Attachment E

From:	Aubrey, Craig
To:	Gary Frazer; Ashfield, Patrice; Gina Shultz
Subject:	National pesticide consult briefing materials
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Attachments:	National Pesticide Consultation briefing for David Bernhart 10_6_17.pptx 20171006_pesticide consultation update ca.docx

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Gary, Patrice updated the ppt we shared with Greg to reflect the change you requested. She also merged a cpl of the slides on malathion and chlorpyrifos b/c they had redundancies.

We also updated the BP we shared with SOL earlier this summer on the pest litigation.

Let me know what else we can provide/change...

The briefing has been changed to Wednesday. I would like to get your thoughts on how we will proceed. Do u intend to give the briefing or should it be one of us? It will be Gina's 1st day back from vacation, so she will not have been able to prepare. Patrice is on leave, but wants to be able to attend (not currently on the invite - not sure if we're trying to not overwhelm the POLS with bureaucrats).

Thanks,

Craig

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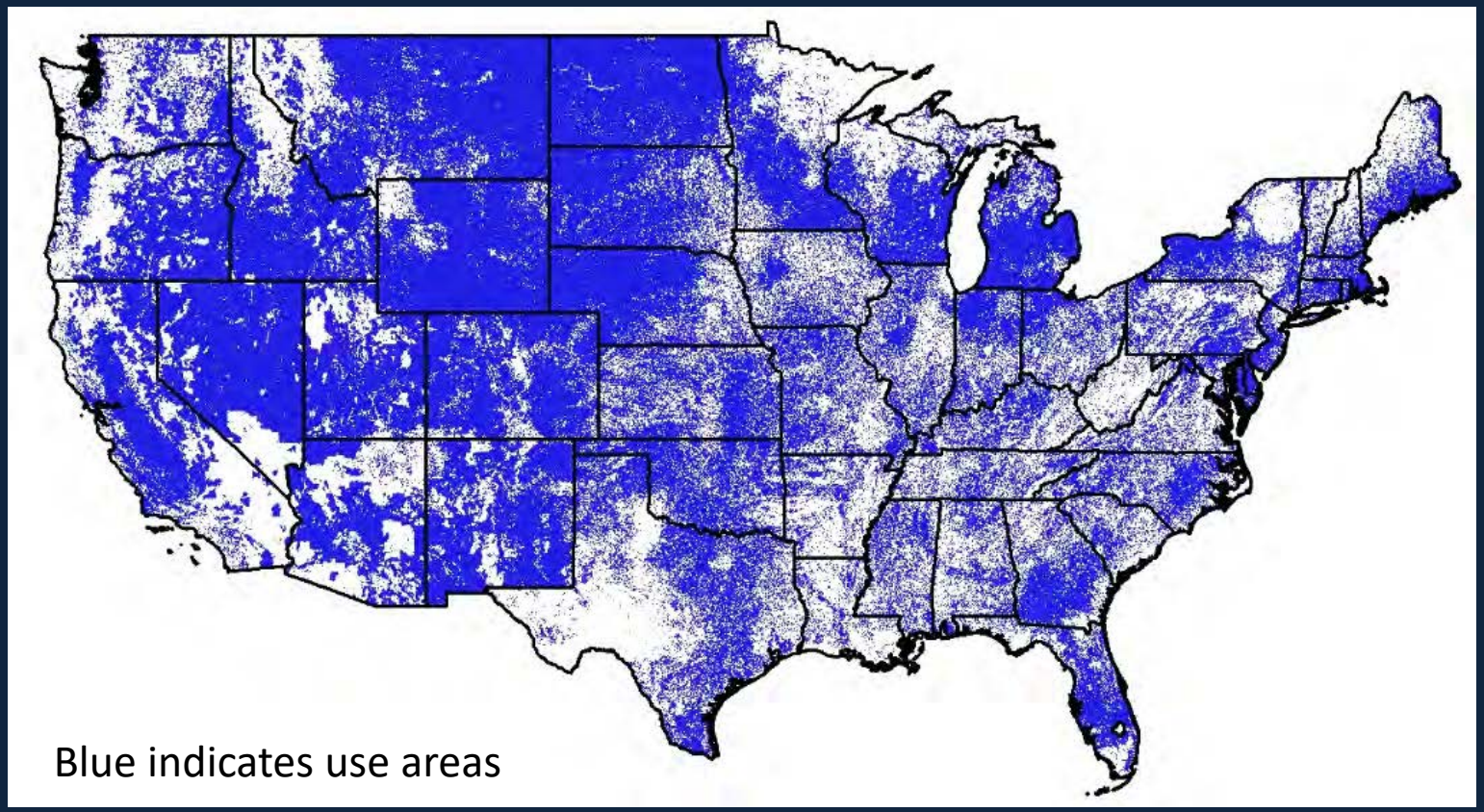
Overview of the National Pesticide Biological Opinions on Chlorpyrifos, Malathion and Diazinon

