



March 2, 2015

VIA FEDERAL E-RULEMAKING PORTAL

Public Comments Processing
Attn: FWS-R3-ES-2014-0056
U.S. Fish and Wildlife Service Headquarters
MS: BPHC
5275 Leesburg Pike
Falls Church, VA 22041-3803

Re: Initial Comments: 90-Day Finding on a Petition to List the Monarch Butterfly (Danaus Plexippus Plexippus) as Threatened Under the Endangered Species Act, 79 Fed. Reg. 78775 (Dec. 31, 2014)

Dear Sir or Madam,

CropLife America (“CropLife”) is the national voice of the agricultural crop protection industry. CropLife represents companies that develop, manufacture, and distribute virtually all of the crop protection, pest management, and biotechnology products used by American farmers. Because these products are critical technologies for American agriculture, CropLife’s members have a substantial interest in the issues presented in the 90-day finding on a petition to list as threatened the Monarch butterfly (*Danaus plexippus plexippus*) made available to the public¹ by the U.S. Fish and Wildlife Service (“FWS”) on December 31, 2014 pursuant to the Endangered Species Act (“ESA”).² As these initial comments indicate, our organization and its members believe that the proposed listing of the Monarch butterfly under the ESA is not warranted.

Estimates for Monarch populations in North America have been available for only about two decades. CropLife and its members understand that overall estimated population levels in North America have declined during that period, although the data indicate that Monarch population numbers fluctuate very widely from year-to-year.³ Indeed, just this past year, the Eastern North

¹ See *Endangered and Threatened Wildlife and Plants; 90-Day Findings on Two Petitions*, 79 Fed. Reg. 78775 (Dec. 31, 2014).

² 16 U.S.C. § 1531 *et seq.*

³ CropLife believes that the overall decline in the Eastern North American Monarch butterfly population has been overstated. See Chip Taylor, Founder and Director of Monarch Watch, Comment to 90-Day Finding, available at <http://www.regulations.gov/#!documentDetail;D=FWS-R3-ES-2014-0056-0290> (“[T]he main justification for the

• Representing the Crop Protection Industry •

1156 15th St. N.W. • Suite 400 • Washington, D.C. 20005 • 202.296.1585 • 202.463.0474 fax • www.croplifeamerica.org

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American Monarch population increased from approximately 34 million to 56.5 million (as reported in January 2015).⁴ Likewise, the Western North American Monarch population increased from 211,000 (2014) to 234,000 (2015).⁵

Multiple butterfly and/or insect species have previously been listed as threatened or endangered under the ESA, but the numbers of those populations are a *tiny fraction of current estimates for the Monarch* – usually fewer than 10,000 – as compared to Monarchs, which are estimated this year at 56 million for Eastern North America and 234,000 in California, not to mention Monarch populations in many other nations (including Australia, New Zealand, Papua New Guinea, the Philippines, Sri Lanka, Portugal, and Spain).⁶ FWS has never before listed a butterfly species with a population of greater than 100,000.⁷ Current Monarch numbers throughout the world are estimated to fluctuate yearly to as high as one billion in many years.⁸

For instance, NatureServe, a non-profit conservation organization widely regarded as a leading source of detailed information on rare and endangered species, has reviewed the global status of the Monarch and determined that it is not threatened.⁹ NatureServe evaluates species in categories ranked from 1 (critically imperiled) through 5 (demonstrably secure) based on available data regarding population numbers.¹⁰ NatureServe assessed global Monarch conservation status and concluded that the species is in category 5, demonstrably secure.

listing seems to be the 90% loss figure. This figure can be challenged. The data for the [19]80s is fragmentary but are suggestive of populations much lower than the large populations recorded for [19]94-[19]96.”)

⁴ Rendon-Salinas, E., *et al.*, *Forest Surface Occupied by Monarch Butterfly Hibernations Colonies in December 2014*, available at http://assets.worldwildlife.org/publications/768/files/original/REPORT_Monarch_Butterfly_colonies_Winter_2014.pdf?1422378439 (accessed Mar. 2, 2015).

⁵ The Western count data are plagued by inconsistent methods from year to year. The 1997 count included Monarchs at hundreds of sites, and the population was in the millions. Since then, fewer locations have been surveyed and the population estimate has hovered around 200,000 since 2001. See <http://www.xerces.org/monarchs/> and <http://www.xerces.org/wp-content/uploads/2011/04/WMTC-Data-1997-2014.pdf>.

⁶ Globally, monarch butterfly populations are found in both the Eastern and Western Hemispheres. See Monarch Lab – Monarch Distribution, available at <http://monarchlab.org/biology-and-research/biology-and-natural-history/global-distribution/> (accessed Feb. 26, 2015).

⁷ See Table 1 at pages 7-9.

⁸ NatureServe Explorer – An Online Encyclopedia of Life, Monarch Butterfly Page (2014), available at <http://explorer.natureserve.org/servlet/NatureServe?searchName=Danaus+plexippus> (accessed Feb. 23, 2015) [hereinafter “NatureServe 2014”].

⁹ *Id.*

¹⁰ See NatureServe Conservation Status Assessments: Methodology for Assigning Ranks, available at http://www.natureserve.org/sites/default/files/publications/files/natureserveconservationstatusmethodology_jun12_0.pdf.

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Indeed, one of the Petitioners advocating for ESA threatened status, Dr. Lincoln Brower, has himself stated: “*the species will not go extinct.*”¹¹ But a likelihood of “extinction” in the “foreseeable future” *is the legal trigger for ESA listing.*¹²

Even the Petition itself fails to make the case for likely “extinction” – suggesting instead that the Monarch has a “quasi-extinction probability” of “greater than *five percent within the next 100 years.*”¹³ It is difficult to imagine any petition with a more tepid prediction of risk. As a Federal court recently concluded, there is “*no case* in which a listing of threatened was based upon a time period that exceeded 50 years.”¹⁴

Therefore, listing the Monarch as threatened under the ESA is not supported by precedent, science, or the law, and is likely counterproductive. Federal agencies and State governments have many authorities appropriate for addressing these types of concerns long before the subject species reach threatened or endangered status under the ESA (*see* Section II). CropLife and its members believe that governmental and privately-sponsored measures are important to address concerns regarding the Monarch and promote the species’ habitat. Indeed, a significant number of Federal, State, local, international, and private measures are already underway or are expanding with additional sources of funding.

As outlined below, a wide range of conservation activities are underway that will continue to improve and expand Monarch habitat. These efforts have already stabilized the overwintering habitat of the Eastern North American Monarch in Mexico and resulted in habitat restoration efforts to incorporate milkweed and nectar plants across the monarch migration route. In addition, FWS recently announced partnerships with the National Wildlife Federation (“NWF”) and the National Fish and Wildlife Foundation (“NFWF”) to establish habitat improvement programs, scientific studies, and other initiatives to fund and improve Monarch populations in North America.¹⁵ Ongoing and planned efforts are significantly expanding upon these accomplishments and will include diverse stakeholders (*e.g.*, conservation groups, states, localities, industry, farmers, and farming organizations). CropLife and its members support these efforts, and CropLife’s members contribute funding to a number of them.

¹¹ *See Saving the Monarch’s Migration: A Conversation with Ecologist Lincoln Brower*, St. Louis Public Radio (Apr. 18, 2014), available at <http://news.stlpublicradio.org/post/saving-monarchs-migration-conversation-ecologist-lincoln-brower> (accessed Feb. 21, 2015) (emphasis added).

¹² 16 U.S.C. § 1532(20).

¹³ Petition at 2, 43 (emphasis added). Indeed, rather than predicting extinction, the Petition instead predicts that, absent appropriate remedial measures, the Monarch population will decline by approximately 14% over 100 years. *See* Petition at 43.

¹⁴ *Alaska Oil & Gas Ass’n v. Pritzker*, 2014 U.S. Dist. LEXIS 101446 (D. Alaska 2014) (emphasis supplied).

¹⁵ Press Release, FWS, U.S. Fish and Wildlife Service Teams with Conservation Partners to Launch Campaign to Save Beleaguered Monarch Butterfly, Engage Millions of Americans (Feb. 9, 2015), available at <http://www.fws.gov/news/ShowNews.cfm?ID=6F984BBC-D85B-FEE8-4C58EF75037F8B59> (accessed Feb. 26, 2015).

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We respectfully urge a careful, probing, and objective review of the science regarding Monarchs. Certain Petitioners suggest that pesticide uses on cropland in the Midwest are the primary cause of Monarch population declines and are causing extinction.¹⁶ The objective science simply cannot support this assertion. And while many of the government and private initiatives described below to support Monarchs are wise, practical, and legally appropriate, listing Monarchs under the ESA is not. Not only do the circumstances here fail to meet the legal threshold for listing, but, as prominent conservation groups like Monarch Watch have indicated, an ESA listing could be *counterproductive* and could have multiple negative impacts on genuine effective conservation initiatives.¹⁷

Below, we provide the following:

- A brief background discussion of the Petition to list the Monarch.¹⁸
- An explanation for why the Monarch is not “threatened” under the ESA.¹⁹
- A summary of ongoing and planned conservation initiatives to improve Monarch habitat.

