681 F.3d at 1028. As in *Karuk Tribe*, EPA's perceived need to reduce potential effects here with the 57-foot buffer underscores that effects are *possible* to off-field species, which is *all that is required* to compel consultation. *Id.* In fact the Court zeroed in on the exact same agency language as here as showing its misinterpretation of the standard. *Id.* (miners' compliance with agency "criteria should *'reduce' – not eliminate* – 'the impacts to anadromous fisheries' . . .") (emphasis added). *Compare supra* p.54 & citations; ER0003, 5, 17, 20.

4. EPA's 57-Foot Buffer as "Mitigation" to Limit the Action Area and Conclude "No Effect" is Unsupportable.

The new buffer reliance proves that EPA was required to consult as a matter of law, but even if it did not, it is arbitrary and capricious, rendering EPA's decision unlawful.

EPA continues to err by relying on "mitigation measures" that EPA wrongly assumes will prevent exposure to dicamba above LOCs outside of the fields. In 2016, EPA initially proposed to limit the action area to treated fields by relying on mitigation that included an in-field,

downwind buffer for spray drift, plus an omnidirectional buffer for volatility, both 110 feet. ER1169. Monsanto then submitted volatility studies (discussed *supra* pp.25-29) that convinced EPA to eliminate the volatilization buffer, which had been based on university research (ER1213-1214), and instead rely entirely on the downwind-only buffer to mitigate spray drift to "a level where effects are expected only within the confines of the treated field."

ER1583; ER1169.

In 2018, EPA had to admit this error and included a 57-foot, omnidirectional, in-field buffer, but only for a limited number of plant species found within 30 meters of field edges as the action area, again arriving at "no effect" determinations. ER0385. EPA's 57-foot buffer does not support its no effect determinations because: 1) EPA ignored injury to plants documented hundreds of feet, *supra* pp.25-26, from fields and overrode its own scientists' conclusions that a much greater buffer distance was necessary; and 2) EPA ignored effects on endangered species that rely on plants for habitat, food, or cover.

EPA assessed twelve academic field studies conducted between 2016 and 2018 showing dicamba spray and volatility "may affect"

susceptible off-field plants based on visual signs of injury, a widely used rating system for herbicidal damage (0 = no injury to 100 = plant death). ER0355-376, 416-418. Two of the field studies recorded injury at distances greater than 440 feet (168m and 136m). ER0368, 370-71, 373, 417-18. More than half the studies identified injury to plants at distances greater than 130 feet (39.6 m). *Id*. This evidence of harm meets the low bar of "may affect" to require an expansion of the action area and consultation.

Based on these studies, on October 3, 2018, EPA scientists recommended expansion of the action area *to 196 feet* (60 meters) around fields where overlap would be possible with endangered species' range, contingent on further evaluation of the 2018 Norsworthy study. ER0523. Following discussions with Dr. Norsworthy, EPA scientists concluded the Norsworthy study is valid and recommended expansion of the action area *to 443 feet* (135 meters) beyond the fields. ER0525.

But, following "management" review, EPA ignored data showing harm to plants and its scientists' recommendations of a 443-foot buffer. ER0526 (scientists drafted "one-pager for our management" on Norsworthy study). On October 11, 2018, EPA conveyed to Monsanto

that "with all of the uncertainty on the Endangered Species side, there is still a lot of work left." ER0521. However, less than two weeks later, on October 31, 2019, EPA concluded a 57-foot buffer was adequate.

EPA reached the 57-foot buffer by disregarding reported visual injury and relying only on four studies that measured plant height, despite their deficiencies, and third-party "Crystal Ball" simulation software. ER0379-81, 411. EPA ignored visual injury to plants because it believed it must show effects on plant growth or reproduction, EPA-approved endpoints in the FIFRA context.

EPA concluded that the 57-foot buffer mitigation provides no more than "*reasonable*" protection (ER0380-81), a *FIFRA* rather than ESA standard, and made its "no effect" determinations on this faulty basis. However, the "may affect" threshold encompasses "any possible effect," including "reasonable" visual injury, not just effects that are related to growth or reproduction. Ignoring visual injury harms misinterprets this standard and violates the ESA.