October, 2017

Chlorpyrifos, Diazinon and Malathion

- Broad spectrum insecticides (i.e., kill all insects)
- Organophosphates, work by inhibiting the enzyme acetylcholinesterase (AChE)
- All animals have this enzyme, so effects are not limited to target species
- Highly toxic across taxa
- Few limits on labels for when and where these pesticides can be used so exposure can be widespread (some restrictions for use near residential areas for human health concerns)
- These pesticides have been found far from sites of application, indicating transport via air

Diazinon Action Area - Labeled Uses



Action area for diazinon (this figure does not include the parts of the action area associated with Alaska, Hawaii, or the U.S. territories).

Biological Opinions – Our Approach

The proposed action is the registration of the labels "*the label is the law,*" and currently the labels allow for:

- multiple to numerous repeat applications seasonally or annually per use (e.g., mosquito adulticide up to biweekly throughout year)
- broad-scale use - geographic exclusions are extremely rare

For determining "may affect," we assumed that if a species' range overlapped with a pesticide use site, it would be exposed to that use (i.e., did not consider probability of use/probability of individuals encountering pesticide).

For many vulnerable species, a single exposure could be catastrophic (particularly narrow endemics). Repeated use (such as mosquito adulticide) could eliminate a segment of a population or an entire population in a given area.

Tools used for the Effects Analysis

We used two tools to estimate the magnitude of effects for species EPA had determined would be adversely affected by the re-registration of these chemicals. They combined the following information to predict the percent of the population affected:

1. toxicity data for a taxa group
2. predicted concentrations in the aquatic and terrestrial environments
3. percent overlap of pesticide use sites with the species range

MagTool - created by EPA. Used for all terrestrial species and a subset aquatic species.

R Plots - created by NMFS. Used for most aquatic species.

Island and Alaskan Species

Pesticide use site data for Alaska and the U.S. islands lack the spatial refinement for the overlap analysis we used for the lower 48, so the approach to the analysis was qualitative.

- Alaska = 5 species (1 plant, 3 birds, 1 mammal). All NLAA due to reduced overlap of use (less agriculture and adulticide) with species' ranges.
- Pacific Islands (includes Hawaii, Guam, CNMI) = 522 species

  Mammals = 4; Birds = 32; Invertebrates = 45; Plants = 440

  Assessments included label use, incorporating concerns such as many endemic species and few individuals.
- Puerto Rico (includes the Virgin Islands) = 72 species

  Birds = 7 Invertebrates = 1 Herpifauna = 11 Plants = 53

  As with the Pacific Islands, assessments based on allowable label uses and highly endemic, restricted species.

Critical Habitat Assessments

Steps for our assessment of the action to CH:

1) We reviewed the Primary Constituent Elements (PCE) or Physical and Biological Features (PBF) for every proposed and designated CH

2) We determined whether the PCE or PBF could be directly or indirectly effected due to the use of pesticides

3) If there was no direct or indirect link between the use of the pesticide and the PCE/PBF, we determined likely no destruction or adverse modification of critical habitat

4) If the PCE/PBF was directly or indirectly affected, then we looked at the percent overlap of the chemical use within the critical habitat. From there, we determined if destruction or adverse modification was likely based upon status of the habitat, percent overlap of the pesticide use, and causal link of the impact to the PCE/PBF.