In addition, CropLife is providing technical comments in an Appendix addressing a wide range of erroneous claims made in the Petition.

BACKGROUND

On August 26, 2014, the Center for Biological Diversity, the Center for Food Safety, the Xerces Society, and Dr. Lincoln Brower (collectively “Petitioners”) filed a Petition with the Department

¹⁶ See, e.g., Center for Food Safety, *Monarchs in Peril – Herbicide-Resistant Crops and the Decline of Monarch Butterflies in America* (Feb. 2015), available at http://www.centerforfoodsafety.org/files/cfs-monarch-report_2-4-15_design_05341.pdf (accessed Feb. 26, 2015).

¹⁷ Chip Taylor, Founder and Director of Monarch Watch, Comment to 90-Day Finding, available at <http://www.regulations.gov#!documentDetail;D=FWS-R3-ES-2014-0056-0290>.

¹⁸ *Petition to Protect the Monarch Butterfly* (Danaus Plexippus Plexippus) *Under the Endangered Species Act*, Aug. 26, 2014, available at http://www.biologicaldiversity.org/species/invertebrates/pdfs/Monarch_ESA_Petition.pdf [hereinafter “Petition”].

¹⁹ As indicated throughout, CropLife does not believe that listing could be legally or scientifically appropriate. We are aware, however, that, in some circumstances, FWS has determined that listing certain species was warranted, but it designated them “warranted but precluded” based on a conclusion that the risk of extinction was neither immediate nor significant. That is not a legally appropriate option here, for all the reasons set forth herein. In any event, the evidence Petitioners submit could not possibly justify any conclusion that the threat to Monarchs is immediate or deserves any heightened level of priority, particularly in light of all the ongoing measures described in Section II. See *Listing and Recovery Priority Guidelines*, 48 Fed. Reg. 43098 (setting forth guidelines for assigning candidate species a listing priority number of 1-12); see also *Partial 90-Day Finding on a Petition to List 404 Species in the Southeastern United States as Endangered or Threatened With Critical Habitat*, Proposed Rule, 76 Fed. Reg. 59836 (demonstrating FWS’s practice of prioritizing candidate species based on NatureServe Heritage Threat Ranks and International Union for the Conservation of Nature and Natural Resources Red List status/rankings).

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of the Interior to list the Monarch as “threatened” under the ESA.²⁰ A “threatened species” is a species “which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”²¹ An “endangered species,” in turn, is “any species which is in danger of extinction throughout all or a significant portion of its range.”²² FWS evaluates threats to a species in its “range” as well as, where applicable, any “significant portion of its range.”

In making a listing determination under the ESA, FWS must evaluate five factors:

- Present or threatened destruction, modification, or curtailment of habitat or range;
- Overutilization for commercial, recreational, scientific, or educational purposes;
- Disease or predation;
- The inadequacy of existing regulatory mechanisms; and
- Other natural or manmade factors affecting continued existence.²³

FWS must also “tak[e] into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas.”²⁴

Petitioners seek a threatened listing for the entirety of the Monarch’s range. In the alternative, Petitioners request listing on the basis that the Monarch is threatened in a significant portion of its range – the North American population.²⁵

The Petition asserts that a number of contributing factors are affecting the Monarch and its habitat in its North American range. Petitioners claim that the Monarch’s overwintering habitat is threatened due to the destruction or modification of the Monarch’s winter range in Mexico – the most vulnerable element of the species’ life-cycle – as a result of illegal logging. Petitioners claim that Monarch populations are also impacted by water diversion, forest disease, severe

²⁰ Petition at 11.

²¹ 16 U.S.C. § 1532(20).

²² 16 U.S.C. § 1532(6).

²³ 16 U.S.C. § 1533(a)(1)(A)-(E); 40 C.F.R. § 424.11(c)(1)-(5)). Technical comments addressing each of these five factors are included in the attached Appendix.

²⁴ 16 U.S.C. § 1533(b)(1)(A).

²⁵ FWS and the National Marine Fisheries Service (“NMFS”) recently promulgated their interpretation of “significant portion of its range.” See *Final Policy on Interpretation of the Phrase “Significant Portion of Its Range” in the Endangered Species Act’s Definitions of “Endangered Species” and “Threatened Species,”* 79 Fed. Reg. 37577 (July 1, 2014).

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weather events, and climate change. The Petition also focuses on pesticide/herbicide use in non-agricultural settings (e.g., roadsides, utility-right-of-ways, and elsewhere), which is claimed to have led to the loss of milkweed and other Monarch habitat. Further, the use of pesticides generally (including certain insecticides) on cropland is also claimed to have had a deleterious impact on the Monarch. It is also alleged that habitat loss and the resulting lower population numbers have made the Monarch more susceptible to disease and predation (particularly the parasite *Ophryocystis elektroscirrha*), weather events, commercial exploitation, and other natural and manmade factors. Finally, land development in the past several decades has also allegedly led to loss of Monarch habitat.

DISCUSSION

I. THE MONARCH BUTTERFLY SHOULD NOT BE LISTED AS THREATENED

A. The Range-Wide Monarch Butterfly Population Is Not Threatened

Listing the Monarch as threatened would be contrary to science, law, and common sense. A species is threatened if it is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”²⁶ Simply put, the Monarch is not at risk of becoming endangered in the foreseeable future. Petitioners admit this. One of the Petitioners has himself commented: “the species will not go extinct.”²⁷ Indeed, the only specific statement that Petitioners put forth regarding extinction threat is that the Eastern population of the Monarch has a “quasi-extinction probability” of “greater than five percent within the next 100 years.”²⁸ This time frame, however, is far beyond what courts have determined to be within the “foreseeable future” for the purpose of listing a species as threatened.²⁹

The Monarch has a global range of greater than 2.5 million square kilometers (greater than 1,000,000 square miles).³⁰ NatureServe estimates that global Monarch populations probably

²⁶ 16 U.S.C. § 1532(20).

²⁷ See *Saving the Monarch's Migration: A Conversation with Ecologist Lincoln Brower*, St. Louis Public Radio (Apr. 18, 2014), available at, <http://news.stlpublicradio.org/post/saving-monarchs-migration-conversation-ecologist-lincoln-brower> (accessed Feb. 21, 2015).

²⁸ Petition at 2, 43.

²⁹ See, e.g., *Alaska Oil & Gas Ass'n v. Pritzker*, 2014 U.S. Dist. LEXIS 101446 (D. Alaska 2014).

³⁰ NatureServe 2014. The U.S. Forest Service relies on NatureServe when assessing at-risk species: “Within the United States, one of the more comprehensively applied classification systems was developed by the Natural Heritage Network and The Nature Conservancy []. This system is based on a number of criteria related to species occurrence, range size, population size, population trend, threats, fragility, and number of protected occurrences ... that are used to assign species to nine conservation status ranks []. We use two conservation status classifications in this report: (1) the threatened and endangered categories developed by [FWS] for the ESA and (2) the national conservation status ranks developed by The Nature Conservancy now maintained by NatureServe [].” See Flather, C., Knowles, M, and McNees, J., “Geographic Patterns of At-Risk Species: A Technical Document Supporting the USDA Forest Service Interim Update of the 2000 RPA Assessment,” (2008), available at http://www.fs.fed.us/rm/pubs/rmrs_gtr211.pdf.

exceed a billion in many years.³¹ Listing a butterfly species with such a wide range and in such large numbers would be unprecedented under the ESA. As demonstrated in Table 1, no butterfly species that has been listed has a population of greater than 100,000 (and some with those high-end estimates were not well-founded on firm counts). Moreover, the vast majority of listed butterfly species have numbers that are below 10,000 and most of these were below 1,000 individual adults.