Assuming, *arguendo*, that EPA must link visual injury to growth or reproduction for its effects determination, EPA did so. EPA concluded that conversion from visual injury to growth/reproduction endpoint

could be achieved using a simple conversion factor compiled from nine studies. ER0409 (all levels of visual injury "were related to thresholds of height or yield effects" using "multiple published effects studies . . ."). EPA scientists found that "at 10% visual injury, a 5% reduction in yield would be expected." ER523. EPA also identified considerable advantages to using all of the twelve field studies in this manner because it provides a "larger pool of data . . . under more variable environmental conditions and performed in more geographic locations." ER0409. But, EPA scrapped these studies to arrive at the unsupportable 57-foot buffer and reach unlawful "no effect" determinations.

Finally, EPA compounded its errors by failing to address species' exposure to dicamba from runoff in irrigation water *as well as* the aggregate of runoff with spray and vapor drift. ER0335-337 (relying on hard-to-follow label direction not to spray within 24 hours of rainfall to mitigate initial LOC exceedance). Not only should reliance on mitigation itself compel consultation, *supra*, the 24-hour rainfall

mitigation does not account for exposure to dicamba from runoff via irrigation water or in the *aggregate* with spray drift and volatilization.[30]

But EPA knew that exposure to dicamba in irrigation water could cause effects because EPA required future additional studies examining the effects of dicamba-containing irrigation runoff water in its 2018 continuation. ER0498, 502-503; ER0519; ER0070; ER0504-508. And data provided to EPA showed how harmful combined exposure can be. ER0356-57, ER0463; ER0843 (showing 40% injury from runoff and drift combined extended *five times* farther off-field than drift alone). EPA arbitrarily ignored potential aggregate effects to species, 900 feet or more from fields. *Id.* For all these reasons, EPA's 57-foot buffer is arbitrary and capricious and contrary to law.

5. Even Applying a 57-foot Buffer, EPA Ignored Effects.

In updating its effects determinations in 2018 because of extensive off-field dicamba injury, EPA limited the assessment to 69 ESA-protected "non-monocot plants that may exist near the treated field" and "newly listed species of terrestrial animals that may be present on

[30] Nor is 24-hours temporally effective. ER0682 (applicator saw runoff with rainfall 4 days after application).

the treated field that were not previously assessed." ER0341; ER0385 (Identifying 69 listed dicot plants species within the "expanded" action area (treated field+30m) and concluding "no effect" based on 57-foot buffer where those species are thought to occur). However, EPA failed to consider the effects on any species *that relies on plants* (any plants, not just endangered or threatened plants) for habitat, including food, shelter/cover, or nesting. ER0009 (indirect effect risks were possible for any species with dependencies).

For example, the rusty patched bumble bee requires pollen and nectar from a variety of flowering plants from spring to fall. 82 Fed. Reg. at 3187. The bee is found near soybean fields, yet EPA ignored the effects of injury to any flowering plants the bee needs, ER0750; ER0777, because those plants are not protected under the ESA, and, therefore, were not included in the expanded action area. Another example is the yellow-billed cuckoo, which relies on riparian trees, including willow and cottonwoods. 79 Fed. Reg. 59992, 60000 (Oct. 3, 2014) (listing rule); 79 Fed. Reg. 48548, (Aug. 15, 2014) (proposed designation of critical habitat, optimal habitat has "dense canopy closure and high foliage volume" of willows and cottonwoods). The cuckoo's habitat is near

Arizona cotton fields, but EPA did not evaluate effects on trees that the cuckoo relies on for habitat. *Supra* p.7, 10-11; ER0727-731 (drift damage to trees).

D. EPA Failed to Comply with the ESA on Designated Critical Habitat.

ESA § 7(a)(2) imposes an independent duty on EPA to "insure" its registration will not result in "destruction or adverse modification" of habitat FWS designated as "critical" to a listed species' survival or recovery. 16 U.S.C. §§ 1533(a)(3)(A), 1536(a)(2). EPA must consult if its registration "may affect" a listed species' critical habitat.

For critical habitat, EPA compounded the legal and scientific errors it made with regards to listed species. In 2016, EPA concluded "no modification" for any species' critical habitat that EPA had already concluded would have "no effect" on the species based on: 1) EPA's unlawful FIFRA RQ/LOC standard and inadequate mitigation, which constrained the action area to the crop fields, 2) EPA's inexpert reduction of species' ranges to conclude most species will not be on the fields; and 3) EPA's inexpert conclusions that species that use the fields will not be affected, again based on RQ/LOC. This allowed EPA to

unlawfully circumvent consultation on *every single* critical habitat in and around the fields in 34 states where EPA authorized dicamba.