Chemical Overview – Chlorpyrifos and Malathion

- Various agricultural and non-agricultural uses including: crops, orchards and vineyards, pasture, managed forests, right of ways, and developed areas (e.g. public parks, golf courses, home use).
- Also used for the following with no geographic and few temporal restrictions
  - mosquito adulticide control
  - wide area use (ant bait and foliar spray)
- Other uses: cattle ear tags, seed treatment, granular formation, bait
- Can remain in the environment for weeks to months after application, resulting in potential effects to species after application

Chlorpyrifos and Malathion - Effects

- High overlap between uses and species' ranges
- High toxicity for all animal taxa. In general, regardless of use site, exposure from chlorpyrifos and malathion to listed animal species could result in:

  - direct mortality (vertebrates and invertebrates)
  - impacts to growth, reproduction and behavior (vertebrates)
  - indirect effects to food sources

- Similarly, listed plants would experience indirect effects from loss of pollinators.
- For mosquito adulticide and wide area use applications, potential for direct and/or indirect effects to all species over 100% of range based on lack of label restrictions.

Chemical Overview – Diazinon

- Due to risk to human health and the environment, use of diazinon was severely restricted in 2004
- Remaining uses are limited to select crops, orchards, vineyards and nurseries
- Can also be used in cattle ear tags
- Can remain in the environment for weeks to months after application, resulting in potential effects to species post application

Diazinon - Effects

- Compared to the other two chemicals, less overlap between diazinon use and species' ranges
- High toxicity for all taxa. In general, regardless of use site, exposure from diazinon to listed animal species often resulted in mortality and indirect effects to food sources.
- Similarly, listed plants would experience indirect effects from loss of pollinators.
- Due to high toxicity, effects predicted from spray drift onto adjacent use sites for many terrestrial species

Draft Biological Opinion Conclusions

	Species			Critical Habitat		
	Jeopardy	No Jeopardy	NLAA	Ad Mod	No Ad Mod	NLAA
Chlorpyrifos	1399 (88%)	130 (8%)	56 (4%)	169 (23%)	562 (76%)	11 (1%)
Malathion	1284 (81%)	192 (12%)	108 (7%)	163 (22%)	546 (74%)	31 (4%)
Diazinon	175 (12%)	843 (57%)	473 (32%)	20 (3%)	267 (41%)	372 (56%)

Notes:
Does not include no effect call determinations or determinations for experimental populations.

Effects for Plants

Indirect effects to plants most significant – loss of pollinators

- Vast majority of listed plants are pollinated by insects
- Substantial overlap for chlorpyrifos and malathion uses, especially 100% overlap for adulticide and wide area use
- Many species have low resiliency, redundancy, and representation in addition to declining population trends
- These factors led to numerous jeopardy determinations for insect-pollinated plants for chlorpyrifos and malathion (less for diazinon)

Contra Costa Goldfields

Photo credit: Lori Oberhofer, NPS

Example: Birds

Cape Sable seaside sparrow - chlorpyrifos

Habitat specific (marl prairies) so able to eliminate most exposure on pesticide use sites such as orchards and vineyards and developed areas. Diet mainly aquatic and terrestrial invertebrates.

May be susceptible to exposure from contaminated invertebrates and direct dermal exposure:

- 6% mortality each year (1% from overlap with pasture, 5% from spray drift from all adjacent use sites)
- Decline in food resources (6%)
- From adulticide, there will be 20% mortality and 100% decline in food resources
- From wide area use, there will be 100% mortality and 100% decline in food resources

Draft Jeopardy

Example: Mammals

San Joaquin kit fox- Diazinon

Photo credit: USFWS

Occurs on fragmented grassland habitat surrounded by intensive agriculture. Diet consists of small mammals such as mice, kangaroo rats, squirrels and rabbits, as well as ground-nesting birds, insects, broadleaf plants, and grasses.

Susceptible to diazinon exposure from consumption of contaminated dietary items and direct dermal exposure.