Table 1
Listed Butterfly Species

	Scientific Name	Common Name	Federal Listing Status	When Listed	Estimated Population Size
1	<i>Anaea troglodyta floridalis</i>	Florida leafwing Butterfly	Endangered	Aug 2013(p)	50-1000
2	<i>Apodemia mormo langei</i>	Lange's Metalmark Butterfly	Endangered	June 1976	<1000
3	<i>Boloria acrocynema</i>	Uncompahgre Fritillary Butterfly	Endangered	June 1991	250-10,000
4	<i>Callophrys mossii bayensis</i>	San Bruno Elfin Butterfly	Endangered	June 1976	<750 (No good estimate)
5	<i>Cyclargus (Hemiargus) thomasi bethunebakeri</i>	Miami Blue Butterfly	Endangered	April 2012	Hundreds or fewer
6	<i>Cyclargus ammon</i>	Nickerbean Blue Butterfly	Similarity of Appearance to Threatened taxon	April 2012	Same as Miami Blue
7	<i>Euphilotes battoides allyni</i>	El Segundo Blue Butterfly	Endangered	June 1976	2,500-10,000
8	<i>Euphilotes enoptes smithi</i>	Smith's Blue Butterfly	Endangered	June 1976	2,500-100,000
9	<i>Euphydryas editha bayensis</i>	Bay Checkerspot Butterfly	Threatened	Sept. 1987	~100,000 [post-diapause]; adults not well described

³¹ *Id.*

	Scientific Name	Common Name	Federal Listing Status	When Listed	Estimated Population Size
10	<i>Euphydryas editha quino</i> (<i>E. e. wrighti</i>)	Quino Checkerspot Butterfly	Endangered	Jan. 1997	500 – 1000's
11	<i>Euphydryas editha taylori</i>	Taylor's (Whulge) Checkerspot	Endangered	Nov. 2013	250-2,500
12	<i>Glaucopsyche lygdamus palosverdesensis</i>	Palos Verdes Blue Butterfly	Endangered	July 1980	50-250
13	<i>Icaricia icarioides fenderi</i>	Fender's Blue Butterfly	Endangered	Jan. 2000	2,500-10,000
14	<i>Icaricia icarioides missionensis</i>	Mission Blue Butterfly	Endangered	June 1976	10,000-100,000
15	<i>Leptotes cassius theonus</i>	Cassius Blue Butterfly	Similarity of Appearance to Threatened taxon	April 2012	Same as Miami Blue
16	<i>Lycaeides argyrognomon lotis</i>	Lotis Blue Butterfly	Endangered	June 1976	max. 16
17	<i>Lycaeides melissa samuelis</i>	Karner Blue Butterfly	Endangered	Dec. 1992	2,500-10,000
18	<i>Neonympha mitchellii mitchellii</i>	Mitchell's Satyr Butterfly	Endangered	June 1991	1,000-10,000
19	<i>Papilio chikae</i>	Luzon Peacock Swallowtail Butterfly	Endangered	Jan 1993	Range is outside US
20	<i>Papilio homerus</i>	Homerus Swallowtail Butterfly	Endangered	Jan 1993	Range is outside US (<50)
21	<i>Papilio hospiton</i>	Corsican Swallowtail Butterfly	Endangered	Jan 1993	Range is outside US (10,000 – 100,000)
22	<i>Plebejus shasta charlestonensis</i>	Mount Charleston Blue Butterfly	Endangered	Oct. 2013	“Hundreds”

	Scientific Name	Common Name	Federal Listing Status	When Listed	Estimated Population Size
23	<i>Speyeria callippe callippe</i>	Callippe Silverspot Butterfly	Endangered	Dec. 1997	50-1000
24	<i>Speyeria zerene behrensii</i>	Behren's Silverspot Butterfly	Endangered	Dec. 1997	50-2,500
25	<i>Speyeria zerene hippolyta</i>	Oregon Silverspot Butterfly	Threatened	July 1980	250-2,500
26	<i>Speyeria zerene myrtleae</i>	Myrtle's silverspot Butterfly	Endangered	June 1992	~10,000
27	<i>Strymon acis bartrami</i>	Bartram's Hairstreak Butterfly	Endangered	Sept. 2014	50-1,000
28	<i>Troides alexandrae</i>	Queen Alexandra's Birdwing Butterfly	Endangered	Sept. 1989	Range is outside US (<50)

Furthermore, as discussed above, NatureServe has assessed the global Monarch population and concluded the species is “demonstrably secure,” having ranked it as a “5” – the most secure ranking a species may be assigned.³² Indeed, experts (including a Petitioner here³³) on Monarch butterflies have commented that the species is not at risk of extinction within its current range.³⁴

Separately, Dr. Daniel Rubinoff, a professor of entomology at the University of Hawaii who specializes in insect conservation, recently stated:

[T]he overwintering population in Mexico still totals more than 30 million.³⁵ Most insect conservationists would be thrilled to record numbers even a tenth of that for many rare species around the country. And that total doesn’t include the millions of Monarchs in populations wintering in California, or those that live year-round in Central America and

³² NatureServe 2014.

³³ See *supra* footnote 11.

³⁴ See *supra* footnote 17.

³⁵ Notably, the 2014 34 million estimate for the Monarch population has increased by approximately 66 percent since Dr. Rubinoff’s statement quoted here.

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the Caribbean, or the introduced populations thriving across the Pacific islands and in Australia.

The Monarch is one of the most widespread species of butterfly in the world. Its ability to find and colonize even isolated patches of milkweed — the host plant for their larvae — is renowned. Monarchs came to Hawaii more than 150 years ago, after milkweed was introduced, and they are now one of the most common and familiar insects in the state. They've moved through Tahiti, the Society Islands and New Caledonia. Once an occasional vagrant, the butterfly flourished after ornamental milkweed was brought to Guam and Australia. This is not a globally rare insect.³⁶

Petitioners nevertheless argue that many species with “relatively abundant population sizes” have been protected under the ESA.³⁷ They point to several examples: the gray bat, Indiana bat, fat pocketbook mussel, piping plover, Chinook salmon, and small whorled pagonia flower. But none of these species’ populations remotely approach that of the Monarch.³⁸ Moreover, none of the listed species cited by Petitioners possess the Monarch’s biological capacity to reproduce in significant numbers or have its high growth rate. Indeed, organisms with high population growth rates (*e.g.* insects) track environmental fluctuations more closely than those with low growth rates.³⁹ In general, these populations respond to changes in their environment quickly and population sizes over time can display a high degree of fluctuation. Significantly, these species tend to be more resilient than species with slower growth rates, and their populations can return to equilibrium at a faster rate after an environmental perturbation.⁴⁰

B. The North American Monarch Butterfly Population Is Not Threatened

Not only should the Monarch not be listed on the basis of its range-wide population, it should also not be listed based on the status of any “significant portion of its range.”⁴¹ FWS recently promulgated a final guidance policy interpreting the phrase “significant portion of its range.”⁴² In the policy, FWS set forth a three-step process for assessing the status of a species. First, FWS assesses the status of its species throughout its entire range. If a species is deemed threatened or endangered, the analysis ends and the species is listed. However, if the species is determined to not be threatened/endangered throughout its range, then FWS must assess whether any

³⁶ Daniel Rubinoff, *Monarch Butterfly Doesn't Need So Much Help*, WashingtonPost.com (Feb. 22, 2015), available at http://www.washingtonpost.com/opinions/the-monarch-butterfly-doesnt-need-so-much-help/2015/02/20/cd936d60-b887-11e4-a200-c008a01a6692_story.html.

³⁷ Petition at 7.

³⁸ For example, the gray bat’s population is about 1,000,000 and the Indiana bat’s is between 100,000 – 1,000,000.

³⁹ See R.E. Ricklefs and G.L. Miller, *Ecology* (4th ed. 1999).

⁴⁰ *Id.*

⁴¹ See 16 U.S.C. § 1532(20).

⁴² *Final Policy Interpretation of the Phrase “Significant Portion of Its Range” in the Endangered Species Act’s Definitions of “Endangered Species” and “Threatened Species,”* 79 Fed. Reg. 37578 (July 1, 2014).

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“portion(s)” of the species range are “significant” – *i.e.*, “if the species is not currently endangered or threatened throughout its range, but the portion’s contribution to the viability of the species is so important that, without the members in that portion, the species would be in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range.”⁴³ “Significance” is evaluated using the concepts of redundancy, resiliency, and representation. If reduction in population in the portion at issue is not “so important” that it would threaten worldwide extinction, then the species is not listed.⁴⁴

Applying this process here, despite claims to the contrary by the Petitioners, the Monarch is clearly not threatened throughout its range. This conclusion is supported by NatureServe, which has indicated that “[r]egardless of what happens in North America this species is at virtually no risk of global extinction in the foreseeable future.”⁴⁵ And again, this view is consistent with other statements made by experts.⁴⁶

Furthermore, even if FWS deemed the North American population to be “significant,” it is not reasonable to conclude that the Monarch is “threatened” in North America (or in any part thereof).⁴⁷ The North American Monarch consists of the following populations: the Eastern migrating population, the Western migrating population, the Florida non-migrating population, and the Hawaii population. The Eastern migrating Monarch population, as measured at its Mexican overwintering site, is currently at approximately 56.5 million (up from 34 million in 2014). The California population is approximately 235,000 Monarchs.⁴⁸ As demonstrated in Table 1, no butterfly species that has been listed has a population of greater than 100,000, far less than the North American Monarch numbers.

Moreover, the Petition generally overstates the historical decline of the Eastern Monarch population. Relying on 1994 – 2013 population estimates based on overwintering cumulative forest surface area occupied, Petitioners conclude that the Monarch population has decreased by more than 90 percent. Based largely upon this data as well as a single modeling study (Flockhart *et al.*, 2014), the Petitioners conclude that Eastern migrating Monarchs are threatened. However, prior to 1995, there was no reliable means to measure or monitor Monarch populations. Indeed, following the initial discovery of the Monarch overwintering colonies in 1975-76, population

⁴³ *Id.*

⁴⁴ *Id.* at 37578-37579.

⁴⁵ NatureServe 2014.

⁴⁶ *See supra* page 6.

⁴⁷ CropLife notes that the Petition is ambiguous as to whether the entire North American population is a single “portion” of the Monarch butterfly’s range for which it seeks a threatened listing, or whether a listing is sought for the Eastern migrating population. Regardless of which population is the relevant “portion,” none are “threatened.”

