

**CHAPTER 15**  
**DESIGNATED CRITICAL HABITAT EFFECTS ANALYSIS**  
**1,3-DICHLOROPROPENE AND METOLACHLOR**

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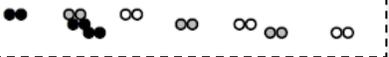
## 15 EFFECTS OF THE ACTION ANALYSIS – DESIGNATED CRITICAL HABITAT

### 15.1 Introduction

See Chapters 4 (Approach to the Assessment), 11 (Effects Analysis Introduction), and 12 (Effects of the Action to ESA-listed Species) for descriptions of the methods and information used in this section. In this section we integrate the exposure and response information to evaluate the likelihood of adverse effects from stressors of the action to designated critical habitat. The information is organized by species. Within each section the information is presented in the following order:

1. R- Plots figures: Demonstrate the relationship between geographically-specific potential exposure distributions and assessment measures (response distributions). These figures also convey the prevalence of registered use sites within the species designated critical habitats by providing potential acreage of allowed uses within the species range and what the percent overlap of that use relative to the size of the species range. See Table 1 below and the assessment framework chapter for more information on the interpretation of risk plots. Additional information on the effects information displayed in risk plots is provided in the beginning of each of the effects analysis sections.

**Table 1. General risk plot components**

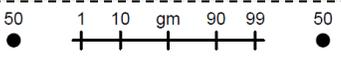
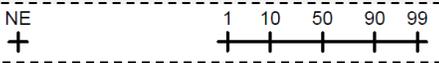
<p><b>Title</b> Species name is given, with ESU or DPS abbreviated, for example:  <div style="border: 1px dashed black; padding: 2px; display: inline-block;"><b>Chinook salmon PS (Range)</b></div>  “(Range)” indicates that the species range, rather than designated critical habitat (Habitat), was used to calculate overlap percentages.</p>
<p><b>Effect Concentrations</b> See Tables below for 1,3-D, chloropicrin, and metolachlor specific information.</p>
<p><b>Exposure Concentrations</b> The overlap use category is listed, followed by the acres within species range and percent of species range composed of those acres, for example:  <div style="border: 1px dashed black; padding: 2px; display: inline-block;">Vegetables and Mint (40807, 0.6 %)</div> </p> <p>Some use categories such as “field crops” and “fruit and nuts” show multiple overlap percentages. This reflects that more than one crop is lumped into this use category. See chapter 11 for a crosswalk of authorized use sites to overlap category. Circles represent estimated exposure concentrations for three modeled scenarios: bin 0 (open circles); bin 2 (gray circles); bin 7 (black circles). Note that there are three rows of estimated exposure concentrations for each overlap category; each row represents a different time-weighted average: 1-day (bottom row); 4-day (middle row); and 21-day (top row).</p>

2. Likelihood of exposure tables: Tables summarizing assessment of likelihood of exposure to each pesticide use that can occur within the species designated critical habitat.
3. Risk Hypotheses Tables: tables for each risk hypothesis summarizing risk and confidence associated with each registered use that occurs within the species designated critical habitat.
4. Final effects analysis table and narrative summary: Each sections concludes with a table indicating which risk hypotheses were supported and associated narrative summary of overall risk of the action to the designated critical habitat.

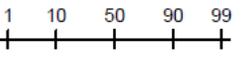
### 15.2 Products Containing 1,3-Dichloropropene Effects Analysis

The response endpoints displayed in the 1,3-Dichloropropene and chloropicrin risk plots that follow are provided in Table 2 & Table 3. See the introduction to the effects analysis chapter for more information regarding the available relevant toxicological data for these compounds.

**Table 2. Effects endpoints displayed in risk plots for 1,3-Dichloropropene**

<p><b>Endpoint: Prey Abundance</b></p> <p><b>Invertebrates</b></p> <p>Prey Abundance </p> <p>Test species: Water flea; Water flea            Duration: 48-hr            Toxicity value (ppb): EC50 (50) = 90; 6200; geometric mean* (gm) = 747; slope = 4.5 (assumed)            Citation/MRID: 40098001; 00117044</p>	
<p><b>Fish</b></p> <p>Direct Mortality </p> <p>Test species: Rainbow Trout            Duration: 96-hr            Toxicity value (ppb): LC50 (50) = 2780; slope = 4.5 (assumed); None Expected (NE) = 244            Citation/MRID: 49382003</p>	
<p><b>Endpoint: Aquatic Plants</b></p> <p>Aquatic Plants (EC25) </p> <p>Test species: Freshwater diatom (nv); Duckweed (v); Green algae (a)            Duration: 5-day; 7-day; 96-hr            Toxicity value (ppb): EC25= 30; 1310; 7850            Citation/MRID: 44843909; 44843914; 44940314</p>	
<p><i>*The calculation and reference to the geometric mean of the two different LC50s was determined appropriate as the studies were otherwise comparable in regards to species tested, exposure duration, and overall data quality.</i></p>	

**Table 3. Effects endpoints displayed in risk plots for chloropicrin**

<p><b>Endpoint: Prey Abundance</b></p> <p><b>Invertebrates</b></p> <p>Prey Abundance </p> <p>Test species: Water flea            Duration: Acute</p>	
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Toxicity value (ppb): EC50 (50) = 120; slope = 4.5 (assumed) Citation/MRID: 48442401	
<b>Fish</b>	
<b>Direct Mortality</b>	
Test species: Rainbow Trout Duration: Acute Toxicity value (ppb): LC50 (50) = 11; slope = 4.5 (assumed); None Expected (NE) = 1 Citation/MRID: 48442405	
<b>Endpoint: Aquatic Plants</b>	
<b>Aquatic Plants (EC25)</b>	
Test species: Duckweed (v); Green Algae (a) Duration: not specified Toxicity value (ppb): EC25 = 4.6; 85 Citation/MRID: 48442801; 49559701	

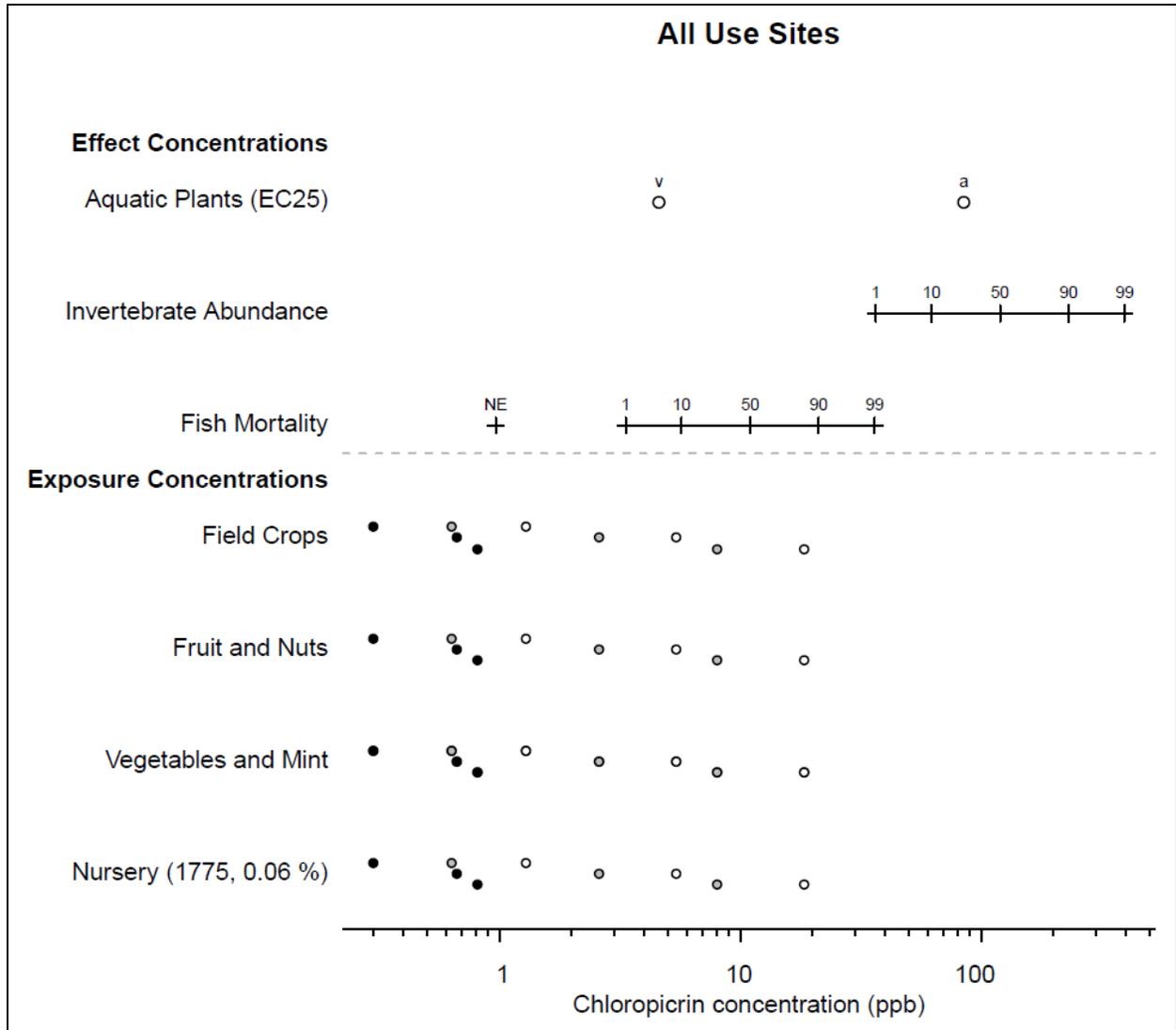
### Characterizing the “effect of exposure” for chloropicrin.

The effects analysis for 1,3-Dichloropropene, like metolachlor, is an assessment of the effects of the action which includes (1) approved product labels containing the primary active ingredient, (2) degradates and metabolites of that active ingredient, (3) formulations, including other ingredients within formulations, (4) adjuvants, and (5) tank mixtures. Some aspects of the effects of the action are considered quantitatively (e.g. prey availability response to the primary active ingredient), whereas others are considered more qualitatively (e.g. recommended tank mixtures). Here we present a semi-quantitative analysis of chloropicrin, a common co-active ingredient in 1,3-Dichloropropene formulated products. A semi-quantitative assessment was determined to be appropriate for chloropicrin given the frequency at which it is co-formulated with 1,3-Dichloropropene as well as its relatively greater toxicity to freshwater fish.

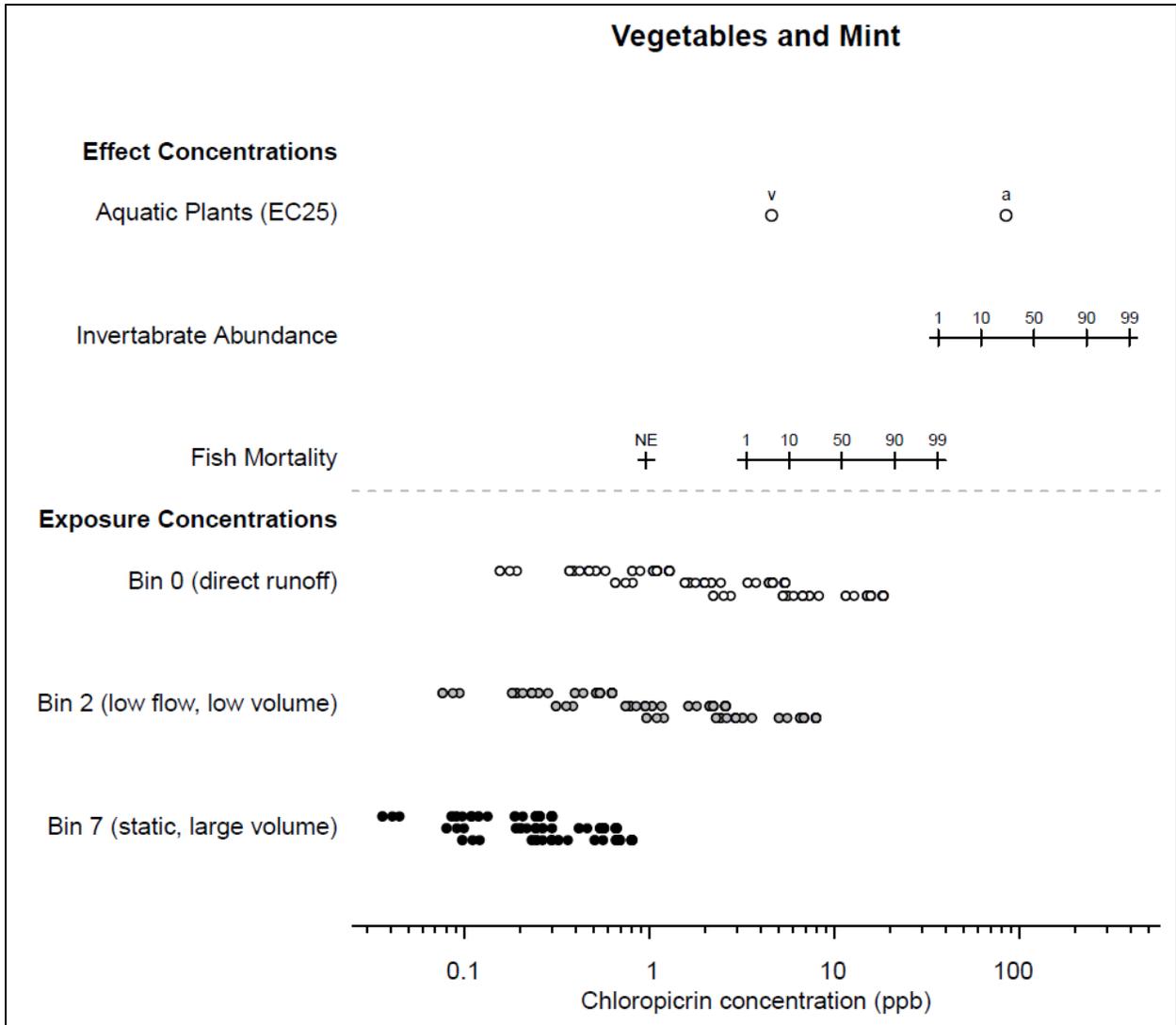
The effect of chloropicrin was considered in evaluating the prey availability, vegetative cover, and water quality risk hypotheses, as these are primary biological features for each of the designated critical habitats considered. For prey abundance, the effect of exposure was “none expected” for invertebrate prey and “medium” for juvenile fish (depicted as “Direct Mortality” on risk plots). This follows from the criteria described in the assessment framework chapter i.e. the overlap between EECs and effects endpoints (Figure 1). In assessing the effects to vegetative cover, the effect of exposure was characterized as medium for riparian vegetation and low for aquatic vegetation (depicted as “Aquatic Plants” on risk plots). The effects of exposure to terrestrial (riparian) vegetation is not depicted in risk plots for 1,3-D or chloropicrin, instead a more qualitative narrative approach was taken. See chapter 11 and the vegetative cover risk hypothesis tables for more information. The effect of exposure of chloropicrin on water quality was characterized as medium due to the toxicity to freshwater fish. Our confidence associated with the risk characterizations was decreased with the added consideration of chloropicrin. This

was primarily due to uncertainties in the exposure estimates and response data. Note also that not all 1,3-D/chloropicrin formulated products contain chloropicrin at levels indicating the potential for adverse effects. For example, Figure 2 shows EECs associated with the maximum label rates of all formulated products authorized for use on vegetables and mint. In this example, about half of the label's maximum rates do not result in bin 2 estimates which exceed the 1% effects level for fish mortality.

The designated critical habitat-specific assessments that follow include effect of exposure characterizations for chloropicrin within the risk hypothesis tables. Chloropicrin risk plots are not provided separately for each ESU or DPS habitat assessment.

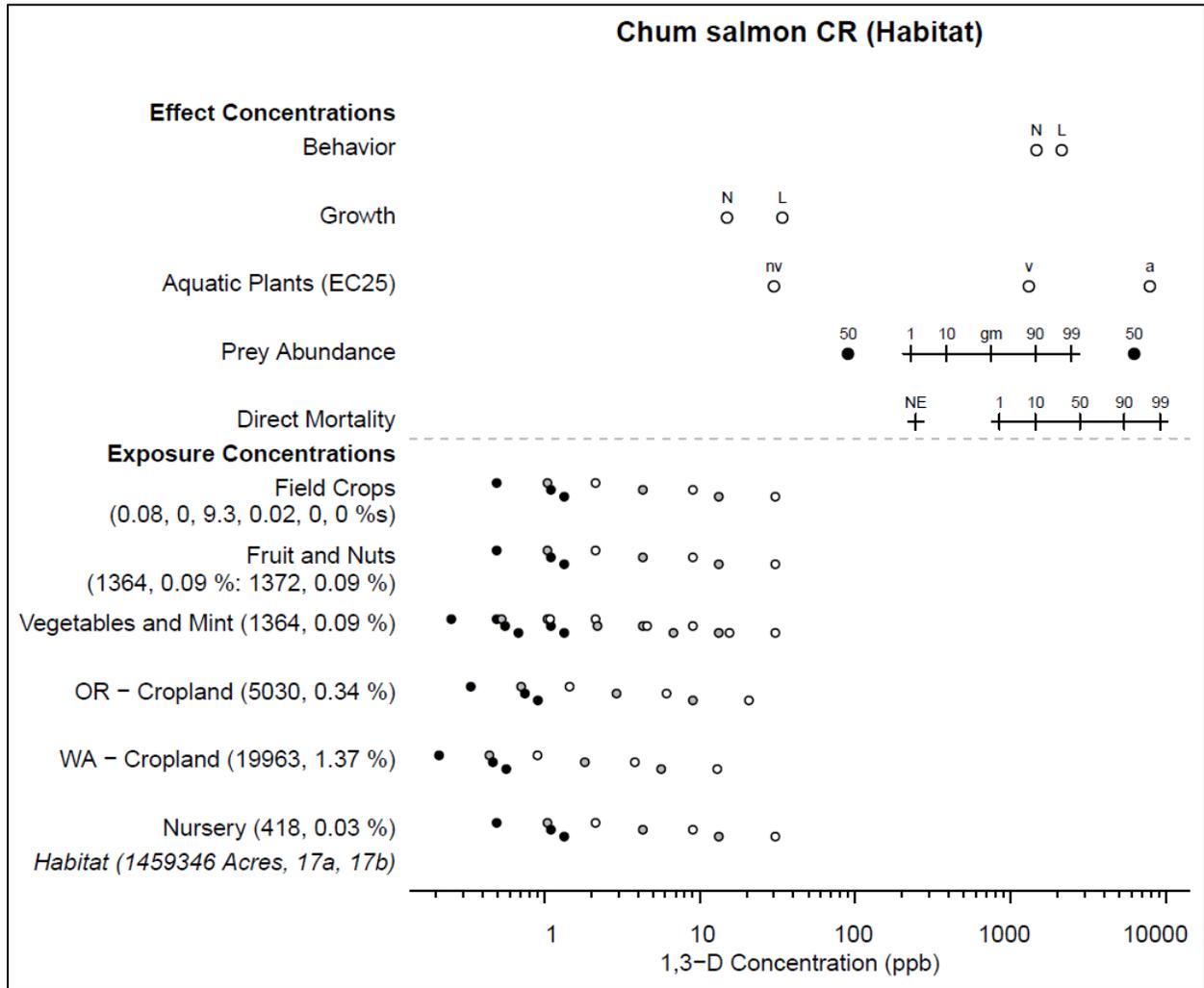


**Figure 1. Chloropicrin estimated concentrations associated with the maximum label rates within each of the FIFRA section 3 uses authorized for 1,3-D/chloropicrin formulated products.**



**Figure 2. Chloropicrin estimated concentrations associated with the maximum rates in labels authorized for use on vegetables and mint.**

**15.2.1 Columbia River Chum Salmon (*O. keta*) Designated Critical Habitat; Products Containing 1,3-D**



**Figure 3. Effects analysis Risk-plot; chum salmon, Columbia River ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 4. Likelihood of exposure determination for chum salmon, Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
WA - Cropland	2	no	yes	NA	Medium
OR - Cropland	1	no	yes	yes	High
Mint	1	no	no	yes	Medium
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	yes	Medium
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	yes	Medium

**Table 5. Prey risk hypothesis; chum salmon, Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
WA - Cropland	1.37	None Expected	None Expected	Medium
OR – Cropland	0.34	None Expected	None Expected	High
Mint	0.09	None Expected	None Expected	Medium
Nursery	0.03	None Expected	None Expected	Low
Fruit and Nuts	0.09, 0.09	None Expected	None Expected	Medium
Field Crops	0.08, 0, 9.3, 0.02, 0, 0	None Expected	None Expected	Medium
Vegetable Crops	0.09	None Expected	None Expected	Medium

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>Medium</b>	

**Table 6. Vegetative cover risk hypothesis; chum salmon, Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
WA - Cropland	1.37	Low	Low	Medium
OR – Cropland	0.34	Low	Low	High
Mint	0.09	Low	Low	Medium
Nursery	0.03	Low	Low	Low
Fruit and Nuts	0.09, 0.09	Low	Low	Medium
Field Crops	0.08, 0, 9.3, 0.02, 0, 0	Low	Low	Medium
Vegetable Crops	0.09	Low	Low	Medium
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 7. Water quality risk hypothesis; chum salmon, Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Columbia River chum ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 8. Effects analysis summary table; chum salmon, Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	Medium	Low	No

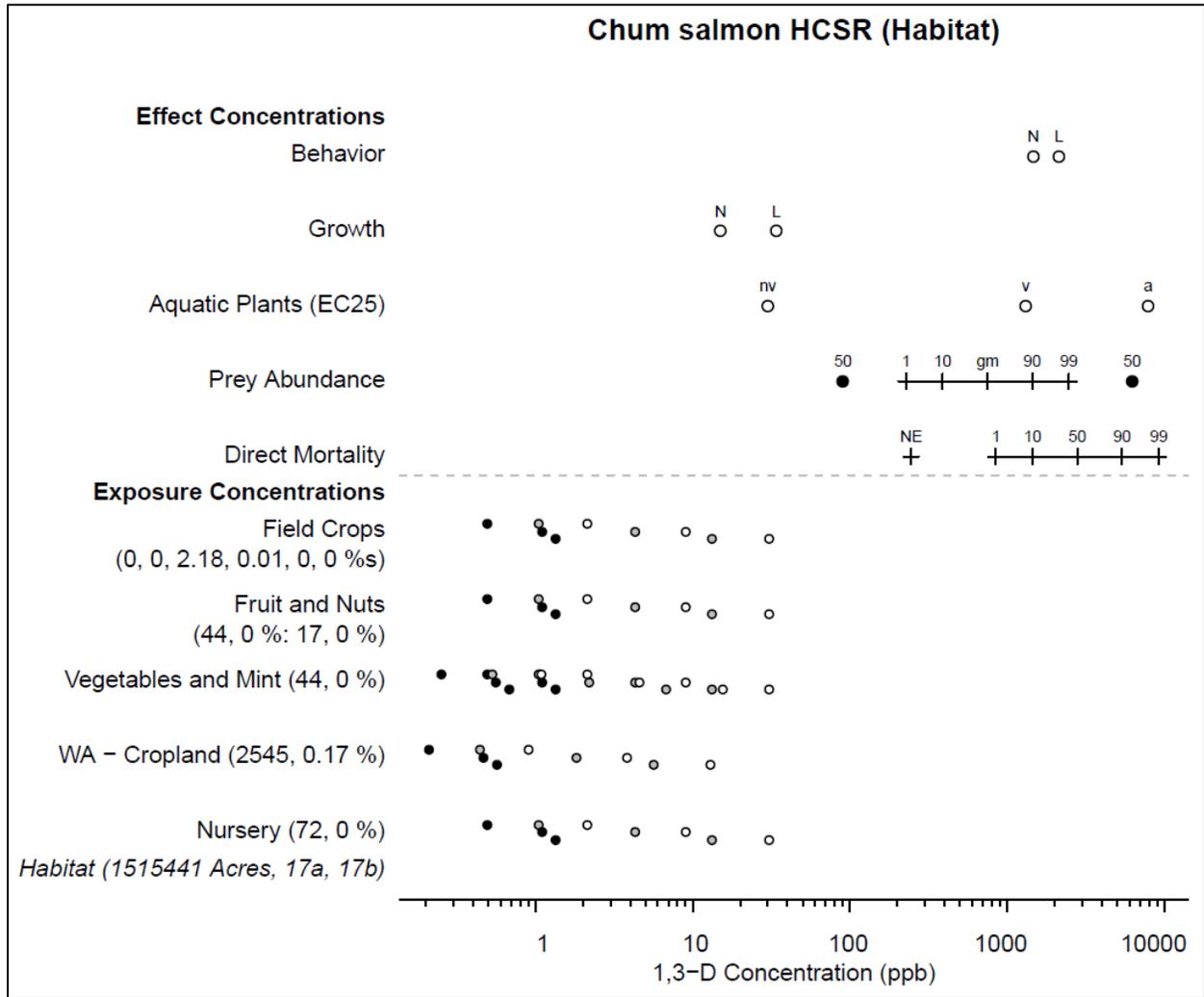
vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Columbia River chum salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Columbia River chum ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.2 Hood Canal summer-run Chum (O. keta) Designated Critical Habitat; Products Containing 1,3-D**



**Figure 4. Effects analysis Risk-plot; chum salmon, Hood Canal summer-run ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 9. Likelihood of exposure determination for chum salmon, Hood Canal summer-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
WA - Cropland	1	no	yes	no	Low
Mint	1	no	no	no	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	no	Low
Field Crops	2	no	no	NA	Low
Vegetable Crops	1	no	no	no	Low

**Table 10. Prey risk hypothesis; chum salmon, Hood Canal summer-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
WA - Cropland	0.17	None Expected	None Expected	Low
Mint	0	None Expected	None Expected	Low
Nursery	0	None Expected	None Expected	Low
Fruit and Nuts	0, 0	None Expected	None Expected	Low
Field Crops	0, 0, 2.18, 0.01, 0, 0	None Expected	None Expected	Low
Vegetable Crops	0	None Expected	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>Medium</b>	

**Table 11. Vegetative cover risk hypothesis; chum salmon, Hood Canal summer-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
WA - Cropland	0.17	Low	Low	Low
Mint	0	Low	Low	Low
Nursery	0	Low	Low	Low
Fruit and Nuts	0, 0	Low	Low	Low
Field Crops	0, 0, 2.18, 0.01, 0, 0	Low	Low	Low
Vegetable Crops	0	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 12. Water quality risk hypothesis; chum salmon, Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

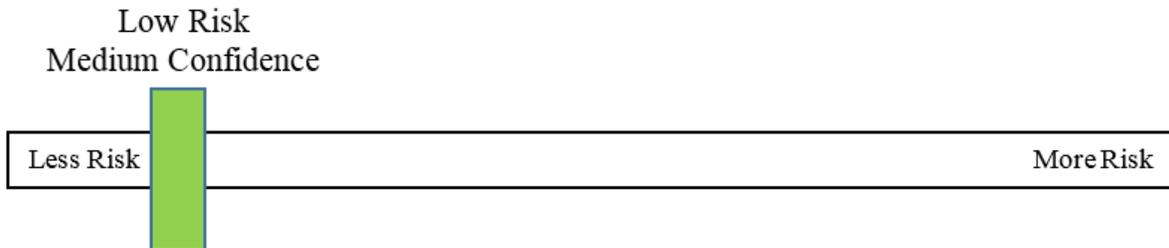
<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Hood Canal summer-run chum ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 13. Effects analysis summary table; chum salmon, Hood Canal summer-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

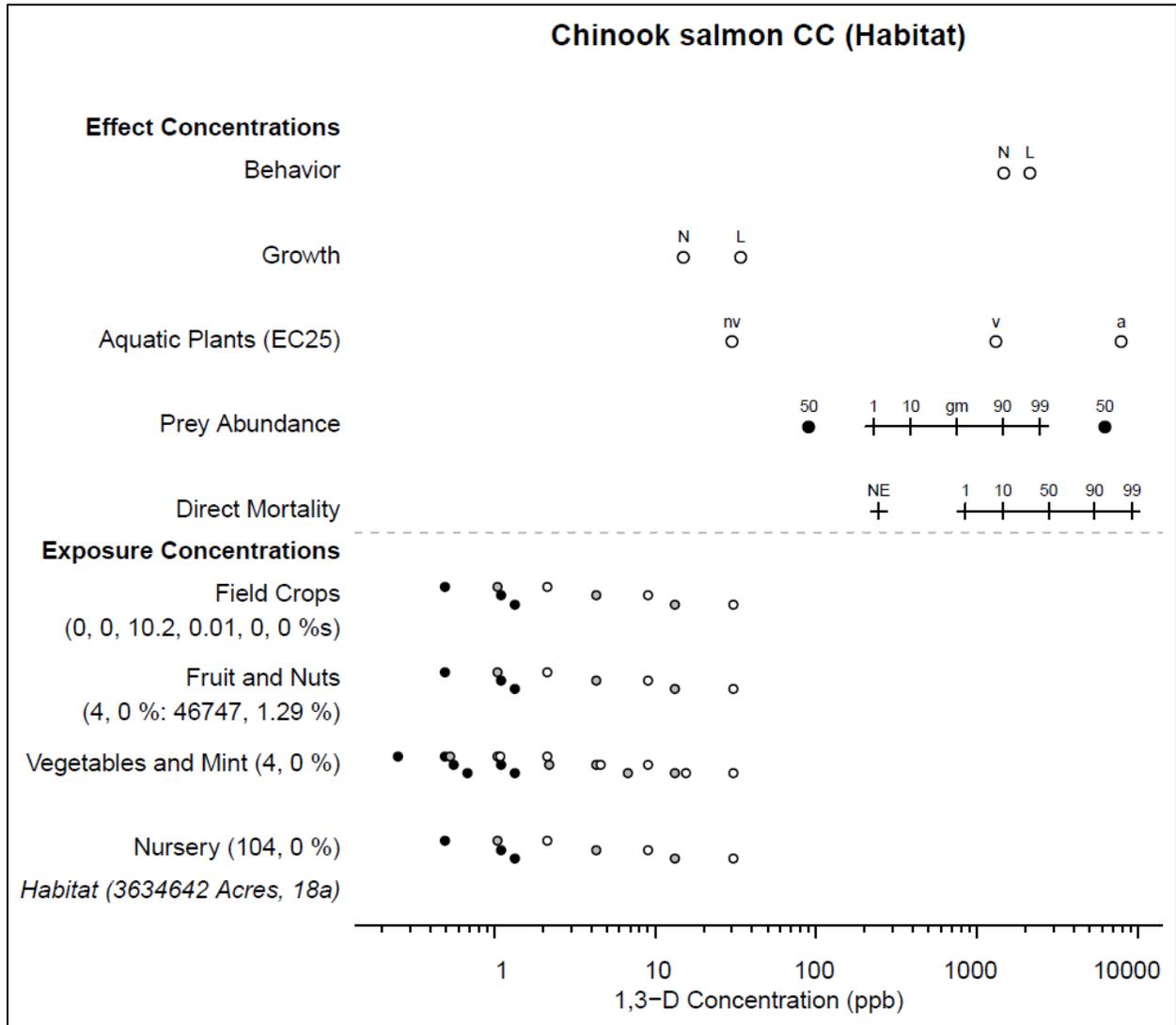
Designated Critical Habitat; Risk Hypotheses	R-plot Derived		Risk Hypothesis Supported? Yes/No
	Risk	Confidence	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of Hood Canal summer-run chum salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Hood Canal summer-run chum ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as low, and the confidence in that risk as medium. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is medium due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.3 California Coastal Chinook (*O. tshawytscha*) Designated Critical Habitat; Products Containing 1,3-D**



**Figure 5. Effects analysis Risk-plot; Chinook salmon, California Coastal ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 14. Likelihood of exposure determination for Chinook salmon, California Coastal ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
Mint	1	no	no	no	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	2	no	no	NA	Low
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	no	Low

**Table 15. Prey risk hypothesis; Chinook salmon, California Coastal ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
Mint	0	None Expected	None Expected	Low
Nursery	0	None Expected	None Expected	Low
Fruit and Nuts	0, 1.29	None Expected	None Expected	Low
Field Crops	0, 0, 10.2, 0.01, 0, 0	None Expected	None Expected	Medium
Vegetable Crops	0	None Expected	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 16. Vegetative cover risk hypothesis; Chinook salmon, California Coastal ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
Mint	0	Low	Low	Low
Nursery	0	Low	Low	Low
Fruit and Nuts	0, 1.29	Low	Low	Low
Field Crops	0, 0, 10.2, 0.01, 0, 0	Low	Low	Medium
Vegetable Crops	0	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 17. Water quality risk hypothesis; Chinook salmon, California Coastal ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>
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<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the California Coastal Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

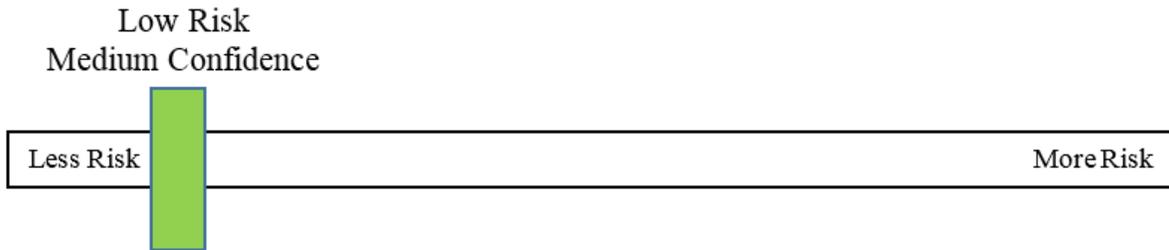
**Table 18. Effects analysis summary table; Chinook salmon, California Coastal ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

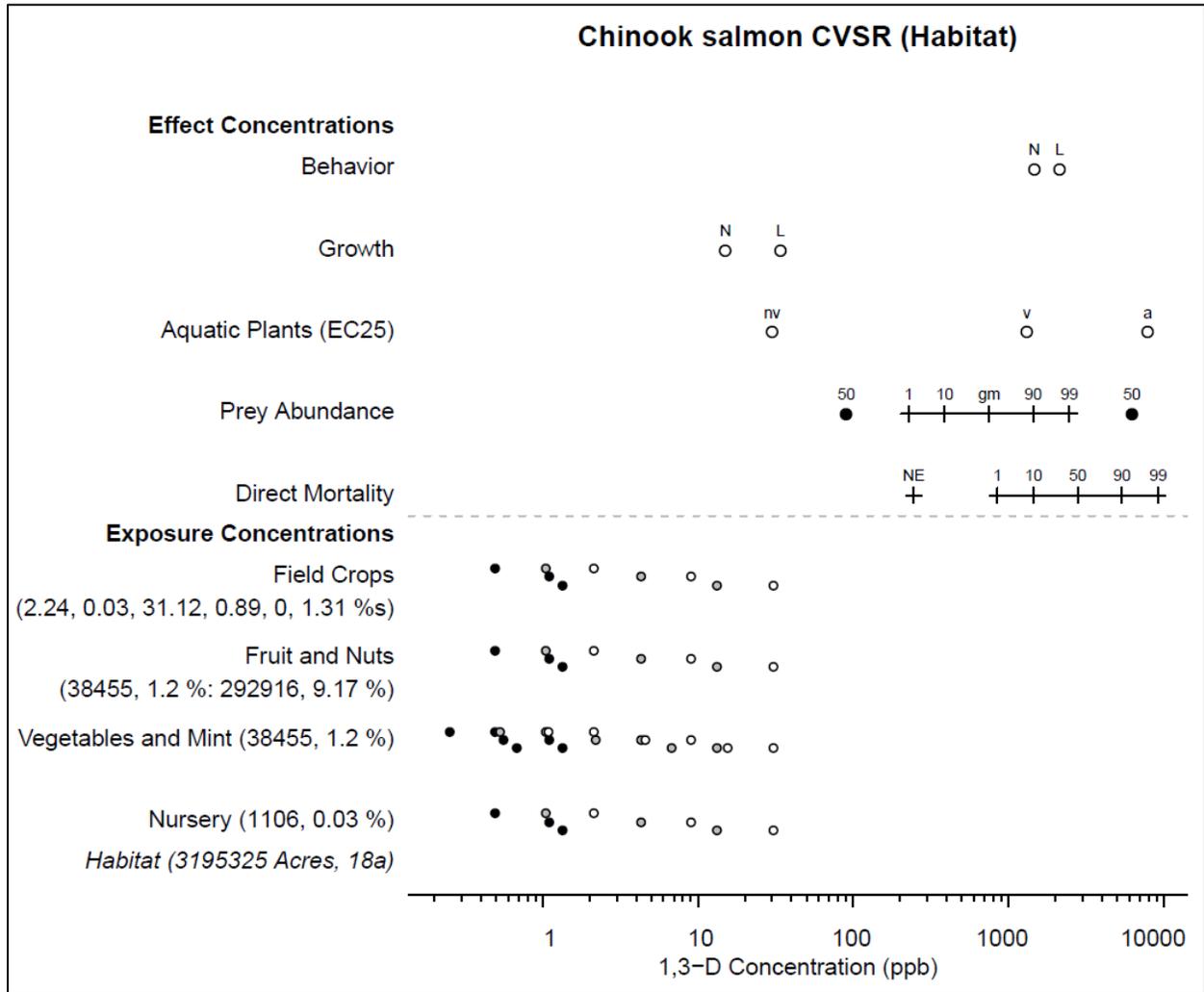
**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of California Coastal Chinook salmon designated critical habitat. The anticipated levels

of products containing 1,3-D within the designated critical habitat of the California Coastal Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as low, and the confidence in that risk as medium. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is medium due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.4 Central Valley Spring-run Chinook Designated Critical Habitat; Products Containing 1,3-D**



**Figure 6. Effects analysis Risk-plot; Chinook salmon, California Central Valley Spring-run ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 19. Likelihood of exposure determination for Chinook salmon, California Central Valley Spring-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
Mint	2	no	no	NA	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	3	no	no	NA	Medium
Field Crops	3	no	no	NA	Medium
Vegetable Crops	2	no	no	NA	Low

**Table 20. Prey risk hypothesis; Chinook salmon, California Central Valley Spring-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
Mint	1.2	None Expected	None Expected	Low
Nursery	0.03	None Expected	None Expected	Low
Fruit and Nuts	1.2, 9.17	None Expected	None Expected	Medium
Field Crops	2.24, 0.03, 31.12, 0.89, 0, 1.31	None Expected	None Expected	Medium
Vegetable Crops	1.2	None Expected	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			

Low	Medium	
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**Table 21. Vegetative cover risk hypothesis; Chinook salmon, California Central Valley Spring-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
Mint	1.2	Low	Low	Low
Nursery	0.03	Low	Low	Low
Fruit and Nuts	1.2, 9.17	Low	Low	Medium
Field Crops	2.24, 0.03, 31.12, 0.89, 0, 1.31	Low	Low	Medium
Vegetable Crops	1.2	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
<b>Medium</b>	<b>Low</b>			

**Table 22. Water quality risk hypothesis; Chinook salmon, California Central Valley Spring-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the California Central Valley Spring-run Chinook chum ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 23. Effects analysis summary table; Chinook salmon, California Central Valley Spring-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

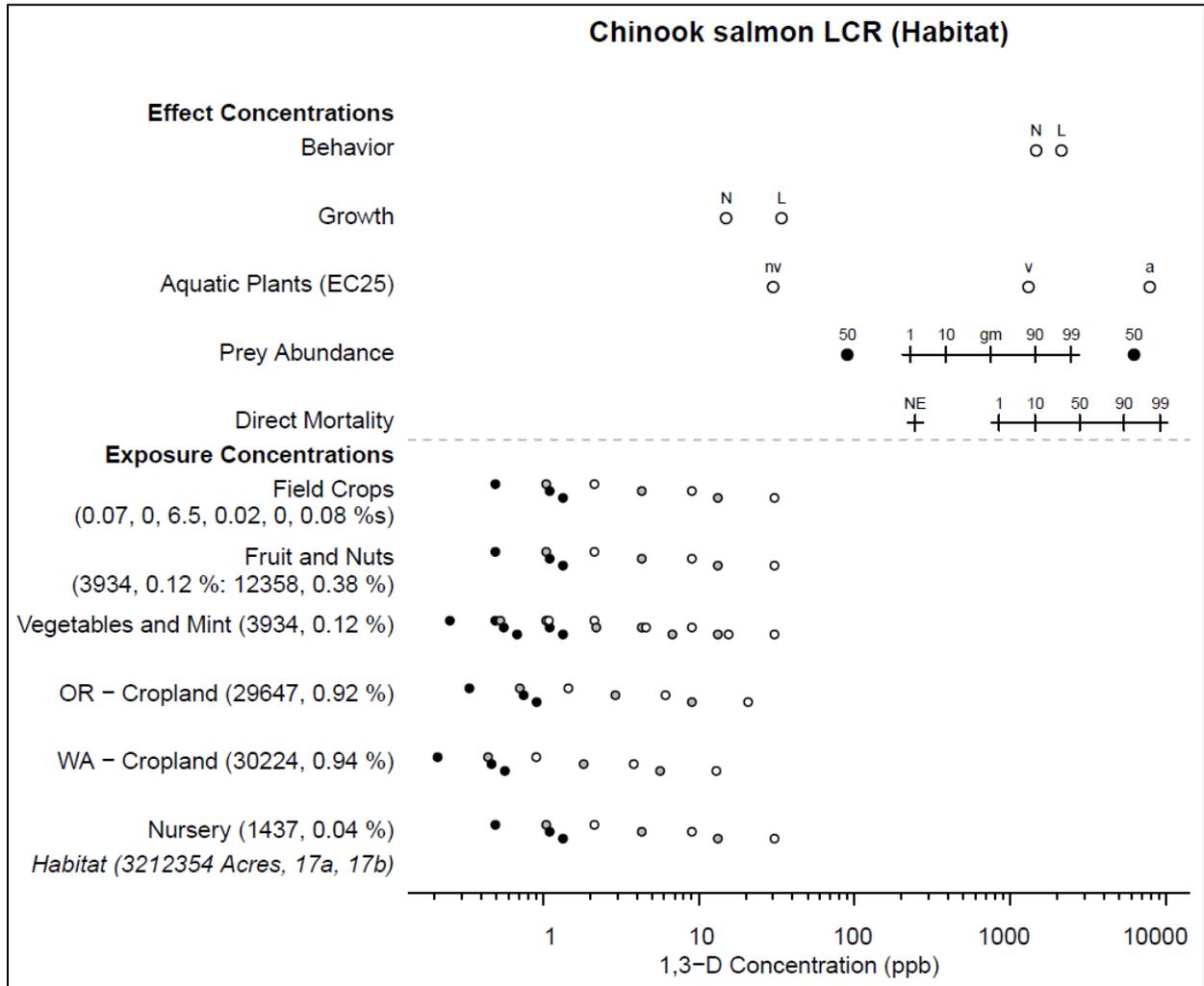
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Medium	Low	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of California Central Valley Spring-run Chinook salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the California Central Valley Spring-run Chinook salmon ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.5 Lower Columbia River Chinook Designated Critical Habitat; Products Containing 1,3-D**



**Figure 7. Effects analysis Risk-plot; Chinook salmon, Lower Columbia River ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 24. Likelihood of exposure determination for Chinook salmon, Lower Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
OR - Cropland	1	no	yes	yes	High
WA - Cropland	1	no	yes	yes	High
Mint	1	no	no	no	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	yes	Medium
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	yes	Medium

**Table 25. Prey risk hypothesis; Chinook salmon, Lower Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR - Cropland	0.92	None Expected	None Expected	High
WA - Cropland	0.94	None Expected	None Expected	High
Mint	0.12	None Expected	None Expected	Low
Nursery	0.03	None Expected	None Expected	Low
Fruit and Nuts	0.12, 0.38	None Expected	None Expected	Medium
Field Crops	0.07, 0, 6.5, 0.02, 0, 0.08	None Expected	None Expected	Medium
Vegetable Crops	0.12	None Expected	None Expected	Medium

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>Medium</b>	

**Table 26. Vegetative cover risk hypothesis; Chinook salmon, Lower Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
OR - Cropland	0.92	Low	Low	High
WA - Cropland	0.94	Low	Low	High
Mint	0.12	Low	Low	Low
Nursery	0.03	Low	Low	Low
Fruit and Nuts	0.12, 0.38	Low	Low	Medium
Field Crops	0.07, 0, 6.5, 0.02, 0, 0.08	Low	Low	Medium
Vegetable Crops	0.12	Low	Low	Medium
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 27. Water quality risk hypothesis; Chinook salmon, Lower Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Lower Columbia River Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 28. Effects analysis summary table; Chinook salmon, Lower Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	Medium	Low	No