- 10-13% mortality each year from consumption of contaminated arthropods, birds, grasses, leaves, and mammals
- Decline in food resources [mammals (2%), birds (16%), terrestrial invertebrates (16%)]
- Effects to growth, reproduction , behavior (16%)

Draft Jeopardy

Example: Fish

Moapa dace

If exposures to chlorpyrifos and malathion were to occur, there would be adverse effects to dace and their aquatic invertebrate prey. However, most of the species' range is on a Refuge and the Warm Springs Natural Area, both of which are managed in part for the dace. Therefore, we were able to eliminate most exposure from pesticide use sites in our analysis.

- Draft No Jeopardy for chlorpyrifos and malathion
  - Some adverse effects from drift and from exposure in the range outside of the protected areas
  - Buffers and other conservation measures related to pesticides are specified in the stewardship plan
  - Refuge manages for the dace

- Draft not likely to adversely affect for diazinon – the only overlap is cattle ear tag use (we considered the effect from ear tags discountable for the dace)

Path Forward

- We are coordinating with EPA to ensure they accept our analytical process and conclusions as scientifically sound.
- Transmit the draft biological opinions to EPA
- Work with EPA, NMFS, USDA, registrants, and grower groups to:
  1. refine our effects analyses between the draft and final biological opinions; and
  2. identify measures to avoid jeopardy and destruction or adverse modification determinations.

Questions?

Nationwide Pesticide Consultations Update ~~for HQ SOL~~
U.S. Fish and Wildlife Service
~~May 9~~October 12, 2017

~~The purpose of this briefing is to update the DOI Solicitor's Office on the litigation associated with Endangered Species Act (ESA) compliance with the registration and re-registration of pesticides under the Federal Insecticide and Fungicide Act (FIFRA).~~

Background

The U.S. Fish and Wildlife Service (FWS), Environmental Protection Agency (EPA), and National Marine Fisheries Service (NMFS) are currently in consultation under Section 7 of the Endangered Species Act regarding the effects of 5 pesticides (3 formal, 2 informal) on all listed domestic threatened and endangered species (T&E species) and their critical habitat, as well as conferring on candidate and proposed species and proposed critical habitat. We plan to consult on the nationwide effects of 4 additional chemicals. Section 7 requires that federal agencies, in consultation with the FWS and NMFS, ensure their actions do not jeopardize the continued existence of T&E species or destroy or adversely modify critical habitat. Under FIFRA, companies that produce pesticides must register and re-register those pesticides with EPA. Pesticide registration ultimately sets permissible uses for a pesticide, which must be reflected on the label. As part of the registration process, if EPA determines that the use of the pesticide may affect T&E species or critical habitat, they must undergo Section 7 consultation. If use of the pesticide is likely to adversely affect T&E species or critical habitat, FWS and/or NMFS will prepare a biological opinion (BO) to determine whether the action is likely to jeopardize the continued existence of T&E species or destroy or adversely modify critical habitat.

Litigation History

The Center for Biological Diversity (CBD) brought several lawsuits seeking to force consultation on various pesticides. EPA and FWS are under settlement agreements to consult on 9 pesticides on a specified timetable, as detailed in a subsequent section.

The pesticide suits against FWS were preceded by suits against EPA for failure to consult on pesticide registrations. The first of these suits, filed in 2002, alleged failure to consult on the effects of 66 pesticides on the California red-legged frog in *CBD v. Johnson*, No. 02-cv-1580-JSW (N.D. Cal.). CBD and EPA settled this suit in 2006 and EPA agreed to make effects determinations on the pesticides. CBD filed a second lawsuit, *CBD v. EPA*, No. 3:07-cv-02794-JCS (N.D. Cal.), in which it sought to compel EPA to complete effects determinations and initiate consultation on the effects of 75 pesticides on 11 listed species in the San Francisco Bay area and to enjoin EPA from permitting the use of the pesticides in the area until consultation was complete. In May 2010, EPA and CBD reached a settlement in *CBD v. EPA* in which EPA agreed it would complete effects determinations, under a set schedule, on the 75 pesticides and initiate consultation on pesticides for which "may affect" determinations were made. By July 2013, EPA had completed all but 16 of the 75 effects determinations. In 2015, the parties