⁴⁸ Reliable population numbers are not available for the Florida and Hawaii populations.

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data through the 1980s and early 1990s was fragmentary, but suggests that average populations may have been lower than the record high populations recorded for 1994-96.⁴⁹

The conclusion that the Monarch is not threatened is supported by NatureServe's assessment of the health of the Monarch in U.S. States and Canadian Provinces.⁵⁰ Such rankings can range from S5 (secure) to SX (presumed extinct). The Monarch is ranked as S5 – the most secure ranking – in the vast majority of the U.S. states, including *every state in the Corn Belt*: North Dakota, Wisconsin, Michigan, Ohio, Indiana, Illinois, Iowa, Missouri, Nebraska, and Kansas. It is also deemed secure in Arkansas, Pennsylvania, New York, and several other states. The Monarch is ranked S4, apparently secure, (the second-to-highest ranking) in Texas, Oklahoma, Kentucky, Tennessee, Virginia, and North Carolina. It is ranked S3, vulnerable, in California. These rankings clearly demonstrate that the Monarch is in no way “threatened” in North America. For these reasons, there is no basis for listing the Monarch butterfly as threatened under the ESA.

II. MONARCH BUTTERFLY CONSERVATION EFFORTS ARE IMPROVING THE SPECIES' HABITAT

ESA Sec. 4(b)(1)(A) provides the statutory basis to rely on conservation plans when making a listing decision, requiring FWS to: “tak[e] into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction”⁵¹ FWS has developed formal guidance for evaluating conservation agreements – the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (“PECE”).⁵² The PECE policy sets out criteria for evaluating “formalized conservation efforts [that] contribute to making it unnecessary to list a species, or to list a species as threatened rather than endangered.” The criteria are used to determine whether the plan can eliminate or adequately reduce the section 4(a)(1) threats. Crucially, PECE allows FWS to evaluate both currently implemented conservation plans that have not been fully evaluated or demonstrated as well as not yet implemented conservation plans.

⁴⁹ Taylor, C., Comment to Docket FWS-R3-ES-2014-0056 (Jan. 24, 2015), *available at* <http://www.regulations.gov/#!documentDetail;D=FWS-R3-ES-2014-0056-0290> (accessed Feb. 26, 2015) (“[T]he main justification for the listing seems to be the 90% loss figure. This figure can be challenged. The data for the [19]80s is fragmentary but are suggestive of populations much lower than the large populations recorded for [19]94-[19]96.”).

⁵⁰ NatureServe 2014.

⁵¹ 16 U.S.C. § 1533(b)(1)(A).

⁵² *Policy for Evaluation of Conservation Efforts When Making Listing Decisions*, 68 Fed. Reg. 15100 (Mar. 28, 2003).

Thus, governmental and private options are both important to improve Monarch habitat and legally appropriate for consideration in determining whether to list the Monarch. Current efforts are focused on restoring and expanding habitat from the Upper Midwest and West Coast to wintering habitat in Mexico and in the migration corridors in between, as well as funding and supporting scientific initiatives to better understand Monarch population decline and raising public awareness. Ongoing Monarch conservation efforts have now reached an all-time high, and a number of recently-announced Federal initiatives are further increasing the amount of land, capital, and expertise devoted to conserving and restoring Monarch habitat and migration corridors. These efforts play a crucial role in stemming and reversing the decline in the Monarch population. CropLife and its members are supporting these efforts, which are being undertaken by a wide range of stakeholders, including state and local governments, foreign nations, private parties, non-governmental organizations, international organizations, and many more. Such efforts should be relied upon in reaching the conclusion that the Monarch is not threatened.

A. Completed and Ongoing Conservation Efforts

- **Mexico**

- *Mariposa Monarca Biosphere Reserve.* The Monarch Butterfly Biosphere Reserve (Mariposa Monarca Biosphere Reserve) was created by the Mexican government to protect 62-square miles of forests within four separate Monarch sanctuaries. The Biosphere Reserve was expanded to include 217 square miles. The Biosphere program and recent Mexican government enforcement efforts to halt illegal logging in the area have been highly effective in preserving Monarch wintering habitat within the reserves.⁵³
- *FWS's Wildlife Without Borders Program – Mexico.* FWS Wildlife Without Borders Program – Mexico is a grants program, in partnership with Mexican authorities and non-governmental organizations, and has invested over \$700,000 in projects to protect and restore the wintering habitat of the Monarch.⁵⁴

- **United States - Federal**

- *U.S. Forest Service Monarch Butterfly Program.* The U.S. Forest Service's ("USFS") Monarch Butterfly Program, a subset of its Wings Across America Program, is an international initiative addressing threats to the Monarch and its habitat by uniting a wide range of partners across the Monarch's migratory path in

⁵³ Vidal, O., López- García, J. & Rendon-Salinas, E., *Trends in deforestation and forest degradation after a decade of monitoring in the Monarch Butterfly Biosphere Reserve in Mexico*, Conservation Biology, 28:177–186 (2014).

⁵⁴ Wildlife Without Borders Program – Mexico, available at <http://www.fws.gov/international/wildlife-without-borders/mexico/> (accessed Feb. 23, 2015); see also <http://www.fws.gov/international/animals/monarch-butterfly.html> (accessed Feb. 23, 2015).

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the United States, Canada, and Mexico.⁵⁵ USFS coordinates and advances habitat conservation efforts through training and community outreach that reach both urban and rural populations. The Program is designed to engage a wide range of audiences, including urban youth and schoolchildren that reside along the Monarch's entire North American migratory path. In addition to these efforts, the Program works to create and preserve milkweed and other prairie plants to create more habitats, not just for the Monarch but also for all pollinators.

- *U.S. Department of Agriculture.* The U.S. Department of Agriculture (“USDA”) has committed a total of \$12 million to establish programs to improve honeybee and pollinator habitat in the upper Midwest.⁵⁶ \$8 million was made available under the Conservation Reserve Program (“CRP”). Four species of milkweed were included on the approved list of species eligible for planting under the program to “support[t] habitat for Monarch butterflies.”⁵⁷ The other \$4 million was made available under the Environmental Quality Incentives Program and was intended to improve habitat for honeybees and pollinators.⁵⁸
- *Monarch Joint Venture.* The Monarch Joint Venture (“MJV”), which began in 2007, is a partnership of federal and state agencies, NGOs, and academic programs working together to support and coordinate efforts to protect the Monarch migration across the lower 48 United States.⁵⁹ Since 2009, the MJV has engaged 18 partners, allocated financial contributions for science-based Monarch conservation projects, and issued contract awards to 12 partner organizations for over \$750,000.⁶⁰

⁵⁵ See U.S. Forest Service Monarch Butterfly Program, *available at* <http://www.fs.fed.us/global/wings/butterflies/welcome.htm> (accessed Feb. 23, 2015).

⁵⁶ News Release, U.S. Department of Agriculture, USDA Provides \$8 Million to Help Boost Declining Honey Bee Population (June 20, 2014), *available at* <http://www.usda.gov/wps/portal/usda/usdahome?contentid=2014/06/0130.xml&contentidonly=true> (accessed Feb. 28, 2015); News Release, U.S. Department of Agriculture, USDA to Provide \$4 million for Honey Bee Habitat (Oct. 29, 2014), *available at* <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/home/?cid=stelprdb1262944> (accessed Feb. 28, 2015).

⁵⁷ U.S. Department of Agriculture, CRP Honey Bee Initiative (Aug. 19, 2014), *available at* https://www.fsa.usda.gov/Internet/FSA_Notice/crp_775.pdf.

⁵⁸ News Release, U.S. Department of Agriculture, USDA to Provide \$4 million for Honey Bee Habitat (Oct. 29, 2014), *available at* <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/home/?cid=stelprdb1262944> (accessed Feb. 28, 2015).

⁵⁹ U.S. Department of Agriculture, The Monarch Butterfly in North America, *available at* http://www.fs.fed.us/wildflowers/pollinators/Monarch_Butterfly/index.shtml (accessed Feb. 28, 2015).

⁶⁰ Wendy Caldwell, *Monarch Joint Venture*, July 2009 – May 2014, *available at* http://monarchjointventure.org/images/uploads/documents/MJV_final_report_2014_FINAL.pdf.