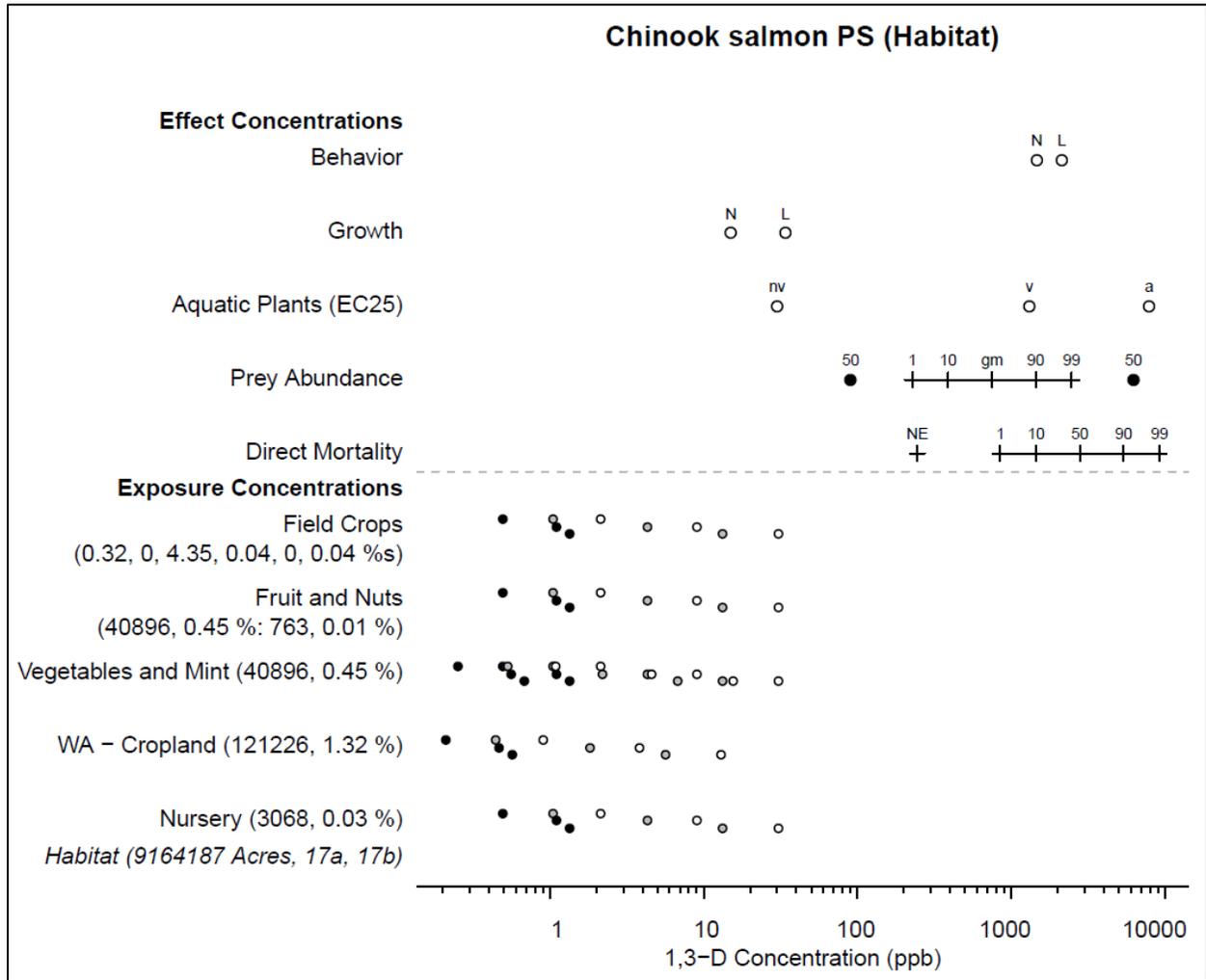
vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Lower Columbia River Chinook salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Lower Columbia River Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.6 Puget Sound Chinook Designated Critical Habitat; Products Containing 1,3-D**



**Figure 8. Effects analysis Risk-plot; Chinook salmon, Puget Sound ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 29. Likelihood of exposure determination for Chinook salmon, Puget Sound ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
WA - Cropland	2	no	yes	NA	Medium
Mint	1	no	no	yes	Medium
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	yes	Medium
Field Crops	2	no	no	NA	Low
Vegetable Crops	1	no	no	yes	Medium

**Table 30. Prey risk hypothesis; Chinook salmon, Puget Sound ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
WA - Cropland	1.32	None Expected	None Expected	Medium
Mint	0.45	None Expected	None Expected	Medium
Nursery	0.03	None Expected	None Expected	Low
Fruit and Nuts	0.45, 0.01	None Expected	None Expected	Medium
Field Crops	0.32, 0, 4.35, 0.04, 0, 0.04	None Expected	None Expected	Low
Vegetable Crops	0.45	None Expected	None Expected	Medium
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			

Low	Medium	
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**Table 31. Vegetative cover risk hypothesis; Chinook salmon, Puget Sound ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
WA - Cropland	1.32	Low	Low	Medium
Mint	0.45	Low	Low	Medium
Nursery	0.03	Low	Low	Low
Fruit and Nuts	0.45, 0.01	Low	Low	Medium
Field Crops	0.32, 0, 4.35, 0.04, 0, 0.04	Low	Low	Low
Vegetable Crops	0.45	Low	Low	Medium
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
<b>Medium</b>	<b>Low</b>			

**Table 32. Water quality risk hypothesis; Chinook salmon, Puget Sound ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Puget Sound Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 33. Effects analysis summary table; Chinook salmon, Puget Sound ESU designated critical habitat and products containing 1,3-Dichloropropene**

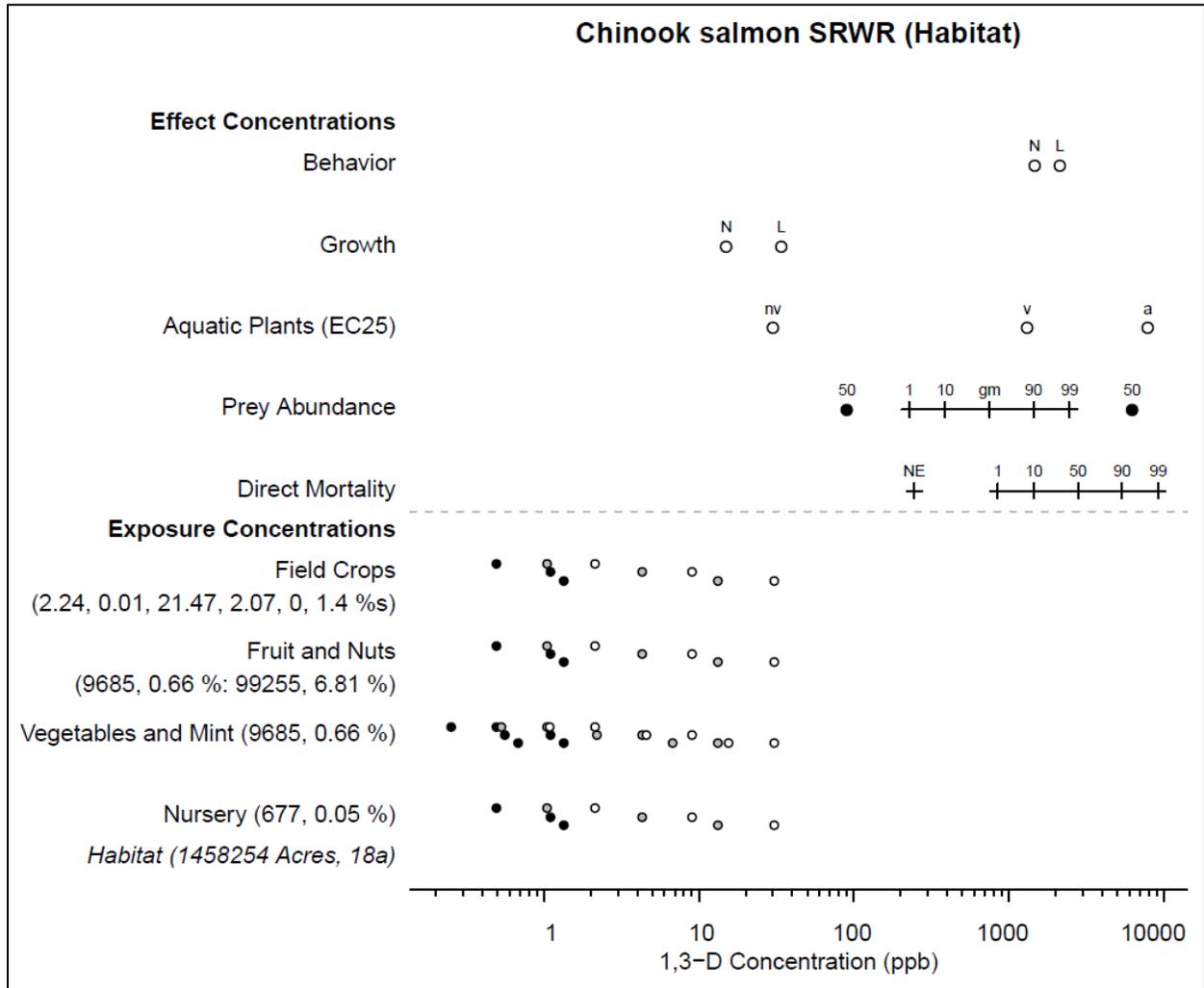
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Medium	Low	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of Puget Sound Chinook salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Puget Sound Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.7 Sacramento River Winter-run Chinook Salmon Designated Critical Habitat;  
Products Containing 1,3-D**



**Figure 9. Effects analysis Risk-plot; Chinook salmon, Sacramento River Winter-run ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 34. Likelihood of exposure determination for Chinook salmon, Sacramento River Winter-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
Mint	1	no	no	no	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	3	no	no	NA	Medium
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	no	Low

**Table 35. Prey risk hypothesis; Chinook salmon, Sacramento River Winter-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
Mint	0.66	None Expected	None Expected	Low
Nursery	0.05	None Expected	None Expected	Low
Fruit and Nuts	0.66, 6.81	None Expected	None Expected	Medium
Field Crops	2.24, 0.01, 21.47, 2.07, 0, 1.4	None Expected	None Expected	Medium
Vegetable Crops	0.66	None Expected	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 36. Vegetative cover risk hypothesis; Chinook salmon, Sacramento River Winter-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
Mint	0.66	Low	Low	Low
Nursery	0.05	Low	Low	Low
Fruit and Nuts	0.66, 6.81	Low	Low	Medium
Field Crops	2.24, 0.01, 21.47, 2.07, 0, 1.4	Low	Low	Medium
Vegetable Crops	0.66	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
<b>Medium</b>	<b>Low</b>			

**Table 37. Water quality risk hypothesis; Chinook salmon, Sacramento River Winter-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>
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<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Sacramento River Winter-run Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 38. Effects analysis summary table; Chinook salmon, Sacramento River Winter-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Medium	Low	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

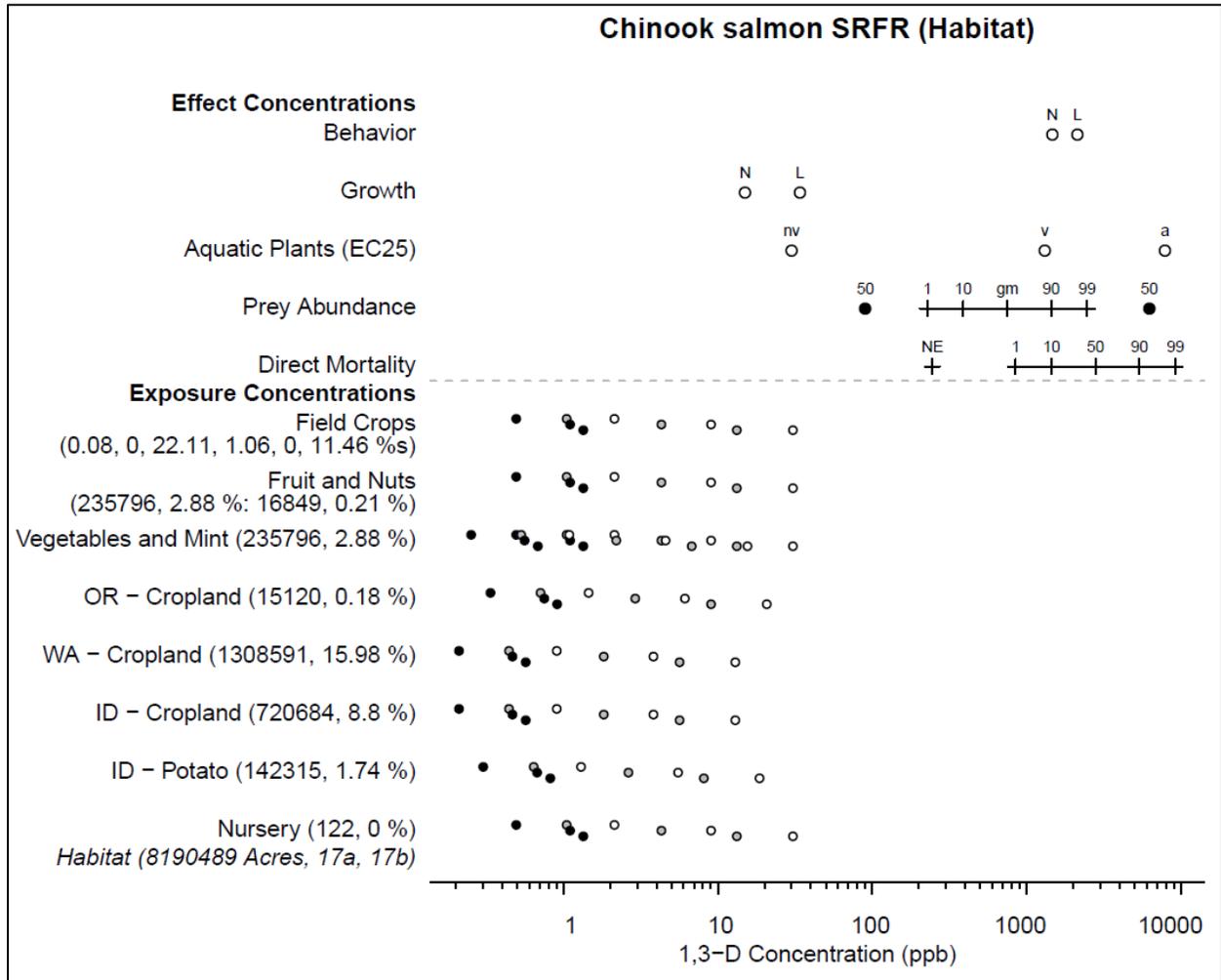
**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Sacramento River Winter-run Chinook salmon designated critical habitat. The

anticipated levels of products containing 1,3-D within the designated critical habitat of the Sacramento River Winter-run Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.8 Snake River Fall-run Chinook Salmon Designated Critical Habitat; Products Containing 1,3-D**



**Figure 10. Effects analysis Risk-plot; Chinook salmon, Snake River Fall-run ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 39. Likelihood of exposure determination for Chinook salmon, Snake River Fall-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
OR Cropland	1	no	yes	no	Low
WA Cropland	3	no	yes	NA	High
ID Cropland	3	no	yes	NA	High
ID Potato	2	no	yes	NA	Medium
Mint	2	no	no	NA	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	2	no	no	NA	Low
Field Crops	3	no	no	NA	Medium
Vegetable Crops	2	no	no	NA	Low

**Table 40. Prey risk hypothesis; Chinook salmon, Snake River Fall-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR – Cropland	0.18	None Expected	None Expected	Low
WA – Cropland	15.98	None Expected	None Expected	High
ID – Cropland	8.8	None Expected	None Expected	High
ID – Potato	1.74	None Expected	None Expected	Medium
Mint	2.88	None Expected	None Expected	Low
Nursery	0	None Expected	None Expected	Low

Fruit and Nuts	2.88, 0.21	None Expected	None Expected	Low
Field Crops	0.08, 0, 22.11, 1.06, 0, 11.46	None Expected	None Expected	Medium
Vegetable Crops	2.88	None Expected	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 41. Vegetative cover risk hypothesis; Chinook salmon, Snake River Fall-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
OR – Cropland	0.18	Low	Low	Low
WA – Cropland	15.98	Low	Low	High
ID – Cropland	8.8	Low	Low	High
ID – Potato	1.74	Low	Low	Medium
Mint	2.88	Low	Low	Low
Nursery	0	Low	Low	Low
Fruit and Nuts	2.88, 0.21	Low	Low	Low
Field Crops	0.08, 0, 22.11, 1.06, 0, 11.46	Low	Low	Medium
Vegetable Crops	2.88	Low	Low	Low
<b>Terrestrial Plants</b>				

<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 42. Water quality risk hypothesis; Chinook salmon, Snake River Fall-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<p><b>Endpoint: Water Quality</b></p>		
<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Snake River Fall-run Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 43. Effects analysis summary table; Chinook salmon, Snake River Fall-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

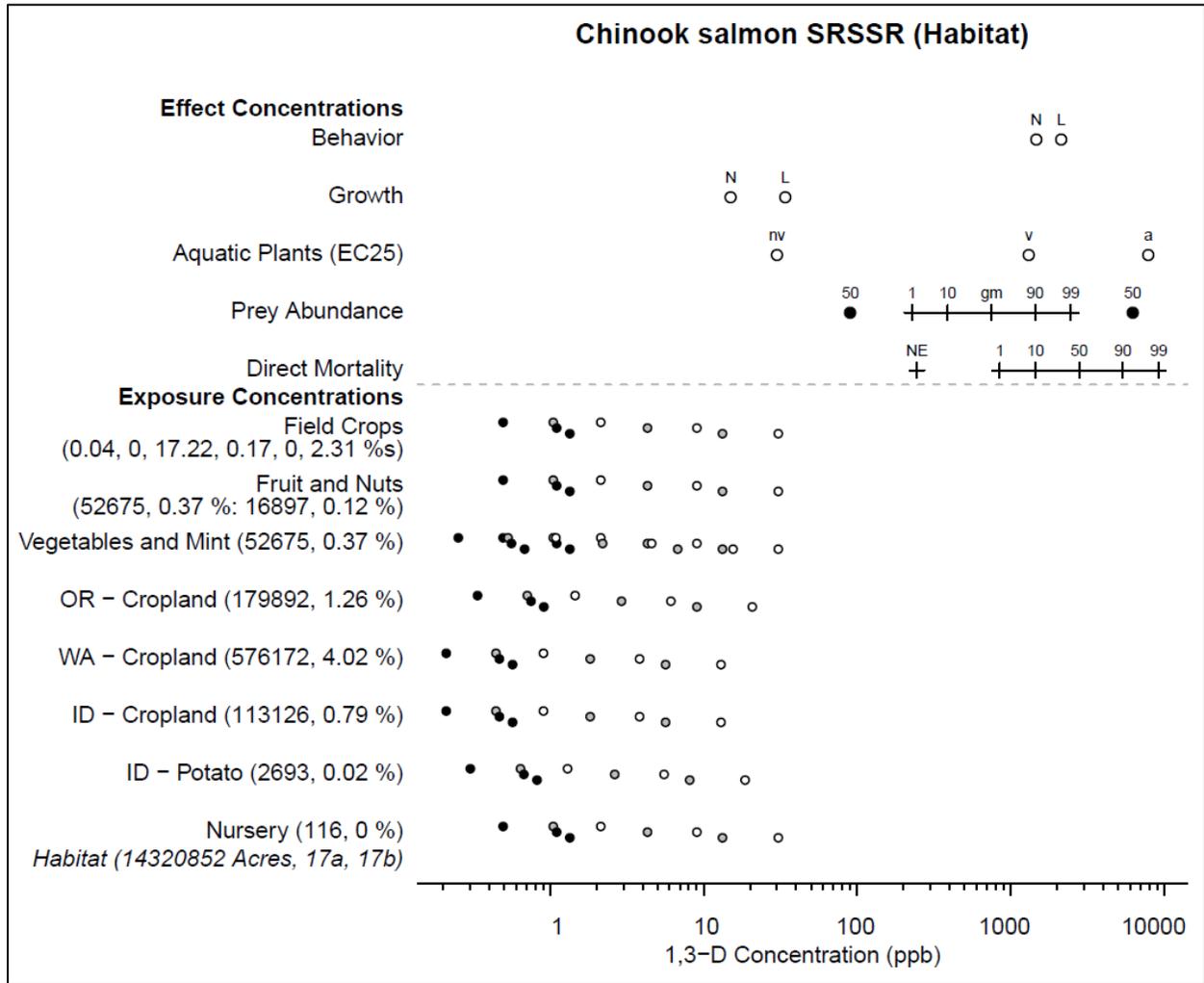
Designated Critical Habitat; Risk Hypotheses	R-plot Derived		Risk Hypothesis Supported?
	Risk	Confidence	Yes/No
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Medium	Low	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Snake River Fall-run Chinook salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Snake River Fall-run Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.9 Snake River Spring/Summer-run Chinook Salmon Designated Critical Habitat; Products Containing 1,3-D**



**Figure 11. Effects analysis Risk-plot; Chinook salmon, Snake River Spring/Summer-run ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 44. Likelihood of exposure determination for Chinook salmon, Snake River Spring/Summer-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
OR Cropland	2	no	yes	NA	Medium
WA Cropland	2	no	yes	NA	Medium
ID Cropland	1	no	yes	yes	High
ID Potato	1	no	yes	no	Low
Mint	1	no	no	yes	Medium
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	yes	Medium
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	yes	Medium

**Table 45. Prey risk hypothesis; Chinook salmon, Snake River Spring/Summer-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Prey</b>				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR – Cropland	1.26	None Expected	None Expected	Medium
WA – Cropland	4.02	None Expected	None Expected	Medium
ID – Cropland	0.79	None Expected	None Expected	High
ID – Potato	0.02	None Expected	None Expected	Low
Mint	0.37	None Expected	None Expected	Medium

Nursery	0	None Expected	None Expected	Low
Fruit and Nuts	0.37, 0.12	None Expected	None Expected	Medium
Field Crops	0.04, 0, 17.22, 0.17, 0, 2.31	None Expected	None Expected	Medium
Vegetable Crops	0.37	None Expected	None Expected	Medium
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 46. Vegetative cover risk hypothesis; Chinook salmon, Snake River Spring/Summer-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
OR – Cropland	1.26	Low	Low	Medium
WA – Cropland	4.02	Low	Low	Medium
ID – Cropland	0.79	Low	Low	High
ID – Potato	0.02	Low	Low	Low
Mint	0.37	Low	Low	Medium
Nursery	0	Low	Low	Low
Fruit and Nuts	0.37, 0.12	Low	Low	Medium
Field Crops	0.04, 0, 17.22, 0.17, 0, 2.31	Low	Low	Medium
Vegetable Crops	0.37	Low	Low	Medium
<b>Terrestrial Plants</b>				

<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 47. Water quality risk hypothesis; Chinook salmon, Snake River Spring/Summer-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<p><b>Endpoint: Water Quality</b></p>		
<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Snake River Spring/Summer-run Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 48. Effects analysis summary table; Chinook salmon, Snake River Spring/Summer-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

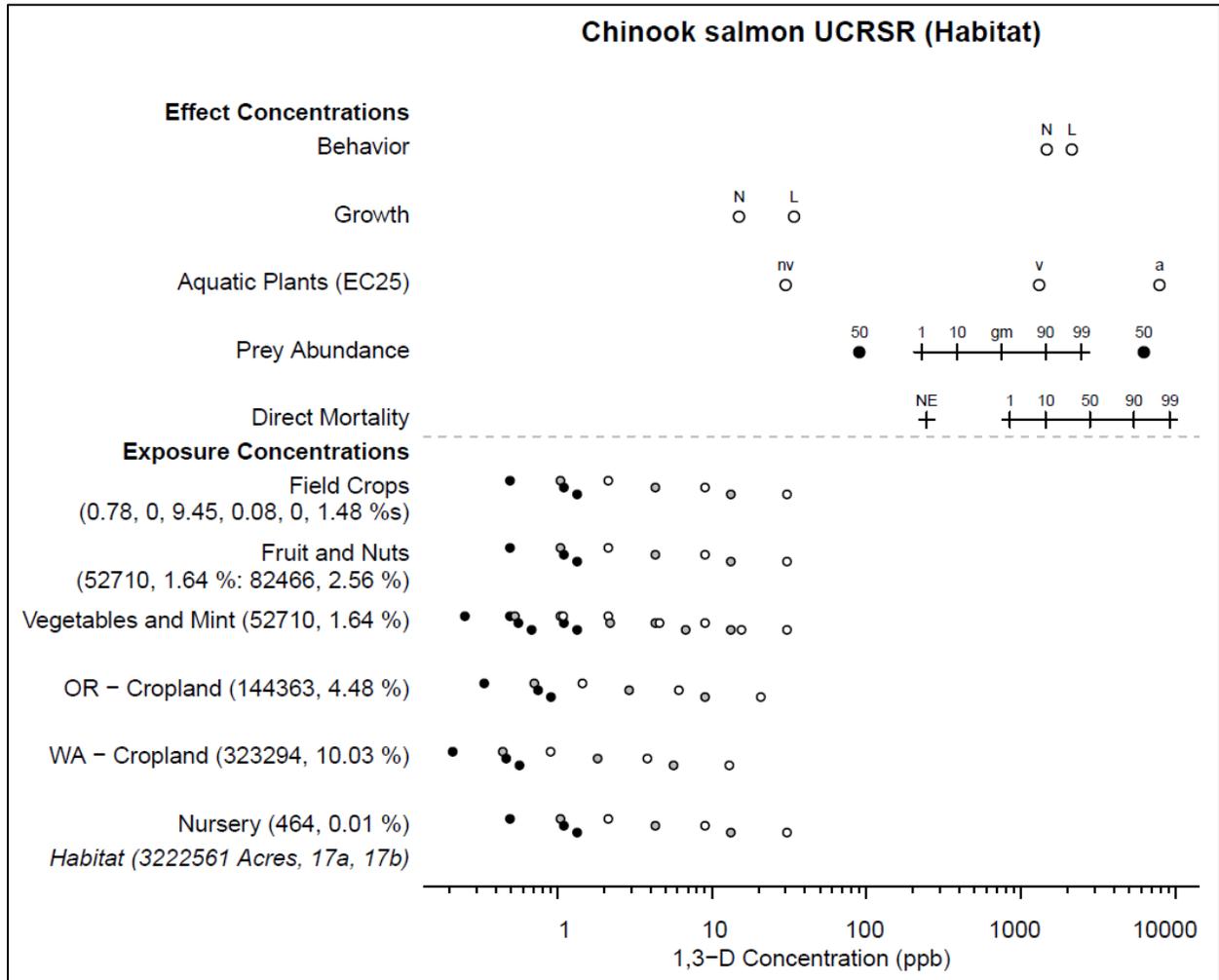
Designated Critical Habitat; Risk Hypotheses	R-plot Derived		Risk Hypothesis Supported?
	Risk	Confidence	Yes/No
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Medium	Low	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of Snake River Spring/Summer-run Chinook salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Snake River Spring/Summer-run Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.10 Upper Columbia River Spring-run Chinook Salmon Designated Critical Habitat; Products Containing 1,3-D**



**Figure 12. Effects analysis Risk-plot; Chinook salmon, Upper Columbia River Spring-run ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 49. Likelihood of exposure determination for Chinook salmon, Upper Columbia River Spring-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
OR Cropland	2	no	yes	NA	Medium
WA Cropland	3	no	yes	NA	High
Mint	2	no	no	NA	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	2	no	no	NA	Low
Field Crops	3	no	no	NA	Medium
Vegetable Crops	2	no	no	NA	Low

**Table 50. Prey risk hypothesis; Chinook salmon, Upper Columbia River Spring-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR – Cropland	4.48	None Expected	None Expected	Medium
WA – Cropland	10.03	None Expected	None Expected	High
Mint	1.64	None Expected	None Expected	Low
Nursery	0.01	None Expected	None Expected	Low
Fruit and Nuts	1.64, 2.56	None Expected	None Expected	Low
Field Crops	0.78, 0, 9.45, 0.08, 0, 1.48	None Expected	None Expected	Medium

Vegetable Crops	1.64	None Expected	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 51. Vegetative cover risk hypothesis; Chinook salmon, Upper Columbia River Spring-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
<b>Aquatic Plants</b>				
OR – Cropland	4.48	Low	Low	Medium
WA – Cropland	10.03	Low	Low	High
Mint	1.64	Low	Low	Low
Nursery	0.01	Low	Low	Low
Fruit and Nuts	1.64, 2.56	Low	Low	Low
Field Crops	0.78, 0, 9.45, 0.08, 0, 1.48	Low	Low	Medium
Vegetable Crops	1.64	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 52. Water quality risk hypothesis; Chinook salmon, Upper Columbia River Spring-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Upper Columbia River Spring-run Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 53. Effects analysis summary table; Chinook salmon, Upper Columbia River Spring-run ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	Medium	Low	No

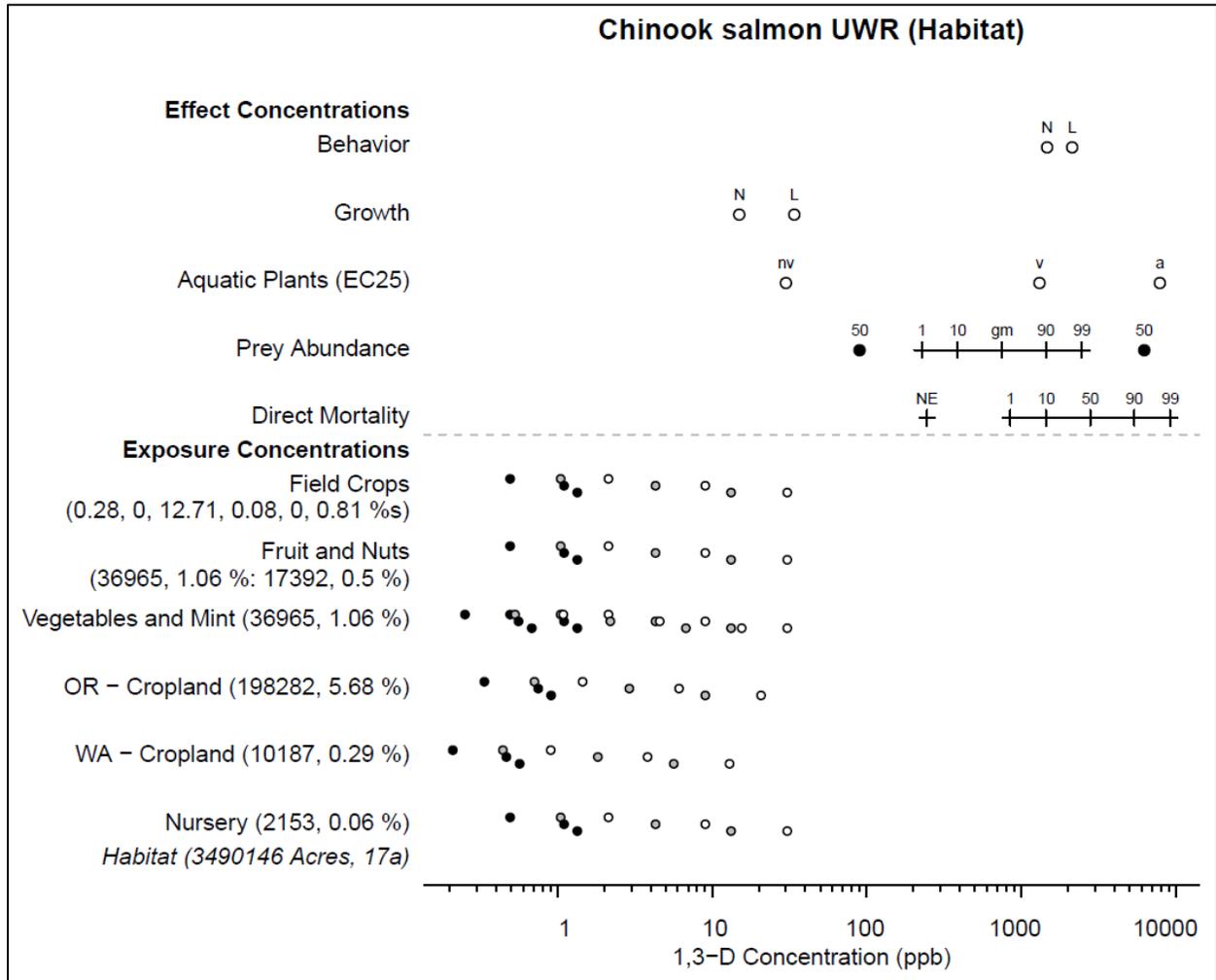
vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Upper Columbia River Spring-run Chinook salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Upper Columbia River Spring-run Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.11 Upper Willamette River Chinook Salmon Designated Critical Habitat; Products Containing 1,3-D**



**Figure 13. Effects analysis Risk-plot; Chinook salmon, Upper Willamette River ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 54. Likelihood of exposure determination for Chinook salmon, Upper Willamette River ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
OR Cropland	3	no	yes	NA	High
WA Cropland	1	no	yes	no	Low
Mint	2	no	no	NA	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	2	no	no	NA	Low
Field Crops	3	no	no	NA	Medium
Vegetable Crops	2	no	no	NA	Low

**Table 55. Prey risk hypothesis; Chinook salmon, Upper Willamette River ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR – Cropland	5.68	None Expected	None Expected	High
WA – Cropland	0.29	None Expected	None Expected	Low
Mint	1.06	None Expected	None Expected	Low
Nursery	0.06	None Expected	None Expected	Low
Fruit and Nuts	1.06, 0.5	None Expected	None Expected	Low
Field Crops	0.28, 0, 12.71, 0.08, 0, 0.81	None Expected	None Expected	Medium
Vegetable Crops	1.06	None Expected	None Expected	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>Medium</b>	

**Table 56. Vegetative cover risk hypothesis; Chinook salmon, Upper Willamette River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
OR – Cropland	5.68	Low	Low	High
WA – Cropland	0.29	Low	Low	Low
Mint	1.06	Low	Low	Low
Nursery	0.06	Low	Low	Low
Fruit and Nuts	1.06, 0.5	Low	Low	Low
Field Crops	0.28, 0, 12.71, 0.08, 0, 0.81	Low	Low	Medium
Vegetable Crops	1.06	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 57. Water quality risk hypothesis; Chinook salmon, Upper Willamette River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Upper Willamette River Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 58. Effects analysis summary table; Chinook salmon, Upper Willamette River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	Medium	Low	No

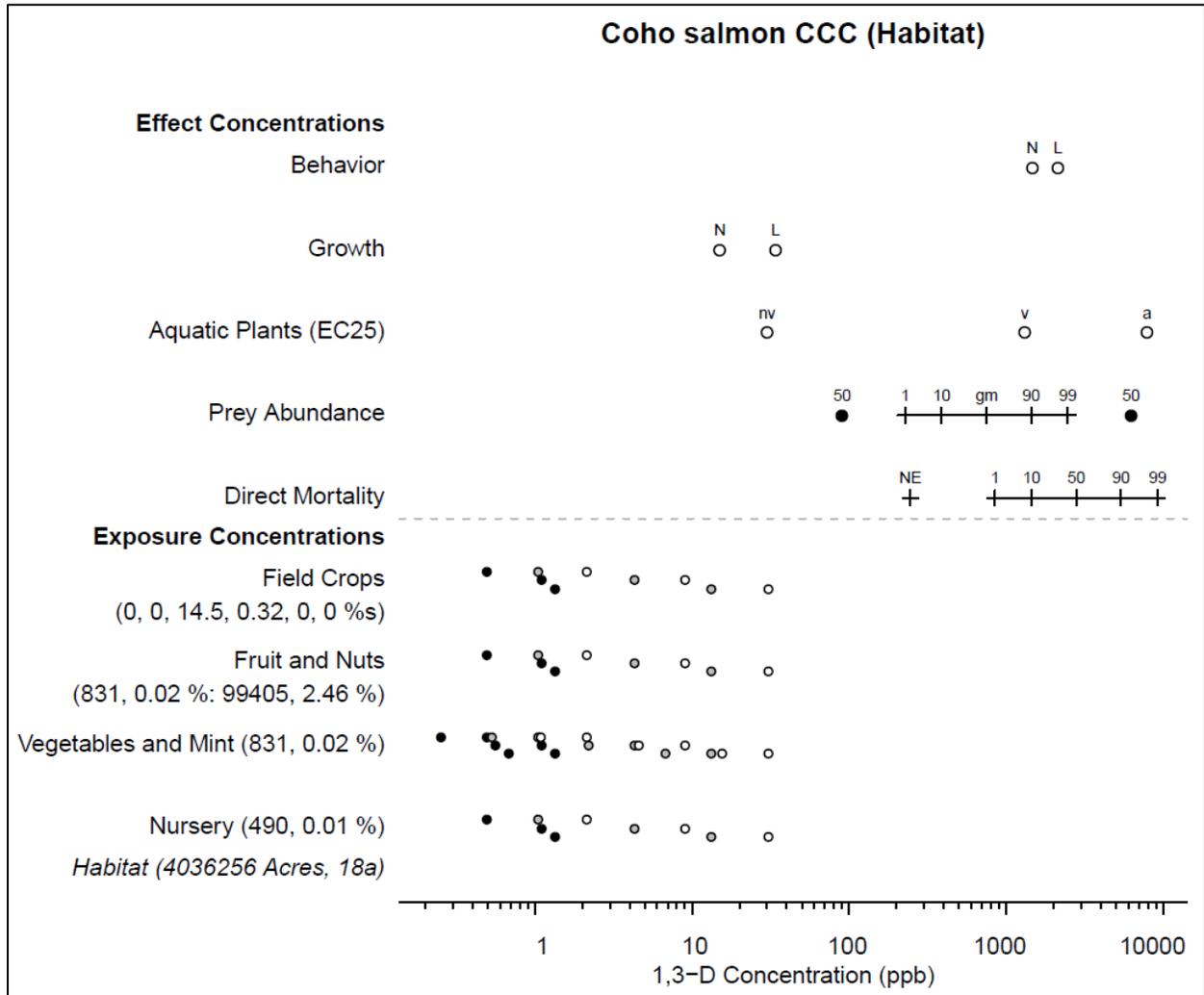
vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Upper Willamette River Chinook salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Upper Willamette River Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.12 Central California Coast Coho Salmon Designated Critical Habitat; Products Containing 1,3-D**



**Figure 14. Effects analysis Risk-plot; Coho salmon, Central California Coast ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 59. Likelihood of exposure determination for Coho salmon, Central California Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
Mint	1	no	no	no	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	2	no	no	NA	Low
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	no	Low

**Table 60. Prey risk hypothesis; Coho salmon, Central California Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
Mint	0.02	None Expected	None Expected	Low
Nursery	0.01	None Expected	None Expected	Low
Fruit and Nuts	0.02, 2.46	None Expected	None Expected	Low
Field Crops	0, 0, 14.5, 0.32, 0, 0	None Expected	None Expected	Medium
Vegetable Crops	1.02	None Expected	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 61. Vegetative cover risk hypothesis; Coho salmon, Central California Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
Mint	0.02	Low	Low	Low
Nursery	0.01	Low	Low	Low
Fruit and Nuts	0.02, 2.46	Low	Low	Low
Field Crops	0, 0, 14.5, 0.32, 0, 0	Low	Low	Medium
Vegetable Crops	1.02	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 62. Water quality risk hypothesis; Coho salmon, Central California Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>
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<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Central California Coast coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

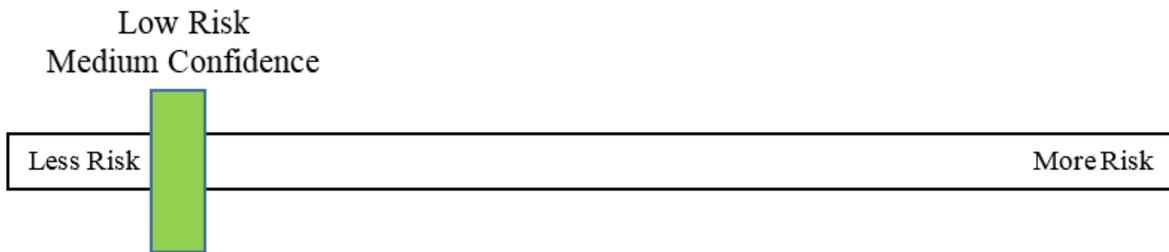
**Table 63. Effects analysis summary table; Coho salmon, Central California Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

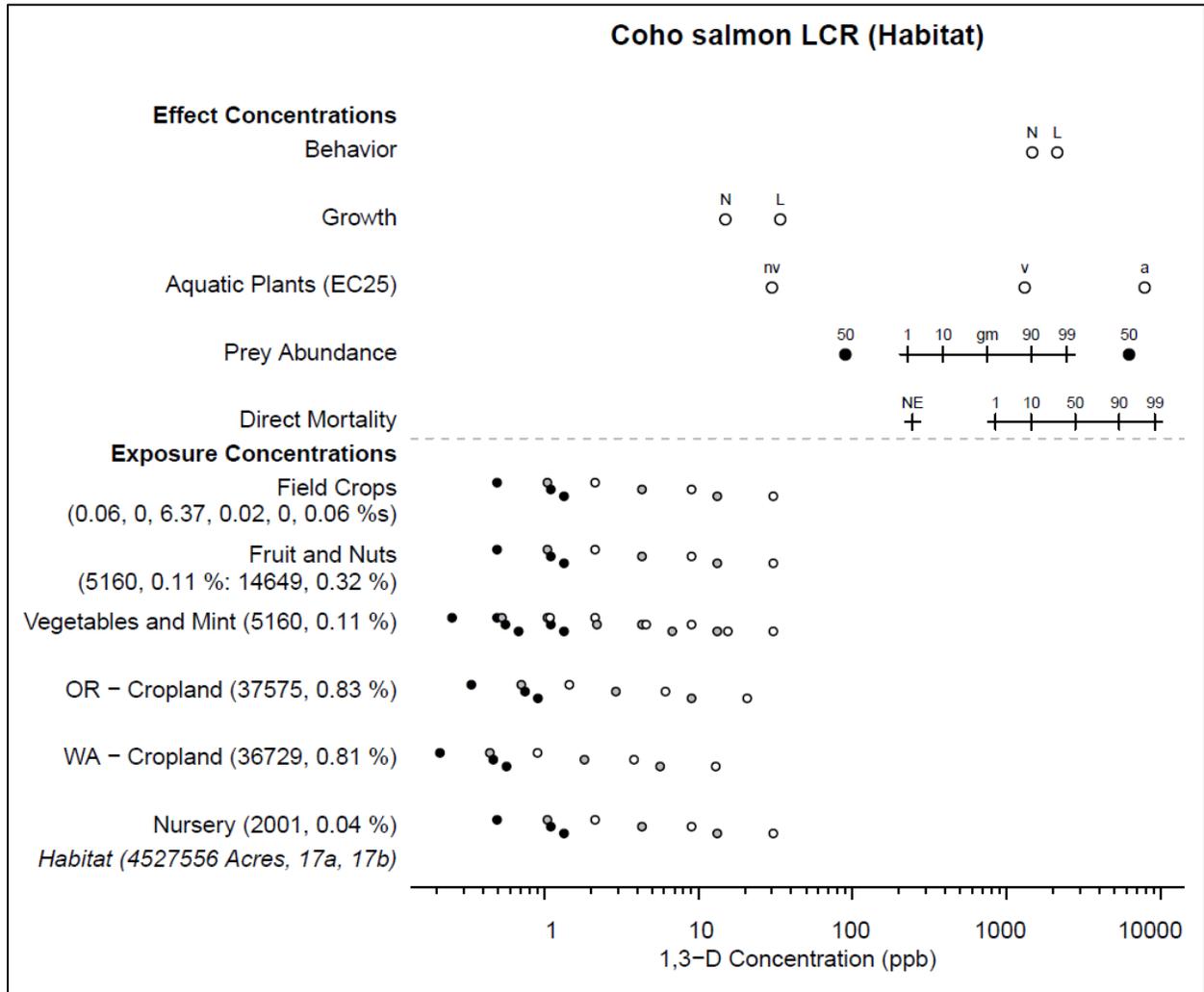
**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Central California Coast coho salmon designated critical habitat. The anticipated

levels of products containing 1,3-D within the designated critical habitat of the Central California Coast coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as low, and the confidence in that risk as medium. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is medium due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.13 Lower Columbia River Coho Salmon Designated Critical Habitat; Products Containing 1,3-D**



**Figure 15. Effects analysis Risk-plot; Coho salmon, Lower Columbia River ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 64. Likelihood of exposure determination for Coho salmon, Lower Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
OR Cropland	1	no	yes	yes	High
WA Cropland	1	no	yes	yes	High
Mint	1	no	no	yes	Medium
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	yes	Medium
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	yes	Medium

**Table 65. Prey risk hypothesis; Coho salmon, Lower Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR – Cropland	0.83	None Expected	None Expected	High
WA – Cropland	0.81	None Expected	None Expected	High
Mint	0.11	None Expected	None Expected	Medium
Nursery	0.04	None Expected	None Expected	Low
Fruit and Nuts	0.11, 0.32	None Expected	None Expected	Medium
Field Crops	0.06, 0, 6.37, 0.02, 0, 0.06	None Expected	None Expected	Medium
Vegetable Crops	0.11	None Expected	None Expected	Medium

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>Medium</b>	

**Table 66. Vegetative cover risk hypothesis; Coho salmon, Lower Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
OR – Cropland	0.83	Low	Low	High
WA – Cropland	0.81	Low	Low	High
Mint	0.11	Low	Low	Medium
Nursery	0.04	Low	Low	Low
Fruit and Nuts	0.11, 0.32	Low	Low	Medium
Field Crops	0.06, 0, 6.37, 0.02, 0, 0.06	Low	Low	Medium
Vegetable Crops	0.11	Low	Low	Medium
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 67. Water quality risk hypothesis; Coho salmon, Lower Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Lower Columbia River coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 68. Effects analysis summary table; Coho salmon, Lower Columbia River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	Medium	Low	No

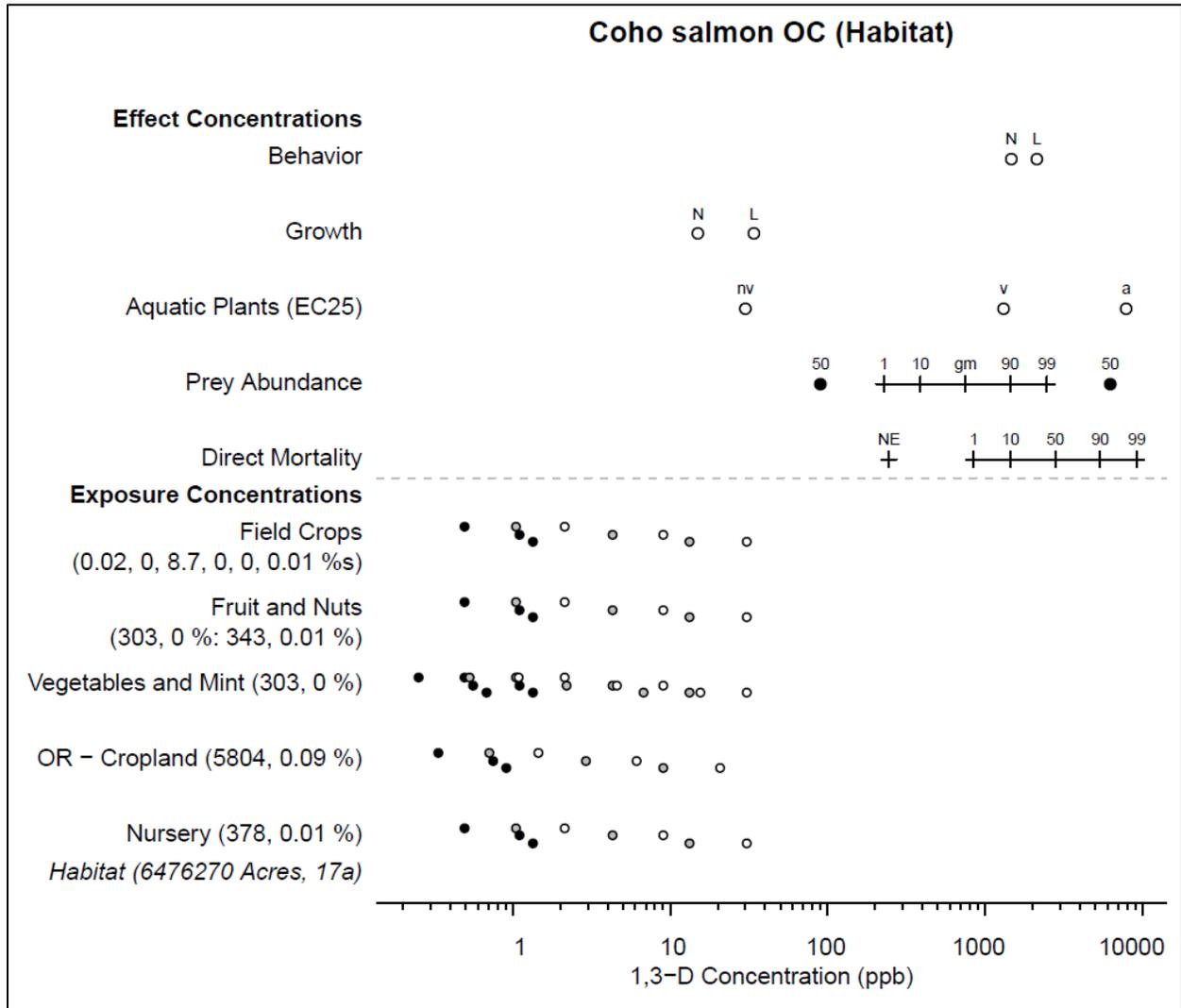
vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Lower Columbia River coho salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Lower Columbia River coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.14 Oregon Coast Coho Salmon Designated Critical Habitat; Products Containing 1,3-D**



**Figure 16. Effects analysis Risk-plot; Coho salmon, Oregon Coast ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 69. Likelihood of exposure determination for Coho salmon, Oregon Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
OR Cropland	1	no	yes	no	Low
Mint	1	no	no	no	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	no	Low
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	no	Low

**Table 70. Prey risk hypothesis; Coho salmon, Oregon Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR Cropland	0.09	None Expected	None Expected	Low
Mint	0	None Expected	None Expected	Low
Nursery	0.01	None Expected	None Expected	Low
Fruit and Nuts	0, 0.01	None Expected	None Expected	Low
Field Crops	0.02, 0, 8.7, 0, 0, 0.01	None Expected	None Expected	Medium
Vegetable Crops	0	None Expected	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			

Low	Medium	
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**Table 71. Vegetative cover risk hypothesis; Coho salmon, Oregon Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
OR Cropland	0.09	Low	Low	Low
Mint	0	Low	Low	Low
Nursery	0.01	Low	Low	Low
Fruit and Nuts	0, 0.01	Low	Low	Low
Field Crops	0.02, 0, 8.7, 0, 0, 0.01	Low	Low	Medium
Vegetable Crops	0	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
Low	Medium			

**Table 72. Water quality risk hypothesis; Coho salmon, Oregon Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

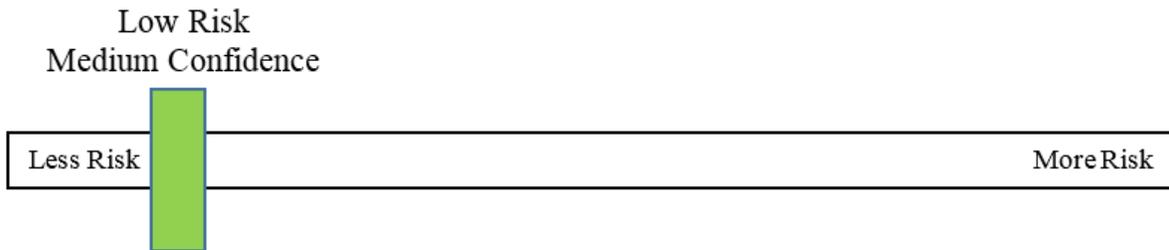
<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Oregon Coast coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 73. Effects analysis summary table; Coho salmon, Oregon Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of Oregon Coast coho salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Oregon Coast coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as low, and the confidence in that risk as medium. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is medium due to the exposures predicted in critical habitats over the 15-year duration of the action.