In 2018, EPA could not continue to ignore that XtendiMax leaves the fields, but did not revisit its 2016 critical habitat determinations. Instead, EPA required the 57-foot buffer for the limited number of designated critical habitats that exist within 30 meters of field edges if a "primary constituent element"[31] of the critical habitat includes plants likely to be damaged by dicamba. The 57-foot buffer is inadequate for the reasons discussed *supra* pp.59-64. Nonetheless, EPA concluded "no modification."

1. EPA Applied the Wrong Standard.

First, EPA failed to apply the low "may affect" standard that triggers consultation. EPA purported to analyze "modification" of critical habitat. ER0388. The law requires consultation for all "actions that have *any chance of affecting* … critical habitat—even if it is later

[31] Critical habitat is designated to preserve specific habitat features, known as "primary constituent elements" (PCEs), which are the "physical or biological features" "essential to the conservation of the species" and "which may require special management considerations or protection." 16 U.S.C. § 1532(5)(A)(i); 50 C.F.R. § 424.12(b).

determined that the actions are 'not likely' to do so." *Karuk Tribe,* 681 F.3d at 1027 (emphasis added).

Second, EPA conflated risks to species with risks to critical habitat, tiering its habitat duties to its species "no effect" determinations, but critical habitat may be affected regardless of whether an action may affect the species itself. *Greenpeace v. Nat'l Marine Fisheries Serv.*, 55 F. Supp. 2d 1248, 1265 (W.D. Wash. 1999).

Here is the rule EPA created:

> The Agency will conclude 'modification' of designated critical habitat if the range of designated critical habitat co-occurs with the states subject to the Federal action and one or more of the following conditions exist:
>
> 1. … *cotton or soybean fields are habitat for the species and there is a "may affect" determination for the species* associated with exposure to [d]icamba ….
>
> 2. … *the species uses cotton or soybean fields* and one or more effects on taxonomic groups predicted for dicamba … on cotton and soybean fields *would modify one or more of the designated PCEs.*
>
> If the above conditions are not met, EPA concludes 'no modification.'

ER1602; ER1173 (emphases added); ER2057; ER1822-1823. EPA applied the same unlawful rule in 2018 to the "fields or areas within 30

meters (spatial estimate of the EPA established 57-foot buffer)." ER0388.

Application of this unlawful standard, relying on unlawful species' effects determinations, resulted in "no modification" for hundreds of critical habitats. For example, EPA determined "no modification" for 59 critical habitats designated within 16 states because 53 has species "judged to not use cotton or soybean fields," none of remaining 6 were "at risk for direct adverse effects," and 5 of those 6 PCEs were "not relatable" to fields. ER2057. For Whooping crane, EPA found use on soybean "could affect" its critical habitat "by making waste soybean grain potentially toxic." *Id.* But, based on EPA's "direct effects assessment for this species" being below levels of concern, EPA concluded "no modification" for Whooping crane habitat too. ER2057-2058; ER1823 ([redacted]); ER1602-1603 (no modification for 122 critical habitats within 11 states); ER1173, 1180-1182, 1208-1209 (no modification for 11 additional critical habitats). In 2018, EPA only revisited 14 critical habitats located within the expanded action are of treated field + 30 meters and

concluded 12 would have "modification," but that the 57-foot buffer excluded these from the action area, resulting in "no modification" for all. ER0388.

2. EPA Unlawfully Excluded From Consideration All Critical Habitats Not Containing Sprayed Fields Occupied By Listed Species.

EPA's erroneous conclusion that consultation is not triggered unless a listed species "use[s] cotton or soybean fields" allowed it to avoid consultation, but a species' physical occupation of part of a critical habitat (here, cotton and soybean fields) is irrelevant to the trigger for consultation (whether dicamba use "may affect" the habitat) An area may be designated because it provides any of a wide range of features:

> A physical or biological feature essential to the conservation of a species for which its designated or proposed critical habitat is based on, such as space for individual and population growth, and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and habitats that are protected from disturbance or are representative of the species' historic geographic and ecological distribution.[32]

[32] U.S. Fish & Wildlife Serv., Endangered Species Glossary, *available at* https://www.fws.gov/nc-es/fish/glossary.pdf

Any action impairing any PCE "may affect" the critical habitat, triggering consultation. *Consultation Handbook* at 4-24 (effects of an action should consider "primary constituent elements of the critical habitat, including direct and indirect effects.").

Crucially, a species' physical presence is unnecessary for designation as critical habitat. Critical habitat may include "specific areas *outside the geographical area occupied by the species* ... upon a determination by the Secretary that such areas are essential for the conservation of the species." 16 U.S.C. § 1532(5)(A)(ii) (emphasis added); *Consultation Handbook* at xix ("Some designated, unoccupied habitat may never be occupied by the species, but was designated since it is essential for conserving the species because it maintains factors constituting the species' habitat.").