- The MJV approach to Monarch conservation work is science-driven and is guided by the North American Monarch Conservation Plan.⁶¹ This plan provides an updated account of the species and its current situation, identifies the main risk factors affecting it and its habitat throughout the flyway, and summarizes the current conservation actions taken in each country. Against this background, it offers a list of key tri-national collaborative conservation actions, priorities, and targets to be considered for adoption by the three countries.
- The MJV's actions and projects address the following main objectives: (1) decrease or eliminate deforestation in the overwintering habitat; (2) combat threats of habitat loss and degradation in the flyway; (3) address threats of loss, fragmentation, and modification of breeding habitat; (4) develop innovative enabling approaches that promote sustainable livelihoods for the local population; and (5) monitor Monarchs throughout the flyway.
- *FWS Monarch Conservation Funding.* FWS has allocated \$2 million to existing projects dedicated to preserving or restoring Monarch habitat.⁶² According to FWS, the funding is intended to restore and enhance more than 200,000 acres of habitat for Monarchs while also supporting over 750 schoolyard habitats and pollinator gardens. The funds focus primarily on habitat restoration and enhancement projects, native seed strategies, and education and awareness programs in the Monarch's migration path along the I-35 corridor from Texas to Minnesota (*i.e.*, the areas that provide important spring and summer breeding habitats in the Eastern population's central flyway). Funds are also dedicated to the Western Monarch population.
- *North American Pollinator Protection Campaign.* The North American Pollinator Protection Campaign ("NAPPC") is a collaborative body of more than 120 diverse partners. Scientists, researchers, conservationists, government officials, and dedicated volunteers are succeeding with major programs to protect pollinators, to raise awareness of pollinator-related issues, and to benefit the health of all species – particularly those most threatened. Although the NAPPC is focused on pollinators generally, its conservation efforts positively impact the Monarch.

⁶¹ Secretariat of the Commission for Environmental Cooperation, North American Monarch Conservation Plan (2008), *available at* http://www.cec.org/Storage/62/5431_Monarch_en.pdf (accessed Mar. 1, 2015).

⁶² U.S. Fish and Wildlife Service, Save the Monarch – Monarch Projects, *available at* <http://www.fws.gov/savethemonarch/projects.html> (accessed Feb. 28, 2015).

- **United States – State & Local**

- *California.* Several units of the National Park system in California contain Monarch overwintering sites.
- *Iowa.* The Iowa Monarch Conservation Consortium is a farmer-led, scientifically-based group that is working to enhance Monarch butterflies in Iowa through the combined efforts of farmers, private citizens, and their organizations. It is comprised of Iowa organizations representing farmers, livestock producers, conservation interests, the Iowa Department of Natural Resources, the Iowa Department of Agriculture and Land Stewardship, and Iowa State University (“ISU”). Consortium partner ISU is currently raising approximately 10,000 milkweed seedlings of several species in greenhouses. The milkweed will be planted later this year on 13 ISU research and demonstration farms throughout the state. The coordinated research and extension/outreach components of the consortium will also ensure that resources invested in conservation have a high likelihood of successfully supporting Monarch populations.⁶³
- *Minnesota.* The Minnesota Board of Water & Soil Resources (“BWSR”) is restoring approximately 5,000 to 8,000 acres of prairie and wetland on marginal agricultural lands as part of the Reinvest in Minnesota program each year. The Minnesota Prairie Conservation Plan is being used to guide restoration efforts in core areas of grassland habitat and corridors connecting these areas across the Minnesota landscape. Seed mixes with a minimum of twenty species are being used for these projects following the BWSR Native Vegetation Establishment and Enhancement Guidelines. Many of the projects also have native seedbanks that provide additional native flowers that benefit pollinators such as mints, vervains, and milkweeds. Cost-share funding is also being used to increase diversity of existing projects through a habitat enhancement program.⁶⁴
- *Community Habitat Initiatives.* NWF works with several local communities to create Monarch habitat, educate citizens, and advocate for local ordinances that protect milkweed and flowering plants. Such activities have occurred in the following communities: Utah, Cache Valley Wildlife Association; Maryland,

⁶³ *New Consortium Launched to Conserve Monarch Butterfly Habitat in Iowa*, Mar. 2, 2015, available at <http://www.cals.iastate.edu/news/releases/new-consortium-launched-protect-monarch-butterfly-habitat-iowa> (accessed Mar. 2, 2015).

⁶⁴ *Minnesota Board of Water & Soil Resources, Pollinator Plan* (Apr. 4, 2014), available at http://www.bwsr.state.mn.us/native_vegetation/Pollinator_Plan.pdf (accessed Mar. 1, 2015).

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Woodland Hills; Missouri, Chesterfield Citizens Committee for the Environment; Connecticut, Community Wildlife Habitat of Colchester; and California, Alpine.⁶⁵

- **Other International**

- *North American Monarch Conservation Plan.* Parties in Canada, Mexico, and the United States produced the North American Monarch Conservation Plan ("NAMCP") in 2008 (Commission for Environmental Cooperation 2008). The NAMCP is a research effort and has developed extensive scientific data on threats to migratory Monarchs and recommended conservation actions.
- *Trilateral Monarch Butterfly Sister Protected Area.* The Trilateral Monarch Butterfly Sister Protected Area ("SPA") Network is a partnership of wildlife refuges and national parks in the United States and Canada, and natural protected areas in Mexico working together on Monarch conservation projects.⁶⁶ The SPA network is a project of the Trilateral Committee for Wildlife and Ecosystem Conservation and Management. The project was initiated in May 2006 to collaborate on Monarch habitat preservation and restoration; research and monitoring; and environmental education and public outreach.

B. Other Joint Public and Private Conservation Efforts

- *FWS Save the Monarch Initiative.* FWS has pledged \$1.2 million to a new funding initiative with NFWF. The FWS pledge will be matched by NFWF and other donors, and the funds will be used to leverage additional funding from other Federal agencies, state and local partners, and the private sector to fund Monarch conservation efforts.
- *FWS & National Wildlife Federation Memorandum of Understanding.* A recent Memorandum of Understanding ("MOU") between FWS and NWF is designed to serve as a framework for cooperation to restore and conserve Monarch populations and habitats.⁶⁷ FWS and NWF have pledged to cooperate, particularly on efforts to raise awareness of Monarch populations and their habitat. NWF will utilize its existing Gardening for Wildlife Program and Forest and Farm program to promote Monarch habitat populations. NWF will also conduct outreach and raise awareness of the Monarch. FWS will make its public lands, staff, and facilities available to further the

⁶⁵ National Wildlife Federation – Monarch Butterfly, *available at* <http://www.nwf.org/Pollinators/Monarch/Communities.aspx> (accessed Feb. 28, 2015).

⁶⁶ Trilateral Committee for Wildlife and Ecosystem Conservation and Management, *available at* <http://www.trilat.org/> (accessed Feb. 28, 2015).

⁶⁷ Memorandum of Understanding Between the National Wildlife Federation and the United States Fish and Wildlife Service, *available at* <http://www.fws.gov/savethemonarch/pdfs/monarch-mou-signed.pdf> (accessed Feb. 23, 2015).

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MOU, develop a national communication strategy to raise awareness, and coordinate with other Federal agencies.

- *Keystone Center Stakeholder Dialogue.* The Keystone Center, an independent convener and facilitator, has begun to broadly engage various interest groups with the goal of creating a diverse stakeholder coalition working together toward collaboration, funding, and implementation of comprehensive initiatives to address the recent decline in Monarch populations.
- *Minnesota's Environment and Natural Resources Trust Fund.* The Minnesota Environmental and Natural Resources Trust Fund recently awarded Pheasants Forever with a grant for the creation of the Minnesota Pollinator Partnership. Pheasants Forever, including its quail conservation division, Quail Forever, is the nation's largest nonprofit organization dedicated to upland habitat conservation. Through this new initiative, Pheasants Forever will host 40 community events throughout the state to educate youth and their families about the value of pollinators to humans and pheasants through interactive habitat projects.⁶⁸
- *Dakota Pollinator Partnership.* The Dakota Pollinator Partnership is a collaboration between two leading pollinator habitat nonprofit organizations, Pheasants Forever, Project Apis m. ("PAm"), and the Browning Honey Company, a family-owned beekeeping operation in the upper Midwest, with support from the USDA and the U.S. Geological Survey ("USGS"). The Partnership provides the opportunity to establish a public-private conservation partnership that builds on federal efforts to increase the quality and amount of habitat and forage for pollinators. The Partnership seeks to improve the health and survival of honey bees and other pollinators, including the Monarch, by reversing the loss of high quality pollinator habitat in a geographic region that is home to a substantial portion of the country's managed honey bees.⁶⁹ The project will run from October 2014 through August 2016.⁷⁰

Together, these and other governmental and private programs are improving Monarch populations and habitat. And these types of practical measures are exactly the type of mitigation that FWS can recognize when applying the PECE policy.

⁶⁸ News Release, "Pheasants Forever Earns Grant To Teach Minnesota Youth About Birds & Bees," available at <http://www.pheasantsforever.org/Newsroom/2014-June/Pheasants-Forever-Earns-Grant-to-Teach-Minnesota-Y.aspx> (accessed Mar. 1, 2015).

⁶⁹ See PAm – Pheasants Forever Habitat Partnership, available at http://projectapism.org/?page_id=1410 (accessed Mar. 1, 2015).

⁷⁰ See Contract No. 002-033, "North Dakota Pollinator Partnership" (Dec. 31, 2014), available at <http://www.nd.gov/ndic/out/reports/SP-002-033.pdf> (accessed Mar. 1, 2015).