**Table 74. Likelihood of exposure determination for Coho salmon, Southern Oregon Northern California Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
OR Cropland	1	no	yes	yes	High
Mint	1	no	no	no	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	no	Low
Field Crops	3	no	no	yes	Medium
Vegetable Crops	1	no	no	no	Low

**Table 75. Prey risk hypothesis; Coho salmon, Southern Oregon Northern California Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR – Cropland	0.05	None Expected	None Expected	High
Mint	0	None Expected	None Expected	Low
Nursery	0	None Expected	None Expected	Low
Fruit and Nuts	0, 0	None Expected	None Expected	Low
Field Crops	0, 0, 6.58, 0.02, 0, 0.03	None Expected	None Expected	Medium
Vegetable Crops	0	None Expected	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>Medium</b>	

**Table 76. Vegetative cover risk hypothesis; Coho salmon, Southern Oregon Northern California Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
OR – Cropland	0.05	Low	Low	High
Mint	0	Low	Low	Low
Nursery	0	Low	Low	Low
Fruit and Nuts	0, 0	Low	Low	Low
Field Crops	0, 0, 6.58, 0.02, 0, 0.03	Low	Low	Medium
Vegetable Crops	0	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			

Low	Medium	
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**Table 77. Water quality risk hypothesis; Coho salmon, Southern Oregon Northern California Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Southern Oregon Northern California Coast coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
Medium	Low	

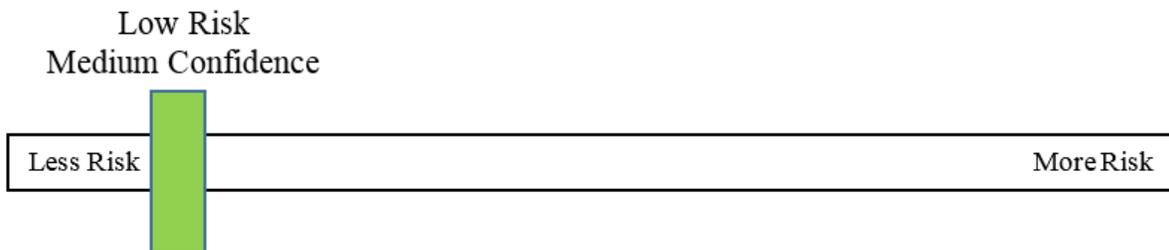
**Table 78. Effects analysis summary table; Coho salmon, Southern Oregon Northern California Coast ESU designated critical habitat and products containing 1,3-Dichloropropene**

Designated Critical Habitat; Risk Hypotheses	R-plot Derived		Risk Hypothesis Supported?
	Risk	Confidence	Yes/No
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	Medium	No

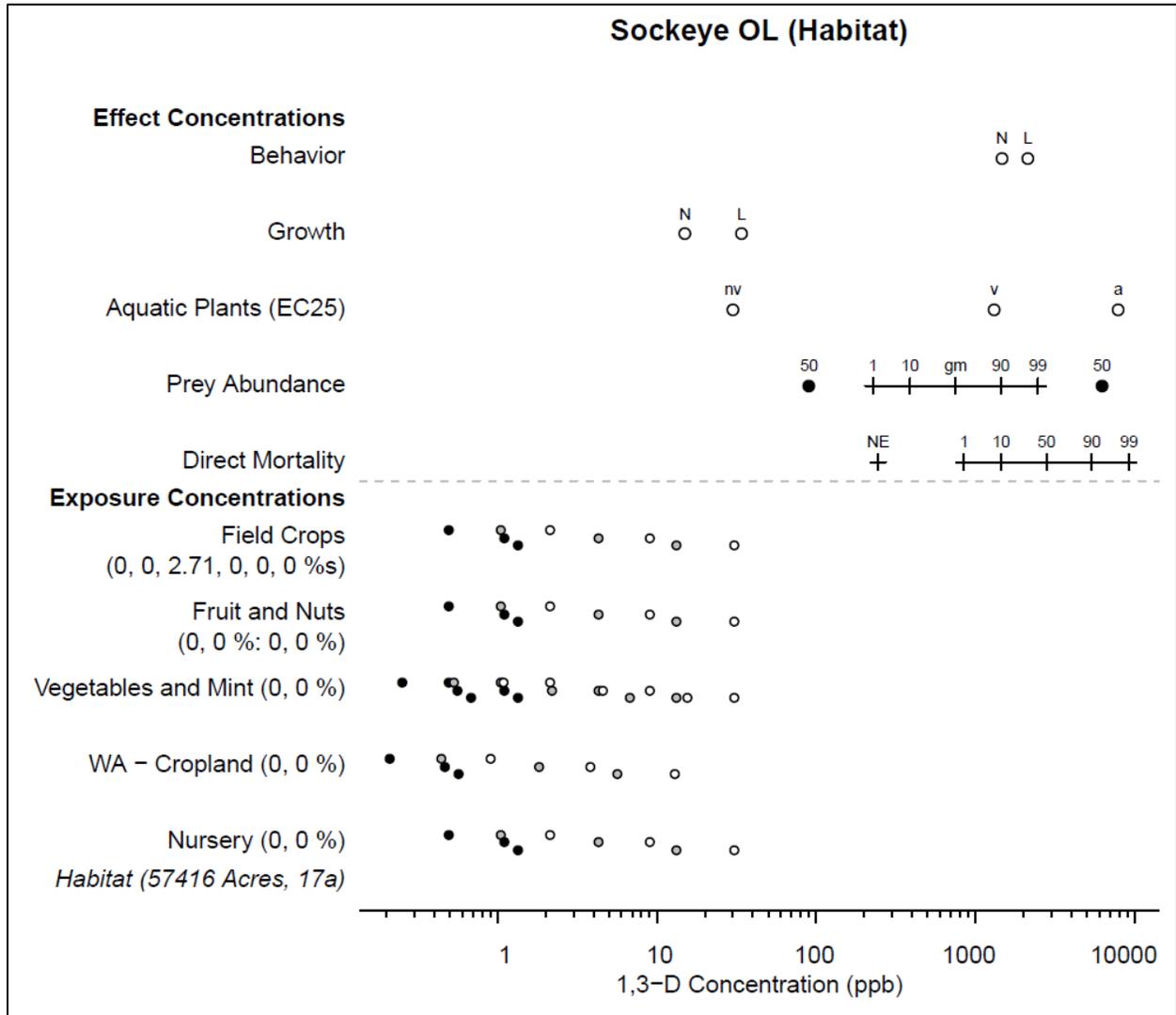
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Southern Oregon Northern California Coast coho salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Southern Oregon Northern California Coast coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as low, and the confidence in that risk as medium. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is medium due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.16 Ozette Lake Sockeye Designated Critical Habitat; Products Containing 1,3-D**



**Figure 18. Effects analysis Risk-plot; Sockeye salmon, Ozette Lake ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 79. Likelihood of exposure determination for Sockeye salmon, Ozette Lake ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
WA Cropland	1	no	yes	no	Low
Mint	1	no	no	no	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	no	Low
Field Crops	2	no	no	NA	Low
Vegetable Crops	1	no	no	no	Low

**Table 80. Prey risk hypothesis; Sockeye salmon, Ozette Lake ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
WA - Cropland	0	None Expected	None Expected	Low
Mint	0	None Expected	None Expected	Low
Nursery	0	None Expected	None Expected	Low
Fruit and Nuts	0, 0	None Expected	None Expected	Low
Field Crops	0, 0, 2.71, 0, 0, 0	None Expected	None Expected	Low
Vegetable Crops	0	None Expected	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			

Low	Medium	
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**Table 81. Vegetative cover risk hypothesis; Sockeye salmon, Ozette Lake ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
WA - Cropland	0	Low	Low	Low
Mint	0			Low
Nursery	0	Low	Low	Low
Fruit and Nuts	0, 0	Low	Low	Low
Field Crops	0, 0, 2.71, 0, 0, 0	Low	Low	Low
Vegetable Crops	0	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
Low	Medium			

**Table 82. Water quality risk hypothesis; Sockeye salmon, Ozette Lake ESU designated critical habitat and products containing 1,3-Dichloropropene**

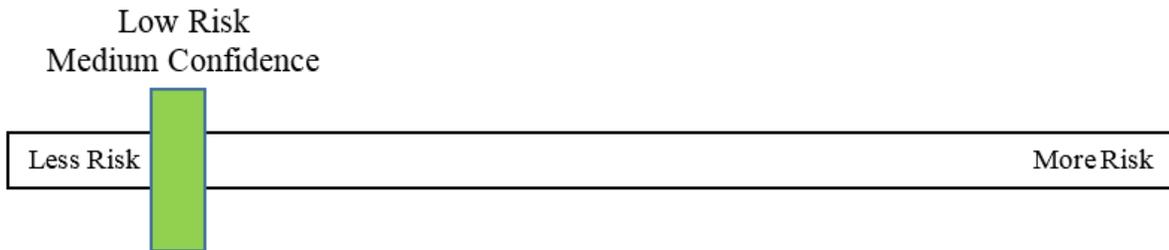
<b>Endpoint: Water Quality</b>		
<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Ozette Lake sockeye ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 83. Effects analysis summary table; Sockeye salmon, Ozette Lake ESU designated critical habitat and products containing 1,3-Dichloropropene**

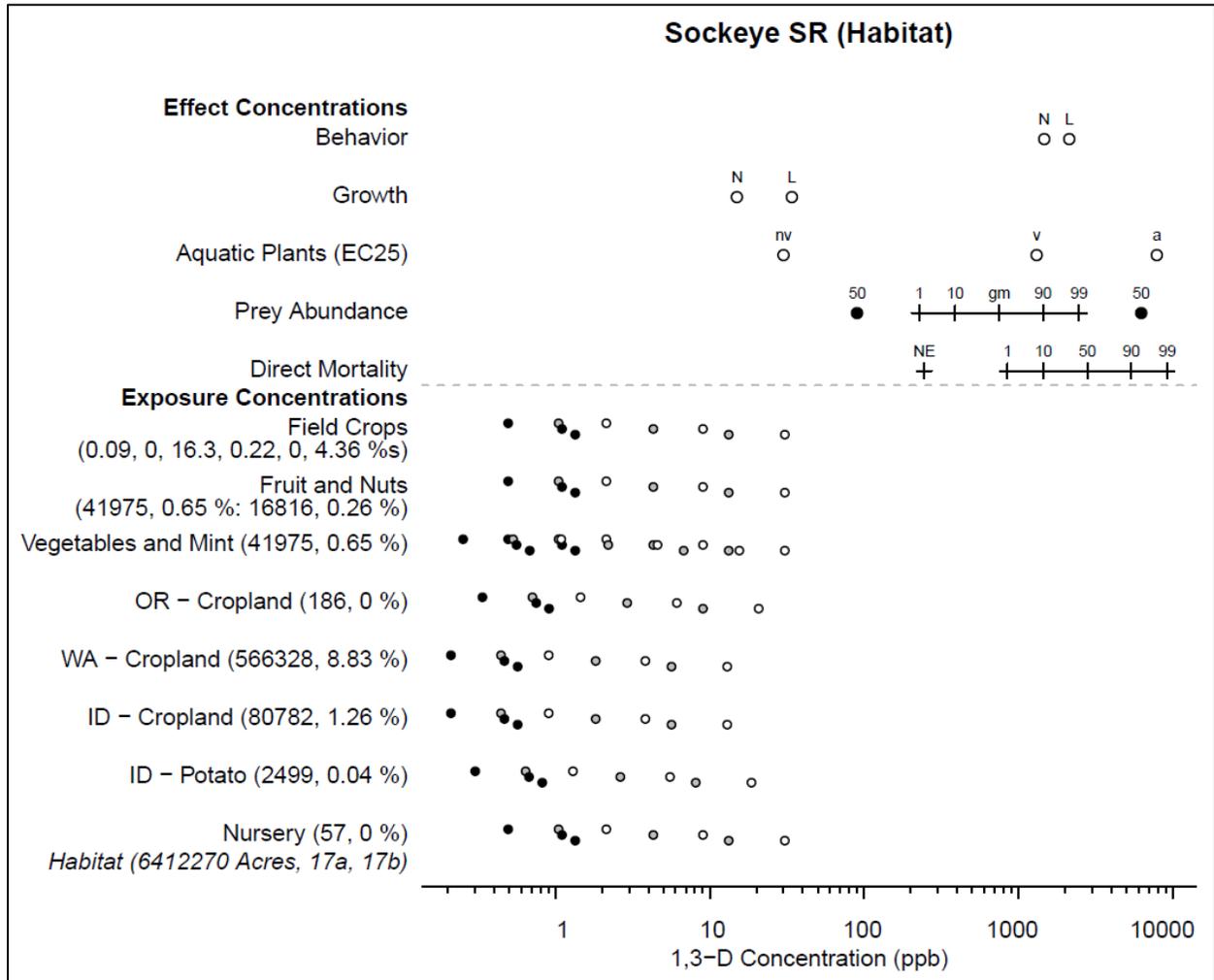
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of Ozette Lake sockeye salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Ozette Lake sockeye ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as low, and the confidence in that risk as medium. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is medium due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.17 Snake River Sockeye Salmon Designated Critical Habitat; Products Containing 1,3-D**



**Figure 19. Effects analysis Risk-plot; Sockeye salmon, Snake River ESU designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 84. Likelihood of exposure determination for Sockeye salmon, Snake River ESU designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
WA Cropland	3	no	yes	NA	High
OR Cropland	1	no	yes	no	Low
ID Cropland	2	no	yes	NA	Medium
ID Potato	1	no	yes	no	Low
Mint	1	no	no	no	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	no	Low
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	no	Low

**Table 85. Prey risk hypothesis; Sockeye salmon, Snake River ESU designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR – Cropland	0	None Expected	None Expected	Low
WA – Cropland	8.83	None Expected	None Expected	High
ID – Cropland	1.26	None Expected	None Expected	Medium
ID – Potato	0.04	None Expected	None Expected	Low
Mint	0.65	None Expected	None Expected	Low
Nursery	0	None Expected	None Expected	Low

Fruit and Nuts	0.65, 0.26	None Expected	None Expected	Low
Field Crops	0.09, 0, 16.3, 0.22, 0, 4.36	None Expected	None Expected	Medium
Vegetable Crops	0.65	None Expected	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 86. Vegetative cover risk hypothesis; Sockeye salmon, Snake River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
OR – Cropland	0	Low	Low	Low
WA – Cropland	8.83	Low	Low	High
ID – Cropland	1.26	Low	Low	Medium
ID – Potato	0.04	Low	Low	Low
Mint	0.65	Low	Low	Low
Nursery	0	Low	Low	Low
Fruit and Nuts	0.65, 0.26	Low	Low	Low
Field Crops	0.09, 0, 16.3, 0.22, 0, 4.36	Low	Low	Medium
Vegetable Crops	0.65	Low	Low	Low
<b>Terrestrial Plants</b>				

<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 87. Water quality risk hypothesis; Sockeye salmon, Snake River ESU designated critical habitat and products containing 1,3-Dichloropropene**

<p><b>Endpoint: Water Quality</b></p>		
<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Snake River sockeye ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 88. Effects analysis summary table; Sockeye salmon, Snake River ESU designated critical habitat and products containing 1,3-Dichloropropene**

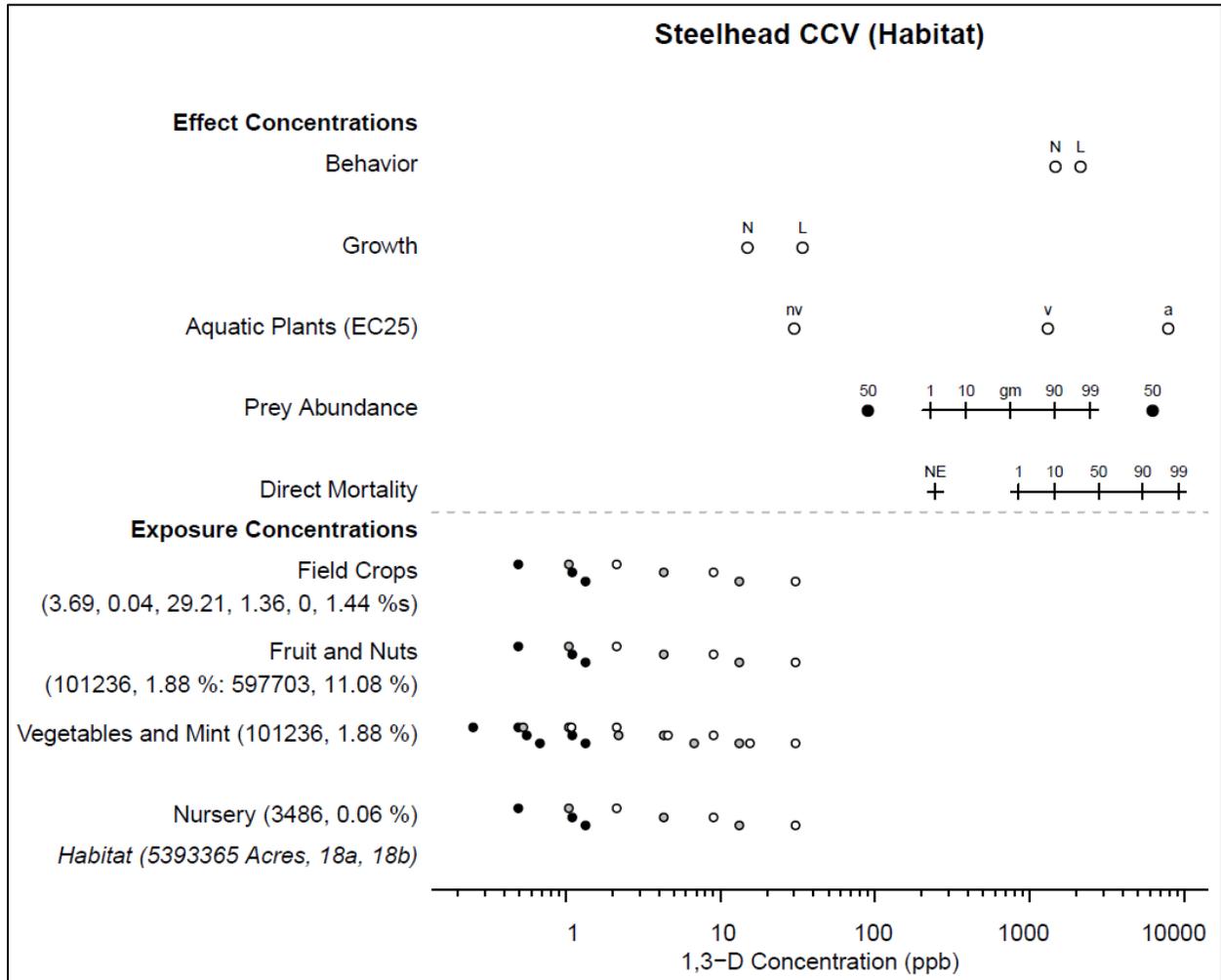
Designated Critical Habitat; Risk Hypotheses	R-plot Derived		Risk Hypothesis Supported? Yes/No
	Risk	Confidence	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Medium	Low	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Snake River sockeye salmon designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Snake River sockeye ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.18 California Central Valley Steelhead Designated Critical Habitat; Products Containing 1,3-D**



**Figure 20. Effects analysis Risk-plot; Steelhead, California Central Valley DPS designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 89. Likelihood of exposure determination for Steelhead, California Central Valley DPS designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
Mint	2	no	no	NA	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	3	no	no	NA	Medium
Field Crops	3	no	no	NA	Medium
Vegetable Crops	2	no	no	NA	Low

**Table 90. Prey risk hypothesis; Steelhead, California Central Valley DPS designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure (Invertebrates/Fish)		Likelihood of Exposure
		1,3-D	Chloropicrin	
Mint	1.88	None Expected	None Expected / Medium	Low
Nursery	0.06	None Expected	None Expected / Medium	Low
Fruit and Nuts	1.88, 11.08	None Expected	None Expected / Medium	Medium
Field Crops	3.69, 0.04, 29.21, 1.36, 0, 1.44	None Expected	None Expected / Medium	Medium
Vegetable Crops	1.88	None Expected	None Expected / Medium	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			

Low	Medium	
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**Table 91. Vegetative cover risk hypothesis; Steelhead, California Central Valley DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
Mint	1.88	Low	Low	Low
Nursery	0.06	Low	Low	Low
Fruit and Nuts	1.88, 11.08	Low	Low	Medium
Field Crops	3.69, 0.04, 29.21, 1.36, 0, 1.44	Low	Low	Medium
Vegetable Crops	1.88	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
<b>Medium</b>	<b>Low</b>			

**Table 92. Water quality risk hypothesis; Steelhead, California Central Valley DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the California Central Valley steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 93. Effects analysis summary table; Steelhead, California Central Valley DPS designated critical habitat and products containing 1,3-Dichloropropene**

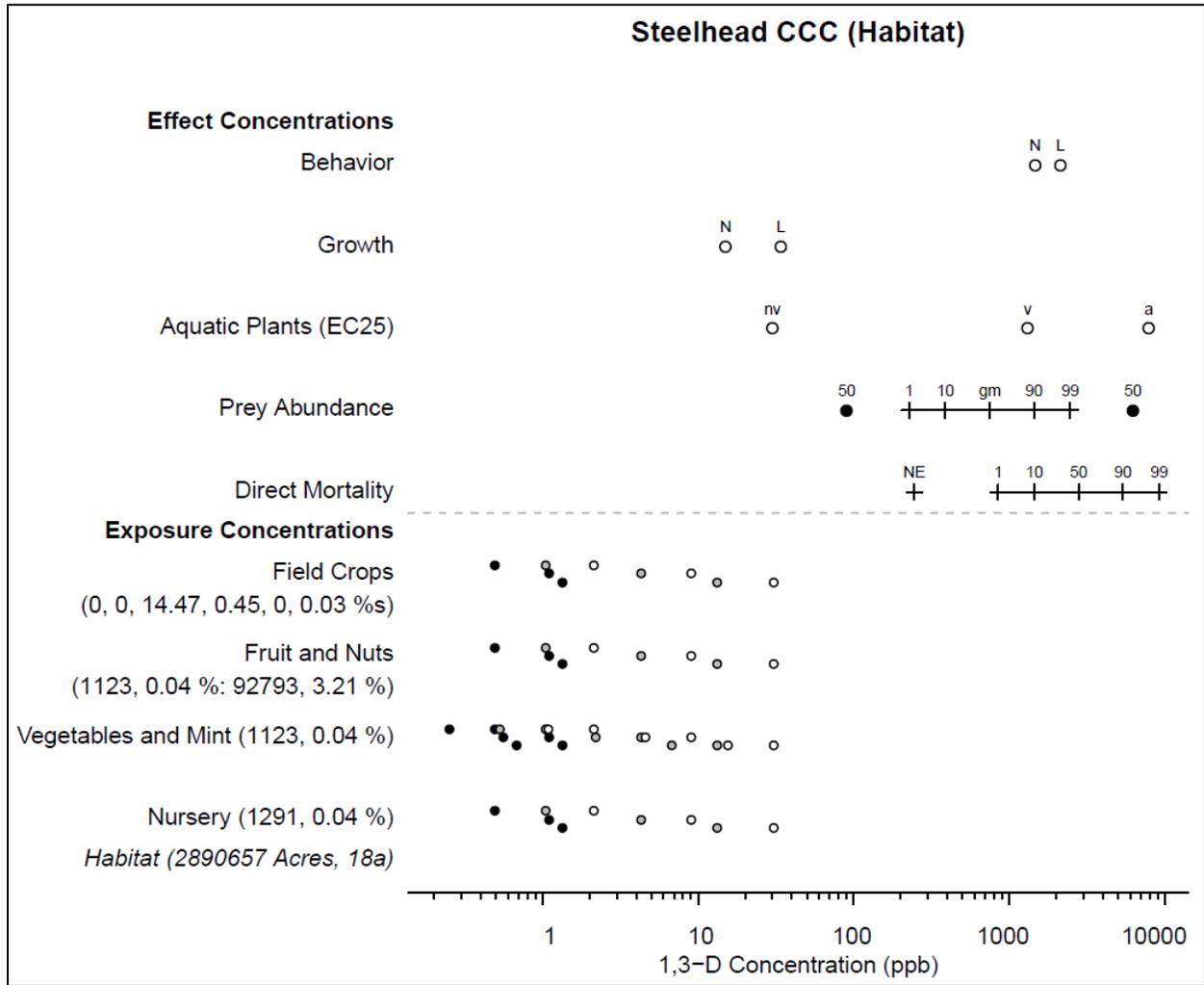
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Medium	Low	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of California Central Valley steelhead designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the California Central Valley steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. 1,3-D products containing chloropicrin, however, may result in some reductions in the availability of juvenile fish as steelhead prey in low flow, low volume habitats. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.19 Central California Coast Steelhead Designated Critical Habitat; Products Containing 1,3-D**



**Figure 21. Effects analysis Risk-plot; Steelhead, Central California Coast DPS designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 94. Likelihood of exposure determination for Steelhead, Central California Coast DPS designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
Mint	1	no	no	no	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	2	no	no	NA	Low
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	no	Low

**Table 95. Prey risk hypothesis; Steelhead, Central California Coast DPS designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure (Invertebrates / Fish)		Likelihood of Exposure
		1,3-D	Chloropicrin	
Mint	0.04	None Expected	None Expected / Medium	Low
Nursery	0.04	None Expected	None Expected / Medium	Low
Fruit and Nuts	0.04, 3.21	None Expected	None Expected / Medium	Low
Field Crops	0, 0, 14.47, 0.45, 0, 0.03	None Expected	None Expected / Medium	Medium
Vegetable Crops	0.04	None Expected	None Expected / Medium	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 96. Vegetative cover risk hypothesis; Steelhead, Central California Coast DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
Mint	0.04	Low	Low	Low
Nursery	0.04	Low	Low	Low
Fruit and Nuts	0.04, 3.21	Low	Low	Low
Field Crops	0, 0, 14.47, 0.45, 0, 0.03	Low	Low	Medium
Vegetable Crops	0.04	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 97. Water quality risk hypothesis; Steelhead, Central California Coast DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>
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<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Central California Coast steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

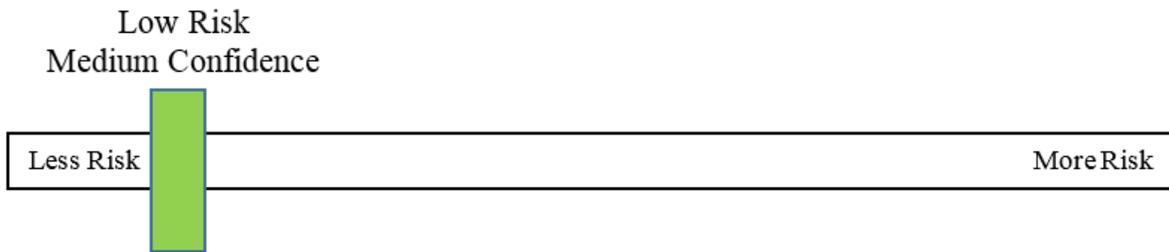
**Table 98. Effects analysis summary table; Steelhead, Central California Coast DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

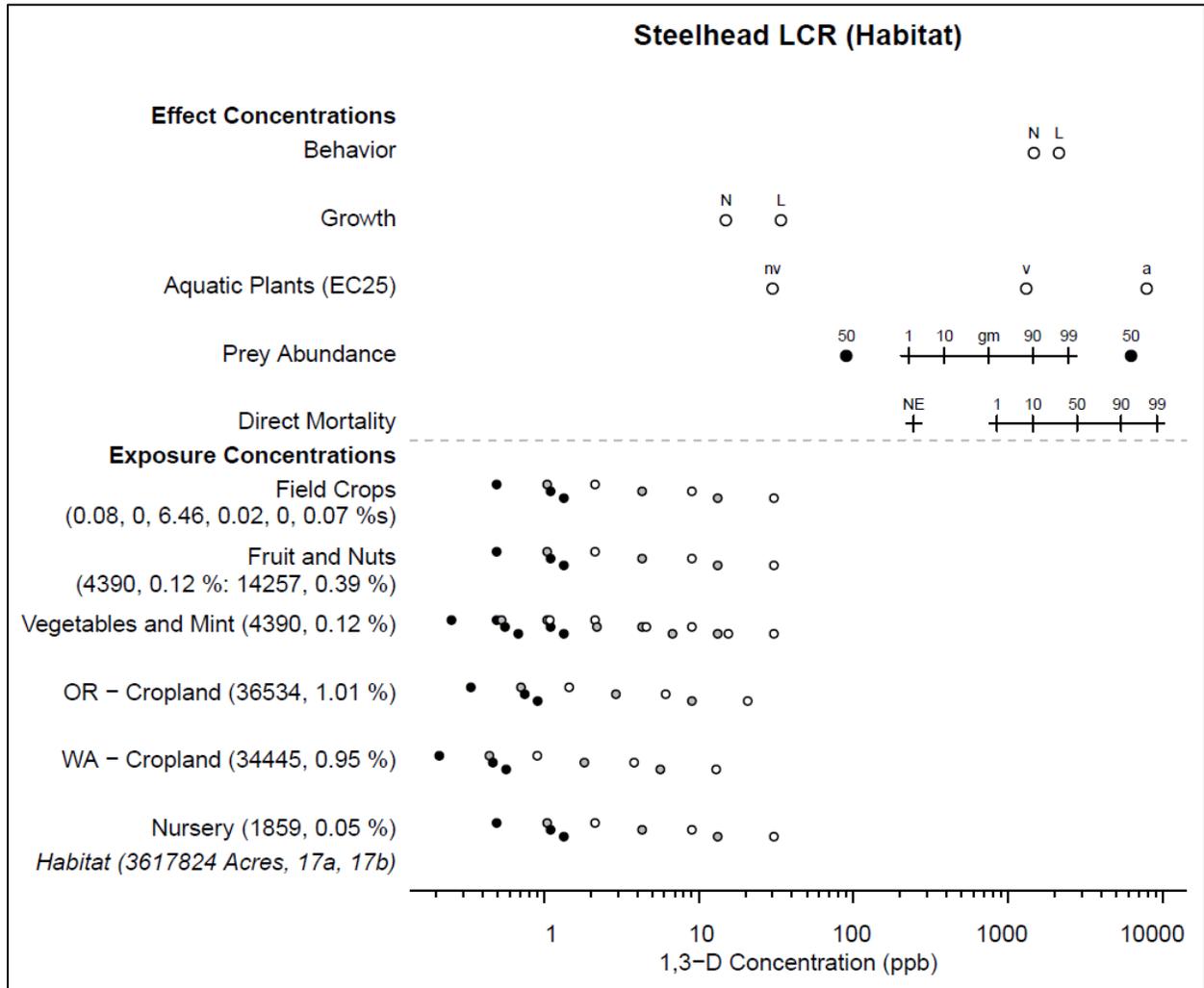
**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Central California Coast steelhead designated critical habitat. The anticipated levels

of products containing 1,3-D within the designated critical habitat of the Central California Coast steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. 1,3-D products containing chloropicrin, however, may result in some reductions in the availability of juvenile fish as steelhead prey in low flow, low volume habitats. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is medium due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.20 Lower Columbia River Steelhead Designated Critical Habitat; Products Containing 1,3-D**



**Figure 22. Effects analysis Risk-plot; Steelhead, Lower Columbia River DPS designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 99. Likelihood of exposure determination for Steelhead, Lower Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
WA Cropland	1	no	yes	yes	High
OR Cropland	2	no	yes	NA	Medium
Mint	1	no	no	yes	Medium
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	yes	Medium
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	yes	Medium

**Table 100. Prey risk hypothesis; Steelhead, Lower Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure (Invertebrates / Fish)		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR – Cropland	1.01	None Expected	None Expected / Medium	Medium
WA – Cropland	0.95	None Expected	None Expected / Medium	High
Mint	0.12	None Expected	None Expected / Medium	Medium
Nursery	0.05	None Expected	None Expected / Medium	Low
Fruit and Nuts	0.12, 0.39	None Expected	None Expected / Medium	Medium
Field Crops	0.08, 0, 6.46, 0.02, 0, 0.07	None Expected	None Expected / Medium	Medium

Vegetable Crops	0.12	None Expected	None Expected	Medium
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 101. Vegetative cover risk hypothesis; Steelhead, Lower Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
<b>Aquatic Plants</b>				
OR – Cropland	1.01	Low	Low	Medium
WA – Cropland	0.95	Low	Low	High
Mint	0.12	Low	Low	Low
Nursery	0.05	Low	Low	Low
Fruit and Nuts	0.12, 0.39	Low	Low	Low
Field Crops	0.08, 0, 6.46, 0.02, 0, 0.07	Low	Low	Medium
Vegetable Crops	0.12	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 102. Water quality risk hypothesis; Steelhead, Lower Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Lower Columbia River steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 103. Effects analysis summary table; Steelhead, Lower Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	Medium	Low	No

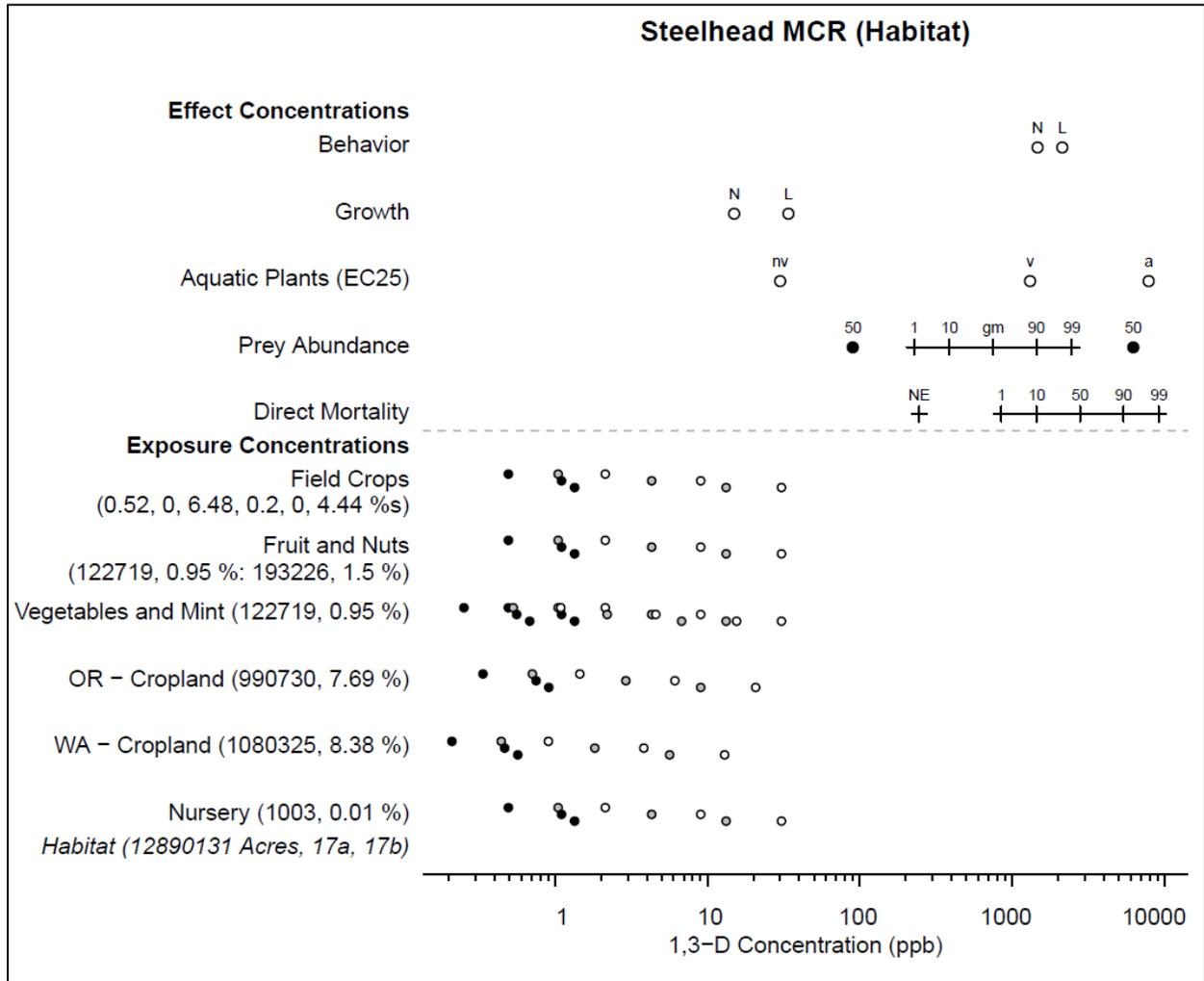
vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Lower Columbia River steelhead designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Lower Columbia River steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. 1,3-D products containing chloropicrin, however, may result in some reductions in the availability of juvenile fish as steelhead prey in low flow, low volume habitats. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.21 Middle Columbia River Steelhead Designated Critical Habitat; Products Containing 1,3-D**



**Figure 23. Effects analysis Risk-plot; Steelhead, Middle Columbia River DPS designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 104. Likelihood of exposure determination for Steelhead, Middle Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
WA Cropland	3	no	yes	NA	High
OR Cropland	3	no	yes	NA	High
Mint	1	no	no	no	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	2	no	no	NA	Low
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	no	Low

**Table 105. Prey risk hypothesis; Steelhead, Middle Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure (Invertebrates / Fish)		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR – Cropland	7.69	None Expected	None Expected / Medium	High
WA – Cropland	8.38	None Expected	None Expected / Medium	High
Mint	0.95	None Expected	None Expected / Medium	Low
Nursery	0.01	None Expected	None Expected / Medium	Low
Fruit and Nuts	0.95, 1.5	None Expected	None Expected / Medium	Low
Field Crops	0.52, 0, 6.48, 0.2, 0, 4.44	None Expected	None Expected / Medium	Medium

Vegetable Crops	0.95	None Expected	None Expected / Medium	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 106. Vegetative cover risk hypothesis; Steelhead, Middle Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
<b>Aquatic Plants</b>				
OR – Cropland	7.69	Low	Low	High
WA – Cropland	8.38	Low	Low	High
Mint	0.95	Low	Low	Low
Nursery	0.01	Low	Low	Low
Fruit and Nuts	0.95, 1.5	Low	Low	Low
Field Crops	0.52, 0, 6.48, 0.2, 0, 4.44	Low	Low	Medium
Vegetable Crops	0.95	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 107. Water quality risk hypothesis; Steelhead, Middle Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Middle Columbia River steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 108. Effects analysis summary table; Steelhead, Middle Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	Medium	Low	No