Consequently, EPA must assess *all potentially affected* critical habitat, including sprayed fields, regardless of whether members of species are likely to be present in them, because the habitat nonetheless may be important for the species' survival or recovery. *Nat'l Res. Def. Council v. Kempthorne*, 506 F. Supp. 2d 322, 381-82 (E.D. Cal. 2007) (biological opinion inadequate because it failed to assess impacts on all

areas of critical habitat, whether or not occupied by endangered species); *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Service*, 378 F.3d 1059, 1070 (9th Cir. 2004), *amended*, 387 F.3d 968 (9th Cir. 2004) ("[T]he purpose of establishing 'critical habitat' is for the government to carve out territory that is not only necessary for the species' survival but also essential for the species' recovery.").

Despite the millions of acres devastated by dicamba drift EPA was certain would never occur, whether EPA's registration will *adversely affect* (or "modify") any of the hundreds of critical habitats is not before this Court; a contrary determination requires FWS's written concurrence after informal consultation, in which EPA unlawfully refused to engage. 50 C.F.R. § 402.14(b)(1). EPA did not meaningfully consider whether spraying the fields "may affect" critical habitats, violating the ESA by assuming effects on unoccupied critical habitat *cannot* trigger consultation.

E. EPA's Scope Was Unlawfully Narrow, Failing to Consider All of the Pesticide.

EPA's assessment also violates the ESA because of its narrowness: EPA focused solely on the dicamba component of XtendiMax. ER0336 (scope limited to the dicamba ingredient); ER0233 (same). Yet EPA

approved the *entire* pesticide product, not just the dicamba ingredient. The "may affect" determination requires determining the scope of what an "effect" is, that "may affect" any protected species or habitat. "Effects of the action" are defined very broadly, as "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action that will be added to the environmental baseline." 50 C.F.R. § 402.02; *Karuk Tribe*, 681 F.3d at 1020 ("Congress intended agency action to have a broad definition in the ESA"). The rest of the product formulation, its "inerts," including surfactants, also may affect endangered species, either alone or in combination with the rest of the product. *Washington Toxics,* 457 F. Supp. 2d at 1183 (discussing inerts, surfactants, degradates). EPA has also approved XtendiMax to be "tank mixed" with other pesticides, without any further ESA assessment; any risks to ESA species from that use were also not considered. *See supra* n.12. EPA's overly narrow review was arbitrary and capricious and contrary to law. *State Farm*, 463 U.S. at 43 (failure to consider an important part of the problem).

III. THE COURT SHOULD VACATE THE REGISTRATION.

The Court should set aside EPA's approval. *All. for the Wild Rockies v. U.S. Forest Serv.,* 907 F.3d 1105, 1121-22 (9th Cir. 2018) ("presumption of vacatur," unless defendants meet their burden to show otherwise); *Pollinator Stewardship*, 806 F.3d at 532 (remand without vacatur permitted only in "limited circumstances"); *Humane Soc. of U.S. v. Locke*, 626 F.3d 1040, 1053 n.7 (9th Cir. 2010) ("rare circumstances"); *Idaho Farm Bureau v. Babbitt*, 58 F.3d 1392, 1405 (9th Cir. 1995) ("Ordinarily" vacatur applies unless "equity demands" otherwise).

In *Pollinator Stewardship*, this Court held that "given the precariousness of bee populations, leaving the EPA's registration of sulfoxaflor in place risks more potential environmental harm than vacating it." 806 F.3d at 532. The exact same is true in this case for endangered species, as well as farmers and the environment more broadly.

The XtendiMax registration is an experiment, the novel use of a volatile pesticide underwritten by great risks. At every opportunity, the agency re-shuffled the approval cards slightly for the coming season,

blaming farmers and requesting more Monsanto studies, while doubling down on its registration rubberstamp, unsupported by substantial evidence. EPA's gambles have busted; the agency's approval strategy and Monsanto's product are both broke, causing unprecedented agricultural harm and placing hundreds of endangered species, already on the brink of extinction, at continued risk. XtendiMax has already been unlawfully registered for three disastrous seasons. A year ago, Respondents wriggled away at the last moment, before this Court could decide these crucial issues. Enough is enough: Their game must end here.

CONCLUSION

For the reasons stated above, Petitioners request the Court vacate the registration, and remand for further proceedings consistent with this Court's decision.

Respectfully submitted this 13th day of August, 2019.

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