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* * *

CropLife and its members are committed to improving the habitat of the Monarch to ensure that it thrives for generations to come. The most impactful action that can be taken at this time is to continue to build robust, multi-state, and state-specific programs to expand habitat and increase the resilience of Monarch populations. Partnerships will bring interest groups together, build capacity, promote research, develop best practices and guidance, incentivize private land owners, and drive multi-state initiatives that will expand habitat and positively affect Monarch butterflies and sustain their migration in North America. However, the best available science and commercial information does not support a threatened listing for the Monarch either throughout its worldwide range or in any significant portion of its range. As CropLife continues to gather more information relevant to this status review, it will supplement these comments as appropriate.

If you have any questions or concerns, please do not hesitate to contact me at rlattimore@croplifeamerica.org or (202) 872-3895.

Sincerely,



Rachel G. Lattimore
Senior Vice President, General Counsel & Secretary
CropLife America

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APPENDIX TECHNICAL COMMENTS

As discussed in the legal comments, there is no basis for the U.S. Fish and Wildlife Service (“FWS”) to conclude that a “threatened” listing is warranted for the Monarch butterfly.

Many factors impact the Monarch butterfly. For migrating populations – in particular the Eastern North America migrating population focused on by Petitioners – such factors include logging of overwintering sites in Mexico, weather events (*e.g.*, freezing temperatures and drought), predation, pathogens and parasites, availability of host milkweed plants and nectar sources across their migration range, and climate change. All of these factors result in significant variability in migrating population size of the species. As discussed in the legal comments, see Section II, collaboration to improve habitat will enable Monarch populations, in particular those in the Eastern North America migrating population, to continue to survive in the face of environmental stressors.

Additionally, agricultural systems have advanced greatly over the past 20 years to become more productive and sustainable to meet the growing demand for food, feed, fiber, and fuel. Effective utilization of existing agricultural lands is critical to preserve natural lands for conservation to provide essential ecosystem services. Any limitations on farming practices, including weed control, would result in more land needed for agriculture production and less land for conservation. Expanding habitat alongside of agriculture, along roadsides, and on public lands can help sustain the annual migration of Monarch butterflies in North America.

The technical comments herein help demonstrate that the information articulated and science referenced in the Petition does not support listing. These comments are organized according to each of the five factors FWS is required to evaluate when making a listing decision under the Endangered Species Act (“ESA”):

- The present or threatened destruction, modification, or curtailment of habitat or range (Section 1).
- Overutilization for commercial, recreational, scientific, or educational purposes (Section 2).
- Disease or predation (Section 3).
- The inadequacy of existing regulatory mechanisms (Section 4).
- Other natural or manmade factors affecting continued existence (Section 5).

1. Factor A - Present or Threatened Destruction, Modification, or Curtailment of the Species' Habitat or Range

The Petition alleges that: (i) milkweed habitat in the Midwestern portion of the U.S. has declined drastically in recent decades, and (ii) such decline in milkweed has contributed significantly to a decline in the Monarch population. Petitioners assert that milkweed patterns of distribution in the Midwest are changing, and a decline in the population of milkweed has been documented. The Petition and other documentation prepared by one of the Petitioners⁷¹ argue that adoption of herbicide-tolerant crops and use of herbicides to control weeds on agricultural lands are primary causative factors for these changes in milkweed and the Eastern North American migrating Monarch population. Petitioners also argue that use of other herbicides and insecticides have diminished nectar-producing habitat relied upon by the Monarch.

However, there is no direct evidence linking Monarch populations to reduced milkweed plant density as a result of the adoption of herbicide-tolerant crops. The recently reported changes in Monarch populations do not appear to match the adoption pattern of glyphosate-tolerant crop technology, *i.e.*, initial rapid increase of adoption followed by relative stability. While the population of milkweed has declined, Monarch populations continue to fluctuate substantially and cannot be linked to any one factor.

CropLife has identified the following issues that Petitioners cite to conclude that Monarch butterflies should be listed because of “present or threatened destruction, modification or curtailment of the species’ habitat or range.”

Insufficient data to substantiate certain conclusions in the Petition

- Oberhauser *et al.* (2001) state that a: “lack of correlation between monarch and milkweed density” exists. In turn, Hartzler (2010) acknowledges that no direct causation exists with the use of glyphosate on glyphosate-tolerant crops, and that other unnamed and unexplored factors may contribute to the decline in milkweeds.
- Pleasants and Oberhauser (2012) claim that “the loss <of milkweed> is coincident with the increased use of glyphosate herbicide in conjunction with increased planting of genetically modified (GM) glyphosate-tolerant corn (maize) and soybeans(soya).” However, no direct evidence establishes a causal link between milkweed declines in agricultural fields, or that any such decline is the sole factor of the recent monarch decline. Nor was this hypothesis tested. In that same paper, the authors state “[t]he relative contribution of the Midwest to the population as a whole is likely to vary from

⁷¹ Center For Food Safety, *Monarchs in Peril, Herbicide-Resistant Crops and the Decline of Monarch Butterflies in North America*, Feb. 2015, available at http://www.centerforfoodsafety.org/files/cfs-monarch-report_2-4-15_design_05341.pdf (accessed Mar. 2, 2015).

year to year,” thus negating a direct and consistent causal link between population and Midwest agriculture.

- These assumptions serve as the basis for modeling conducted by Flockhart *et al.* (2014) without consideration that cause and effect has not been established. The modeling data presented by Flockhart *et al.* (2014) is not linked empirically to the adoption of herbicide-tolerant cropping system. Rather, the authors rely on the correlation between the adoption of this technology to the timeframe of recent monarch declines to conclude an adverse effect.

Study design that is limited spatially and temporally and may not be reflective of trends or wider geographies

- Oberhauser *et al.* (2001) state: “Our observations were made during a single growing season; repeating observations would allow us to generalize our results.” This article also notes that both their and Hartzler and Buhler (2000) data “covered only a small portion of the monarch’s breeding range,” and cautions that more accurate estimates are needed. Elsewhere in the Oberhauser *et al.* (2001) it states: “our study sites were not necessarily representative of available habitats.”
- In a similar manner, Pleasants and Oberhauser (2012) state: “There has not been a long-term study of milkweed density in agricultural habitats outside of Iowa so the similarity between Iowa and the Midwest in this aspect can only be assumed.” The paper also noted that their extrapolation of agricultural milkweeds to monarch egg production was based solely on data from Iowa and “may be somewhat different in other areas of the Midwest.”

Petition fails to consider other factors (e.g., alternative hypothesis)

- Pleasants and Oberhauser (2012) state that: “the differences between years in egg density per stem...are likely caused by other factors,” and they identify temperature and weather as potential other factors. However, these factors are not further examined. These authors also state that: “higher egg densities on agricultural milkweeds were also observed in other states in the Midwest in 2000 (Oberhauser *et al.* 2001).” No explanation is provided for this, and the authors could have considered the possibility that the higher egg densities per plant in the field may be simply related to less available milkweeds/surface area as opposed to a preference for infield milkweeds.
- In regard to the contribution of the Midwest Monarch population to the overwintering population, Pleasants and Oberhauser (2012) state that: “The amount of mortality during the fall migration is likely to vary among years depending on conditions along the migratory route including nectar availability, temperature, weather events, drought conditions and wind conditions.” While these additional factors are complex phenomenon, none of these factors were considered or evaluated.

Results that do not support the claims of the Petition

- Hartzler (2010) comments that roadside habitats in Iowa consistently had more milkweed than in crop fields. In addition, Hartzler (2010) states that: “The land areas most frequently infested with common milkweed were roadsides and areas enrolled in the Conservation Reserve program (CRP) (Hartzler and Buhler, 2000).” In addition, Oberhauser *et al.* (2001) further state that: “Milkweed density was generally higher in non-agricultural habitats than cornfields in all regions.”
- Regarding the loss of milkweed habitat, Hartzler (2010) also reports that milkweed occurrence on roadsides has increased in the last 10 years, thereby increasing Monarch habitat: “eighty-two percent of roadsides surveyed had common milkweed present in 2009, compared to 71% of the roadsides in 1999.”
- Pleasants and Oberhauser (2012) report a decline in milkweed density in non-agricultural habitat but also state that the non-agricultural sites examined in the study: “were not chosen at random, and it is possible that this decline is not representative of milkweeds in non-agricultural habitats across the landscape.”

Cited studies acknowledge limitations

- Oberhauser *et al.* (2001) state that study sites were not randomly selected, but were specifically selected with milkweed densities to allow for observation: “our cornfields tended to have higher milkweed densities than random fields.” The authors comment that this non-random selection may have affected one of the endpoints measured. Oberhauser *et al.* (2001) also states that due to conducting only a single year of observations: “calculations of relative productivity are reported without associated error terms and thus cannot be compared statistically.”
- Pleasants and Oberhauser (2012) note that: “deviations may be due to the fact that we have used egg density as our measure of production, which is a measure of potential production, while actual production is adult butterflies. The relationship between potential and actual production will depend on survivorship from egg to adult, which may vary among years (J.M. Pleasants & K. S. Oberhauser, unpubl. data).”