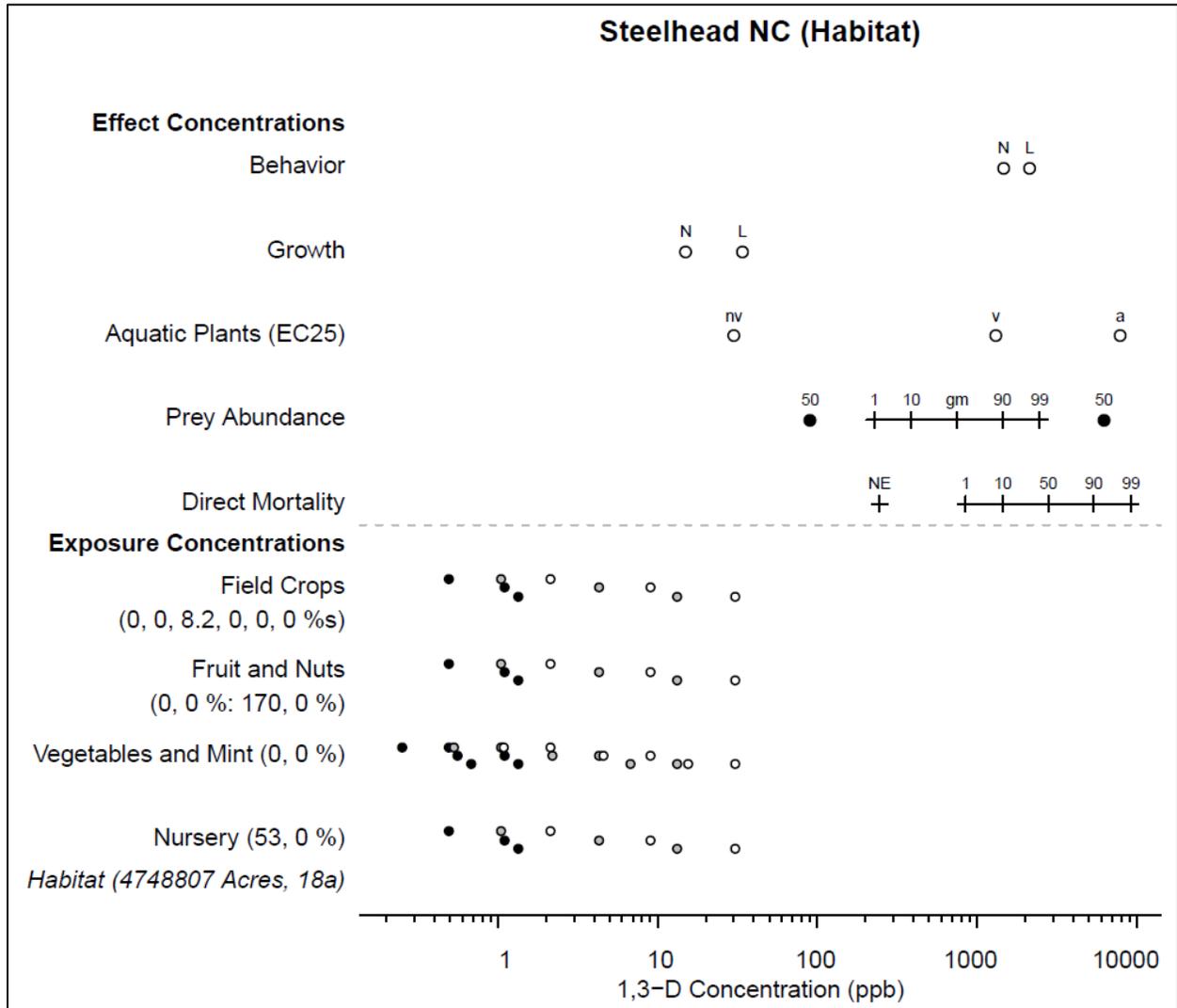
vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Middle Columbia River steelhead designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Middle Columbia River steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. 1,3-D products containing chloropicrin, however, may result in some reductions in the availability of juvenile fish as steelhead prey in low flow, low volume habitats. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.22 Northern California Steelhead Designated Critical Habitat ; Products Containing 1,3-D**



**Figure 24. Effects analysis Risk-plot; Steelhead, Northern California DPS designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 109. Likelihood of exposure determination for Steelhead, Northern California DPS designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
Mint	1	no	no	no	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	no	Low
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	no	Low

**Table 110. Prey risk hypothesis; Steelhead, Northern California DPS designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure (Invertebrates / Fish)		Likelihood of Exposure
		1,3-D	Chloropicrin	
Mint	0	None Expected	None Expected / Medium	Low
Nursery	0	None Expected	None Expected / Medium	Low
Fruit and Nuts	0, 0	None Expected	None Expected / Medium	Low
Field Crops	0, 0, 8.2, 0, 0, 0	None Expected	None Expected / Medium	Medium
Vegetable Crops	0	None Expected	None Expected / Medium	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 111. Vegetative cover risk hypothesis; Steelhead, Northern California DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
Mint	0	Low	Low	Low
Nursery	0	Low	Low	Low
Fruit and Nuts	0, 0	Low	Low	Low
Field Crops	0, 0, 8.2, 0, 0, 0	Low	Low	Medium
Vegetable Crops	0	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 112. Water quality risk hypothesis; Steelhead, Northern California DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>
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<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Northern California steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

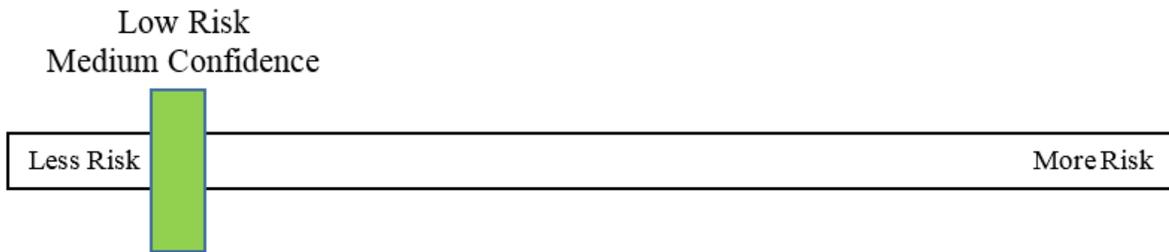
**Table 113. Effects analysis summary table; Steelhead, Northern California DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

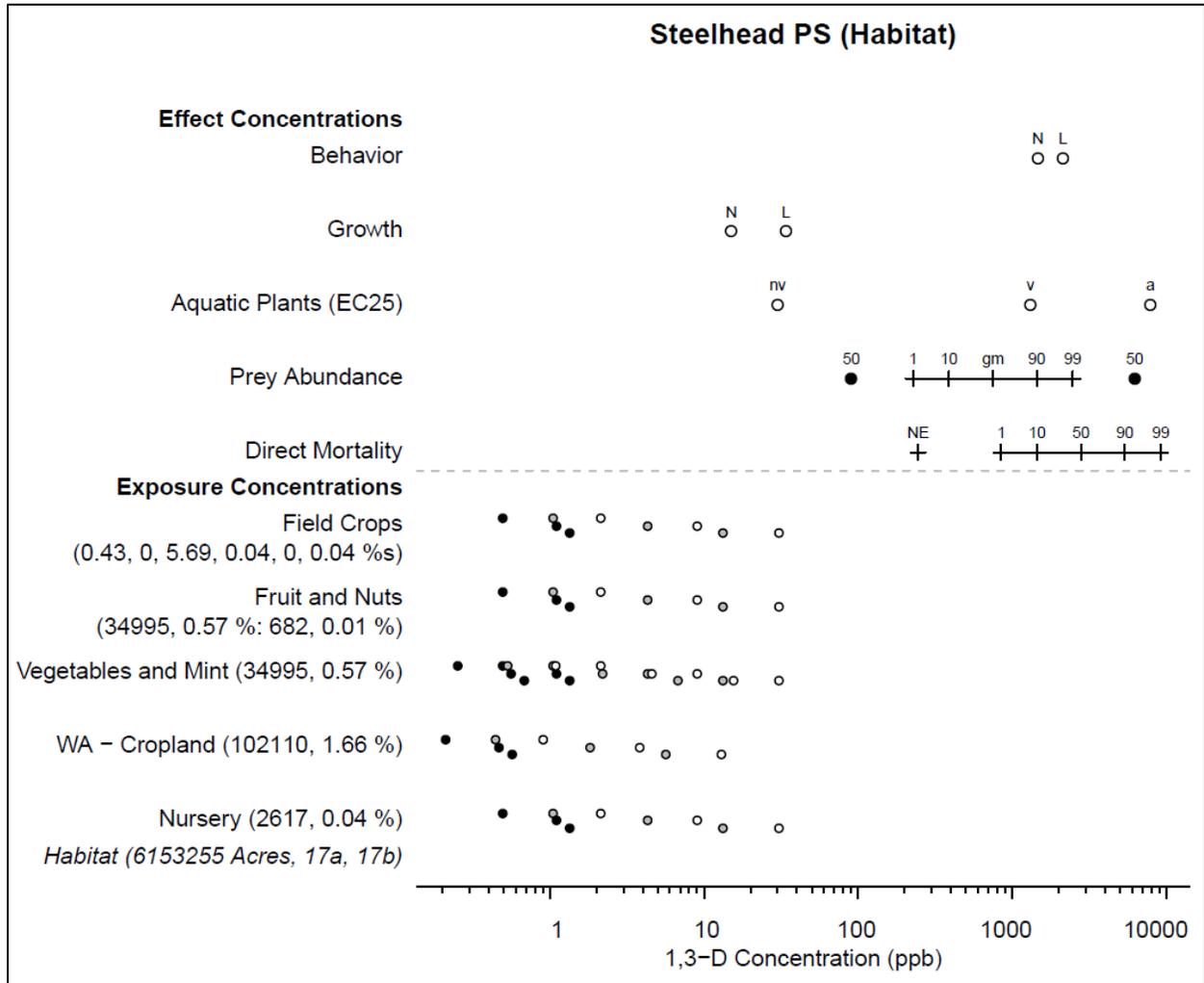
**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Northern California steelhead designated critical habitat. The anticipated levels of

products containing 1,3-D within the designated critical habitat of the Northern California steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. 1,3-D products containing chloropicrin, however, may result in some reductions in the availability of juvenile fish as steelhead prey in low flow, low volume habitats. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is medium due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.23 Puget Sound Steelhead Designated Critical Habitat; Products Containing 1,3-D**



**Figure 25. Effects analysis Risk-plot; Steelhead, Puget Sound DPS designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 114. Likelihood of exposure determination for Steelhead, Puget Sound DPS designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
WA Cropland	2	no	yes	NA	Medium
Mint	1	no	no	yes	Medium
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	yes	Medium
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	yes	Medium

**Table 115. Prey risk hypothesis; Steelhead, Puget Sound DPS designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure (Invertebrates / Fish)		Likelihood of Exposure
		1,3-D	Chloropicrin	
WA - Cropland	1.66	None Expected	None Expected / Medium	Medium
Mint	0.57	None Expected	None Expected / Medium	Medium
Nursery	0.04	None Expected	None Expected / Medium	Low
Fruit and Nuts	0.57, 0.01	None Expected	None Expected / Medium	Medium
Field Crops	0.43, 0, 5.69, 0.04, 0, 0.04	None Expected	None Expected / Medium	Medium
Vegetable Crops	0.57	None Expected	None Expected / Medium	Medium
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>Medium</b>	

**Table 116. Vegetative cover risk hypothesis; Steelhead, Puget Sound DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
WA - Cropland	1.66	Low	Low	Medium
Mint	0.57	Low	Low	Medium
Nursery	0.04	Low	Low	Low
Fruit and Nuts	0.57, 0.01	Low	Low	Medium
Field Crops	0.43, 0, 5.69, 0.04, 0, 0.04	Low	Low	Medium
Vegetable Crops	0.57	Low	Low	Medium
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
<b>Medium</b>	<b>Low</b>			

**Table 117. Water quality risk hypothesis; Steelhead, Puget Sound DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Puget Sound steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 118. Effects analysis summary table; Steelhead, Puget Sound DPS designated critical habitat and products containing 1,3-Dichloropropene**

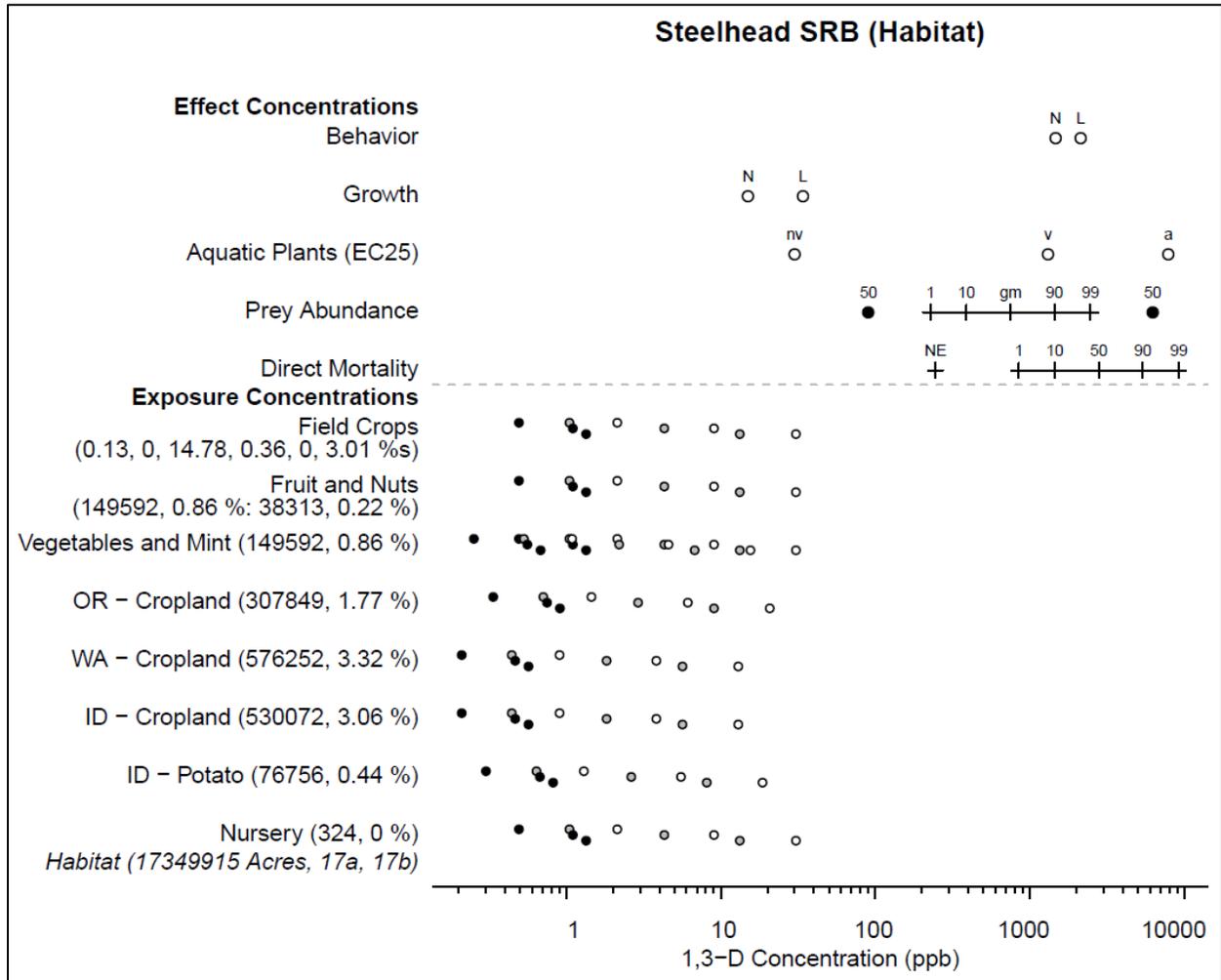
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Medium	Low	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of Puget Sound steelhead designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Puget Sound steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. 1,3-D products containing chloropicrin, however, may result in some reductions in the availability of juvenile fish as steelhead prey in low flow, low volume habitats. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.24 Snake River Basin Steelhead Designated Critical Habitat; Products Containing 1,3-D**



**Figure 26. Effects analysis Risk-plot; Steelhead, Snake River Basin DPS designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 119. Likelihood of exposure determination for Steelhead, Snake River Basin DPS designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
WA Cropland	2	no	yes	NA	Medium
OR Cropland	2	no	yes	NA	Medium
ID Cropland	2	no	yes	NA	Medium
ID Potato	1	no	yes	no	Low
Mint	1	no	no	yes	Medium
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	no	Low
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	yes	Medium

**Table 120. Prey risk hypothesis; Steelhead, Snake River Basin DPS designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure (Invertebrates / Fish)		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR – Cropland	1.77	None Expected	None Expected / Medium	Medium
WA – Cropland	3.32	None Expected	None Expected / Medium	Medium
ID – Cropland	3.06	None Expected	None Expected / Medium	Medium
ID – Potato	0.44	None Expected	None Expected / Medium	Low
Mint	0.86	None Expected	None Expected / Medium	Medium

Nursery	0	None Expected	None Expected / Medium	Low
Fruit and Nuts	0.86, 0.22	None Expected	None Expected / Medium	Low
Field Crops	0.13, 0, 14.78, 0.36, 0, 3.01	None Expected	None Expected / Medium	Medium
Vegetable Crops	0.86	None Expected	None Expected / Medium	Medium
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 121. Vegetative cover risk hypothesis; Steelhead, Snake River Basin DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
OR – Cropland	1.77	Low	Low	Medium
WA – Cropland	3.32	Low	Low	Medium
ID – Cropland	3.06	Low	Low	Medium
ID – Potato	0.44	Low	Low	Low
Mint	0.86	Low	Low	Medium
Nursery	0	Low	Low	Low
Fruit and Nuts	0.86, 0.22	Low	Low	Low
Field Crops	0.13, 0, 14.78, 0.36, 0, 3.01	Low	Low	Medium
Vegetable Crops	0.86	Low	Low	Medium
<b>Terrestrial Plants</b>				

<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 122. Water quality risk hypothesis; Steelhead, Snake River Basin DPS designated critical habitat and products containing 1,3-Dichloropropene**

<p><b>Endpoint: Water Quality</b></p>		
<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Snake River Basin steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 123. Effects analysis summary table; Steelhead, Snake River Basin DPS designated critical habitat and products containing 1,3-Dichloropropene**

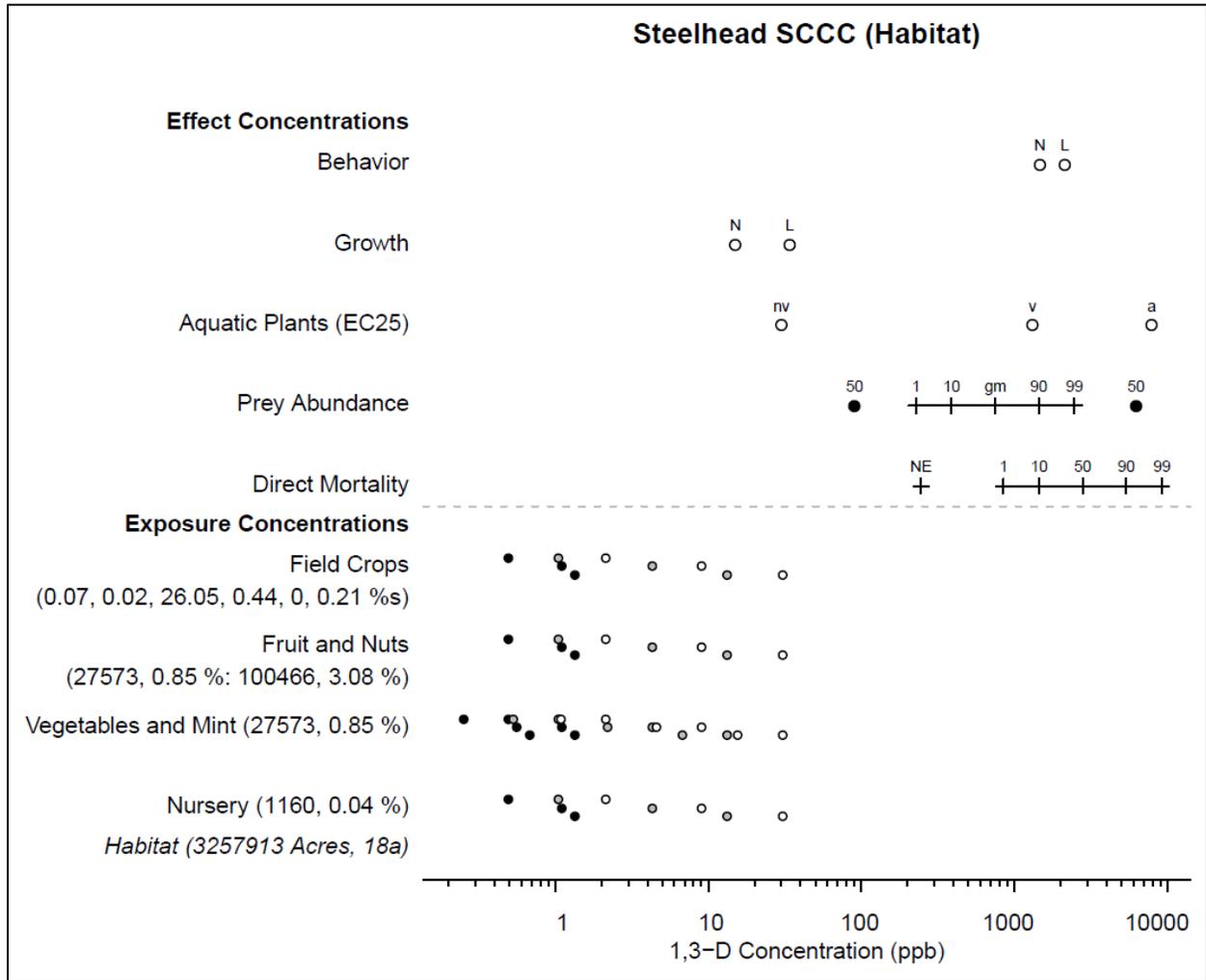
Designated Critical Habitat; Risk Hypotheses	R-plot Derived		Risk Hypothesis Supported?
	Risk	Confidence	Yes/No
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Medium	Low	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of Snake River Basin steelhead designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Snake River Basin steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. 1,3-D products containing chloropicrin, however, may result in some reductions in the availability of juvenile fish as steelhead prey in low flow, low volume habitats. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.25 South Central California Coast Steelhead Designated Critical Habitat; Products Containing 1,3-D**



**Figure 27. Effects analysis Risk-plot; Steelhead, South Central California Coast DPS designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 124. Likelihood of exposure determination for Steelhead, South Central California Coast DPS designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
Mint	1	no	no	yes	Medium
Nursery	1	no	no	no	Low
Fruit and Nuts	2	no	no	NA	Medium
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	yes	Medium

**Table 125. Prey risk hypothesis; Steelhead, South Central California Coast DPS designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure (Invertebrates / Fish)		Likelihood of Exposure
		1,3-D	Chloropicrin	
Mint	0.85	None Expected	None Expected / Medium	Medium
Nursery	0.04	None Expected	None Expected / Medium	Low
Fruit and Nuts	0.85, 3.08	None Expected	None Expected / Medium	Medium
Field Crops	0.07, 0.02, 26.05, 0.44, 0, 0.21	None Expected	None Expected / Medium	Medium
Vegetable Crops	0.85	None Expected	None Expected / Medium	Medium
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			

Low	Medium	
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**Table 126. Vegetative cover risk hypothesis; Steelhead, South Central California Coast DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
Mint	0.85	Low	Low	Medium
Nursery	0.04	Low	Low	Low
Fruit and Nuts	0.85, 3.08	Low	Low	Medium
Field Crops	0.07, 0.02, 26.05, 0.44, 0, 0.21	Low	Low	Medium
Vegetable Crops	0.85	Low	Low	Medium
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
<b>Medium</b>	<b>Low</b>			

**Table 127. Water quality risk hypothesis; Steelhead, South Central California Coast DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the South Central California Coast steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 128. Effects analysis summary table; Steelhead, South Central California Coast DPS designated critical habitat and products containing 1,3-Dichloropropene**

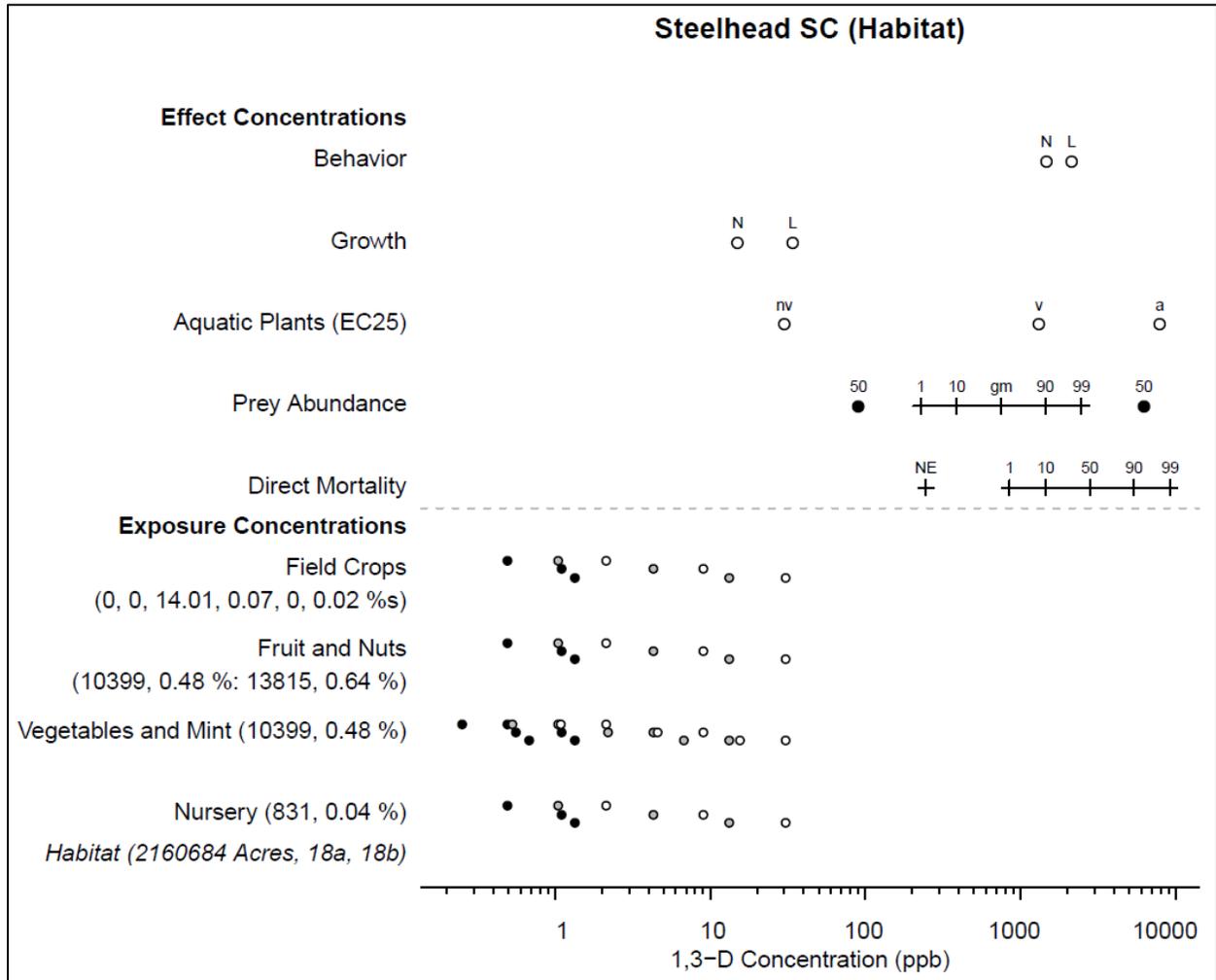
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Medium	Low	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of South Central California Coast steelhead designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the South Central California Coast steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. 1,3-D products containing chloropicrin, however, may result in some reductions in the availability of juvenile fish as steelhead prey in low flow, low volume habitats. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.26 Southern California Steelhead Designated Critical Habitat; Products Containing 1,3-D**



**Figure 28. Effects analysis Risk-plot; Steelhead, Southern California DPS designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 129. Likelihood of exposure determination for Steelhead, Southern California DPS designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
Mint	1	no	no	yes	Medium
Nursery	1	no	no	no	Low
Fruit and Nuts	1	no	no	yes	Medium
Field Crops	3	no	no	NA	Medium
Vegetable Crops	1	no	no	yes	Medium

**Table 130. Prey risk hypothesis; Steelhead, Southern California DPS designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure (Invertebrates / Fish)		Likelihood of Exposure
		1,3-D	Chloropicrin	
Mint	0.48	None Expected	None Expected / Medium	Medium
Nursery	0.04	None Expected	None Expected / Medium	Low
Fruit and Nuts	0.48, 0.64	None Expected	None Expected / Medium	Medium
Field Crops	0, 0, 14.01, 0.07, 0, 0.02	None Expected	None Expected / Medium	Medium
Vegetable Crops	0.48	None Expected	None Expected / Medium	Medium
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 131. Vegetative cover risk hypothesis; Steelhead, Southern California DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>		<b>Likelihood of Exposure</b>
		<b>1,3-D</b>	<b>Chloropicrin</b>	
<b>Aquatic Plants</b>				
Mint	0.48	Low	Low	Medium
Nursery	0.04	Low	Low	Low
Fruit and Nuts	0.48, 0.64	Low	Low	Medium
Field Crops	0, 0, 14.01, 0.07, 0, 0.02	Low	Low	Medium
Vegetable Crops	0.48	Low	Low	Medium
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b></p>				
<b>Risk</b>	<b>Confidence</b>			
<b>Medium</b>	<b>Low</b>			

**Table 132. Water quality risk hypothesis; Steelhead, Southern California DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>
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<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Southern California steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 133. Effects analysis summary table; Steelhead, Southern California DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Medium	Low	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

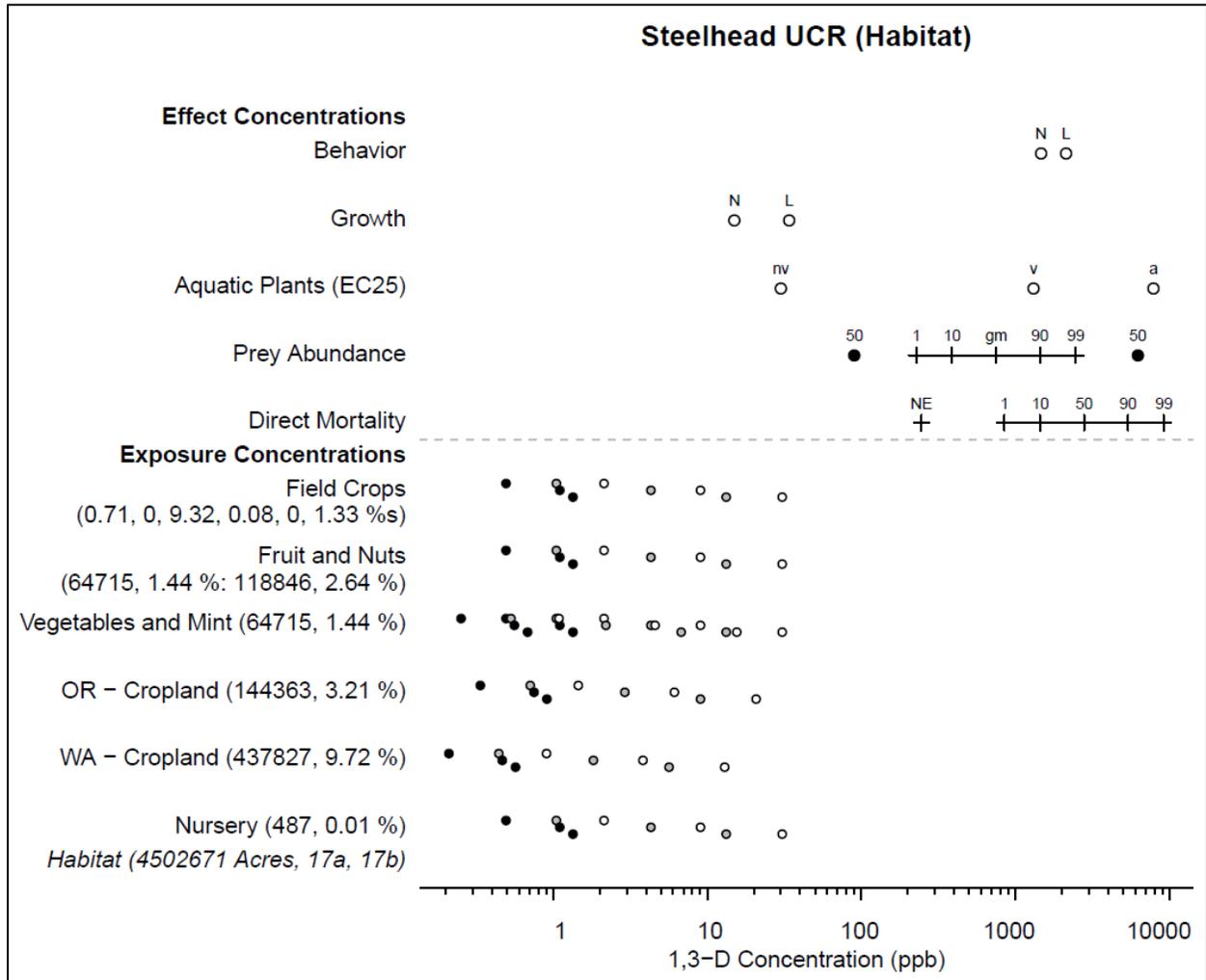
**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Southern California steelhead designated critical habitat. The anticipated levels of

products containing 1,3-D within the designated critical habitat of the Southern California steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. 1,3-D products containing chloropicrin, however, may result in some reductions in the availability of juvenile fish as steelhead prey in low flow, low volume habitats. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.27 Upper Columbia River Steelhead Designated Critical Habitat; Products Containing 1,3-D**



**Figure 29. Effects analysis Risk-plot; Steelhead, Upper Columbia River DPS designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 134. Likelihood of exposure determination for Steelhead, Upper Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
WA Cropland	3	no	yes	NA	High
OR Cropland	2	no	yes	NA	Medium
Mint	2	no	no	NA	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	2	no	no	NA	Low
Field Crops	3	no	no	NA	Medium
Vegetable Crops	2	no	no	NA	Low

**Table 135. Prey risk hypothesis; Steelhead, Upper Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure (Invertebrates / Fish)		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR – Cropland	3.21	None Expected	None Expected / Medium	Medium
WA – Cropland	9.72	None Expected	None Expected / Medium	High
Mint	1.44	None Expected	None Expected / Medium	Low
Nursery	0.01	None Expected	None Expected / Medium	Low
Fruit and Nuts	1.44, 2.64	None Expected	None Expected / Medium	Low
Field Crops	0.71, 0, 9.32, 0.08, 0, 1.33	None Expected	None Expected / Medium	Medium

Vegetable Crops	1.44	None Expected	None Expected / Medium	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 136. Vegetative cover risk hypothesis; Steelhead, Upper Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
<b>Aquatic Plants</b>				
OR – Cropland	3.21	Low	Low	Medium
WA – Cropland	9.72	Low	Low	High
Mint	1.44	Low	Low	Low
Nursery	0.01	Low	Low	Low
Fruit and Nuts	1.44, 2.64	Low	Low	Low
Field Crops	0.71, 0, 9.32, 0.08, 0, 1.33	Low	Low	Medium
Vegetable Crops	1.44	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 137. Water quality risk hypothesis; Steelhead, Upper Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Upper Columbia River steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 138. Effects analysis summary table; Steelhead, Upper Columbia River DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	Medium	Low	No

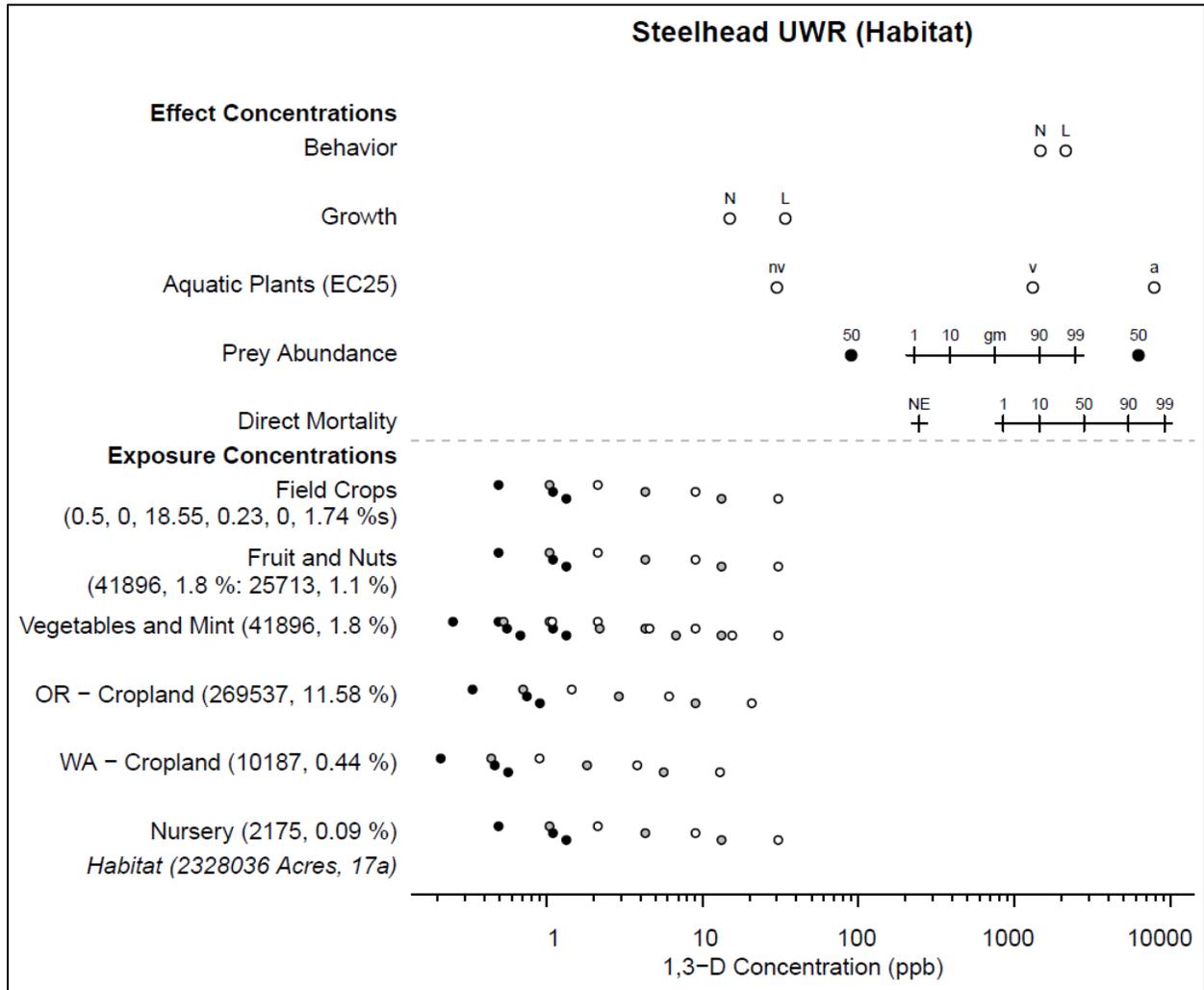
vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Upper Columbia River steelhead designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Upper Columbia River steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. 1,3-D products containing chloropicrin, however, may result in some reductions in the availability of juvenile fish as steelhead prey in low flow, low volume habitats. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.2.28 Upper Willamette River Steelhead Designated Critical Habitat; Products Containing 1,3-D**



**Figure 30. Effects analysis Risk-plot; Steelhead, Upper Willamette River DPS designated critical habitat; aquatic plants and products containing 1,3-Dichloropropene**

**Table 139. Likelihood of exposure determination for Steelhead, Upper Willamette River DPS designated critical habitat and products containing 1,3-Dichloropropene**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
WA Cropland	1	no	yes	no	Low
OR Cropland	3	no	yes	NA	High
Mint	2	no	no	NA	Low
Nursery	1	no	no	no	Low
Fruit and Nuts	2	no	no	NA	Low
Field Crops	3	no	no	NA	Medium
Vegetable Crops	2	no	no	NA	Low

**Table 140. Prey risk hypothesis; Steelhead, Upper Willamette River DPS designated critical habitat and products containing 1,3-Dichloropropene**

Endpoint: Prey				
Use Category	% Overlap	Effect of Exposure (Invertebrates / Fish)		Likelihood of Exposure
		1,3-D	Chloropicrin	
OR – Cropland	11.58	None Expected	None Expected / Medium	High
WA – Cropland	0.44	None Expected	None Expected / Medium	Low
Mint	1.8	None Expected	None Expected / Medium	Low
Nursery	0.09	None Expected	None Expected / Medium	Low
Fruit and Nuts	1.8, 1.1	None Expected	None Expected / Medium	Low
Field Crops	0.5, 0, 18.55, 0.23, 0, 1.74	None Expected	None Expected / Medium	Medium

Vegetable Crops	1.8	None Expected	None Expected / Medium	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>				
<b>Risk</b>	<b>Confidence</b>			
<b>Low</b>	<b>Medium</b>			

**Table 141. Vegetative cover risk hypothesis; Steelhead, Upper Willamette River DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Vegetative Cover</b>				
Use Category	% Overlap	Effect of Exposure		Likelihood of Exposure
		1,3-D	Chloropicrin	
<b>Aquatic Plants</b>				
OR – Cropland	11.58	Low	Low	High
WA – Cropland	0.44	Low	Low	Low
Mint	1.8	Low	Low	Low
Nursery	0.09	Low	Low	Low
Fruit and Nuts	1.8, 1.1	Low	Low	Low
Field Crops	0.5, 0, 18.55, 0.23, 0, 1.74	Low	Low	Medium
Vegetable Crops	1.8	Low	Low	Low
<b>Terrestrial Plants</b>				
<p>Exposure to riparian terrestrial vegetation was considered from both vapor drift and surface run-off exposure pathways. For 1,3-D the effect of exposure to riparian plants via vapor drift is low. This is based on comparisons of vegetative vigor and seedling emergence endpoints to exposure estimates from field studies, monitoring data, as well as modeled concentrations. For chloropicrin, the effect of exposure to riparian plants via vapor drift is medium, this is based on the exceedance of vegetative vigor EC<sub>25</sub> values with modeled air concentrations. The effect of exposure of 1,3-D to riparian vegetation via runoff is low. This is based on comparisons of EECs from field studies as well as those calculated using exposure modeling. For chloropicrin, vegetative vigor and seedling emergence data relevant to the run-off exposure pathway are not available.</p>				

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 142. Water quality risk hypothesis; Steelhead, Upper Willamette River DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. The anticipated levels of products containing 1,3-Dichloropropene within the designated critical habitat of the Upper Willamette River steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. However, products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur. Adverse effects to aquatic plants are not anticipated. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 143. Effects analysis summary table; Steelhead, Upper Willamette River DPS designated critical habitat and products containing 1,3-Dichloropropene**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	Medium	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	Medium	Low	No

vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

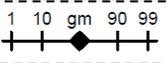
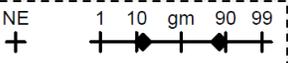
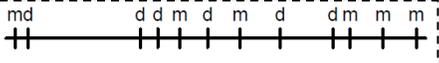
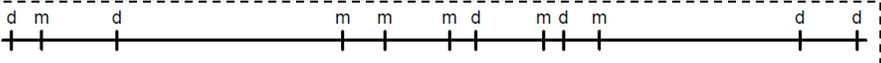
We anticipate that the stressors of the action will negatively affect some physical and biological features of Upper Willamette River steelhead designated critical habitat. The anticipated levels of products containing 1,3-D within the designated critical habitat of the Upper Willamette River steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. 1,3-D products containing chloropicrin, however, may result in some reductions in the availability of juvenile fish as steelhead prey in low flow, low volume habitats. We characterized risk associated with effects to aquatic vegetative cover as low, and terrestrial vegetation as medium, and although adverse effects to terrestrial vegetation could occur, we expect them to be limited in scope. Overall, we characterized risk associated with vegetative cover as medium, and the confidence in that risk as low. Additionally, the likelihood of exposure characterizations for products containing 1,3-D indicate a greater likelihood than is anticipated because labeled use sites are broadly categorized (e.g. field crops). 1,3-D products containing chloropicrin may result in exposures which could degrade water quality in proximity to low flow, low volume species habitats, where take could occur, however we anticipate these effects to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



### 15.3 Metolachlor Effects Analysis

The response endpoints displayed in the metolachlor risk plots that follow are provided in Table 144. See the introduction to the effects analysis chapter for more information regarding the available relevant toxicological data for these compounds.

**Table 144. Effects endpoints displayed in risk plots for metolachlor**

<p><b>Endpoint: Prey Abundance</b></p> <p><b>Invertebrates</b></p> <p>Invertebrate Abundance </p> <p>Test species: Water flea Duration: 96-hr Toxicity value (ppb): LC50 (black diamond) = 23,500; 25,100; geometric mean* (gm) = 24,287; slope = 4.5 (assumed) Citation/MRID: 40098001; 00015546</p>	
<p><b>Fish</b></p> <p>Fish Mortality </p> <p>Test species: Rainbow Trout; Rainbow Trout Duration: 96-hr Toxicity value (ppb): LC50 (black diamond) = 3,900; 11,900; geometric mean* (gm) = 6,840 slope = 4.5 (assumed); None Expected (NE) = 600 Citation/MRID: 00018722; 43928911</p>	
<p><b>Endpoint: Aquatic Plants</b></p> <p>Aquatic Plants (EC25) </p> <p>Test species: Green algae (a); Duckweed (v); Freshwater diatom (nv) Duration: 5-day Toxicity value (ppb): EC25= 4.8; 13; 42 Citation/MRID: 43928929; 43928931; 43541302</p>	
<p><b>Endpoint: Terrestrial Plants</b></p> <p>Vigor EC25 </p> <p>Test species (symbol) EC25 in lbs a.i./A: Ryegrass (m) 0.41; Cucumber (d) 0.44; Lettuce (d) 0.86; Soybean (d) 0.95; Barley (m) 1.09; Tomato (d) 1.28; Maize (m) 1.56; Sugar beet (d) 1.98; Oilseed rape (d) 2.71; Rice (m) 3.01; Oat (m) 3.66; Onion (m) &gt;4.46 Duration: 21-day Citation/MRID: 49930013</p> <p>Emergence EC25 </p>	

Test species (symbol) EC25 in lbs a.i./A: Lettuce (d) 0.02; Ryegrass (m) 0.03; Cucumber (d) 0.04; Barley (m) 0.064; Onion (m) 0.18; Rice (m) 0.24; Oat (m) 0.36; Tomato (d) 0.42; Sugar Beet (d) 0.72; Maize (m) 0.9; Oilseed rape (d) 3.13; Soybean (d) >4.46

Duration: 21-day

Citation/MRID: 49930012

*\*The calculation and reference to the geometric mean of the two different LC50s was determined appropriate as the studies were otherwise comparable in regards to species tested, exposure duration, and overall data quality.*

15.3.1 Columbia River Chum Salmon (*O. keta*) Designated Critical Habitat; Metolachlor

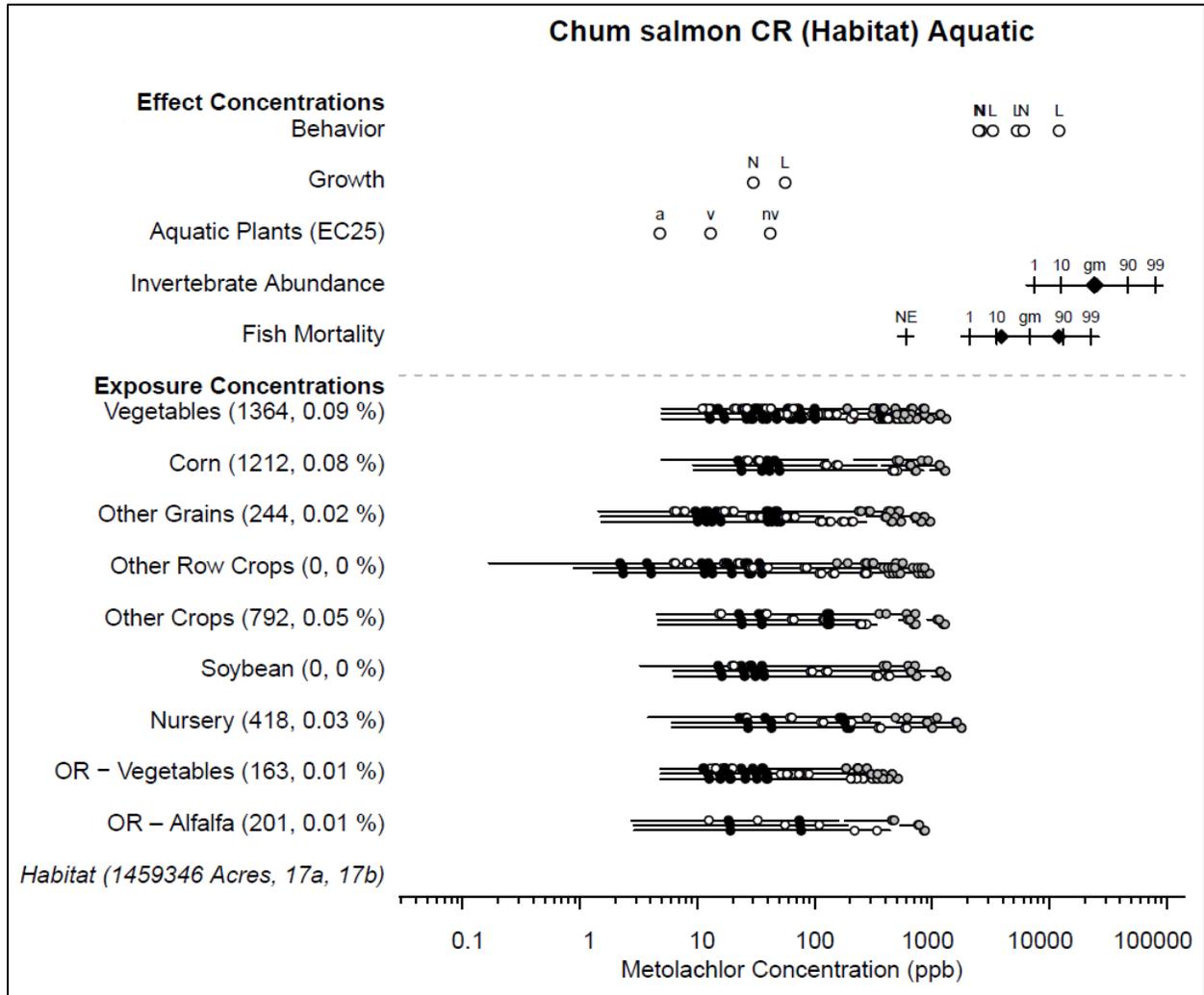


Figure 31. Effects analysis Risk-plot; chum salmon, Columbia River ESU designated critical habitat; aquatic plants and Metolachlor



**Table 145. Likelihood of exposure determination for chum salmon, Columbia River ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>Corn</b>	1	no	yes	yes	<b>High</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	yes	<b>High</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>OR - Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>OR - Alfalfa</b>	1	no	yes	no	<b>Low</b>

**Table 146. Prey risk hypothesis; chum salmon, Columbia River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.09	None Expected	High
Corn	0.08	None Expected	High
Other Grains	0.02	None Expected	Low
Other Row Crops	0	None Expected	Low
Other Crops	0.05	None Expected	High
Soybean	0	None Expected	Low
Nursery	0.03	Low	Low
OR – Vegetables	0.01	None Expected	High
OR – Alfalfa	0.01	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 147. Vegetative cover risk hypothesis; chum salmon, Columbia River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.09	High	High
Corn	0.08	High	High
Other Grains	0.02	High	Low
Other Row Crops	0	High	Low
Other Crops	0.05	High	High
Soybean	0	High	Low
Nursery	0.03	High	Low
OR – Vegetables	0.01	High	High
OR – Alfalfa	0.01	High	Low
<b>Terrestrial</b>			
Vegetables	0.09	High	High
Corn	0.08	High	High
Other Grains	0.02	High	Low
Other Row Crops	0	High	Low
Other Crops	0.05	High	High
Soybean	0	High	Low
Nursery	0.03	High	Low
OR – Vegetables	0.01	High	High
OR – Alfalfa	0.01	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 148. Water quality risk hypothesis; chum salmon, Columbia River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Columbia River chum ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 149. Effects analysis summary table; chum salmon, Columbia River ESU designated critical habitat and Metolachlor**

	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
<b>Designated Critical Habitat; Risk Hypotheses</b>			
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	High	Medium	Yes

vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Columbia River chum salmon designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Columbia River chum salmon are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



15.3.2 Hood Canal summer-run Chum (O. keta) Designated Critical Habitat; Metolachlor

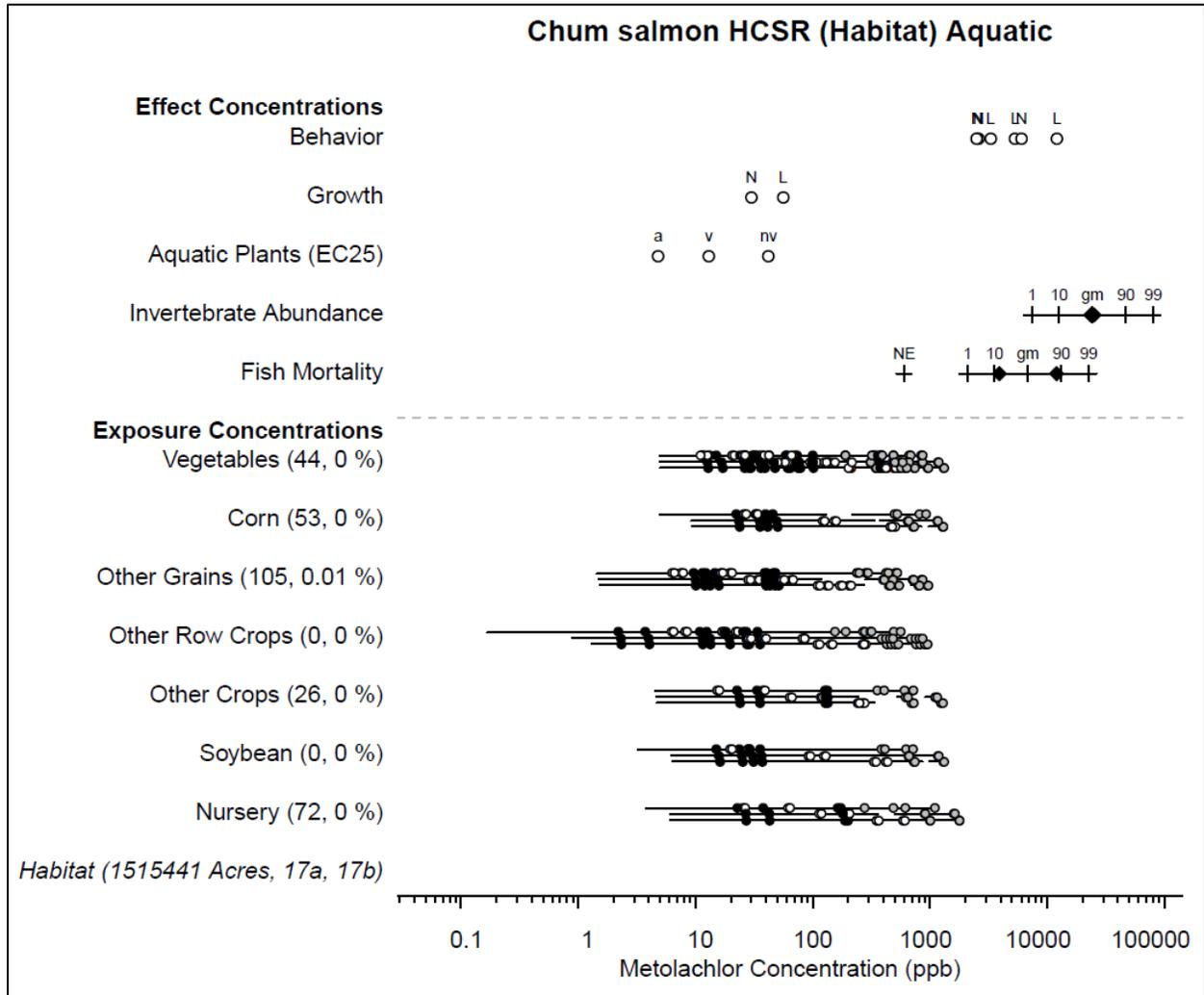


Figure 33. Effects analysis Risk-plot; chum salmon, Hood Canal summer-run ESU designated critical habitat; aquatic plants and Metolachlor



**Table 150. Likelihood of exposure determination for chum salmon, Hood Canal summer-run ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>Corn</b>	1	no	yes	no	<b>Low</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	no	<b>Low</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>

**Table 151. Prey risk hypothesis; chum salmon, Hood Canal summer-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0	None Expected	Low
Corn	0	None Expected	Low
Other Grains	0.01	None Expected	Low
Other Row Crops	0	None Expected	Low
Other Crops	0	None Expected	Low
Soybean	0	None Expected	Low
Nursery	0	Low	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>Low</b>	<b>High</b>		

**Table 152. Vegetative cover risk hypothesis; chum salmon, Hood Canal summer-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0	High	Low
Corn	0	High	Low
Other Grains	0.01	High	Low
Other Row Crops	0	High	Low
Other Crops	0	High	Low
Soybean	0	High	Low
Nursery	0	High	Low
<b>Terrestrial</b>			
Vegetables	0	High	Low
Corn	0	High	Low
Other Grains	0.01	High	Low
Other Row Crops	0	High	Low
Other Crops	0	High	Low
Soybean	0	High	Low
Nursery	0	High	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>Low</b>	<b>High</b>		

**Table 153. Water quality risk hypothesis; chum salmon, Hood Canal summer-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>
--------------------------------

<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Hood Canal summer-run chum ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however, these effects will be limited by the minimal extent of exposure. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

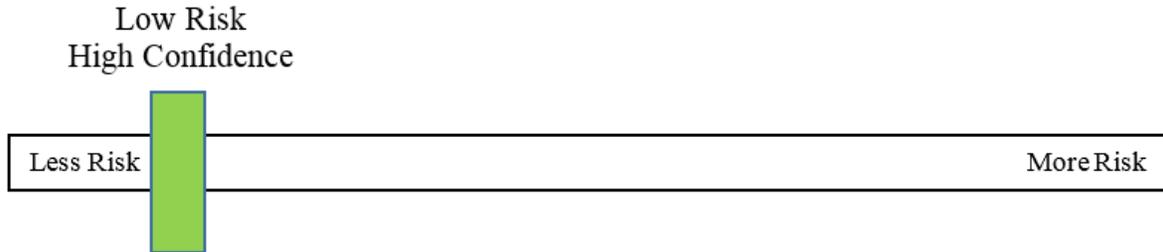
**Table 154. Effects analysis summary table; chum salmon, Hood Canal summer-run ESU designated critical habitat and Metolachlor**

Designated Critical Habitat; Risk Hypotheses	R-plot Derived		Risk Hypothesis Supported?
	Risk	Confidence	Yes/No
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Low	High	No

**Designated Critical Habitat Effects Analysis Summary**

We do not anticipate that the stressors of the action will negatively affect physical and biological features of Hood Canal summer-run chum salmon designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Hood Canal summer-run chum

ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is high due to the exposures predicted in critical habitats over the 15-year duration of the action.







**Table 155. Likelihood of exposure determination for Chinook salmon, California Coastal ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>Corn</b>	1	no	yes	no	<b>Low</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	no	<b>Low</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>CA - Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>CA - Cotton</b>	1	no	yes	no	<b>Low</b>

**Table 156. Prey risk hypothesis; Chinook salmon, California Coastal ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0	None Expected	Low
Corn	0	None Expected	Low
Other Grains	0.01	None Expected	Low
Other Row Crops	0	None Expected	Low
Other Crops	0	None Expected	Low
Soybean	0	None Expected	Low
Nursery	0	Low	Low
CA – Vegetables	0	None Expected	Low
CA – Cotton	0	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 157. Vegetative cover risk hypothesis; Chinook salmon, California Coastal ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0	High	Low
Corn	0	High	Low
Other Grains	0.01	High	Low
Other Row Crops	0	High	Low
Other Crops	0	High	Low
Soybean	0	High	Low
Nursery	0	High	Low
CA – Vegetables	0	High	Low
CA – Cotton	0	High	Low
<b>Terrestrial</b>			
Vegetables	0	High	Low
Corn	0	High	Low
Other Grains	0.01	High	Low
Other Row Crops	0	High	Low
Other Crops	0	High	Low
Soybean	0	High	Low
Nursery	0	High	Low
CA – Vegetables	0	High	Low
CA – Cotton	0	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 158. Water quality risk hypothesis; Chinook salmon, California Coastal ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the California Coastal Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however, these effects will be limited by the minimal extent of exposure. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

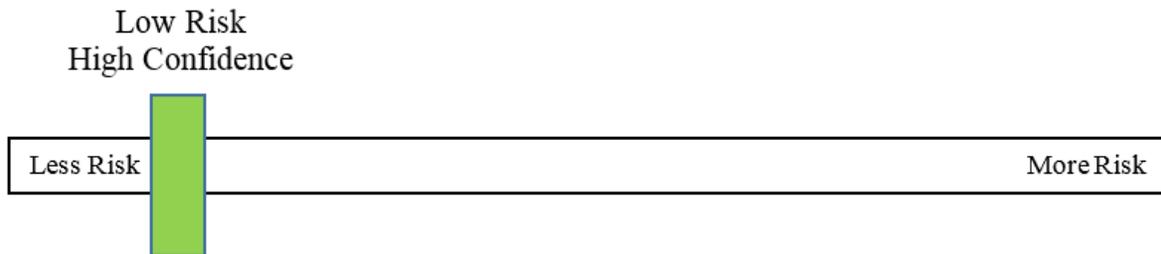
**Table 159. Effects analysis summary table; Chinook salmon, California Coastal ESU designated critical habitat and Metolachlor**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	High	No

Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Low	High	No

**Designated Critical Habitat Effects Analysis Summary**

We do not anticipate that the stressors of the action will negatively affect physical and biological features of California Coastal Chinook ESU designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the California Coastal Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is high due to the exposures predicted in critical habitats over the 15-year duration of the action.



15.3.5 Central Valley Spring-run Chinook Designated Critical Habitat; Metolachlor

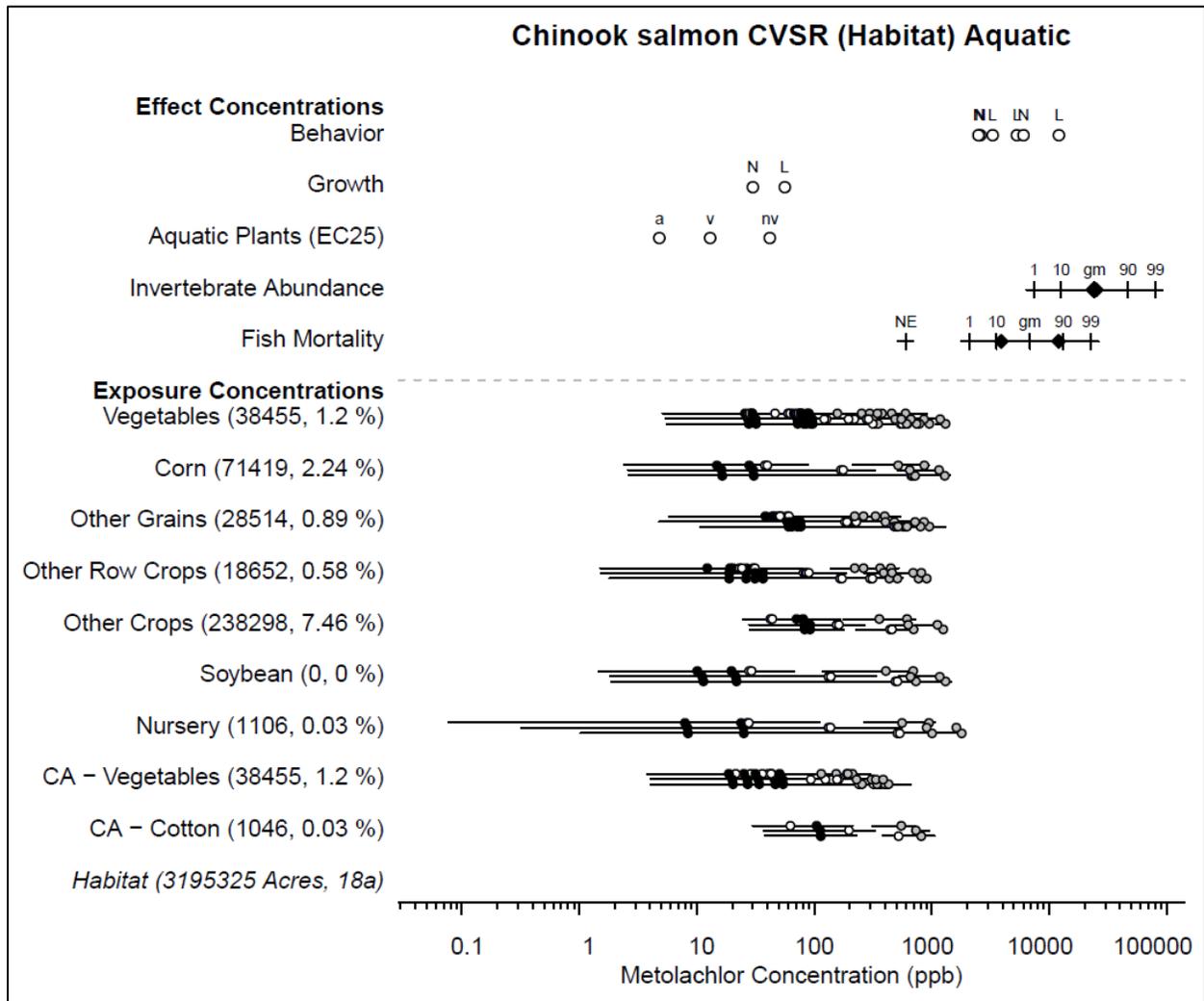


Figure 37. Effects analysis Risk-plot; Chinook salmon, Central Valley spring-run ESU designated critical habitat; aquatic plants and Metolachlor



**Table 160. Likelihood of exposure determination for Chinook salmon, Central Valley spring-run ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	2	no	yes	NA	<b>Medium</b>
<b>Corn</b>	2	no	yes	NA	<b>Medium</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	yes	<b>High</b>
<b>Other Crops</b>	3	no	yes	NA	<b>High</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>CA - Vegetables</b>	2	no	yes	NA	<b>Medium</b>
<b>CA - Cotton</b>	1	no	yes	no	<b>Low</b>

**Table 161. Prey risk hypothesis; Chinook salmon, Central Valley spring-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	1.2	None Expected	Medium
Corn	2.24	None Expected	Medium
Other Grains	0.89	None Expected	Low
Other Row Crops	0.58	None Expected	High
Other Crops	7.46	None Expected	High
Soybean	0	None Expected	Low
Nursery	0.03	Low	Low
CA – Vegetables	1.2	None Expected	Medium
CA – Cotton	0.03	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 162. Vegetative cover risk hypothesis; Chinook salmon, Central Valley spring-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	1.2	High	Medium
Corn	2.24	High	Medium
Other Grains	0.89	High	Low
Other Row Crops	0.58	High	High
Other Crops	7.46	High	High
Soybean	0	High	Low
Nursery	0.03	High	Low
CA – Vegetables	1.2	High	Medium
CA – Cotton	0.03	High	Low
<b>Terrestrial</b>			
Vegetables	1.2	High	Medium
Corn	2.24	High	Medium
Other Grains	0.89	High	Low
Other Row Crops	0.58	High	High
Other Crops	7.46	High	High
Soybean	0	High	Low
Nursery	0.03	High	Low
CA – Vegetables	1.2	High	Medium
CA – Cotton	0.03	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 163. Water quality risk hypothesis; Chinook salmon, Central Valley spring-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Chinook salmon, Central Valley spring-run ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 164. Effects analysis summary table; Chinook salmon, Central Valley spring-run ESU designated critical habitat and Metolachlor**

	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported?</b> Yes/No
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>Risk</b>	<b>Confidence</b>	

Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	High	Medium	Yes
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of California Central Valley spring-run Chinook salmon designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the California Central Valley spring-run Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.





15.3.6 Lower Columbia River Chinook Designated Critical Habitat; Metolachlor

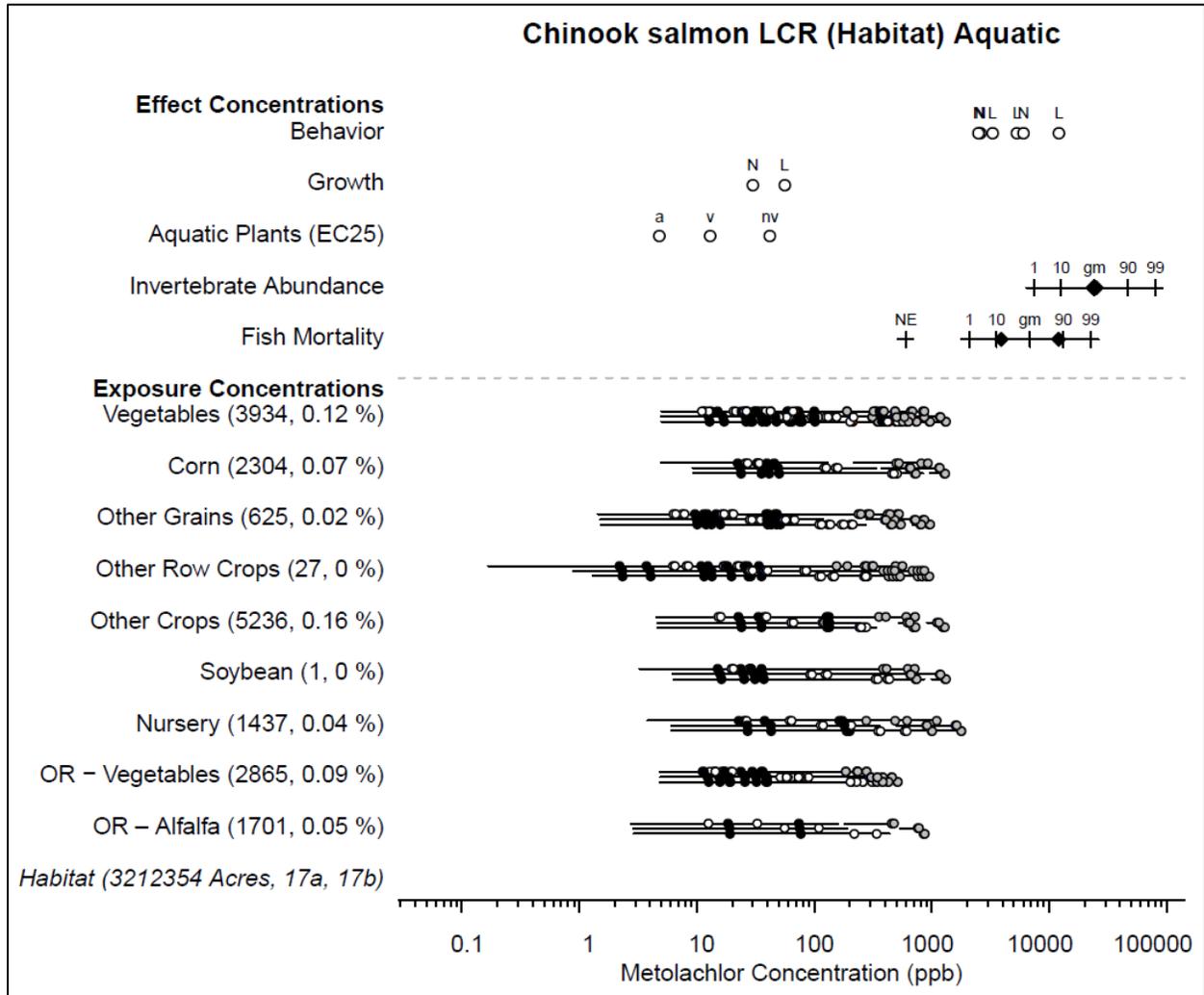


Figure 39. Effects analysis Risk-plot; Chinook salmon, Lower Columbia River ESU designated critical habitat; aquatic plants and Metolachlor



**Table 165. Likelihood of exposure determination for Chinook salmon, Lower Columbia River ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>Corn</b>	1	no	yes	yes	<b>High</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	yes	<b>High</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>OR - Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>OR - Alfalfa</b>	1	no	yes	no	<b>Low</b>

**Table 166. Prey risk hypothesis; Chinook salmon, Lower Columbia River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.12	None Expected	High
Corn	0.07	None Expected	High
Other Grains	0.02	None Expected	Low
Other Row Crops	0	None Expected	Low
Other Crops	0.16	None Expected	High
Soybean	0	None Expected	Low
Nursery	0.04	Low	Low
OR – Vegetables	0.09	None Expected	Low
OR – Alfalfa	0.05	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 167. Vegetative cover risk hypothesis; Chinook salmon, Lower Columbia River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.12	High	High
Corn	0.07	High	High
Other Grains	0.02	High	Low
Other Row Crops	0	High	Low
Other Crops	0.16	High	High
Soybean	0	High	Low
Nursery	0.04	High	Low
OR – Vegetables	0.09	High	Low
OR – Alfalfa	0.05	High	Low
<b>Terrestrial</b>			
Vegetables	0.12	High	High
Corn	0.07	High	High
Other Grains	0.02	High	Low
Other Row Crops	0	High	Low
Other Crops	0.16	High	High
Soybean	0	High	Low
Nursery	0.04	High	Low
OR – Vegetables	0.09	High	Low
OR – Alfalfa	0.05	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 168. Water quality risk hypothesis; Chinook salmon, Lower Columbia River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Chinook salmon, Lower Columbia River ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 169. Effects analysis summary table; Chinook salmon, Lower Columbia River ESU designated critical habitat and Metolachlor**

	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported?</b> Yes/No
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>Risk</b>	<b>Confidence</b>	

Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	High	Medium	Yes
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

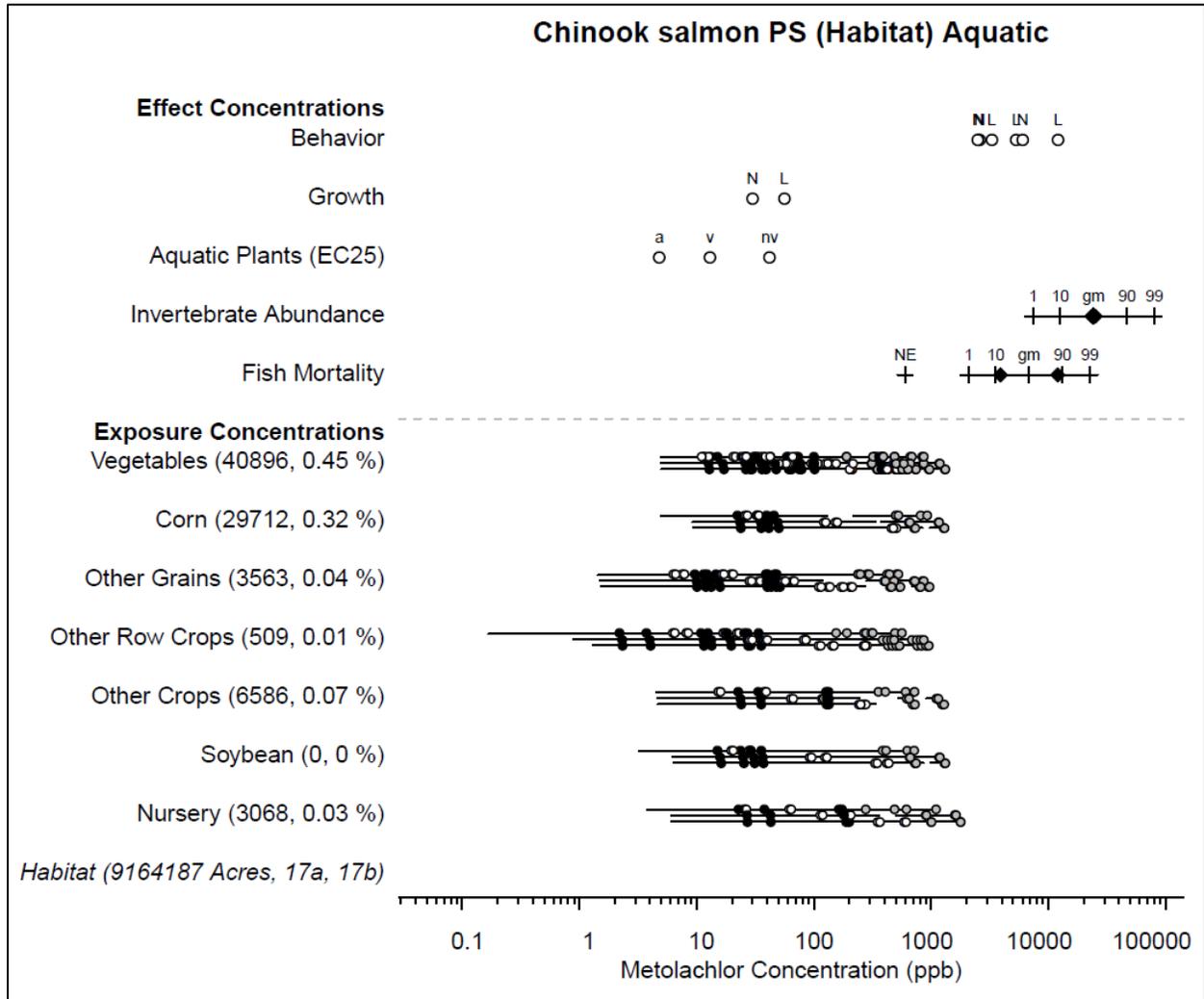
### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of Lower Columbia River Chinook salmon designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Lower Columbia River Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.





15.3.7 Puget Sound Chinook Designated Critical Habitat; Metolachlor



**Figure 41. Effects analysis Risk-plot; Chinook Salmon, Puget Sound ESU designated critical habitat; aquatic plants and Metolachlor**



**Table 170. Likelihood of exposure determination for Chinook Salmon, Puget Sound ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>Corn</b>	1	no	yes	yes	<b>High</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	no	<b>Low</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>

**Table 171. Prey risk hypothesis; Chinook Salmon, Puget Sound ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.45	None Expected	High
Corn	0.32	None Expected	High
Other Grains	0.04	None Expected	Low
Other Row Crops	0.01	None Expected	Low
Other Crops	0.07	None Expected	Low
Soybean	0	None Expected	Low
Nursery	0.03	Low	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>Low</b>	<b>High</b>		

**Table 172. Vegetative cover risk hypothesis; Chinook Salmon, Puget Sound ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.45	High	High
Corn	0.32	High	High
Other Grains	0.04	High	Low
Other Row Crops	0.01	High	Low
Other Crops	0.07	High	Low
Soybean	0	High	Low
Nursery	0.03	High	Low
<b>Terrestrial</b>			
Vegetables	0.45	High	High
Corn	0.32	High	High
Other Grains	0.04	High	Low
Other Row Crops	0.01	High	Low
Other Crops	0.07	High	Low
Soybean	0	High	Low
Nursery	0.03	High	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>High</b>	<b>Medium</b>		

**Table 173. Water quality risk hypothesis; Chinook Salmon, Puget Sound ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>
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<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Chinook salmon, Puget Sound ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 174. Effects analysis summary table; Chinook Salmon, Puget Sound ESU designated critical habitat and Metolachlor**

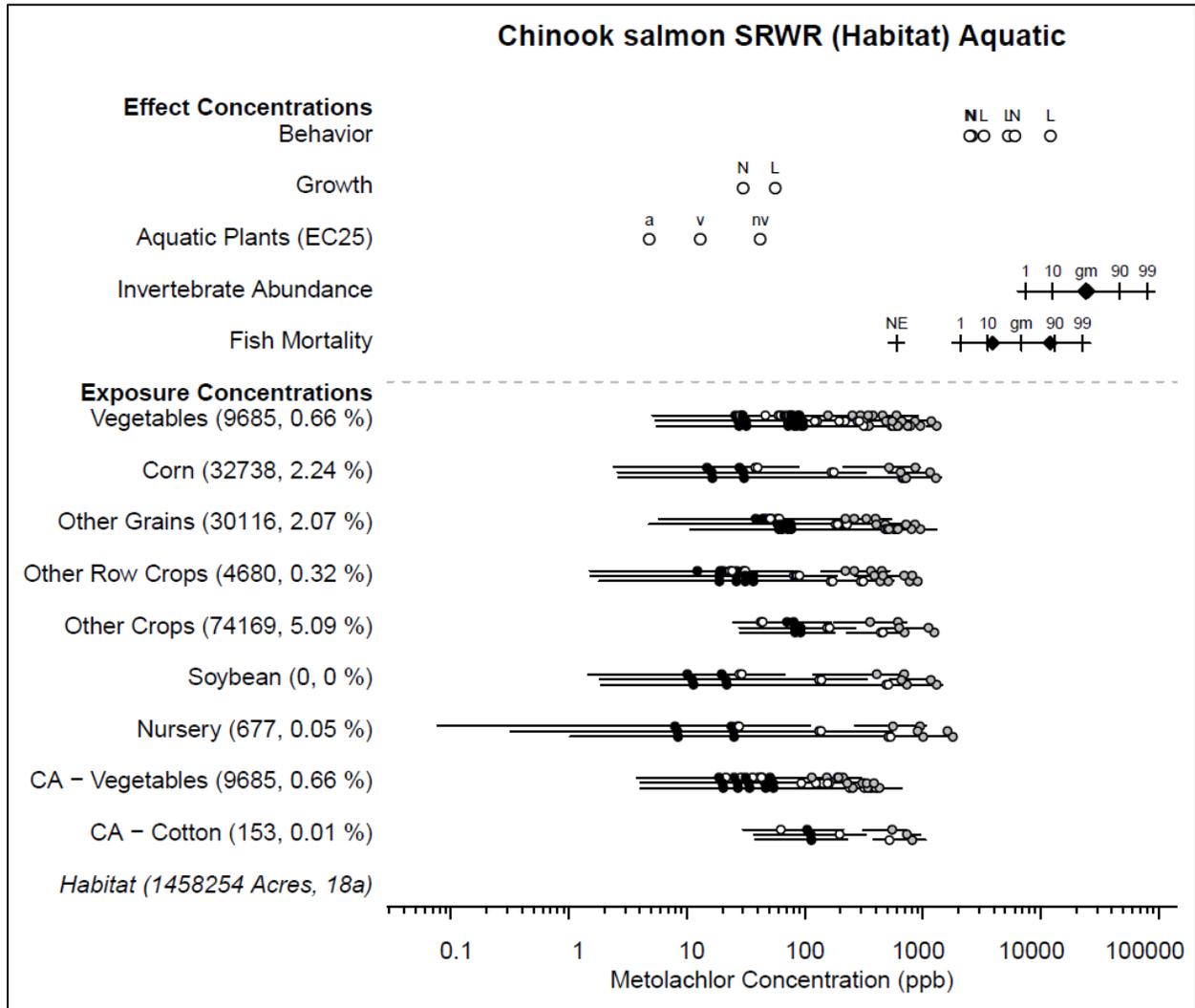
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	High	Medium	Yes
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of Puget Sound Chinook salmon designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Puget Sound Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



### 15.3.8 Sacramento River Winter-run Chinook Salmon Designated Critical Habitat; Metolachlor





**Table 175. Likelihood of exposure determination for Chinook salmon, Sacramento River winter-run ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>Corn</b>	2	no	yes	NA	<b>Medium</b>
<b>Other Grains</b>	2	no	yes	NA	<b>Medium</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	3	no	yes	NA	<b>High</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>CA - Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>CA - Cotton</b>	1	no	yes	no	<b>Low</b>

**Table 176. Prey risk hypothesis; Chinook salmon, Sacramento River winter-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.66	None Expected	Low
Corn	2.24	None Expected	Medium
Other Grains	2.07	None Expected	Medium
Other Row Crops	0.32	None Expected	Low
Other Crops	5.09	None Expected	High
Soybean	0	None Expected	Low
Nursery	0.05	Low	Low
CA – Vegetables	0.66	None Expected	Low
CA – Cotton	0.01	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 177. Vegetative cover risk hypothesis; Chinook salmon, Sacramento River winter-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.66	High	Low
Corn	2.24	High	Medium
Other Grains	2.07	High	Medium
Other Row Crops	0.32	High	Low
Other Crops	5.09	High	High
Soybean	0	High	Low
Nursery	0.05	High	Low
CA – Vegetables	0.66	High	Low
CA – Cotton	0.01	High	Low
<b>Terrestrial</b>			
Vegetables	0.66	High	Low
Corn	2.24	High	Medium
Other Grains	2.07	High	Medium
Other Row Crops	0.32	High	Low
Other Crops	5.09	High	High
Soybean	0	High	Low
Nursery	0.05	High	Low
CA – Vegetables	0.66	High	Low
CA – Cotton	0.01	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 178. Water quality risk hypothesis; Chinook salmon, Sacramento River winter-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Chinook salmon, Sacramento River winter-run ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 179. Effects analysis summary table; Chinook salmon, Sacramento River winter-run ESU designated critical habitat and Metolachlor**

	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported?</b> Yes/No
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>Risk</b>	<b>Confidence</b>	

Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	High	Medium	Yes
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

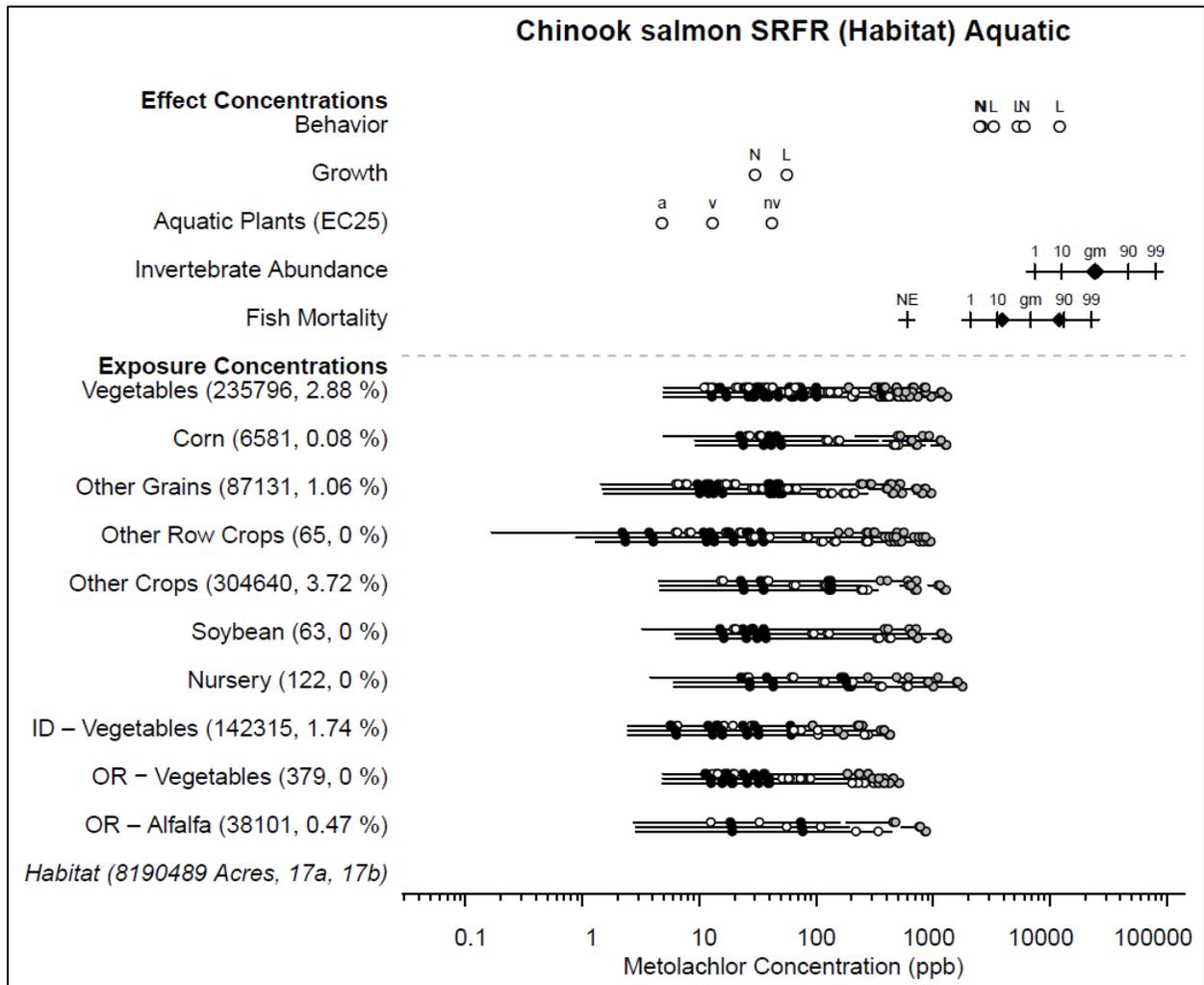
**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Sacramento River winter-run Chinook salmon designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Sacramento River winter-run Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.