Data or conclusions cited in the Petition that are inconsistent with other research

- Hartzler (2010) comments that: “Estimates of monarch wintering populations in Mexico over the time frame of the common milkweed surveys do not indicate a decline in butterflies that parallels that of common milkweed (monarchwatch.org). Rather,

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fluctuations in monarchs were reported to correlate with climatic events that influenced survival and reproduction.”

- Pleasants and Oberhauser (2012) also note that their data on the contribution of the Midwest to the overwinter population does not agree with other data: “the fact that the size of the overwintering population has declined less than the population contribution from the Midwest reflects the mitigating effect of portions of the range of the species that are not dominated by corn and soybean agriculture and have not been impacted by milkweed loss”
- Pleasants and Oberhauser (2012) comment that the lack of decline in Eastern population of Monarchs as reported by Davis (2012) (a paper that is not cited in the Petition) is because the Eastern population: “comes from areas with less corn and soybean agriculture and thus less milkweed loss because of herbicide use.” However, this conclusion is inconsistent with the milkweed surveys in Maryland by Oberhauser *et al.* (2001) where it is reported that: “we had to survey over 30 fields in Maryland just to find 5 that contained high enough milkweed densities to monitor, and are confident that densities in surveyed fields are higher than those in most Maryland cornfields.”

Researchers cited acknowledge that further information is needed to make firm conclusions

- Pleasants and Oberhauser (2012), in discussing some of the uncertainties in their study and conclusions regarding the decline of milkweed in non-agricultural areas, state that: “a more thorough survey of milkweed densities in randomly chosen non-agricultural habitats over time is needed.”
- In regard to the contribution of the Midwest to the overwintering Monarchs, Pleasants and Oberhauser (2012) state that: “A reassessment of the production contribution of the Midwest and other parts of the range, such as that performed earlier by Wassenaar and Hobson (1998), would be useful.”

Overwintering Habitat

Petitioners claim that the Monarch’s overwintering habitat in Mexico is threatened by illegal and legal logging. While this may be historically true, this is a not a full accounting of Vidal *et al.* (2014) and downplays the success that the Mexican government has had in curtailing illegal logging at the Monarch overwinter site. Vidal *et al.* (2014) further state that: “Mexican authorities effectively enforced efforts to protect the monarch reserve, particularly from 2007 to 2012. Those efforts...resulted in a decrease of large-scale illegal logging from 731 ha affected in 2005-2007 to none affected in 2012.”

2. Factor B - Overutilization for Commercial, Scientific, or Educational Purposes

The Petitioners suggest that buying and mass-releasing captive-reared monarchs to augment local populations could pose a harm to Monarchs. They speculate that release of large numbers of captive-reared Monarch butterflies could lead to transmission of disease to wild populations, decrease genetic diversity, and lead to deleterious genetic adaptations. However, these are only speculative theoretical concerns, and the Petitioners have not provided any evidence that these risks are actually occurring.

The Association for Butterflies (“AFB”) has developed a Code of Ethics, a disease-testing program, and disease education programs, and it has implemented a regular blind-screening program to ensure parasites and disease are at levels considered acceptable by academic experts. Through AFB, academic experts have developed guidelines for the disease testing program and implemented recommendations for allowable levels of *Ophryocystis elektroscirrha* (“OE”).

In addition, the impact of the Monarch breeders and the Monarch-rearing industry on Monarch populations is far less than suggested by the Petitioners. An examination of the original sources cited in the Petition (pg. 74) shows that cited numbers of released Monarchs came from a Xerces press release that misrepresented numbers originally in a 2006 New York Times op-ed article. This does not constitute the best available scientific data.

3. Factor C – Disease and Predation

The Petition asserts that disease and predation are supporting factors for listing Monarchs because of the large impact they can have on population levels. Both disease and predation are processes that themselves would not be sufficient to push the Monarch population to extinction. According to the Petition, however, in the context of other factors, disease and predation pose a significant risk to Monarch survival. Upon closer examination, many of the key statements and assertions are not supported by the underlying citations or are suppositions about possible impacts rather than conclusions based on the best available scientific information. Several of these unsupported conclusions are described below.

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Petitioners’ Assertion: *Monarchs that are infected with this parasite have reduced flight ability and reduced longevity (Altizer and de Roode 2010, p. 23).*

The citation is to an article that does not contain any information about where its source material may be found. No data are presented. It is not possible to assess the accuracy of this statement without source material and the claim is therefore not supported by the Petition.

Petitioners’ Assertion: *The protozoan parasite O. elektroscirrha has been relatively well studied and has significant lethal and sub-lethal effects on monarch populations. Monarchs that are infected with this parasite have reduced flight ability and reduced longevity (Altizer and de*

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Roode 2010, p. 23). Female butterflies appear to be more susceptible to OE infection than males. In general, female butterflies exhibit higher infection intensities (de Roode et al. 2008) ...

The discussion fails to note an important observation made by de Roode *et al.* (2008) that there is no change in fecundity with higher *O. elektroscirra* replication rates. Failing to mention this point gives the impression that the consequences of *O. elektroscirra* infection are more dire than the data may support.

Petitioners' Assertion: *The OE parasite has become so prevalent that it may be responsible for the increasingly skewed sex ratio of monarchs with declining proportions of females. An analysis of 30 years of monarch population data reveals that between 1976 and 1985, 53 percent of overwintering monarchs in Mexico were female, but since the year 2000, the proportion of females has declined to 43 percent (Davis and Rendon-Salinas 2010). The proportion of females in the fall migration has also declined (Ibid., p. 45). Declining proportion of females is of conservation concern and could have serious ramifications for population growth and recovery.*

The statement is speculative and not based on the cited publications. Some data from Mexico demonstrate differences in sex ratios but no link is made to the parasite itself so the cause is indeterminate. The statement that a declining proportion of females could have impacts on population growth is supposition and not supported by a citation to any scientific study.

Petitioners' Assertion: *Reduced availability of milkweed will push monarchs into smaller habitat patches and thus increase their infection risk.*

This statement is speculative and not supported with a citation to any scientific study.

Petitioners' Assertion: *Non-migrating monarchs can suffer especially high rates of infection.*

The Petition's claims about Monarch populations are based on information regarding migrating populations of Monarchs. These particular statements about threats that are specific to non-migrating Monarchs are not relevant to claims about factors affecting migratory populations. In addition, the Petition presents no evidence to demonstrate that non-migratory populations are declining or otherwise deserving of listing as threatened or endangered.

Petitioners' Assertion: *Human activities are influencing parasite dynamics in monarch populations due to several factors including the loss of breeding and overwintering habitat, the release of captive-bred butterflies, and factors related to global climate change including the spread of tropical milkweed (*A. currasavica*) and increased stress due to drought and severe temperatures (Bartel et al. 2011, p.349).*

The citation to Bartel *et al.* (2011) does not support the statement. Page 349 of Bartel *et al.* (2011) speculates about the impact of climate change on migratory animals but presents no scientifically supported data to demonstrate any of the listed factors are influencing parasite dynamics in a manner that would impact Monarchs specifically.

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Petitioners' Assertion: *These year round patches of tropical milkweed facilitate increased transmission of OE (Monarch Joint Venture 2014 - http://monarchjointventure.org/images/uploads/documents/Oe_fact_sheet.pdf).*

The citation is to a fact sheet that itself does not contain scientific information or data and does not provide citation to scientific information or data. The claim is therefore not supported.

Petitioners' Assertion: *Overall, climate change will have serious ramifications for disease in monarchs. Global climate change will influence butterfly diseases by affecting pathogen development, survival rates of parasites and hosts, processes of disease transmission, and stress and host susceptibility. Increasingly warm winters in North America will prevent the die-off of pathogens that would otherwise be killed by cold weather. Warmer temperatures and reduced seasonality will likely lead to increased pathogen survival and transmission (Altizer and de Roode 2010, p. 25).*

The premise of this paragraph is based on supposition. The citation is to a section on page 25 of Altizer and de Roode (2010) that relies on numerous uses of “may,” “could,” and “possibly.” The assertions are not supported by citations to data or other types of scientific evidence.

Petitioners' Assertion: *Modification and curtailment of habitat and range will crowd monarchs into smaller habitat patches, increasing the risk of disease transmission, and also increasing competition and exposure to pesticides and other environmental stressors that will heighten the susceptibility of monarchs to infection (Altizer and de Roode 2010, p. 25).*

The premise of this paragraph is based on supposition. The citation is to a section on page 25 of Altizer and de Roode (2010) that relies on numerous uses of “may,” “could”, and “possibly”. The assertions are not supported by citations to data or other types of scientific evidence.

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Petitioners' Assertion: *Monarch reproductive success is dependent on large numbers of butterflies being in the population. The threat of predation is greatly exacerbated by declining numbers of monarchs resulting from habitat loss and degradation, loss of milkweed, climate change, and other threats.*

The statement presents a speculative view of the Monarch’s future based on observed incidents of predation combined with assertions about the need for large populations to ensure reproductive success. No citations are provided to demonstrate that predation results in Monarch populations so low that reproductive success is limited. Without scientific justification in the Petition there is no basis to support this claim. Finally, the statement that “loss of milkweed,

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climate change and other threats” exacerbates threats from predation is not supported with citations to data or other scientific information.