**15.3.9 Snake River Fall-run Chinook Salmon Designated Critical Habitat; Metolachlor**



**Figure 45. Effects analysis Risk-plot; Chinook salmon, Snake River fall-run ESU designated critical habitat; aquatic plants and Metolachlor**



**Table 180. Likelihood of exposure determination for Chinook salmon, Snake River fall-run ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
Vegetables	2	no	yes	NA	Medium
Corn	1	no	yes	yes	High
Other Grains	2	no	yes	NA	Medium
Other Row Crops	1	no	yes	no	Low
Other Crops	2	no	yes	NA	Medium
Soybean	1	no	yes	no	Low
Nursery	1	no	yes	no	Low
ID - Vegetables	2	no	yes	NA	Medium
OR - Vegetables	1	no	yes	no	Low
OR - Alfalfa	1	no	yes	no	Low

**Table 181. Prey risk hypothesis; Chinook salmon, Snake River fall-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
Use Category	% Overlap	Effect of Exposure	Likelihood of Exposure
Vegetables	2.88	None Expected	Medium
Corn	0.08	None Expected	High
Other Grains	1.06	None Expected	Medium
Other Row Crops	0	None Expected	Low
Other Crops	3.72	None Expected	Medium
Soybean	0	None Expected	Low
Nursery	0	Low	Low
ID – Vegetables	1.74	None Expected	Medium
OR – Vegetables	0	None Expected	Low
OR – Alfalfa	0.47	None Expected	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 182. Vegetative cover risk hypothesis; Chinook salmon, Snake River fall-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	2.88	High	Medium
Corn	0.08	High	High
Other Grains	1.06	High	Medium
Other Row Crops	0	High	Low
Other Crops	3.72	High	Medium
Soybean	0	High	Low
Nursery	0	High	Low
ID – Vegetables	1.74	High	Medium
OR – Vegetables	0	High	Low
OR – Alfalfa	0.47	High	Low
<b>Terrestrial</b>			
Vegetables	2.88	High	Medium
Corn	0.08	High	High
Other Grains	1.06	High	Medium
Other Row Crops	0	High	Low
Other Crops	3.72	High	Medium
Soybean	0	High	Low
Nursery	0	High	Low
ID – Vegetables	1.74	High	Medium

OR – Vegetables	0	High	Low
OR – Alfalfa	0.47	High	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>High</b>	<b>Medium</b>		

**Table 183. Water quality risk hypothesis; Chinook salmon, Snake River fall-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Chinook salmon, Snake River fall-run ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 184. Effects analysis summary table; Chinook salmon, Snake River fall-run ESU designated critical habitat and Metolachlor**

	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported?</b> Yes/No
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>Risk</b>	<b>Confidence</b>	

Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	High	Medium	Yes
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

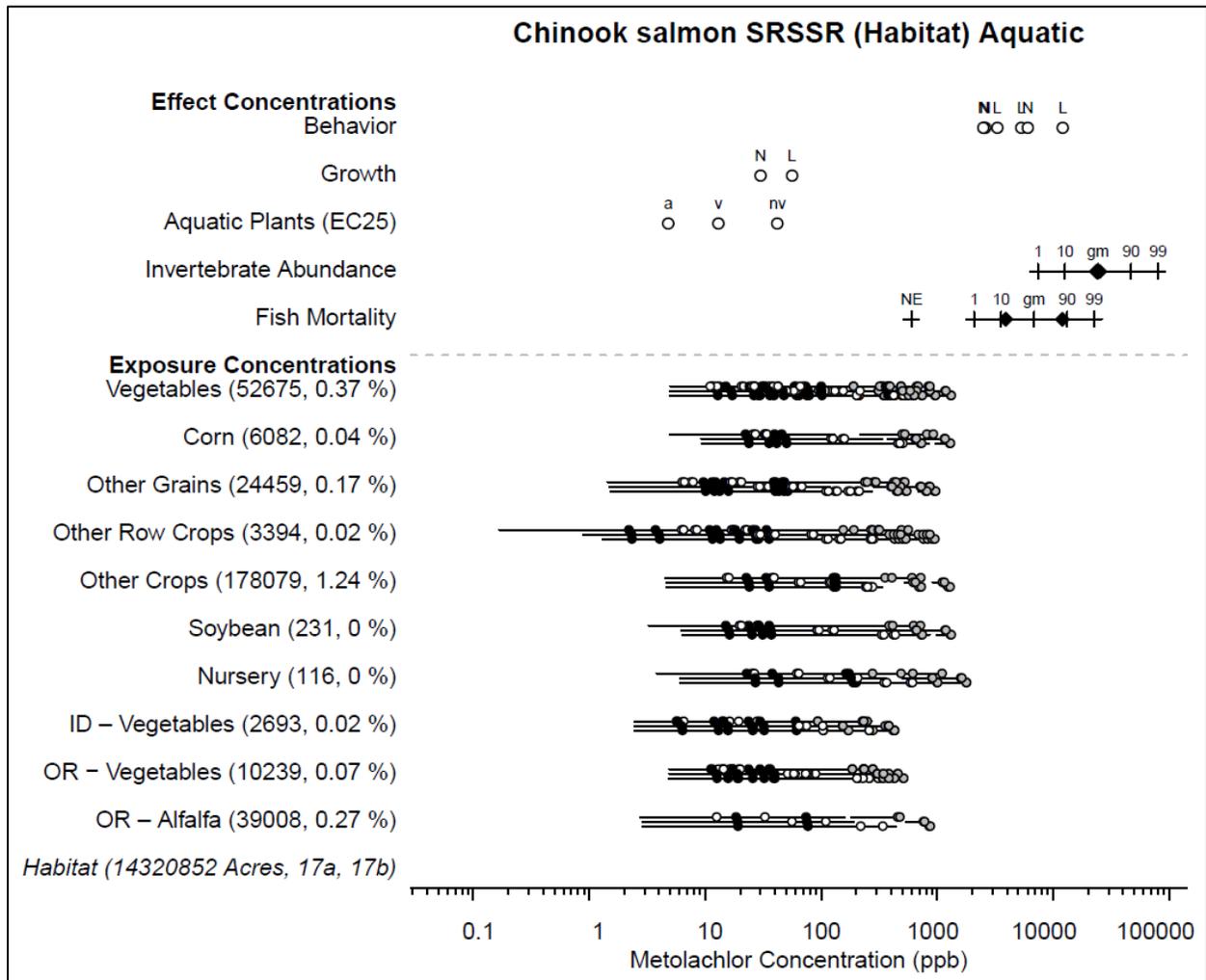
### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of Snake River Chinook salmon fall-run designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Snake River fall-run Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.





15.3.10 Snake River Spring/Summer-run Chinook Salmon Designated Critical Habitat;



**Figure 47. Effects analysis Risk-plot; Chinook salmon Snake River spring/summer-run ESU designated critical habitat; aquatic plants and Metolachlor**



**Table 185. Likelihood of exposure determination for Chinook salmon Snake River spring/summer-run ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
Vegetables	1	no	yes	no	Low
Corn	1	no	yes	yes	High
Other Grains	1	no	yes	no	Low
Other Row Crops	1	no	yes	no	Low
Other Crops	2	no	yes	NA	Medium
Soybean	1	no	yes	no	Low
Nursery	1	no	yes	no	Low
ID - Vegetables	1	no	yes	no	Low
OR - Vegetables	1	no	yes	no	Low
OR - Alfalfa	1	no	yes	no	Low

**Table 186. Prey risk hypothesis; Chinook salmon Snake River spring/summer-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.37	None Expected	Low
Corn	0.04	None Expected	High
Other Grains	0.17	None Expected	Low
Other Row Crops	0.02	None Expected	Low
Other Crops	1.24	None Expected	Medium
Soybean	0	None Expected	Low
Nursery	0	Low	Low
ID – Vegetables	0.02	None Expected	Low
OR – Vegetables	0.07	None Expected	Low
OR – Alfalfa	0.27	None Expected	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 187. Vegetative cover risk hypothesis; Chinook salmon Snake River spring/summer-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.37	High	Low
Corn	0.04	High	High
Other Grains	0.17	High	Low
Other Row Crops	0.02	High	Low
Other Crops	1.24	High	Medium
Soybean	0	High	Low
Nursery	0	High	Low
ID – Vegetables	0.02	High	Low
OR – Vegetables	0.07	High	Low
OR – Alfalfa	0.27	High	Low
<b>Terrestrial</b>			
Vegetables	0.37	High	Low
Corn	0.04	High	High
Other Grains	0.17	High	Low
Other Row Crops	0.02	High	Low
Other Crops	1.24	High	Medium
Soybean	0	High	Low
Nursery	0	High	Low
ID – Vegetables	0.02	High	Low

OR – Vegetables	0.07	High	Low
OR – Alfalfa	0.27	High	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>High</b>	<b>Medium</b>		

**Table 188. Water quality risk hypothesis; Chinook salmon Snake River spring/summer-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Chinook salmon, Snake River spring/summer-run ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 189. Effects analysis summary table; Chinook salmon Snake River spring/summer-run ESU designated critical habitat and Metolachlor**

	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported?</b> Yes/No
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>Risk</b>	<b>Confidence</b>	

Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	High	Medium	Yes
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

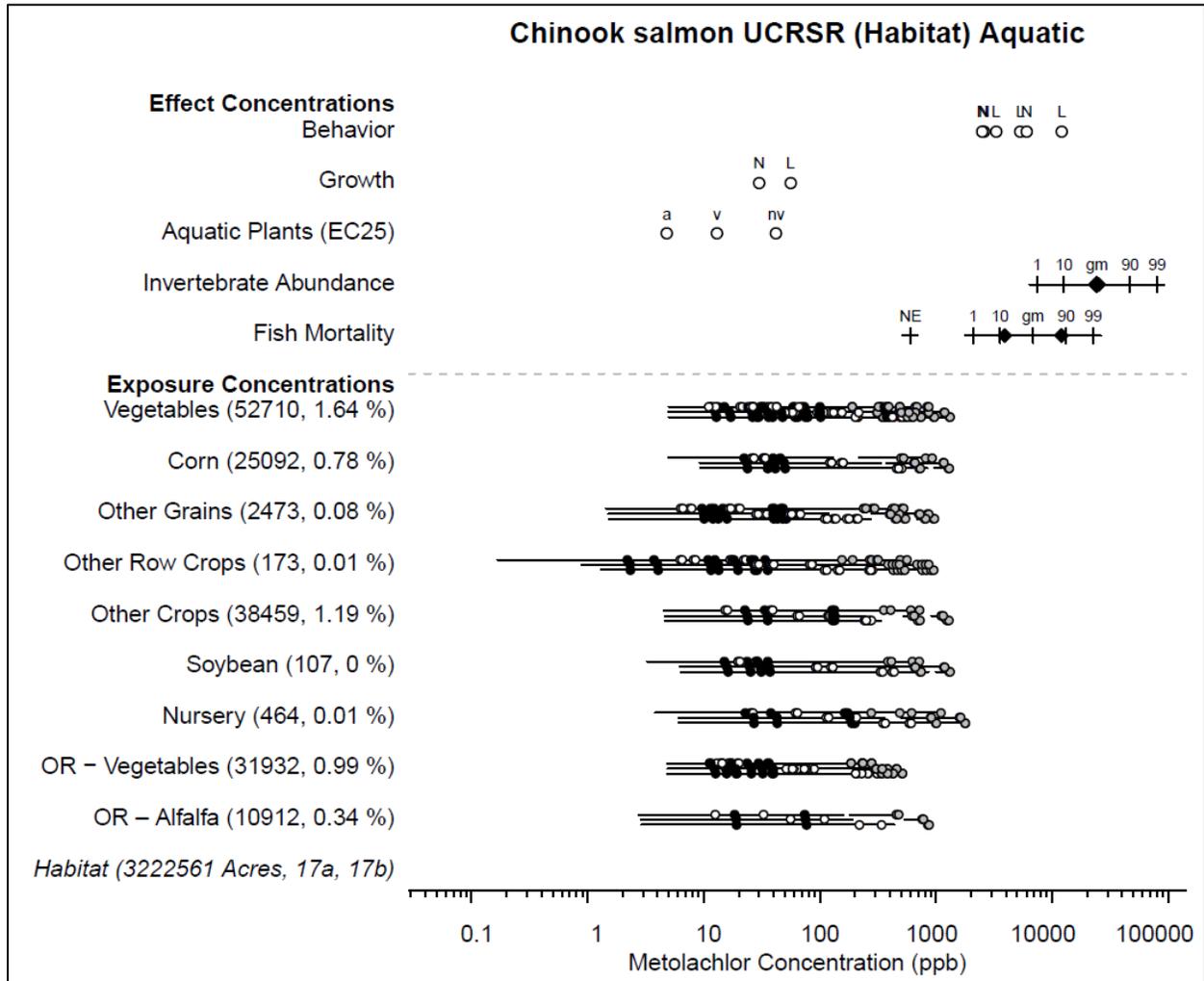
### Designated Critical Habitat Effects Analysis Summary

We anticipate that the stressors of the action will negatively affect some physical and biological features of Snake River spring/summer-run Chinook salmon designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Snake River spring/summer-run Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.

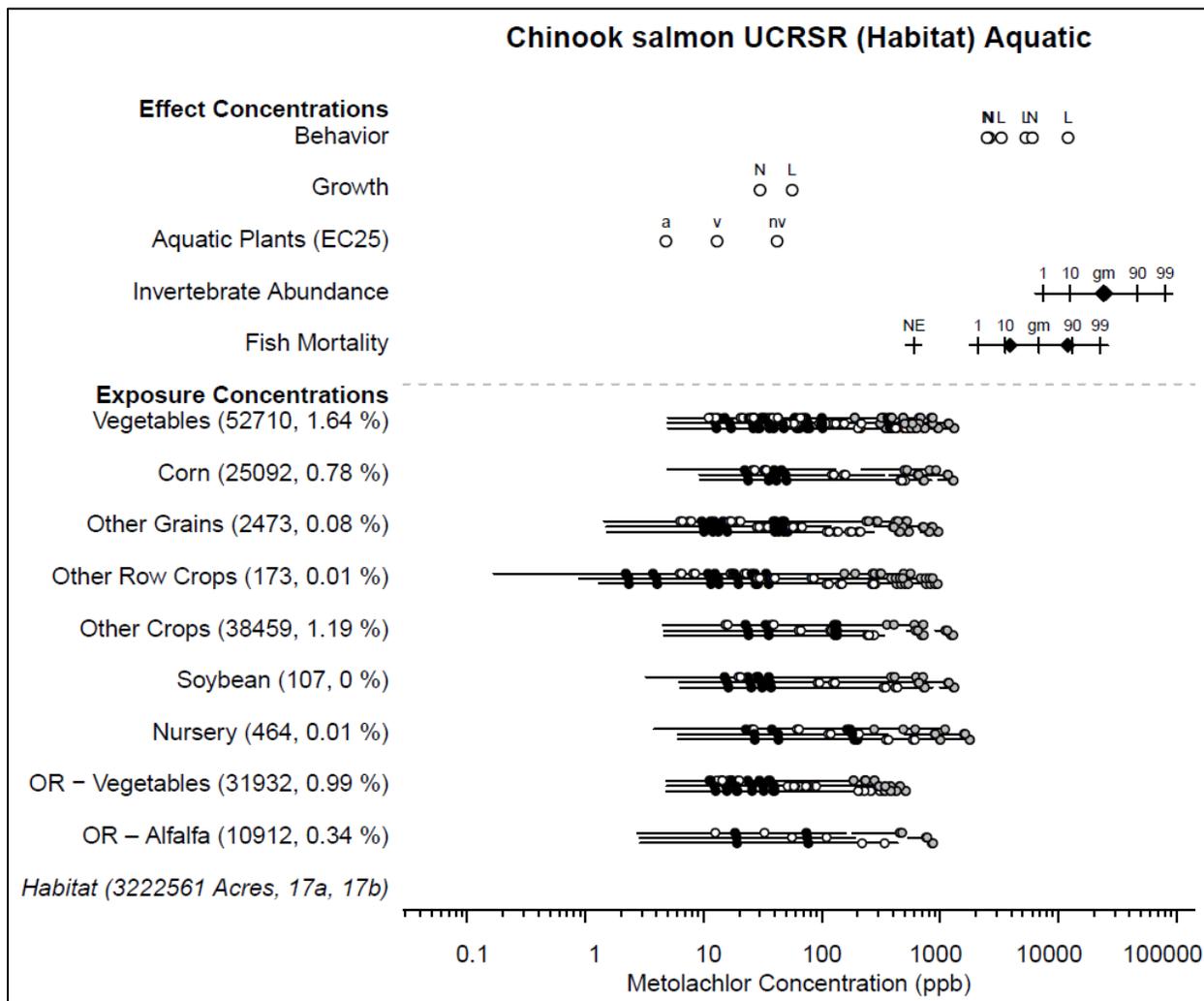




**15.3.11 Upper Columbia River Spring-run Chinook Salmon Designated Critical Habitat; Metolachlor**



**Figure 49. Effects analysis Risk-plot; Chinook salmon, Upper Columbia River spring-run ESU designated critical habitat; aquatic plants and Metolachlor**



**Figure 50. Effects analysis Risk-plot; Chinook salmon, Upper Columbia River spring-run ESU designated critical habitat; terrestrial plants, riparian habitat and Metolachlor**

**Table 190. Likelihood of exposure determination for Chinook salmon, Upper Columbia River spring-run ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
Vegetables	2	no	yes	NA	Medium
Corn	1	no	yes	yes	High
Other Grains	1	no	yes	no	Low
Other Row Crops	1	no	yes	no	Low
Other Crops	2	no	yes	NA	Medium
Soybean	1	no	yes	no	Low
Nursery	1	no	yes	no	Low
OR - Vegetables	1	no	yes	no	Low
OR - Alfalfa	1	no	yes	no	Low

**Table 191. Prey risk hypothesis; Chinook salmon, Upper Columbia River spring-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
Use Category	% Overlap	Effect of Exposure	Likelihood of Exposure
Vegetables	1.64	None Expected	Medium
Corn	0.78	None Expected	High
Other Grains	0.08	None Expected	Low
Other Row Crops	0.01	None Expected	Low
Other Crops	1.19	None Expected	Medium
Soybean	0	None Expected	Low
Nursery	0.01	Low	Low
OR – Vegetables	0.99	None Expected	Low
OR – Alfalfa	0.34	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 192. Vegetative cover risk hypothesis; Chinook salmon, Upper Columbia River spring-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	1.64	High	Medium
Corn	0.78	High	High
Other Grains	0.08	High	Low
Other Row Crops	0.01	High	Low
Other Crops	1.19	High	Medium
Soybean	0	High	Low
Nursery	0.01	High	Low
OR – Vegetables	0.99	High	Low
OR – Alfalfa	0.34	High	Low
<b>Terrestrial</b>			
Vegetables	1.64	High	Medium
Corn	0.78	High	High
Other Grains	0.08	High	Low
Other Row Crops	0.01	High	Low
Other Crops	1.19	High	Medium
Soybean	0	High	Low
Nursery	0.01	High	Low
OR – Vegetables	0.99	High	Low
OR – Alfalfa	0.34	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 193. Water quality risk hypothesis; Chinook salmon, Upper Columbia River spring-run ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Chinook salmon, Upper Columbia River spring-run ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 194. Effects analysis summary table; Chinook salmon, Upper Columbia River spring-run ESU designated critical habitat and Metolachlor**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	High	Medium	Yes

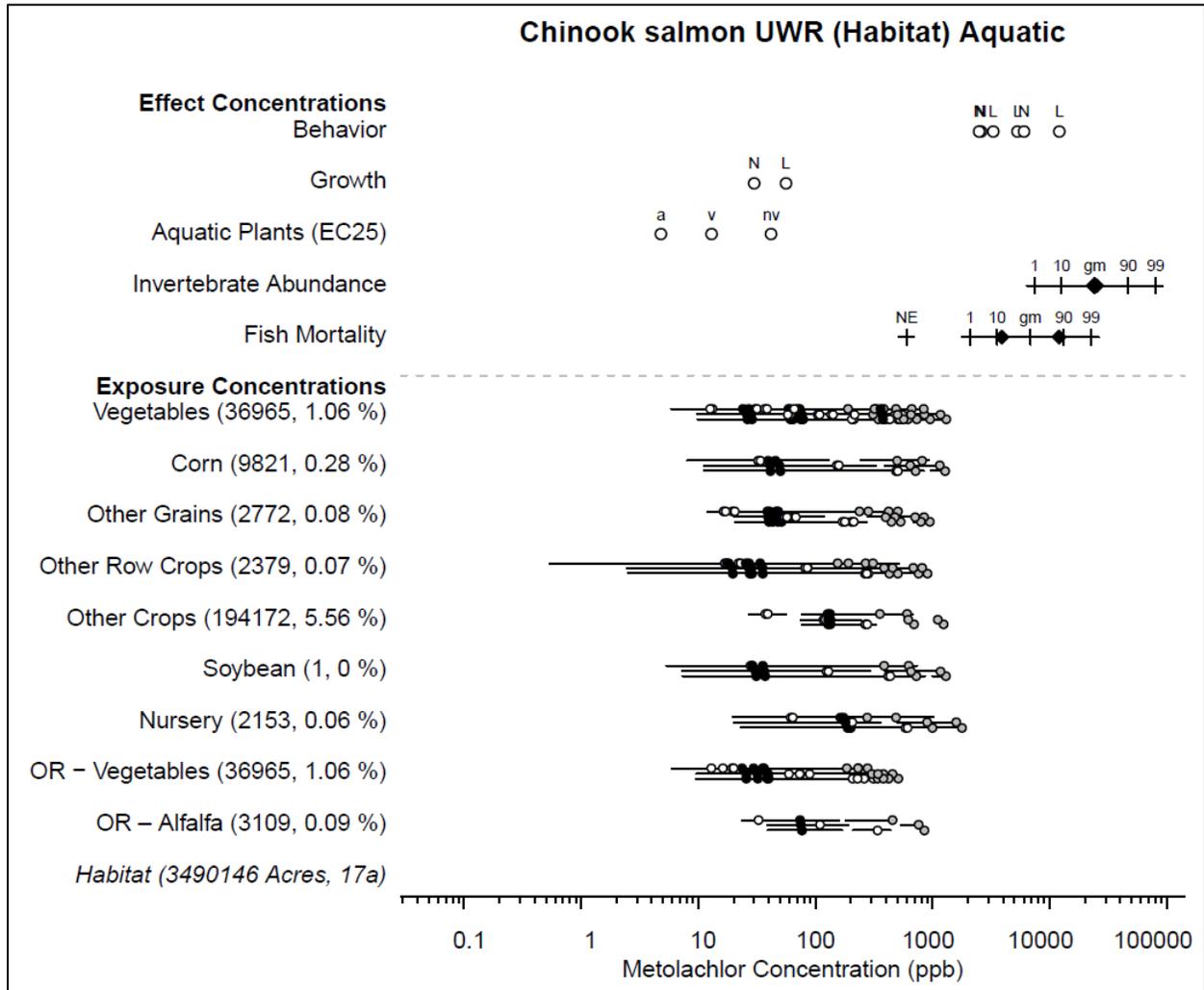
vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

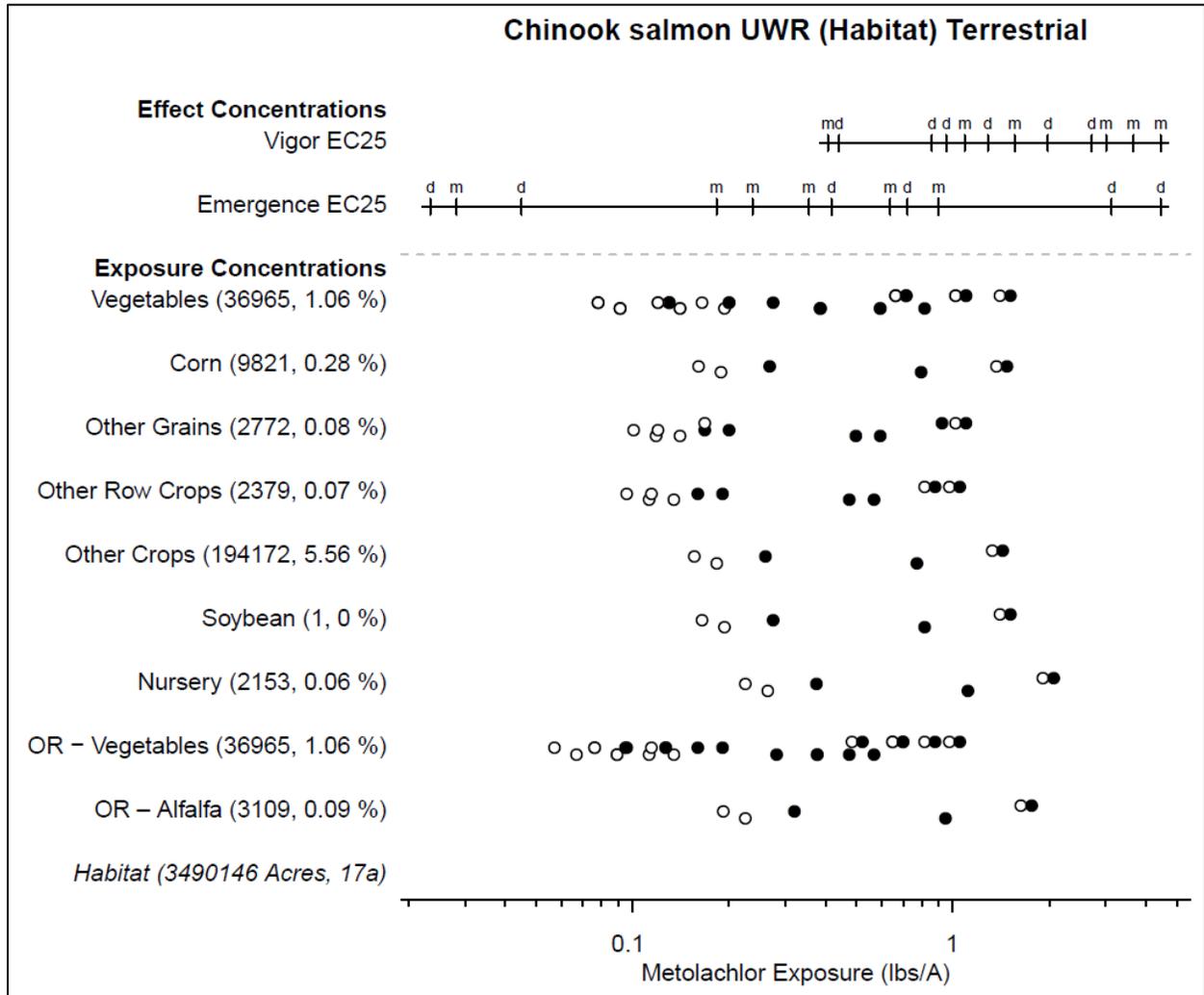
We anticipate that the stressors of the action will negatively affect some physical and biological features of Upper Columbia River Chinook salmon spring-run designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Upper Columbia River Chinook spring-run ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.3.12 Upper Willamette River Chinook Salmon Designated Critical Habitat;  
Metolachlor**



**Figure 51. Effects analysis Risk-plot; Chinook salmon, Upper Willamette River ESU designated critical habitat; aquatic plants and Metolachlor**



**Figure 52. Effects analysis Risk-plot; Chinook salmon, Upper Willamette River ESU designated critical habitat; terrestrial plants, riparian habitat and Metolachlor**

**Table 195. Likelihood of exposure determination for Chinook salmon, Upper Willamette River ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	2	no	yes	NA	<b>Medium</b>
<b>Corn</b>	1	no	yes	yes	<b>High</b>
<b>Other Grains</b>	1	no	yes	yes	<b>High</b>
<b>Other Row Crops</b>	1	no	yes	yes	<b>High</b>
<b>Other Crops</b>	3	no	yes	NA	<b>High</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>OR - Vegetables</b>	2	no	yes	NA	<b>Medium</b>
<b>OR - Alfalfa</b>	1	no	yes	no	<b>Low</b>

**Table 196. Prey risk hypothesis; Chinook salmon, Upper Willamette River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	1.06	None Expected	Medium
Corn	0.28	None Expected	High
Other Grains	0.08	None Expected	High
Other Row Crops	0.07	None Expected	High
Other Crops	5.56	None Expected	High
Soybean	0	None Expected	Low
Nursery	0.06	Low	Low
OR – Vegetables	1.06	None Expected	Medium
OR – Alfalfa	0.09	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 197. Vegetative cover risk hypothesis; Chinook salmon, Upper Willamette River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	1.06	High	Medium
Corn	0.28	High	High
Other Grains	0.08	High	High
Other Row Crops	0.07	High	High
Other Crops	5.56	High	High
Soybean	0	High	Low
Nursery	0.06	High	Low
OR – Vegetables	1.06	High	Medium
OR – Alfalfa	0.09	High	Low
<b>Terrestrial</b>			
Vegetables	1.06	High	Medium
Corn	0.28	High	High
Other Grains	0.08	High	High
Other Row Crops	0.07	High	High
Other Crops	5.56	High	High
Soybean	0	High	Low
Nursery	0.06	High	Low
OR – Vegetables	1.06	High	Medium
OR – Alfalfa	0.09	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 198. Water quality risk hypothesis; Chinook salmon, Upper Willamette River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Chinook salmon, Upper Willamette River ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 199. Effects analysis summary table; Chinook salmon, Upper Willamette River ESU designated critical habitat and Metolachlor**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	High	Medium	Yes

vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Upper Willamette River Chinook salmon designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Upper Willamette River Chinook ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



15.3.13 Central California Coast Coho Salmon Designated Critical Habitat; Metolachlor

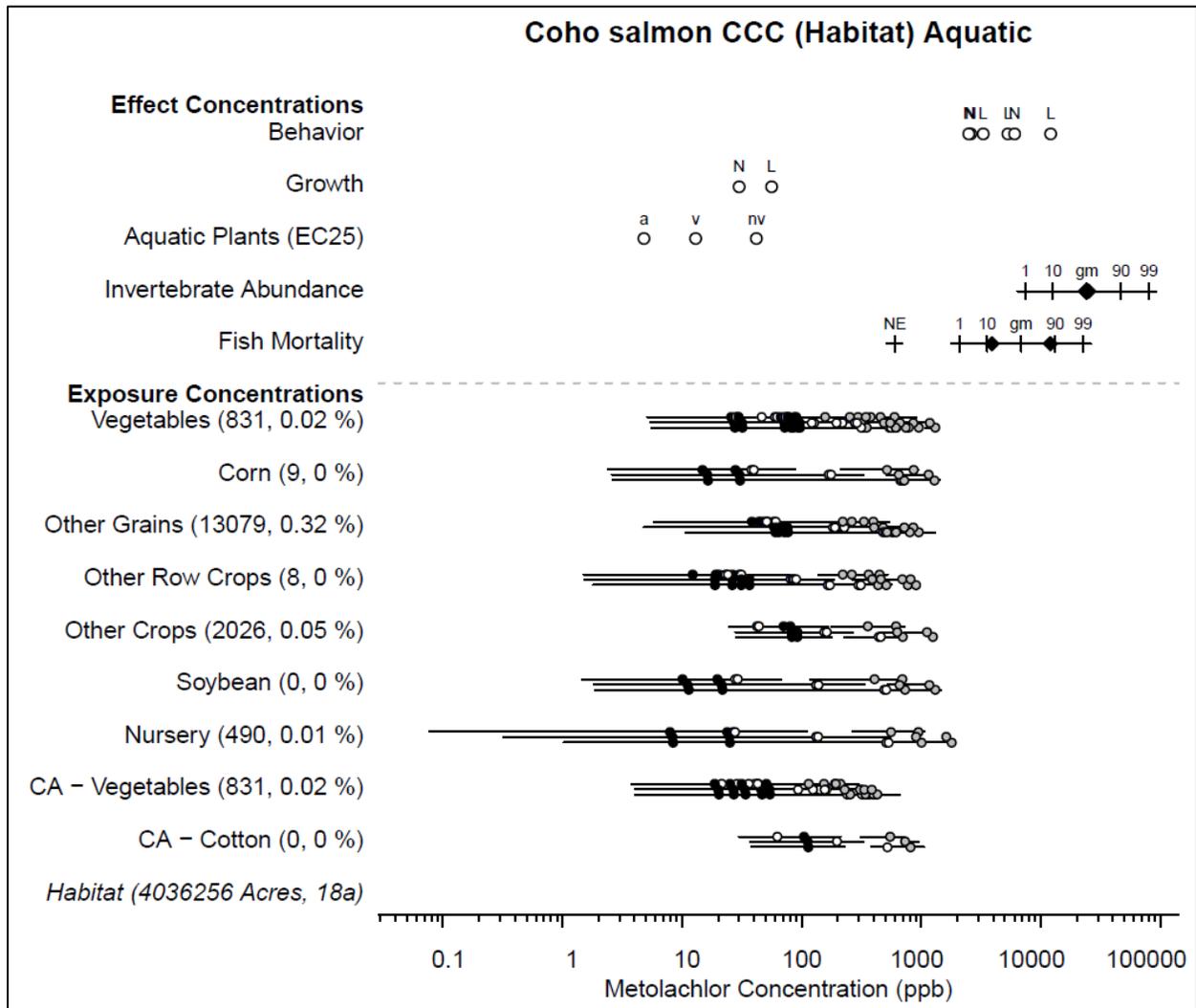


Figure 53. Effects analysis Risk-plot; Coho salmon, Central California Coast ESU designated critical habitat; aquatic plants and Metolachlor



**Table 200. Likelihood of exposure determination for Coho salmon, Central California Coast ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>Corn</b>	1	no	yes	no	<b>Low</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	no	<b>Low</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>CA - Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>CA - Cotton</b>	1	no	yes	no	<b>Low</b>

**Table 201. Prey risk hypothesis; Coho salmon, Central California Coast ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.02	None Expected	Low
Corn	0	None Expected	Low
Other Grains	0.32	None Expected	Low
Other Row Crops	0	None Expected	Low
Other Crops	0.05	None Expected	Low
Soybean	0	None Expected	Low
Nursery	0.01	Low	Low
CA – Vegetables	0.02	None Expected	Low
CA – Cotton	0	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 202. Vegetative cover risk hypothesis; Coho salmon, Central California Coast ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.02	High	Low
Corn	0	High	Low
Other Grains	0.32	High	Low
Other Row Crops	0	High	Low
Other Crops	0.05	High	Low
Soybean	0	High	Low
Nursery	0.01	High	Low
CA – Vegetables	0.02	High	Low
CA – Cotton	0	High	Low
<b>Terrestrial</b>			
Vegetables	0.02	High	Low
Corn	0	High	Low
Other Grains	0.32	High	Low
Other Row Crops	0	High	Low
Other Crops	0.05	High	Low
Soybean	0	High	Low
Nursery	0.01	High	Low
CA – Vegetables	0.02	High	Low
CA – Cotton	0	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 203. Water quality risk hypothesis; Coho salmon, Central California Coast ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Central California Coast Coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however, these effects will be limited by the minimal extent of exposure. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

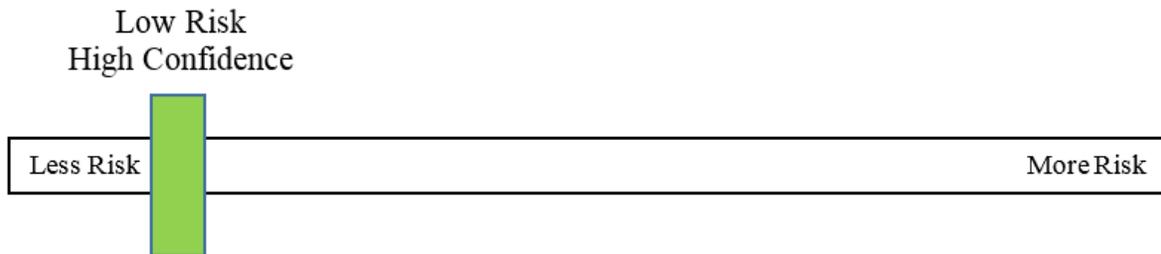
**Table 204. Effects analysis summary table; Coho salmon, Central California Coast ESU designated critical habitat and Metolachlor**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	High	No

Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Low	High	No

**Designated Critical Habitat Effects Analysis Summary**

We do not anticipate that the stressors of the action will negatively affect physical and biological features of Central California Coast Coho salmon designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Central California Coast Coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is high due to the exposures predicted in critical habitats over the 15-year duration of the action.



15.3.14 Lower Columbia River Coho Salmon Designated Critical Habitat; Metolachlor

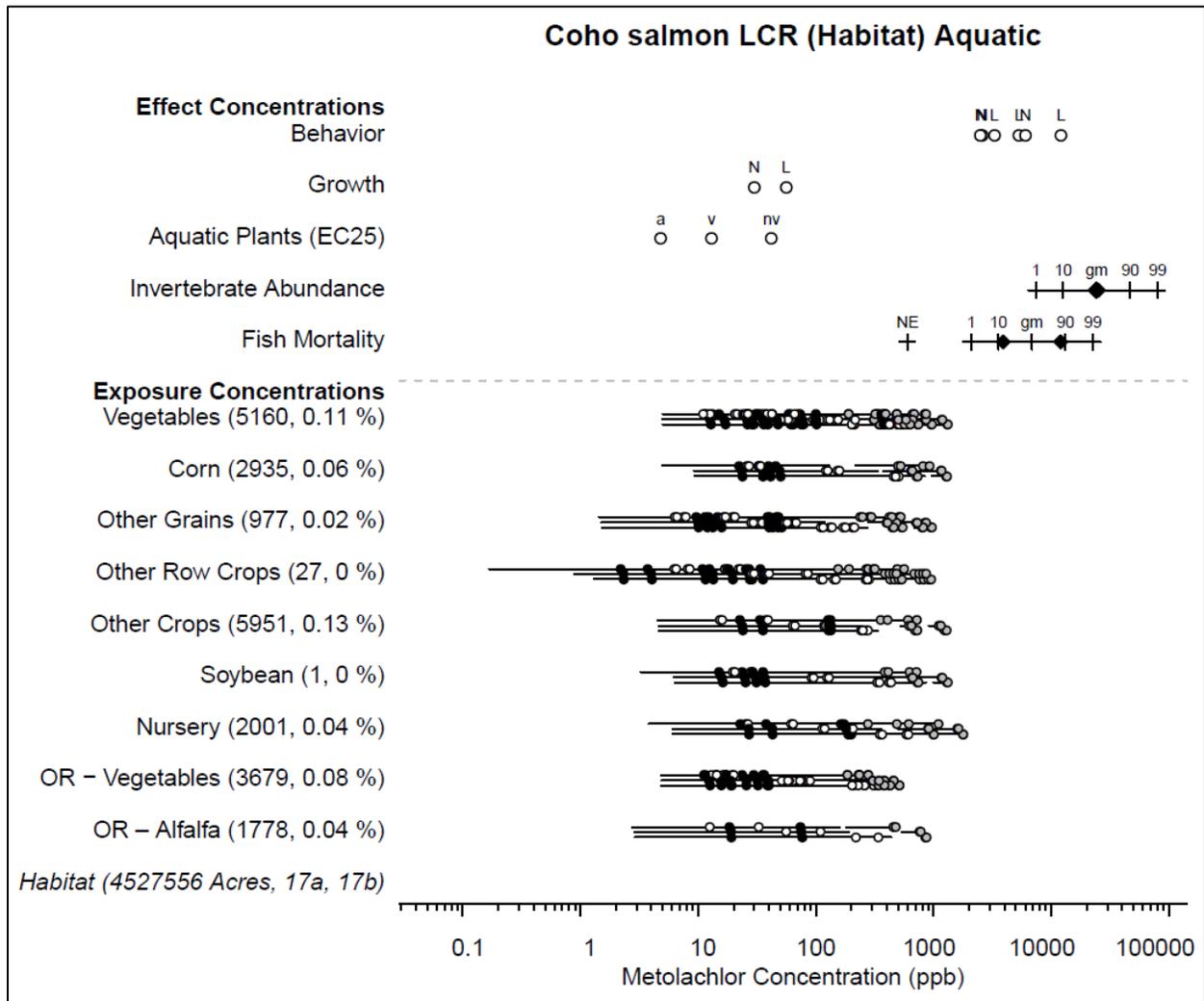


Figure 55. Effects analysis Risk-plot; Coho salmon, Lower Columbia River ESU designated critical habitat; aquatic plants and Metolachlor



**Table 205. Likelihood of exposure determination for Coho salmon, Lower Columbia River ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>Corn</b>	1	no	yes	yes	<b>High</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	yes	<b>High</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>OR - Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>OR - Alfalfa</b>	1	no	yes	no	<b>Low</b>

**Table 206. Prey risk hypothesis; Coho salmon, Lower Columbia River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.11	None Expected	High
Corn	0.06	None Expected	High
Other Grains	0.02	None Expected	Low
Other Row Crops	0	None Expected	Low
Other Crops	0.13	None Expected	High
Soybean	0	None Expected	Low
Nursery	0.04	Low	Low
OR – Vegetables	0.08	None Expected	High
OR – Alfalfa	0.04	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 207. Vegetative cover risk hypothesis; Coho salmon, Lower Columbia River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.11	High	High
Corn	0.06	High	High
Other Grains	0.02	High	Low
Other Row Crops	0	High	Low
Other Crops	0.13	High	High
Soybean	0	High	Low
Nursery	0.04	High	Low
OR – Vegetables	0.08	High	High
OR – Alfalfa	0.04	High	Low
<b>Terrestrial</b>			
Vegetables	0.11	High	High
Corn	0.06	High	High
Other Grains	0.02	High	Low
Other Row Crops	0	High	Low
Other Crops	0.13	High	High
Soybean	0	High	Low
Nursery	0.04	High	Low
OR – Vegetables	0.08	High	High
OR – Alfalfa	0.04	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 208. Water quality risk hypothesis; Coho salmon, Lower Columbia River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Coho salmon, Lower Columbia River ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 209. Effects analysis summary table; Coho salmon, Lower Columbia River ESU designated critical habitat and Metolachlor**

	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
<b>Designated Critical Habitat; Risk Hypotheses</b>			
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	High	Medium	Yes

vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Lower Columbia River Coho salmon designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Lower Columbia River Coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



15.3.15 Oregon Coast Coho Salmon Designated Critical Habitat; Metolachlor

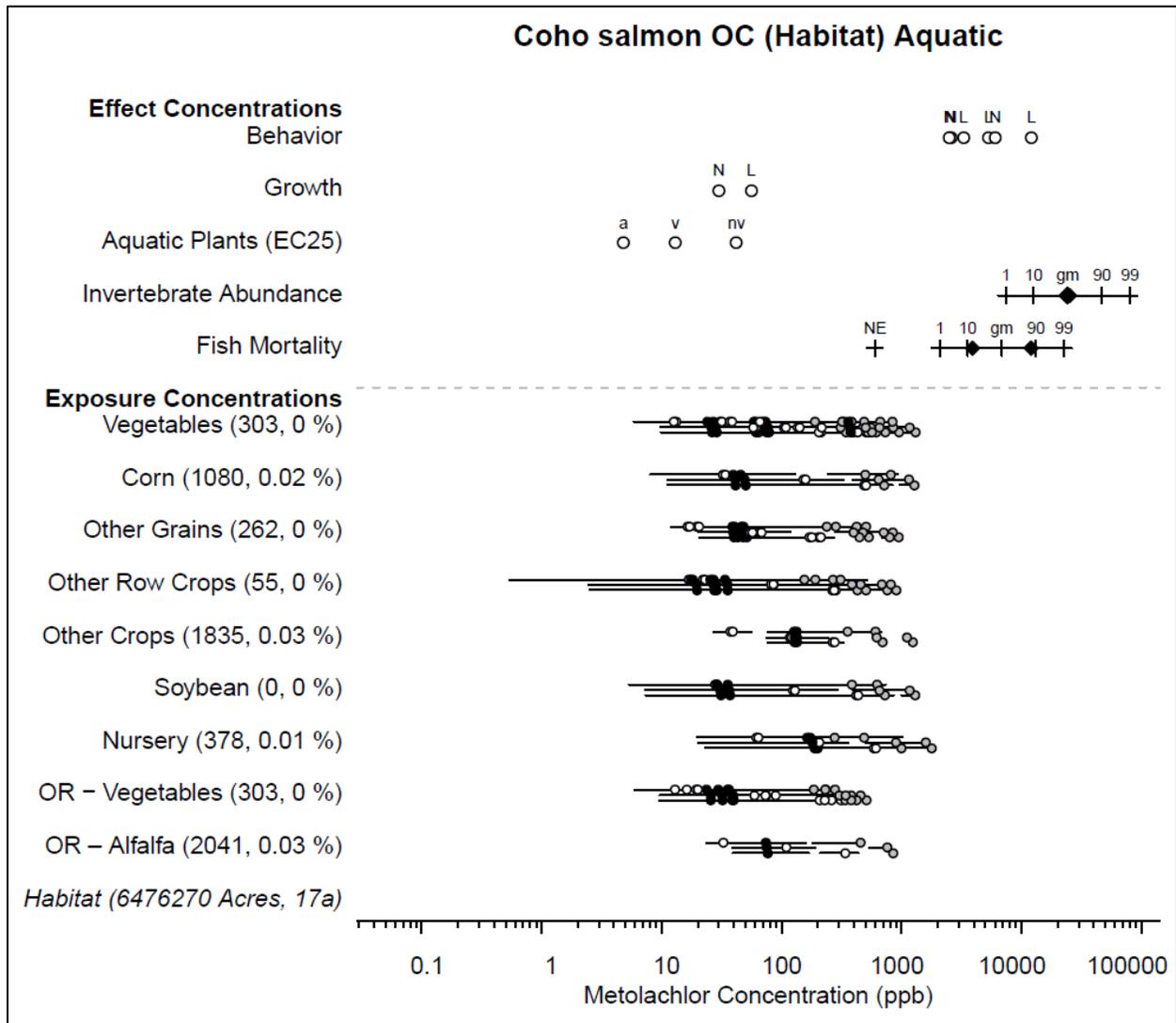
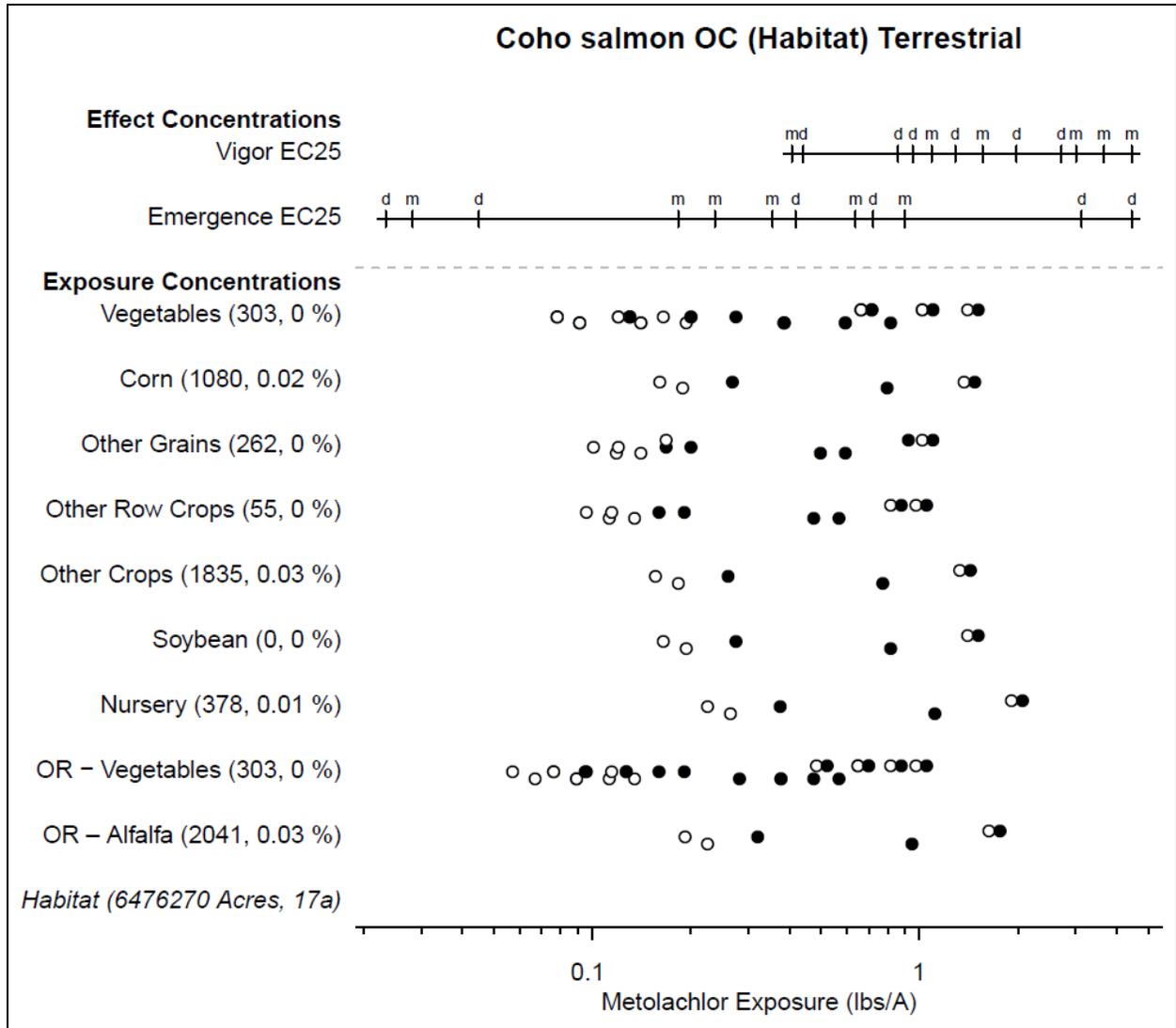