4. Factor D – Inadequacy of existing regulatory mechanisms

Petitioners claim that Monarchs warrant listing based on the inadequacy of existing regulatory mechanisms. The Petitioners claim that there are no existing regulatory mechanisms at the federal, state, or local level that are in place to protect Monarchs. They claim that the following programs will benefit the Monarch but that they are not enforceable:

1. A June 2014 Presidential Memorandum indicating that Monarchs faced “an imminent risk of failed migration” and that established a Federal strategy to address declines in populations of honey bees and other pollinators, including the Monarch.
2. Several units of the National Park system in California contain Monarch overwintering sites.
3. Parties in Canada, Mexico, and the United States produced the North American Monarch Conservation Plan in 2008 (Commission for Environmental Cooperation 2008). Though the plan cannot be considered as a regulatory mechanism, it reflects a solid research effort and contains useful information on threats to migratory Monarchs and recommended conservation actions to remedy such threats.
4. Monarchs were designated a “species of special concern” in Canada in 1997, 2001, and 2010. However, this status does not come with substantive protections.

FWS concluded in its 90-day finding document that the Petitioners had failed to provide substantial information to support their claim that there are inadequate regulatory mechanisms to protect the species.

In addition to the items listed above, the U.S. Environmental Protection Agency (“EPA”) has the authority under the Federal Insecticide, Fungicide, and Rodenticide Act (“FIFRA”) to regulate the use of pesticides, including those that have the potential to impact Monarchs directly or indirectly. FIFRA is a comprehensive regulatory statute that provides the basis for regulation, sale, distribution, and use of pesticides in the United States. Pursuant to FIFRA, a pesticide cannot be manufactured, transported, or sold without EPA first licensing (registering) the pesticide for specific uses. FIFRA’s registration process is stringent. Before registering any new pesticide, EPA must ensure that the pesticide, when used in accordance with an EPA-approved label, will not cause “unreasonable adverse effects to human health or the environment.” *See* 7 U.S.C. § 136a(c)(5); *see also* 7 U.S.C. §136(z)(bb). To determine that the pesticide will not cause unreasonable adverse effects when used properly, EPA’s Office of Pesticide Programs reviews and analyzes thousands of pages of data, comprising the results of years of scientific tests on the pesticide’s safety and efficacy. These tests and data guide EPA’s risk management decisions, *e.g.*, by limiting application rates and frequencies to address a pesticide’s effect on non-target species, including insects. *See* 40 C.F.R. § 158.630.

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In addition, Petitioners claim (pg. 80) that the U.S. Department of Agriculture's Animal and Plant Health Inspection Service ("APHIS") "could not consult [with FWS] under the Endangered Species Act's Section 7 mandates" on the potential impact of genetically engineered crops on threatened and endangered species ("TES"). APHIS and FWS have a formal Memorandum of Understanding ("MOU") specifically to address TES assessments and under what circumstances APHIS should consult with FWS. In full compliance with this MOU, APHIS completes an assessment to support its deregulation decisions and to date has consistently reached a no effect conclusion. Therefore, this claim by the Petitioners is without merit.

Furthermore, pesticides must continue to meet FIFRA's registration standard. EPA reviews pesticides every 15 years to ensure compliance with this standard. 40 C.F.R. §155.40(a). The effects of the pesticide on non-target species are again reviewed and analyzed during this procedure. Additionally, pesticides are subject to administrative review and cancellation proceedings at any time if a pesticide causes unreasonable adverse effects to human health or the environment, or if the pesticide or its labeling otherwise violates FIFRA. 7 U.S.C. § 136d(b); *see also* 40 C.F.R. § 154.10.

5. Factor E - Other Natural or Manmade Factors Affecting its Continued Existence

Petitioners claim that Monarchs warrant listing based on other natural or manmade factors affecting its continued existence. In particular, they allege that exposure to insecticides, particularly neonicotinoids, has adverse effects on Monarchs without providing any data or other scientific information that directly supports this claim. The Petition admits on page 91 that "no one has tested the hypothesis that neonicotinoid use is a significant driver of Monarch population dynamics." Given that fact, it is not possible to draw a conclusion regarding neonicotinoid use and their impact on Monarch butterfly populations. The remainder of the section claiming harm from neonicotinoid exposure is speculative in that it does not cite any sources regarding toxicity of these chemistries to Monarch butterfly adults and larvae and does not present any information demonstrating that Monarchs feed on nectar from plants that are treated with neonicotinoids. Recent work from a researcher at the University of Minnesota (Krischik, unpublished⁷²) indicates that neonicotinoid levels in milkweed leaves were lower than acute mortality effect levels of Monarch caterpillars in the lab.

Pleasants and Oberhauser (2012) report that that "agricultural milkweeds are more heavily used than non-agricultural milkweeds" and a Center for Food Safety report (2015) claims that "monarchs produce almost four times more progeny per plant on milkweed in corn and soybean fields than on milkweed growing elsewhere." Taken together, these two statements imply that Monarchs are able to thrive in crop fields if sufficient milkweed is present. If that is the case,

⁷² Research work and results described in media story at: <http://www.mprnews.org/story/2015/02/10/butterfly-deaths-neonicotinoids>.

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concerns about insecticide exposure are overstated if Monarchs are able to thrive in agricultural land habitat despite potential exposure to broad-spectrum insecticides.

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References

Altizer, S.M., and J. de Roode. 2010. When butterflies get bugs: the ABCs of lepidopteran disease. *American Butterflies* 18:16–27.

Bartel, R.A., K.S. Oberhauser, J.C. De Roode, and S. M. Altizer. 2011. Monarch butterfly migration and parasite transmission in eastern North America. *Ecology* 92:342–351.

Davis, A.K., and E. Rendon-Salinas. 2010. Are female monarch butterflies declining in eastern North America? Evidence of a 30-year change in sex ratios at Mexican overwintering sites. *Biology Letters* 6:45–47. Available from <http://rsbl.royalsocietypublishing.org/cgi/doi/10.1098/rsbl.2009.0632> (accessed February 27, 2015).

Davis, A.K., 2012. Are migratory monarchs really declining in eastern North America? Examining evidence from two fall census programs. *Insect Conservation and Diversity* 5(2):101–105.

de Roode, J.C., A.J. Yates, and S. Altizer. 2008. Virulence-transmission trade-offs and population divergence in virulence in a naturally occurring butterfly parasite. *Proceedings of the National Academy of Sciences* 105(21): 7489-7494.

Flockhart, D.T., J.B. Pichancourt, D.R. Norris, and T.G. Martin. 2014. Unraveling the annual cycle in a migratory animal: Breeding-season habitat loss drives population declines of monarch butterflies. Supplementary Material in addition. *Journal of Animal Ecology*: doi: 10.1111/1365-2656.12253.

Hamilton CM, Martinuzzi S, Plantinga AJ, Radeloff VC, Lewis DJ, et al. 2013. Current and Future Land Use around a Nationwide Protected Area Network. *PLoS ONE* 8(1): e55737. doi:10.1371/journal.pone.0055737 Available from <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0055737> (Accessed February 27, 2015).

Hartzler, R.G. 2010. Reduction in common milkweed (*Asclepias syriaca*) occurrence in Iowa cropland from 1999 to 2009. *Crop Protection* 29:1542–1544. Available from <http://linkinghub.elsevier.com/retrieve/pii/S0261219410002152> (accessed February 27, 2015).

Hartzler, R.G., and D.D. Buhler. 2000. Occurrence of common milkweed (*Asclepias syriaca*) in cropland and adjacent areas. *Crop Protection* 19:363–366. Available from <http://www.sciencedirect.com/science/article/pii/S0261219400000247> (accessed February 27, 2015).

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Monarch Joint Venture. 2014. Potential risks of growing exotic milkweeds for monarchs. Available from http://monarchjointventure.org/images/uploads/documents/Oe_fact_sheet.pdf (accessed February 26, 2015).

Oberhauser, K.S. 2012. Tachinid flies and monarch butterflies: citizen scientists document parasitism patterns over broad spatial and temporal scales. *American Entomologist* 58:19-22

Oberhauser, K. and A.T. Peterson. 2003. Modeling current and future potential wintering distributions of eastern North American monarch butterflies. *Proceedings of the National Academy of Sciences* 100(24):14063-14068.

Pleasants, J.M., and K.S. Oberhauser. 2012. Milkweed loss in agricultural fields because of herbicide use: effect on the monarch butterfly population. *Insect Conservation and Diversity* 6:135–144. Available from <http://doi.wiley.com/10.1111/j.1752-4598.2012.00196.x> (accessed February 27, 2015).

Vidal, O., López-García, J. & Rendon-Salinas, E. 2014. Trends in deforestation and forest degradation after a decade of monitoring in the Monarch Butterfly Biosphere Reserve in Mexico. *Conservation Biology* 28:177–186.

Wassenaar, L.I. & Hobson, K.A. 1998. Natal origins of migratory Monarch Butterflies at wintering colonies in Mexico: new isotopic evidence. *Proceedings of the National Academy of Sciences* 95:15436–15439.