Figure 57. Effects analysis Risk-plot; Coho salmon, Oregon Coast ESU designated critical habitat; aquatic plants and Metolachlor



**Figure 58. Effects analysis Risk-plot; Coho salmon, Oregon Coast ESU designated critical habitat; terrestrial plants, riparian habitat and Metolachlor**

**Table 210. Likelihood of exposure determination for Coho salmon, Oregon Coast ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>Corn</b>	1	no	yes	no	<b>Low</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	no	<b>Low</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>OR - Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>OR - Alfalfa</b>	1	no	yes	no	<b>Low</b>

**Table 211. Prey risk hypothesis; Coho salmon, Oregon Coast ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0	None Expected	Low
Corn	0.02	None Expected	Low
Other Grains	0	None Expected	Low
Other Row Crops	0	None Expected	Low
Other Crops	0.03	None Expected	Low
Soybean	0	None Expected	Low
Nursery	0.01	Low	Low
CA – Vegetables	0	None Expected	Low
CA – Cotton	0.03	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 212. Vegetative cover risk hypothesis; Coho salmon, Oregon Coast ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0	High	Low
Corn	0.02	High	Low
Other Grains	0	High	Low
Other Row Crops	0	High	Low
Other Crops	0.03	High	Low
Soybean	0	High	Low
Nursery	0.01	High	Low
CA – Vegetables	0	High	Low
CA – Cotton	0.03	High	Low
<b>Terrestrial</b>			
Vegetables	0	High	Low
Corn	0.02	High	Low
Other Grains	0	High	Low
Other Row Crops	0	High	Low
Other Crops	0.03	High	Low
Soybean	0	High	Low
Nursery	0.01	High	Low
CA – Vegetables	0	High	Low
CA – Cotton	0.03	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 213. Water quality risk hypothesis; Coho salmon, Oregon Coast ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Oregon Coast Coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however, these effects will be limited by the minimal extent of exposure. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

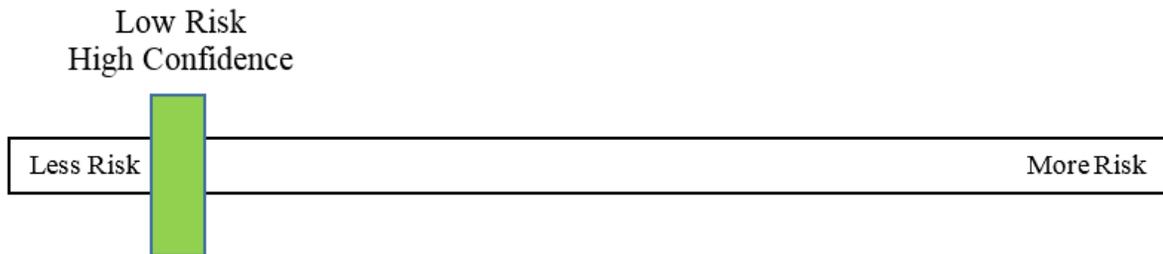
**Table 214. Effects analysis summary table; Coho salmon, Oregon Coast ESU designated critical habitat and Metolachlor**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	High	No

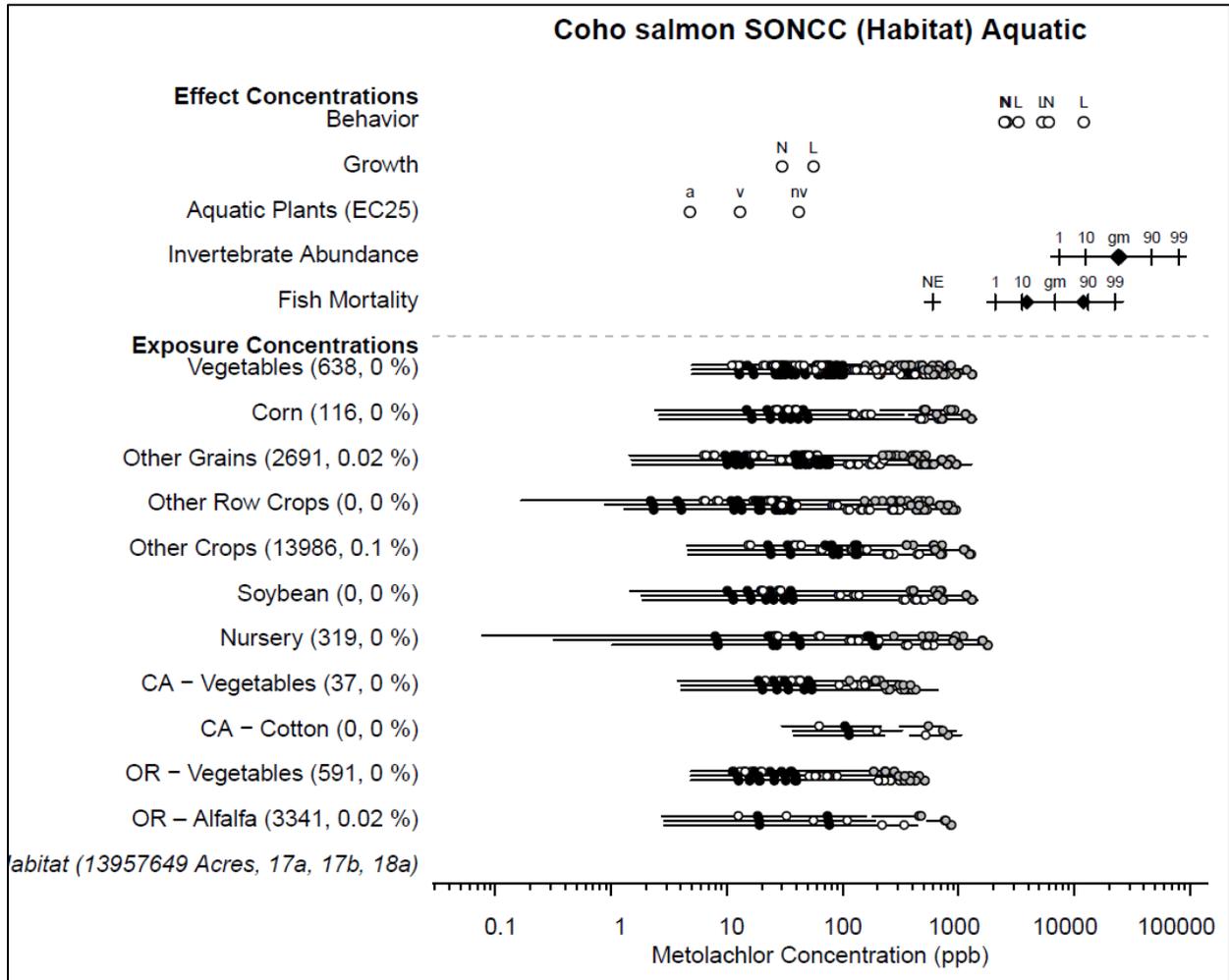
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Low	High	No

**Designated Critical Habitat Effects Analysis Summary**

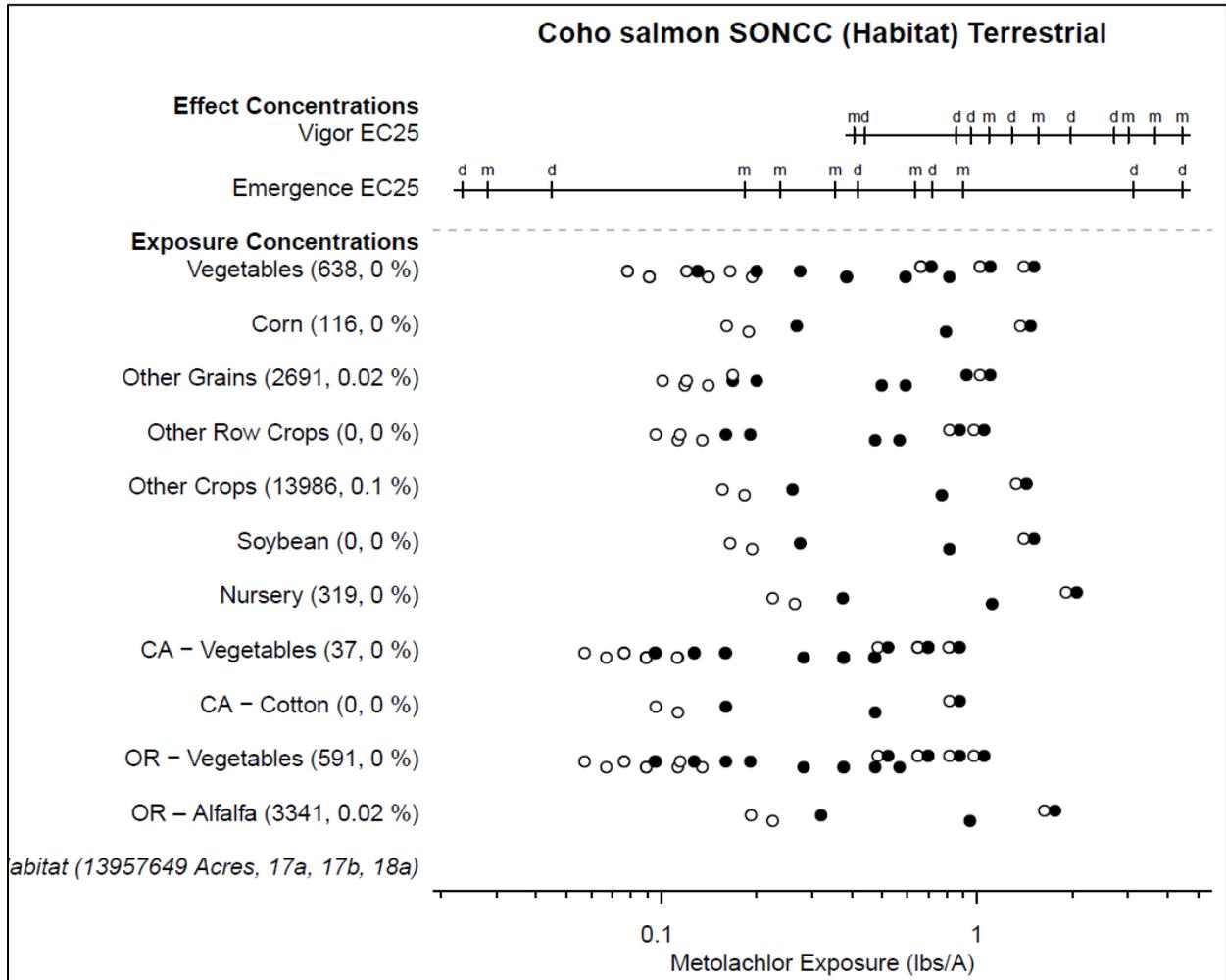
We do not anticipate that the stressors of the action will negatively affect physical and biological features of Oregon Coast Coho salmon designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Oregon Coast Coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is high due to the exposures predicted in critical habitats over the 15-year duration of the action.



### 15.3.16 Southern Oregon Northern California (SONC) Coho Salmon Designated Critical Habitat; Metolachlor



**Figure 59. Effects analysis Risk-plot; Coho salmon, Southern Oregon Northern California Coast ESU designated critical habitat; aquatic plants and Metolachlor**



**Figure 60. Effects analysis Risk-plot; Coho salmon, Southern Oregon Northern California Coast ESU designated critical habitat; terrestrial plants, riparian habitat and Metolachlor**

**Table 215. Likelihood of exposure determination for Coho salmon, Southern Oregon Northern California Coast ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>Corn</b>	1	no	yes	no	<b>Low</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	yes	<b>High</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>CA - Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>CA - Cotton</b>	1	no	yes	no	<b>Low</b>
<b>OR - Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>OR - Alfalfa</b>	1	no	yes	no	<b>Low</b>

**Table 216. Prey risk hypothesis; Coho salmon, Southern Oregon Northern California Coast ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0	None Expected	Low
Corn	0	None Expected	Low
Other Grains	0.02	None Expected	Low
Other Row Crops	0	None Expected	Low
Other Crops	0.1	None Expected	High
Soybean	0	None Expected	Low
Nursery	0	Low	Low
CA – Vegetables	0	None Expected	Low
CA – Cotton	0	None Expected	Low

OR – Vegetables	0	None Expected	Low
OR – Alfalfa	0.02	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>Low</b>	<b>High</b>		

**Table 217. Vegetative cover risk hypothesis; Coho salmon, Southern Oregon Northern California Coast ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0	High	Low
Corn	0	High	Low
Other Grains	0.02	High	Low
Other Row Crops	0	High	Low
Other Crops	0.1	High	High
Soybean	0	High	Low
Nursery	0	High	Low
CA – Vegetables	0	High	Low
CA – Cotton	0	High	Low
OR – Vegetables	0	High	Low
OR – Alfalfa	0.02	High	Low
<b>Terrestrial</b>			
Vegetables	0	High	Low
Corn	0	High	Low
Other Grains	0.02	High	Low
Other Row Crops	0	High	Low
Other Crops	0.1	High	High

Soybean	0	High	Low
Nursery	0	High	Low
CA – Vegetables	0	High	Low
CA – Cotton	0	High	Low
OR – Vegetables	0	High	Low
OR – Alfalfa	0.02	High	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>Medium</b>	<b>Low</b>		

**Table 218. Water quality risk hypothesis; Coho salmon, Southern Oregon Northern California Coast ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Southern Oregon Northern California Coast Coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however, these effects will be limited by the minimal extent of exposure. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

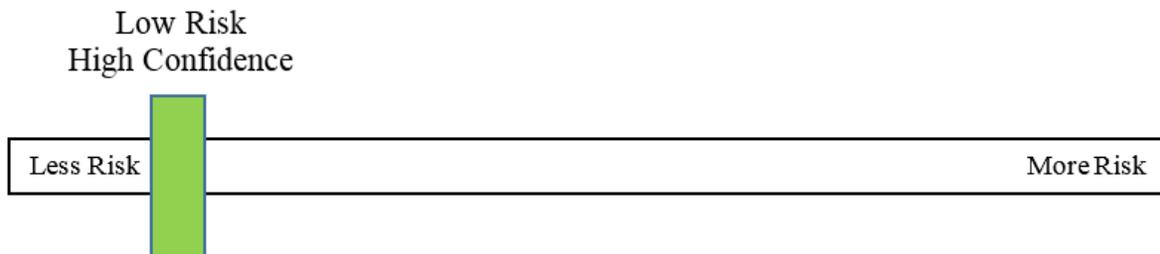
**Table 219. Effects analysis summary table; Coho salmon, Southern Oregon Northern California Coast ESU designated critical habitat and Metolachlor**

	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported?</b>
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>Risk</b>	<b>Confidence</b>	

			Yes/No
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Medium	Low	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Low	High	No

**Designated Critical Habitat Effects Analysis Summary**

We do not anticipate that the stressors of the action will negatively affect physical and biological features of Southern Oregon Northern California Coast Coho salmon designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Southern Oregon Northern California Coast Coho ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is high due to the exposures predicted in critical habitats over the 15-year duration of the action.



15.3.17 Ozette Lake Sockeye Designated Critical Habitat; Metolachlor

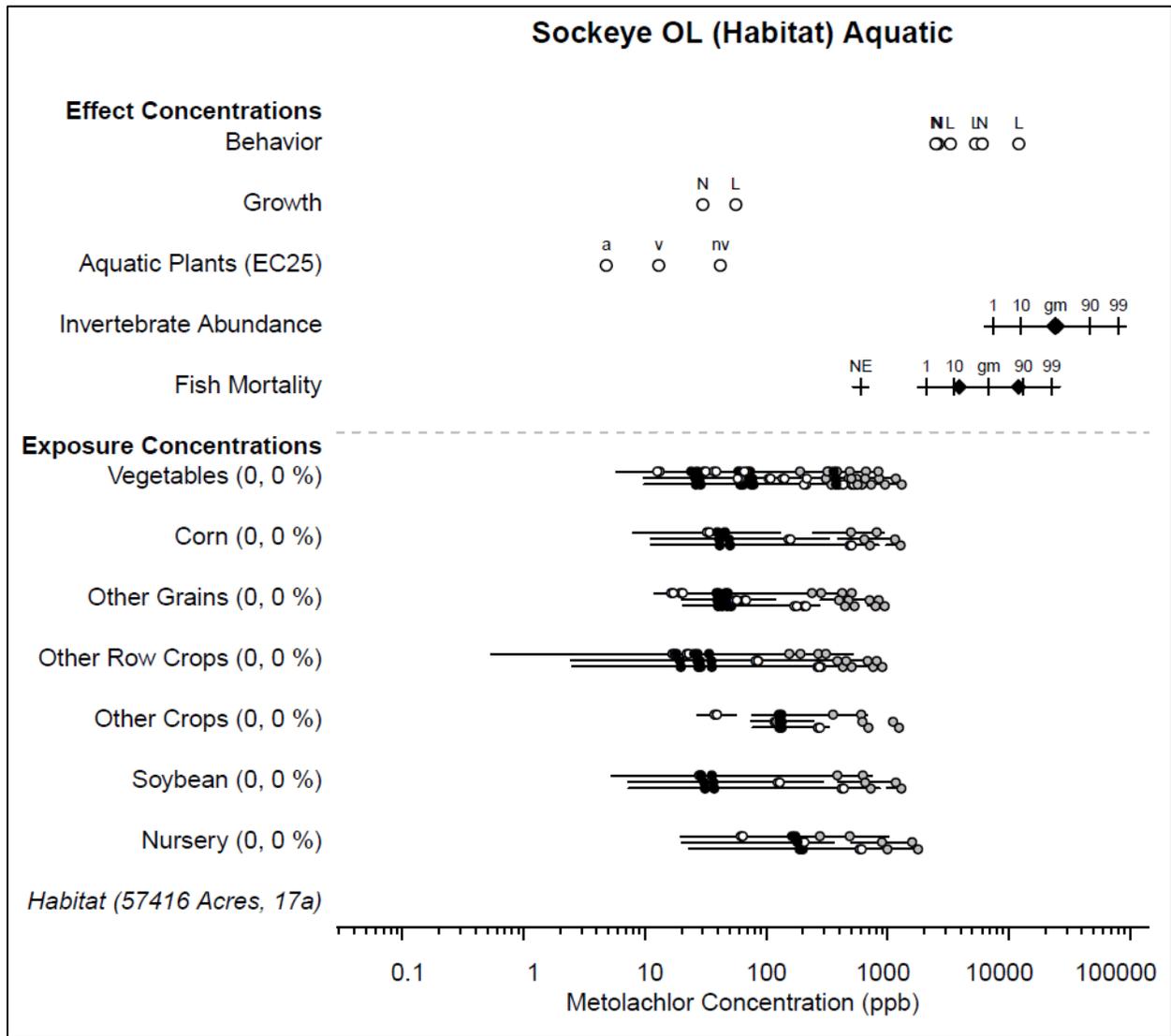


Figure 61. Effects analysis Risk-plot; Ozette Lake Sockeye ESU designated critical habitat; aquatic plants and Metolachlor



**Table 220. Likelihood of exposure determination for Ozette Lake Sockeye ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>Corn</b>	1	no	yes	no	<b>Low</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	no	<b>Low</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>

**Table 221. Prey risk hypothesis; Ozette Lake Sockeye ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0	None Expected	Low
Corn	0	None Expected	Low
Other Grains	0	None Expected	Low
Other Row Crops	0	None Expected	Low
Other Crops	0	None Expected	Low
Soybean	0	None Expected	Low
Nursery	0	Low	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>Low</b>	<b>High</b>		

**Table 222. Vegetative cover risk hypothesis; Ozette Lake Sockeye ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0	High	Low
Corn	0	High	Low
Other Grains	0	High	Low
Other Row Crops	0	High	Low
Other Crops	0	High	Low
Soybean	0	High	Low
Nursery	0	High	Low
<b>Terrestrial</b>			
Vegetables	0	High	Low
Corn	0	High	Low
Other Grains	0	High	Low
Other Row Crops	0	High	Low
Other Crops	0	High	Low
Soybean	0	High	Low
Nursery	0	High	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>Low</b>	<b>High</b>		

**Table 223. Water quality risk hypothesis; Ozette Lake Sockeye ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>
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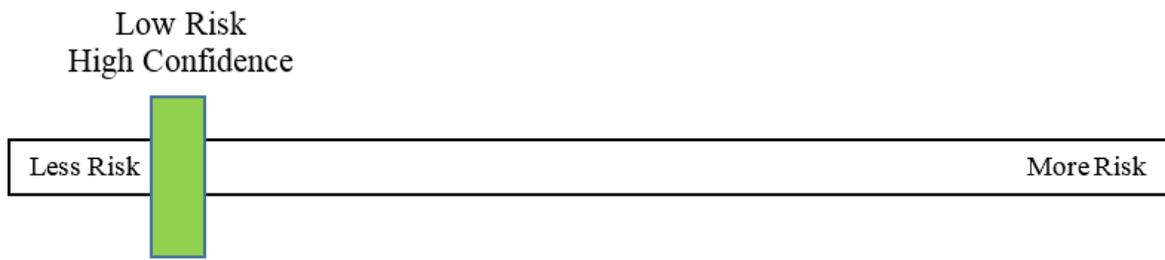
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, currently there are no authorized use sites of metolachlor within the designated critical habitat of the Ozette Lake Sockeye ESU and therefore reductions in the overall abundance and availability of aquatic invertebrates are not expected. Adverse effects to aquatic and terrestrial vegetation are also not expected.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 224. Effects analysis summary table; Ozette Lake Sockeye ESU designated critical habitat and Metolachlor**

Designated Critical Habitat; Risk Hypotheses	R-plot Derived		Risk Hypothesis Supported? Yes/No
	Risk	Confidence	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Low	High	No

**Designated Critical Habitat Effects Analysis Summary**

There are no metolachlor authorized use sites within the designated critical habitat of the Ozette Lake Sockeye ESU, and therefore impacts to the overall abundance and availability of aquatic invertebrates, or adverse effects to aquatic and terrestrial vegetation are not expected. The conservation value of designated critical habitat is not anticipated to be affected by this action. Overall the risk is low and the confidence associated with that risk is high due to the lack of any current exposures predicted in the critical habitats over the 15-year duration of the action.







**Table 225. Likelihood of exposure determination for Sockeye salmon, Snake River ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>Corn</b>	1	no	yes	no	<b>Low</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	2	no	yes	NA	<b>Medium</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>ID - Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>OR - Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>OR - Alfalfa</b>	1	no	yes	no	<b>Low</b>

**Table 226. Prey risk hypothesis; Sockeye salmon, Snake River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Prey (invertebrates)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.65	None Expected	Low
Corn	0.09	None Expected	Low
Other Grains	0.22	None Expected	Low
Other Row Crops	0	None Expected	Low
Other Crops	2.42	None Expected	Medium
Soybean	0	None Expected	Low
Nursery	0	Low	Low
ID – Vegetables	0.04	None Expected	Low
OR – Vegetables	0	None Expected	Low
OR – Alfalfa	0.01	None Expected	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 227. Vegetative cover risk hypothesis; Sockeye salmon, Snake River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.65	High	Low
Corn	0.09	High	Low
Other Grains	0.22	High	Low
Other Row Crops	0	High	Low
Other Crops	2.42	High	Medium
Soybean	0	High	Low
Nursery	0	High	Low
ID – Vegetables	0.04	High	Low
OR – Vegetables	0	High	Low
OR – Alfalfa	0.01	High	Low
<b>Terrestrial</b>			
Vegetables	0.65	High	Low
Corn	0.09	High	Low
Other Grains	0.22	High	Low
Other Row Crops	0	High	Low
Other Crops	2.42	High	Medium
Soybean	0	High	Low
Nursery	0	High	Low
ID – Vegetables	0.04	High	Low

OR – Vegetables	0	High	Low
OR – Alfalfa	0.01	High	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>Medium</b>	<b>Low</b>		

**Table 228. Water quality risk hypothesis; Sockeye salmon, Snake River ESU designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>			
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Snake River Sockeye ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however, these effects will be limited by the minimal extent of exposure. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.			
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>Low</b>	<b>High</b>		

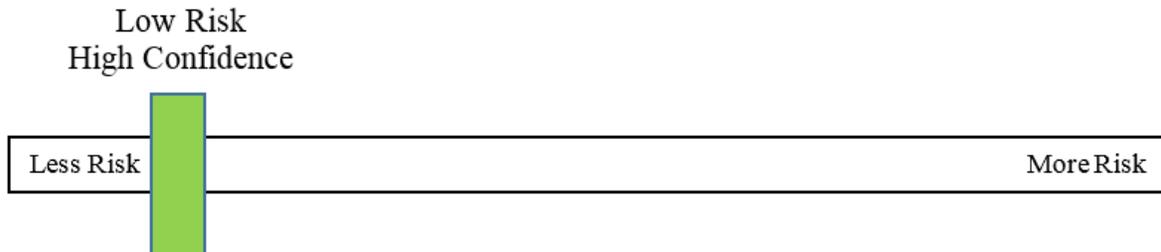
**Table 229. Effects analysis summary table; Sockeye salmon, Snake River ESU designated critical habitat and Metolachlor**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No

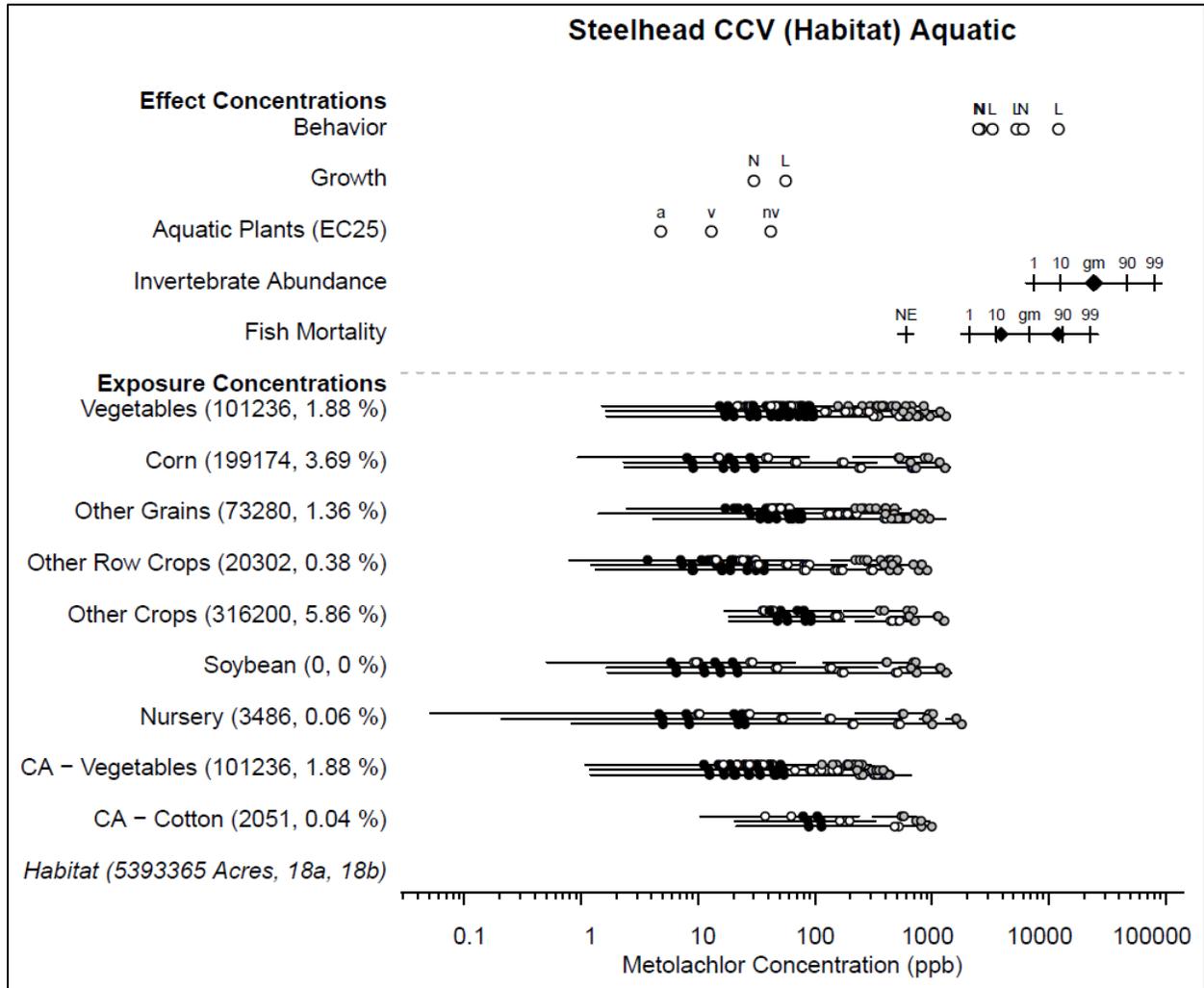
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Medium	Low	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Low	High	No

**Designated Critical Habitat Effects Analysis Summary**

We do not anticipate that the stressors of the action will negatively affect physical and biological features of Snake River Sockeye salmon designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Snake River Sockeye ESU are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is high due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.3.19 California Central Valley Steelhead Designated Critical Habitat; Metolachlor**



**Figure 65. Effects analysis Risk-plot; Steelhead, California Central-Valley DPS designated critical habitat; aquatic plants and Metolachlor**



**Table 230. Likelihood of exposure determination for Steelhead, California Central-Valley DPS designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	2	no	yes	NA	<b>Medium</b>
<b>Corn</b>	2	no	yes	NA	<b>Medium</b>
<b>Other Grains</b>	2	no	yes	NA	<b>Medium</b>
<b>Other Row Crops</b>	1	no	yes	yes	<b>High</b>
<b>Other Crops</b>	3	no	yes	NA	<b>High</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>CA - Vegetables</b>	2	no	yes	NA	<b>Medium</b>
<b>CA - Cotton</b>	1	no	yes	no	<b>Low</b>

**Table 231. Prey risk hypothesis; Steelhead, California Central-Valley DPS designated critical habitat and Metolachlor**

<b>Endpoint: Prey</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	1.88	None Expected	Medium
Corn	3.69	None Expected	Medium
Other Grains	1.36	None Expected	Medium
Other Row Crops	0.38	None Expected	High
Other Crops	5.86	None Expected	High
Soybean	0	None Expected	Low
Nursery	0.06	Low	Low
CA – Vegetables	1.88	None Expected	Medium
CA – Cotton	0.04	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 232. Vegetative cover risk hypothesis; Steelhead, California Central-Valley DPS designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	1.88	High	Medium
Corn	3.69	High	Medium
Other Grains	1.36	High	Medium
Other Row Crops	0.38	High	High
Other Crops	5.86	High	High
Soybean	0	High	Low
Nursery	0.06	High	Low
CA – Vegetables	1.88	High	Medium
CA – Cotton	0.04	High	Low
<b>Terrestrial</b>			
Vegetables	1.88	High	Medium
Corn	3.69	High	Medium
Other Grains	1.36	High	Medium
Other Row Crops	0.38	High	High
Other Crops	5.86	High	High
Soybean	0	High	Low
Nursery	0.06	High	Low
CA – Vegetables	1.88	High	Medium
CA – Cotton	0.04	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 233. Water quality risk hypothesis; Steelhead, California Central-Valley DPS designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Steelhead, California Central Valley DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 234. Effects analysis summary table; Steelhead, California Central-Valley DPS designated critical habitat and Metolachlor**

	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
<b>Designated Critical Habitat; Risk Hypotheses</b>			
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	High	Medium	Yes

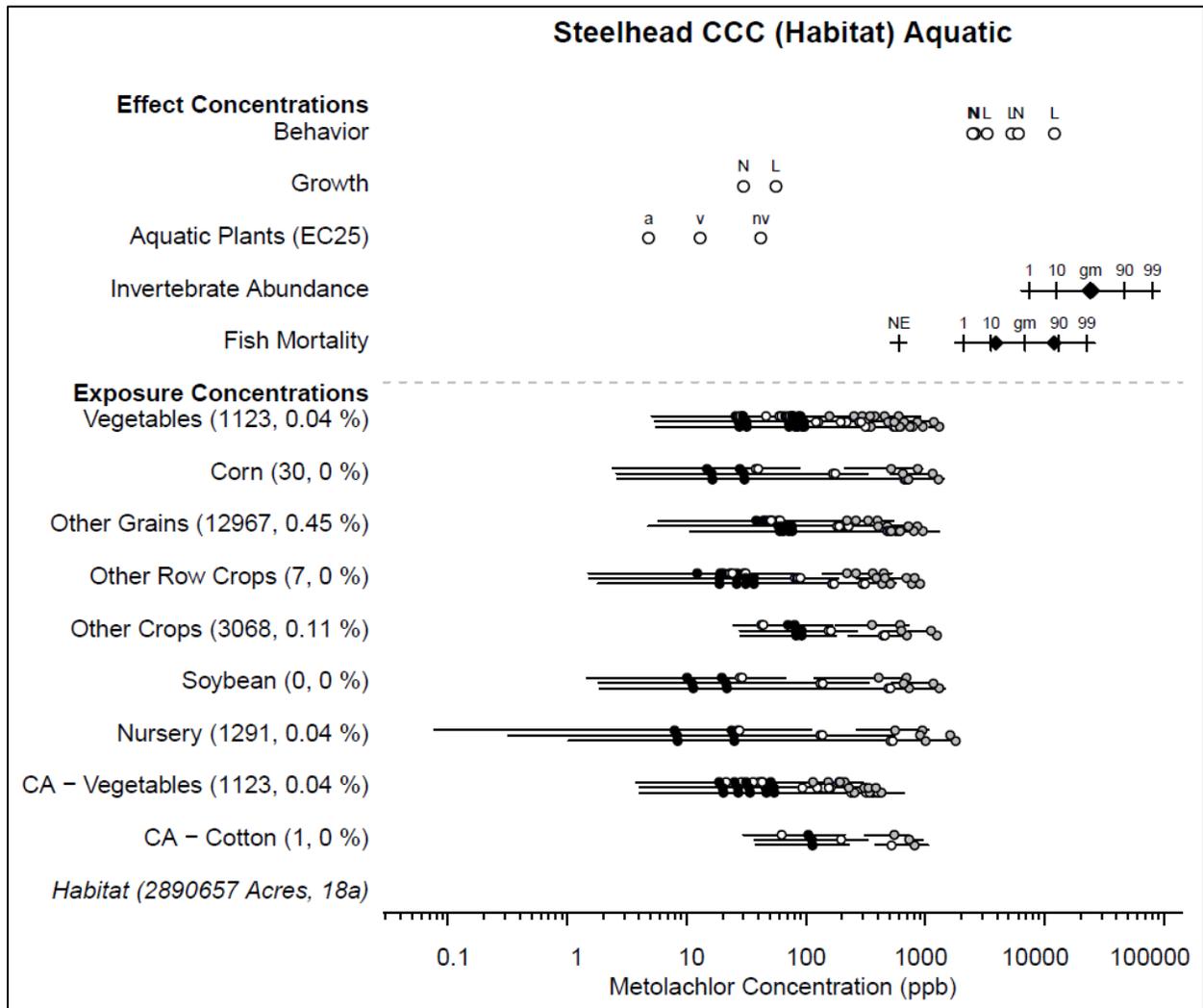
vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of California Central-Valley Steelhead designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the California Central-Valley Steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.3.20 Central California Coast Steelhead Designated Critical Habitat; Metolachlor**



**Figure 67. Effects analysis Risk-plot; Steelhead, Central California Coast DPS designated critical habitat; aquatic plants and Metolachlor**



**Table 235. Likelihood of exposure determination for Steelhead, Central California Coast DPS designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>Corn</b>	1	no	yes	no	<b>Low</b>
<b>Other Grains</b>	1	no	yes	yes	<b>High</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	yes	<b>High</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>CA - Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>CA - Cotton</b>	1	no	yes	no	<b>Low</b>

**Table 236. Prey risk hypothesis; Steelhead, Central California Coast DPS designated critical habitat and Metolachlor**

<b>Endpoint: Prey</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.04	None Expected	Low
Corn	0	None Expected	Low
Other Grains	0.45	None Expected	High
Other Row Crops	0	None Expected	Low
Other Crops	0.11	None Expected	High
Soybean	0	None Expected	Low
Nursery	0.04	Low	Low
CA – Vegetables	0.04	None Expected	Low
CA – Cotton	0	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 237. Vegetative cover risk hypothesis; Steelhead, Central California Coast DPS designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.04	High	Low
Corn	0	High	Low
Other Grains	0.45	High	High
Other Row Crops	0	High	Low
Other Crops	0.11	High	High
Soybean	0	High	Low
Nursery	0.04	High	Low
CA – Vegetables	0.04	High	Low
CA – Cotton	0	High	Low
<b>Terrestrial</b>			
Vegetables	0.04	High	Low
Corn	0	High	Low
Other Grains	0.45	High	High
Other Row Crops	0	High	Low
Other Crops	0.11	High	High
Soybean	0	High	Low
Nursery	0.04	High	Low
CA – Vegetables	0.04	High	Low
CA – Cotton	0	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 238. Water quality risk hypothesis; Steelhead, Central California Coast DPS designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Steelhead, Central California Coast DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 239. Effects analysis summary table; Steelhead, Central California Coast DPS designated critical habitat and Metolachlor**

	R-plot Derived		Risk Hypothesis Supported? Yes/No
	Risk	Confidence	
Designated Critical Habitat; Risk Hypotheses			
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	High	Medium	Yes

vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Central California Coast Steelhead designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Central California Coast Steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



15.3.21 Lower Columbia River Steelhead Designated Critical Habitat; Metolachlor

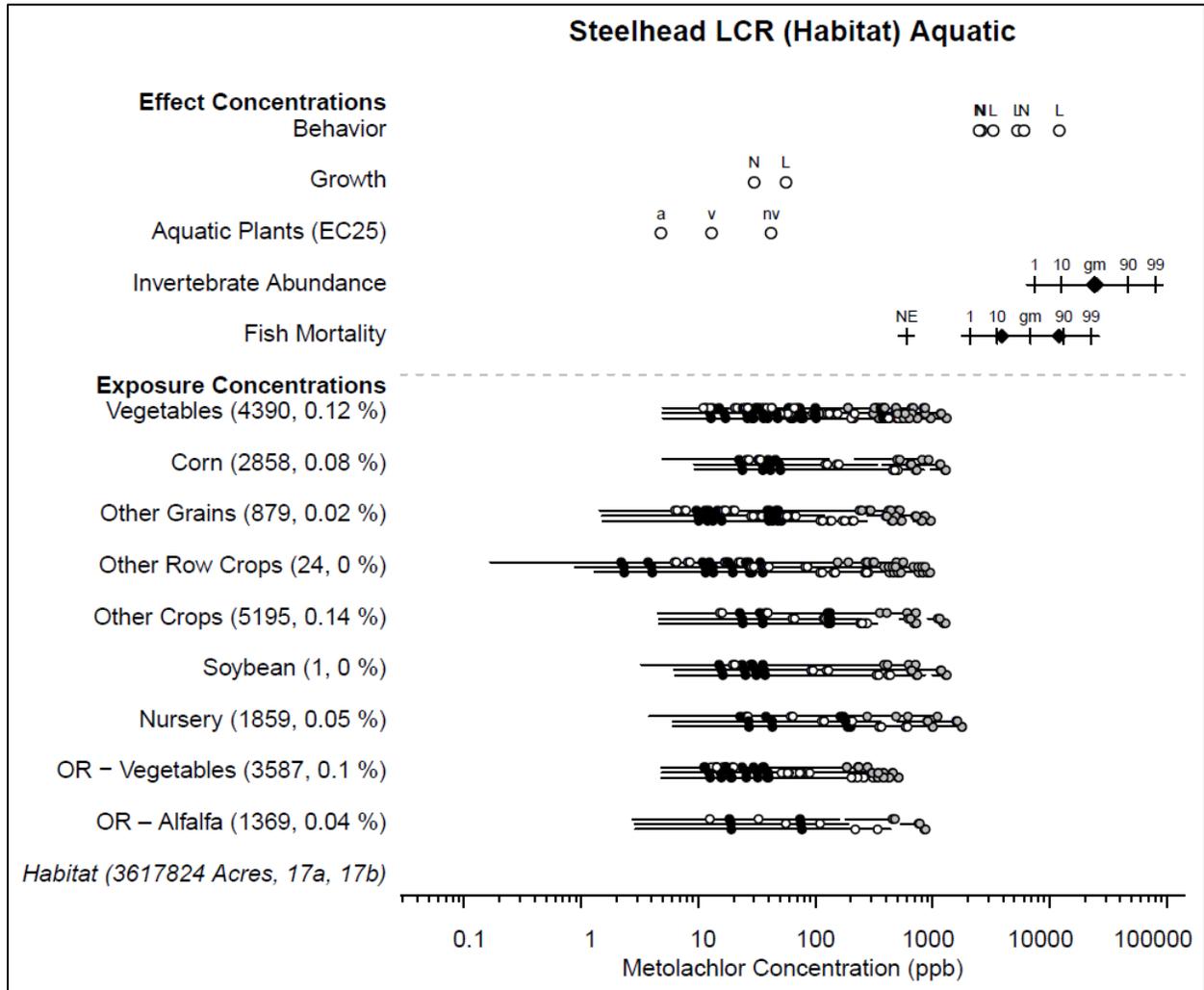


Figure 69. Effects analysis Risk-plot; Steelhead, Lower Columbia River DPS designated critical habitat; aquatic plants and Metolachlor



**Table 240. Likelihood of exposure determination for Steelhead, Lower Columbia River DPS designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>Corn</b>	1	no	yes	yes	<b>High</b>
<b>Other Grains</b>	1	no	yes	yes	<b>High</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	yes	<b>High</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>OR - Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>OR - Alfalfa</b>	1	no	yes	no	<b>Low</b>

**Table 241. Prey risk hypothesis; Steelhead, Lower Columbia River DPS designated critical habitat and Metolachlor**

<b>Endpoint: Prey</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.12	None Expected	High
Corn	0.08	None Expected	High
Other Grains	0.02	None Expected	High
Other Row Crops	0	None Expected	Low
Other Crops	0.14	None Expected	High
Soybean	0	None Expected	Low
Nursery	0.05	Low	Low
OR – Vegetables	0.1	None Expected	High
OR – Alfalfa	0.04	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 242. Vegetative cover risk hypothesis; Steelhead, Lower Columbia River DPS designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.12	High	High
Corn	0.08	High	High
Other Grains	0.02	High	High
Other Row Crops	0	High	Low
Other Crops	0.14	High	High
Soybean	0	High	Low
Nursery	0.05	High	Low
OR – Vegetables	0.1	High	High
OR – Alfalfa	0.04	High	Low
<b>Terrestrial</b>			
Vegetables	0.12	High	High
Corn	0.08	High	High
Other Grains	0.02	High	High
Other Row Crops	0	High	Low
Other Crops	0.14	High	High
Soybean	0	High	Low
Nursery	0.05	High	Low
OR – Vegetables	0.1	High	High
OR – Alfalfa	0.04	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 243. Water quality risk hypothesis; Steelhead, Lower Columbia River DPS designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Steelhead, Lower Columbia River DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 244. Effects analysis summary table; Steelhead, Lower Columbia River DPS designated critical habitat and Metolachlor**

	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
<b>Designated Critical Habitat; Risk Hypotheses</b>			
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	High	Medium	Yes

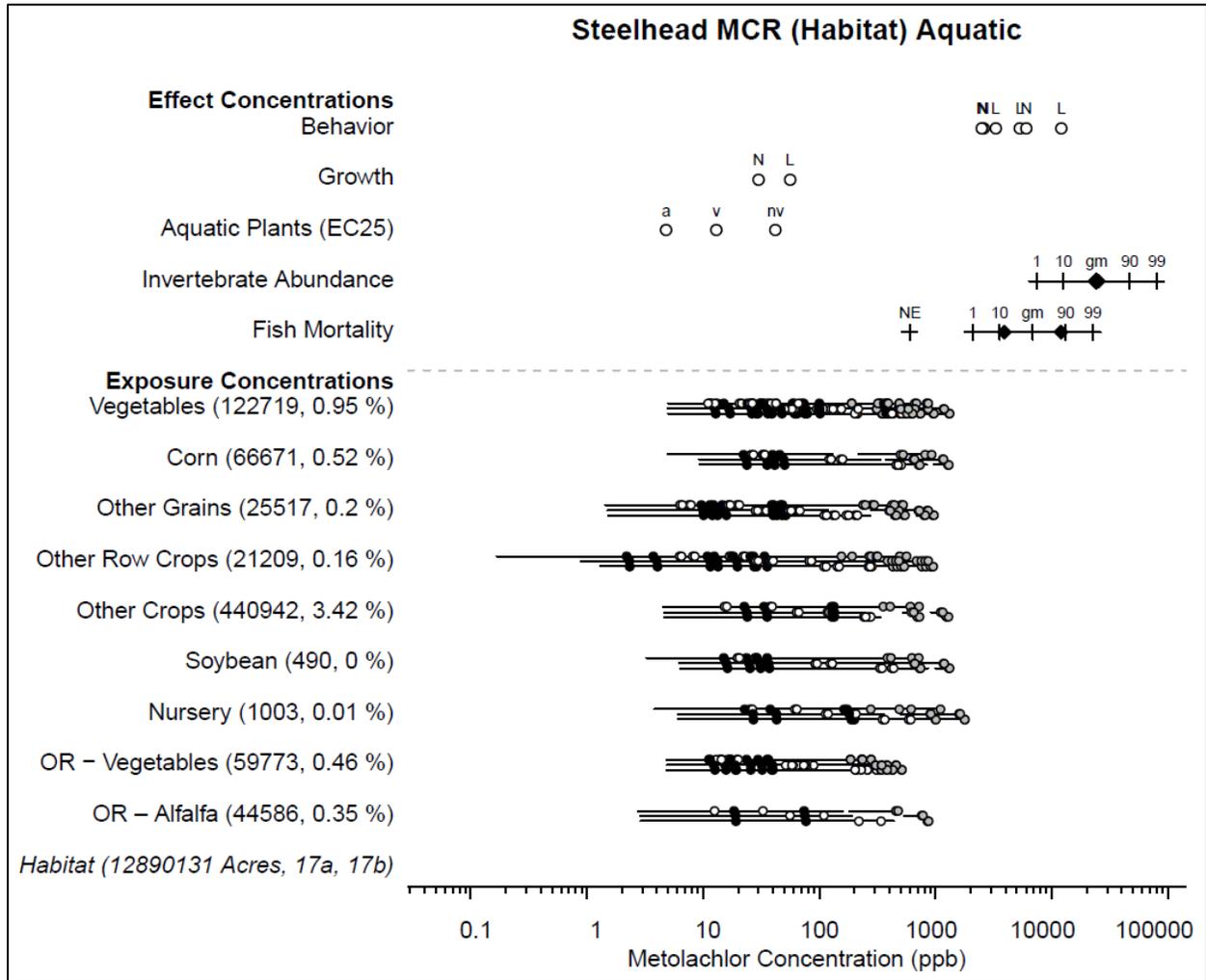
vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Lower Columbia River Steelhead designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Lower Columbia River Steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



15.3.22 Middle Columbia River Steelhead Designated Critical Habitat; Metolachlor



**Figure 71. Effects analysis Risk-plot; Steelhead, Middle Columbia River DPS designated critical habitat; aquatic plants and Metolachlor**



**Table 245. Likelihood of exposure determination for Steelhead, Middle Columbia River DPS designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>Corn</b>	1	no	yes	yes	<b>High</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	yes	<b>High</b>
<b>Other Crops</b>	2	no	yes	NA	<b>Medium</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>OR - Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>OR - Alfalfa</b>	1	no	yes	no	<b>Low</b>

**Table 246. Prey risk hypothesis; Steelhead, Middle Columbia River DPS designated critical habitat and Metolachlor**

<b>Endpoint: Prey</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.95	None Expected	High
Corn	0.52	None Expected	High
Other Grains	0.2	None Expected	Low
Other Row Crops	0.16	None Expected	High
Other Crops	3.42	None Expected	Medium
Soybean	0	None Expected	Low
Nursery	0.01	Low	Low
OR – Vegetables	0.46	None Expected	High
OR – Alfalfa	0.35	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 247. Vegetative cover risk hypothesis; Steelhead, Middle Columbia River DPS designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.95	High	High
Corn	0.52	High	High
Other Grains	0.2	High	Low
Other Row Crops	0.16	High	High
Other Crops	3.42	High	Medium
Soybean	0	High	Low
Nursery	0.01	High	Low
OR – Vegetables	0.46	High	High
OR – Alfalfa	0.35	High	Low
<b>Terrestrial</b>			
Vegetables	0.95	High	High
Corn	0.52	High	High
Other Grains	0.2	High	Low
Other Row Crops	0.16	High	High
Other Crops	3.42	High	Medium
Soybean	0	High	Low
Nursery	0.01	High	Low
OR – Vegetables	0.46	High	High
OR – Alfalfa	0.35	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 248. Water quality risk hypothesis; Steelhead, Middle Columbia River DPS designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Steelhead, Middle Columbia River DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 249. Effects analysis summary table; Steelhead, Middle Columbia River DPS designated critical habitat and Metolachlor**

	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
<b>Designated Critical Habitat; Risk Hypotheses</b>			
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	High	Medium	Yes

vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Middle Columbia River Steelhead designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Middle Columbia River Steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



15.3.23 Northern California Steelhead Designated Critical Habitat; Metolachlor

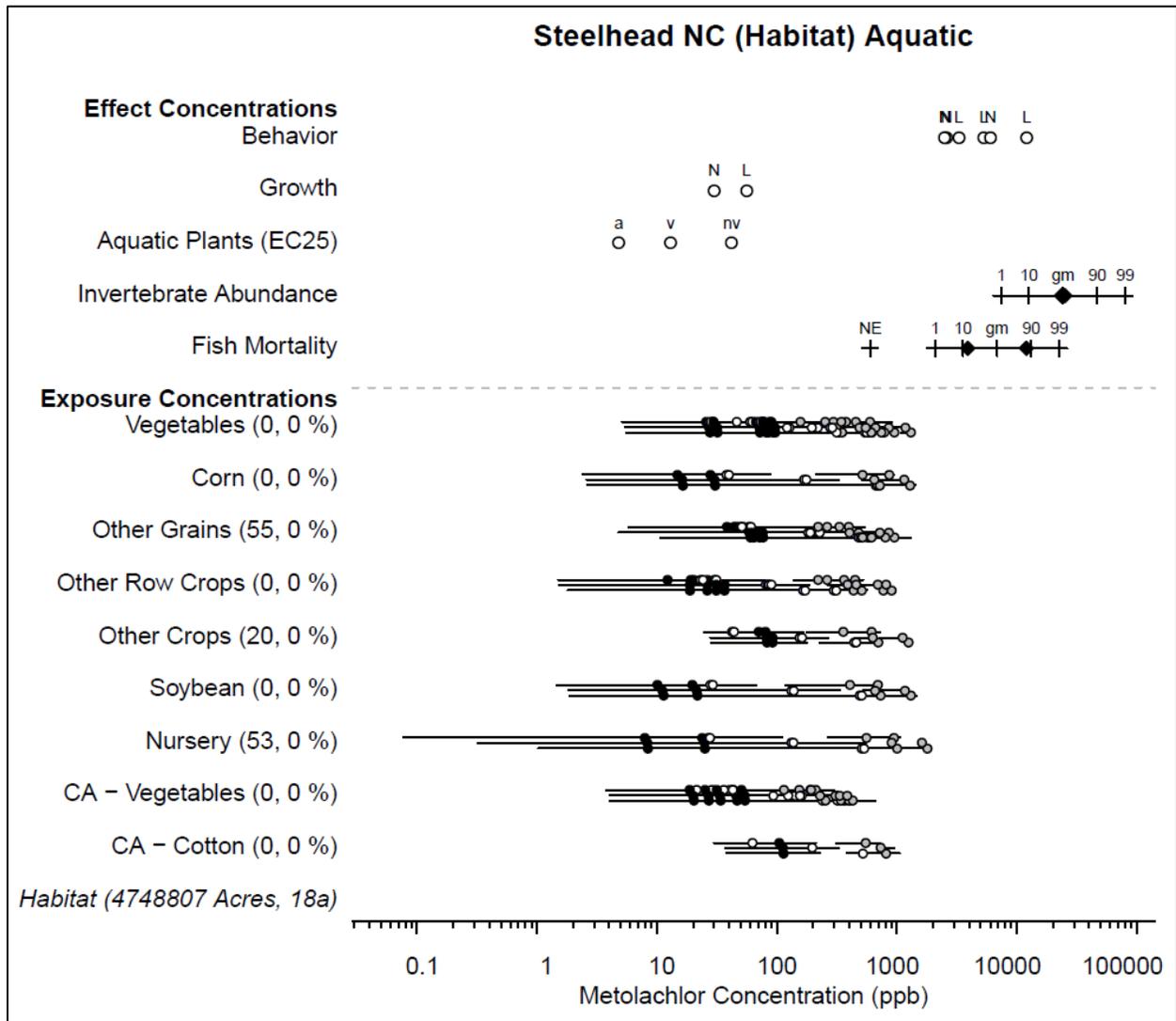


Figure 73. Effects analysis Risk-plot; Steelhead, Northern California DPS designated critical habitat; aquatic plants and Metolachlor



**Table 250. Likelihood of exposure determination for Steelhead, Northern California DPS ESU designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>Corn</b>	1	no	yes	no	<b>Low</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	no	<b>Low</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>CA - Vegetables</b>	1	no	yes	no	<b>Low</b>
<b>CA - Cotton</b>	1	no	yes	no	<b>Low</b>

**Table 251. Prey risk hypothesis; Steelhead, Northern California DPS designated critical habitat and Metolachlor**

<b>Endpoint: Prey</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0	None Expected	Low
Corn	0	None Expected	Low
Other Grains	0	None Expected	Low
Other Row Crops	0	None Expected	Low
Other Crops	0	None Expected	Low
Soybean	0	None Expected	Low
Nursery	0	Low	Low
CA – Vegetables	0	None Expected	Low
CA – Cotton	0	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 252. Vegetative cover risk hypothesis; Steelhead, Northern California DPS designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0	High	Low
Corn	0	High	Low
Other Grains	0	High	Low
Other Row Crops	0	High	Low
Other Crops	0	High	Low
Soybean	0	High	Low
Nursery	0	High	Low
CA – Vegetables	0	High	Low
CA – Cotton	0	High	Low
<b>Terrestrial</b>			
Vegetables	0	High	Low
Corn	0	High	Low
Other Grains	0	High	Low
Other Row Crops	0	High	Low
Other Crops	0	High	Low
Soybean	0	High	Low
Nursery	0	High	Low
CA – Vegetables	0	High	Low
CA – Cotton	0	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 253. Water quality risk hypothesis; Steelhead, Northern California DPS designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Northern California Steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however, these effects will be limited by the minimal extent of exposure. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

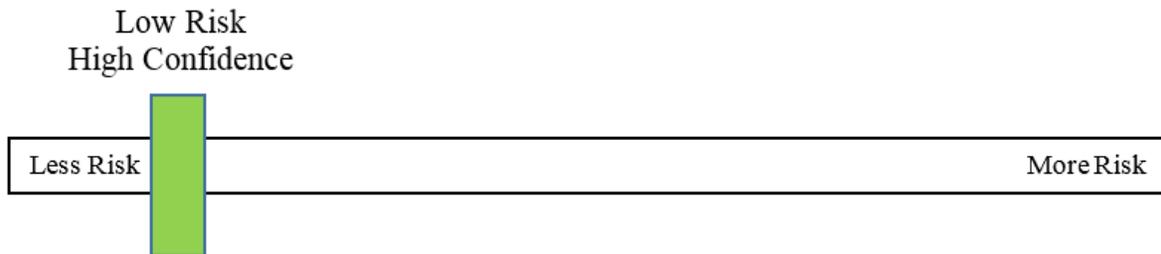
**Table 254. Effects analysis summary table; Steelhead, Northern California DPS designated critical habitat and Metolachlor**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	Low	High	No

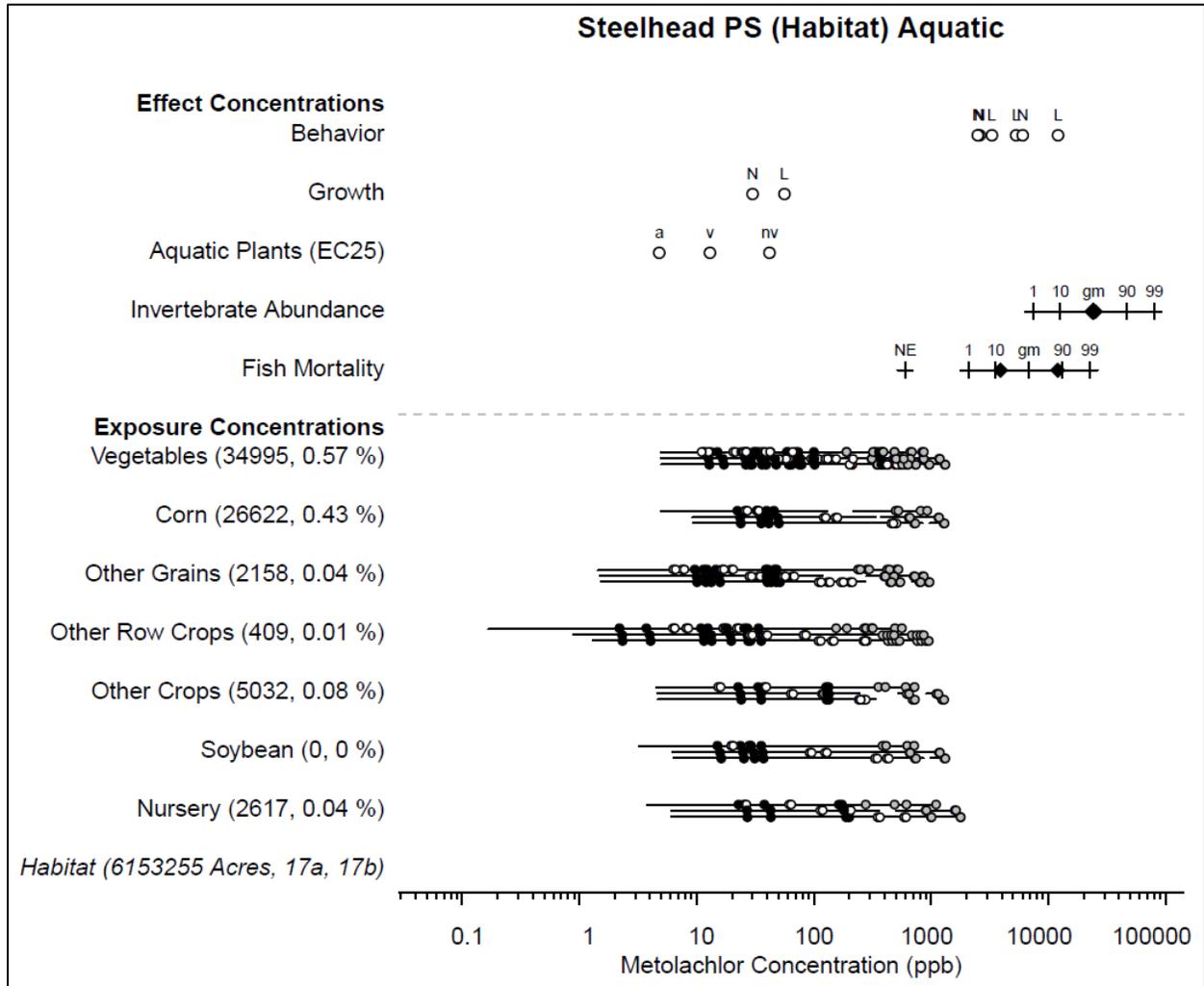
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Low	High	No

**Designated Critical Habitat Effects Analysis Summary**

We do not anticipate that the stressors of the action will negatively affect physical and biological features of Northern California Steelhead designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Northern California Steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Some adverse effects to aquatic and terrestrial vegetation may occur, however we anticipate these effects to be limited in scope. Overall the risk is low and the confidence associated with that risk is high due to the exposures predicted in critical habitats over the 15-year duration of the action.



15.3.24 Puget Sound Steelhead Designated Critical Habitat; Metolachlor



**Figure 75. Effects analysis Risk-plot; Steelhead, Puget Sound DPS designated critical habitat; aquatic plants and Metolachlor**



**Table 255. Likelihood of exposure determination for Steelhead, Puget Sound DPS designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>Corn</b>	1	no	yes	yes	<b>High</b>
<b>Other Grains</b>	1	no	yes	no	<b>Low</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	no	<b>Low</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>

**Table 256. Prey risk hypothesis; Steelhead, Puget Sound DPS designated critical habitat and Metolachlor**

<b>Endpoint: Prey</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.57	None Expected	High
Corn	0.43	None Expected	High
Other Grains	0.04	None Expected	Low
Other Row Crops	0.01	None Expected	Low
Other Crops	0.08	None Expected	Low
Soybean	0	None Expected	Low
Nursery	0.04	Low	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>Low</b>	<b>High</b>		

**Table 257. Vegetative cover risk hypothesis; Steelhead, Puget Sound DPS designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.57	High	High
Corn	0.43	High	High
Other Grains	0.04	High	Low
Other Row Crops	0.01	High	Low
Other Crops	0.08	High	Low
Soybean	0	High	Low
Nursery	0.04	High	Low
<b>Terrestrial</b>			
Vegetables	0.57	High	High
Corn	0.43	High	High
Other Grains	0.04	High	Low
Other Row Crops	0.01	High	Low
Other Crops	0.08	High	Low
Soybean	0	High	Low
Nursery	0.04	High	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>High</b>	<b>Medium</b>		

**Table 258. Water quality risk hypothesis; Steelhead, Puget Sound DPS designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>
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<p>Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Steelhead, Puget Sound DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.</p>		
<p><b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b></p>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 259. Effects analysis summary table; Steelhead, Puget Sound DPS designated critical habitat and Metolachlor**

Designated Critical Habitat; Risk Hypotheses	R-plot Derived		Risk Hypothesis Supported? Yes/No
	Risk	Confidence	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	High	Medium	Yes
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Puget Sound Steelhead designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Puget Sound Steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



15.3.25 Snake River Basin Steelhead Designated Critical Habitat; Metolachlor

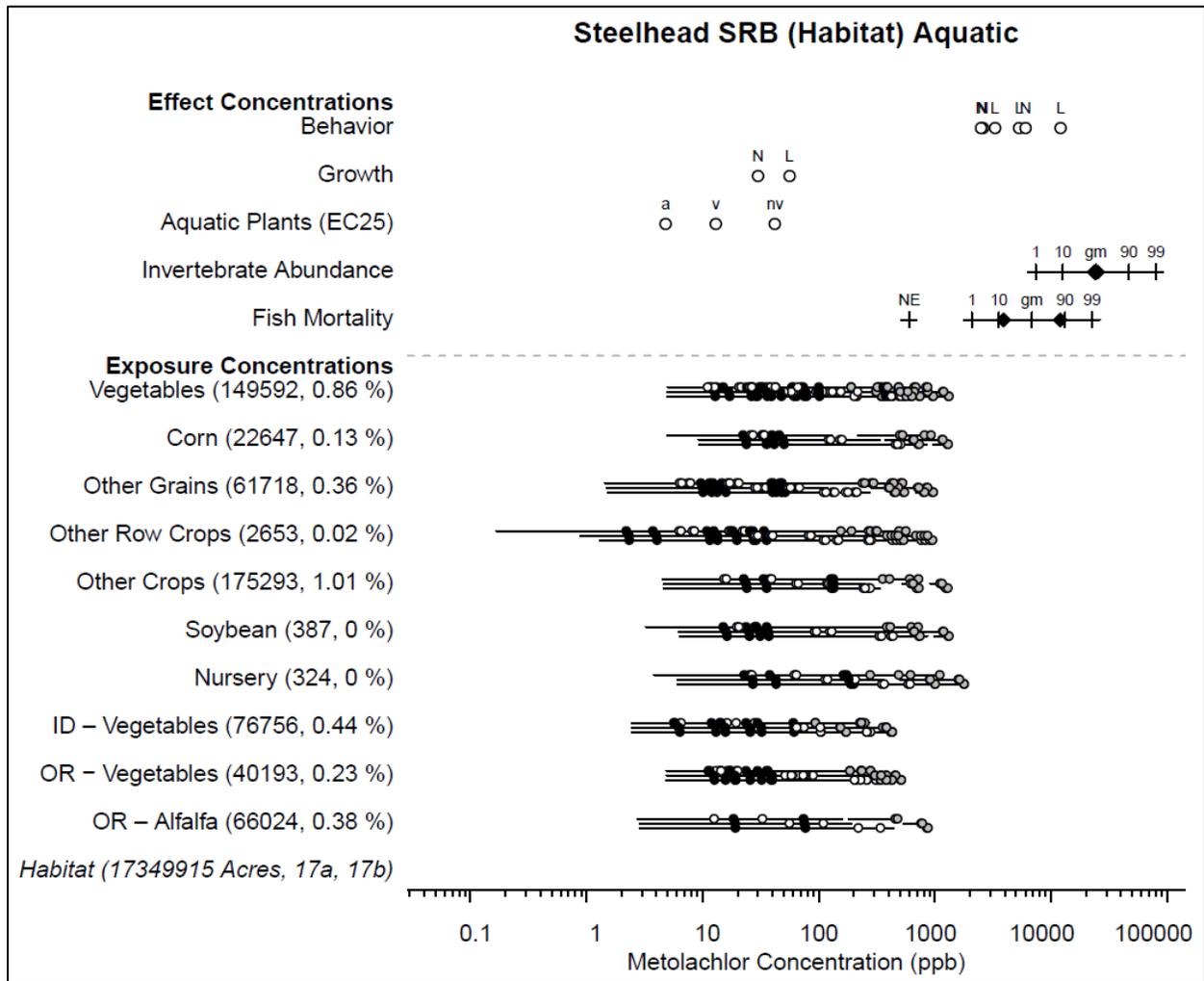


Figure 77. Effects analysis Risk-plot; Steelhead, Snake River Basin DPS designated critical habitat; aquatic plants and Metolachlor



**Table 260. Likelihood of exposure determination for Steelhead, Snake River Basin DPS designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>Corn</b>	1	no	yes	yes	<b>High</b>
<b>Other Grains</b>	1	no	yes	yes	<b>High</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	2	no	yes	NA	<b>Medium</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>ID - Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>OR - Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>OR - Alfalfa</b>	1	no	yes	no	<b>Low</b>

**Table 261. Prey risk hypothesis; Steelhead, Snake River Basin DPS designated critical habitat and Metolachlor**

<b>Endpoint: Prey</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.86	None Expected	High
Corn	0.13	None Expected	High
Other Grains	0.36	None Expected	High
Other Row Crops	0.02	None Expected	Low
Other Crops	1.01	None Expected	Medium
Soybean	0	None Expected	Low
Nursery	0	Low	Low
ID – Vegetables	0.44	None Expected	High
OR – Vegetables	0.23	None Expected	High
OR – Alfalfa	0.38	None Expected	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 262. Vegetative cover risk hypothesis; Steelhead, Snake River Basin DPS designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.86	High	High
Corn	0.13	High	High
Other Grains	0.36	High	High
Other Row Crops	0.02	High	Low
Other Crops	1.01	High	Medium
Soybean	0	High	Low
Nursery	0	High	Low
ID – Vegetables	0.44	High	High
OR – Vegetables	0.23	High	High
OR – Alfalfa	0.38	High	Low
<b>Terrestrial</b>			
Vegetables	0.86	High	High
Corn	0.13	High	High
Other Grains	0.36	High	High
Other Row Crops	0.02	High	Low
Other Crops	1.01	High	Medium
Soybean	0	High	Low
Nursery	0	High	Low
ID – Vegetables	0.44	High	High

OR – Vegetables	0.23	High	High
OR – Alfalfa	0.38	High	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>High</b>	<b>Medium</b>		

**Table 263. Water quality risk hypothesis; Steelhead, Snake River Basin DPS designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>			
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Steelhead, Snake River Basin DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.			
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>			
<b>Risk</b>	<b>Confidence</b>		
<b>Medium</b>	<b>Low</b>		

**Table 264. Effects analysis summary table; Steelhead, Snake River Basin DPS designated critical habitat and Metolachlor**

	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported?</b> Yes/No
<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>Risk</b>	<b>Confidence</b>	

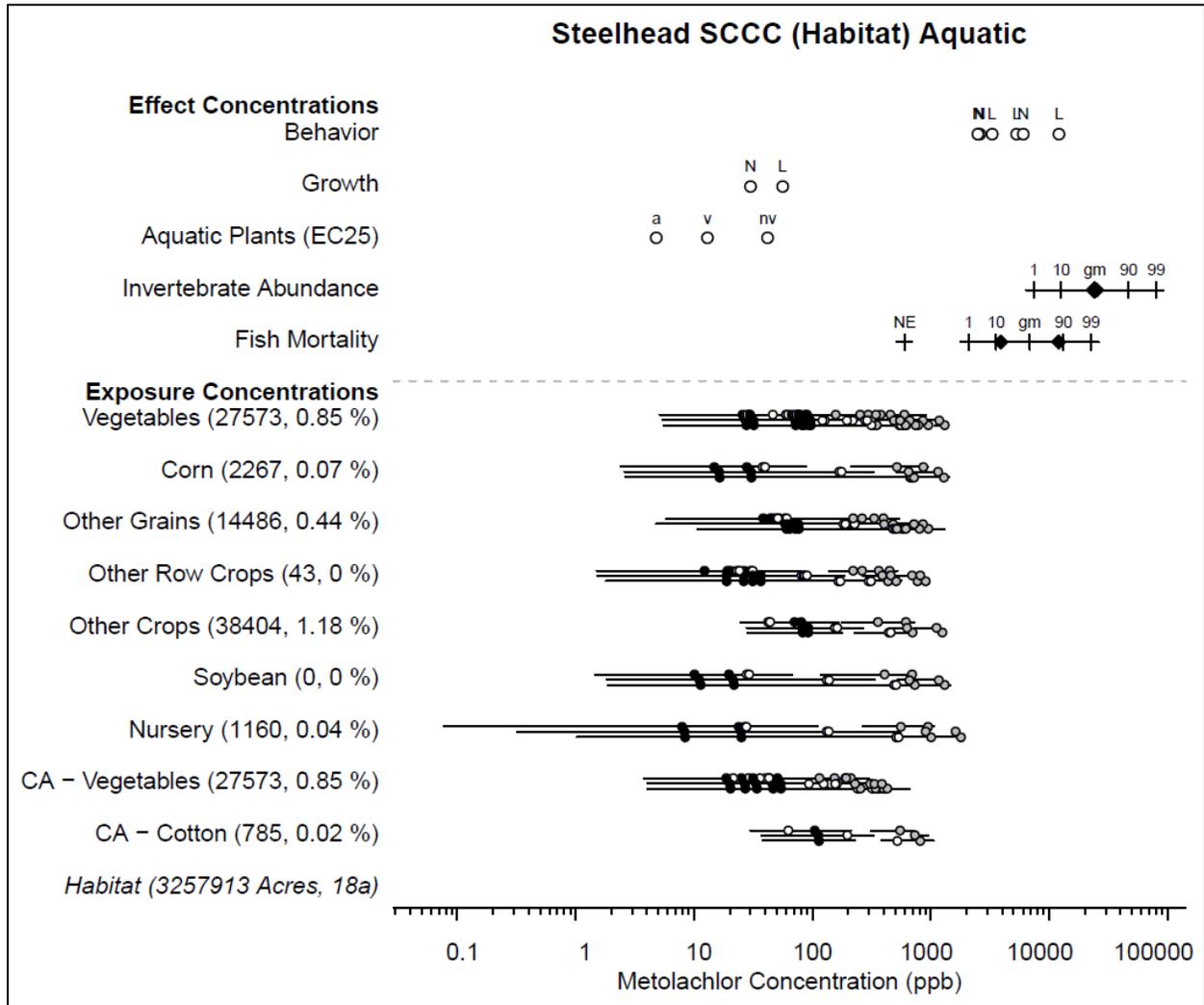
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.	High	Medium	Yes
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

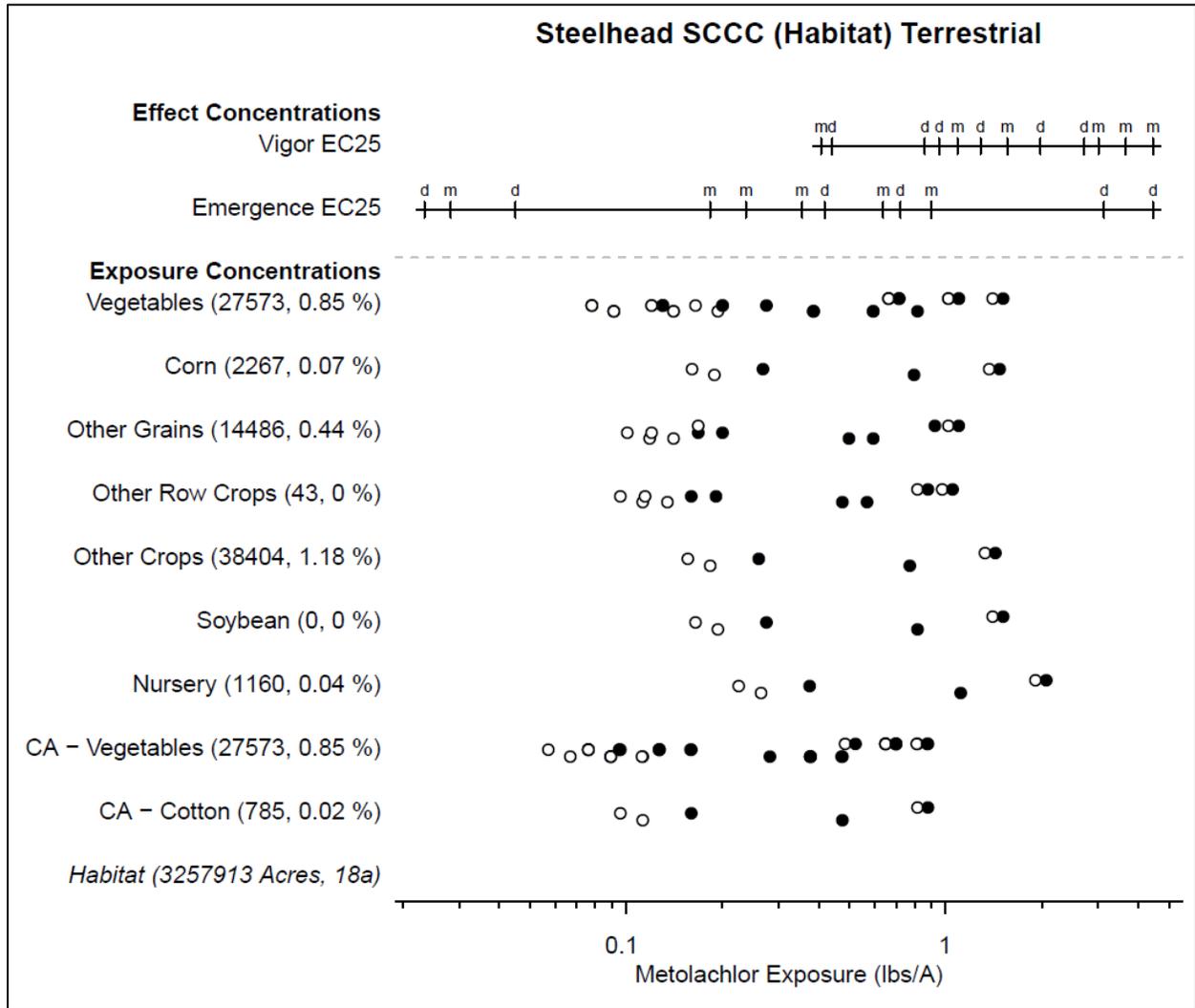
We anticipate that the stressors of the action will negatively affect some physical and biological features of Snake River Basin Steelhead designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Snake River Basin Steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.3.26 South Central California Coast Steelhead Designated Critical Habitat;  
Metolachlor**



**Figure 79. Effects analysis Risk-plot; Steelhead, South Central California Coast DPS designated critical habitat; aquatic plants and Metolachlor**



**Figure 80. Effects analysis Risk-plot; Steelhead, South Central California Coast DPS designated critical habitat; terrestrial plants, riparian habitat and Metolachlor**

**Table 265. Likelihood of exposure determination for Steelhead, South Central California Coast DPS designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>Corn</b>	1	no	yes	yes	<b>High</b>
<b>Other Grains</b>	1	no	yes	yes	<b>High</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	2	no	yes	NA	<b>Medium</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>CA - Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>CA - Cotton</b>	1	no	yes	no	<b>Low</b>

**Table 266. Prey risk hypothesis; Steelhead, South Central California Coast DPS designated critical habitat and Metolachlor**

<b>Endpoint: Prey</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.85	None Expected	High
Corn	0.07	None Expected	High
Other Grains	0.44	None Expected	High
Other Row Crops	0	None Expected	Low
Other Crops	1.18	None Expected	Medium
Soybean	0	None Expected	Low
Nursery	0.04	Low	Low
CA – Vegetables	0.85	None Expected	High
CA – Cotton	0.02	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 267. Vegetative cover risk hypothesis; Steelhead, South Central California Coast DPS designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.85	High	High
Corn	0.07	High	High
Other Grains	0.44	High	High
Other Row Crops	0	High	Low
Other Crops	1.18	High	Medium
Soybean	0	High	Low
Nursery	0.04	High	Low
CA – Vegetables	0.85	High	High
CA – Cotton	0.02	High	Low
<b>Terrestrial</b>			
Vegetables	0.85	High	High
Corn	0.07	High	High
Other Grains	0.44	High	High
Other Row Crops	0	High	Low
Other Crops	1.18	High	Medium
Soybean	0	High	Low
Nursery	0.04	High	Low
CA – Vegetables	0.85	High	High
CA – Cotton	0.02	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 268. Water quality risk hypothesis; Steelhead, South Central California Coast DPS designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Steelhead, South Central California Coast DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 269. Effects analysis summary table; Steelhead, South Central California Coast DPS designated critical habitat and Metolachlor**

Designated Critical Habitat; Risk Hypotheses	R-plot Derived		Risk Hypothesis Supported? Yes/No
	Risk	Confidence	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	High	Medium	Yes

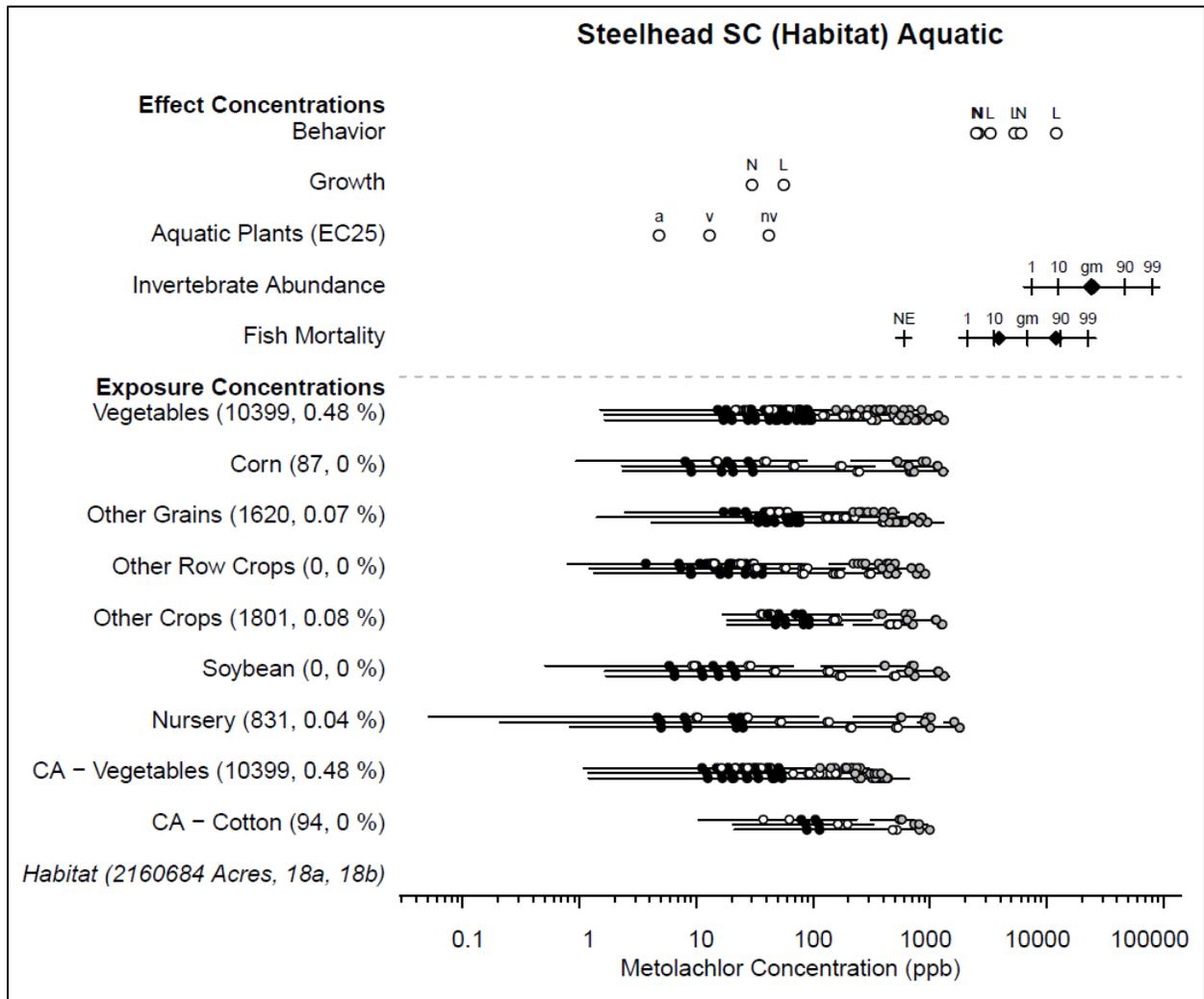
vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of South Central California Coast Steelhead designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the South Central California Coast Steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.3.27 Southern California Steelhead Designated Critical Habitat; Metolachlor**



**Figure 81. Effects analysis Risk-plot; Steelhead, Southern California DPS designated critical habitat; aquatic plants and Metolachlor**



**Table 270. Likelihood of exposure determination for Steelhead, Southern California DPS designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>Corn</b>	1	no	yes	yes	<b>High</b>
<b>Other Grains</b>	1	no	yes	yes	<b>High</b>
<b>Other Row Crops</b>	1	no	yes	no	<b>Low</b>
<b>Other Crops</b>	1	no	yes	yes	<b>High</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>CA - Vegetables</b>	1	no	yes	yes	<b>High</b>
<b>CA - Cotton</b>	1	no	yes	yes	<b>High</b>

**Table 271. Prey risk hypothesis; Steelhead, Southern California DPS designated critical habitat and Metolachlor**

<b>Endpoint: Prey</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	0.48	None Expected	High
Corn	0	None Expected	High
Other Grains	0.07	None Expected	High
Other Row Crops	0	None Expected	Low
Other Crops	0.08	None Expected	High
Soybean	0	None Expected	Low
Nursery	0.04	Low	Low
CA – Vegetables	0.48	None Expected	High
CA – Cotton	0	None Expected	High
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 272. Vegetative cover risk hypothesis; Steelhead, Southern California DPS designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	0.48	High	High
Corn	0	High	High
Other Grains	0.07	High	High
Other Row Crops	0	High	Low
Other Crops	0.08	High	High
Soybean	0	High	Low
Nursery	0.04	High	Low
CA – Vegetables	0.48	High	High
CA – Cotton	0	High	High
<b>Terrestrial</b>			
Vegetables	0.48	High	High
Corn	0	High	High
Other Grains	0.07	High	High
Other Row Crops	0	High	Low
Other Crops	0.08	High	High
Soybean	0	High	Low
Nursery	0.04	High	Low
CA – Vegetables	0.48	High	High
CA – Cotton	0	High	High

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 273. Water quality risk hypothesis; Steelhead, Southern California DPS designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Steelhead, Southern California DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 274. Effects analysis summary table; Steelhead, Southern California DPS designated critical habitat and Metolachlor**

<b>Designated Critical Habitat; Risk Hypotheses</b>	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	High	Medium	Yes

vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Southern California Steelhead designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Southern California Steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



15.3.28 Upper Columbia River Steelhead Designated Critical Habitat; Metolachlor

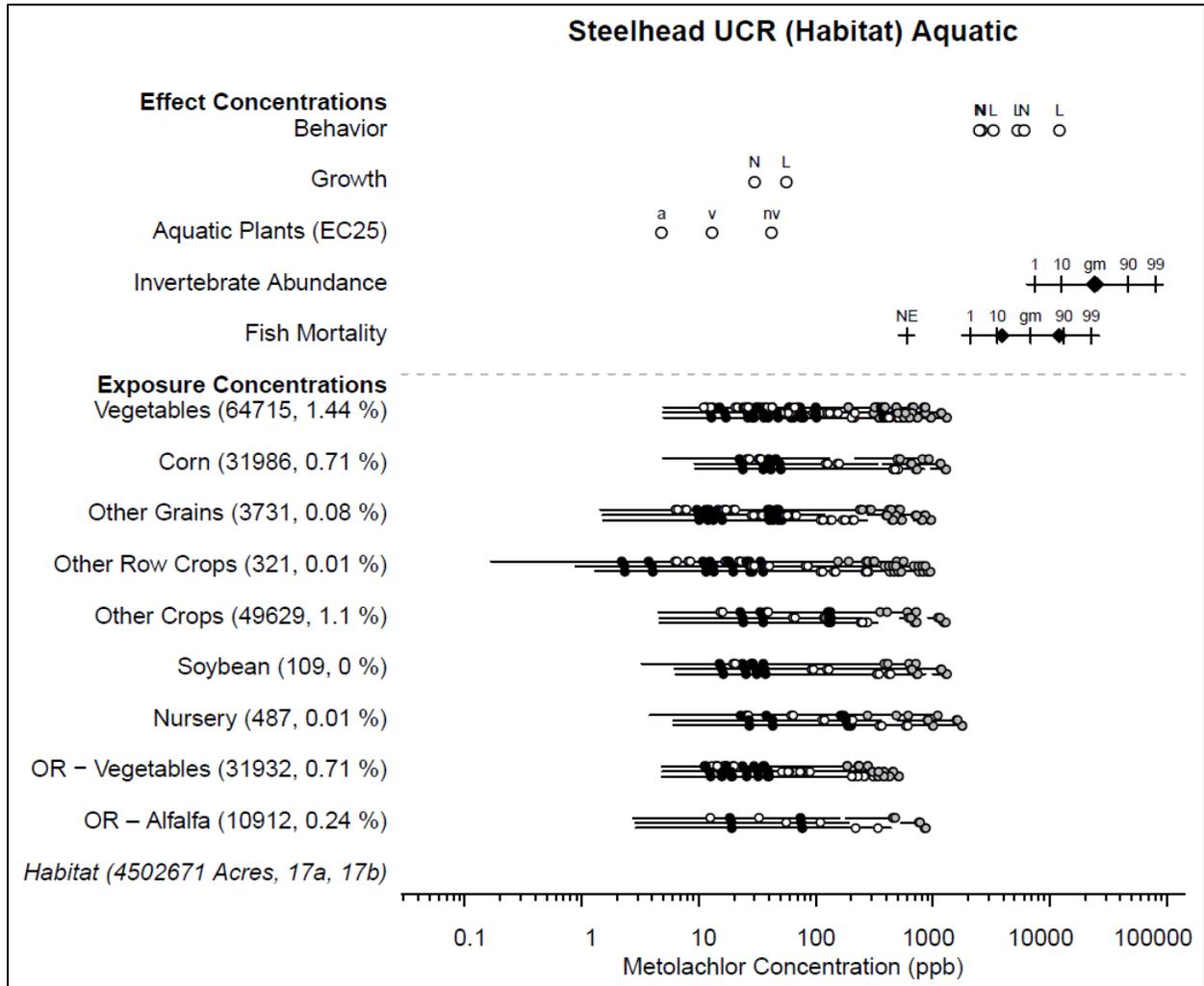


Figure 83. Effects analysis Risk-plot; Steelhead, Upper Columbia River DPS designated critical habitat; aquatic plants and Metolachlor



**Table 275. Likelihood of exposure determination for Steelhead, Upper Columbia River DPS designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
Vegetables	2	no	yes	NA	Medium
Corn	1	no	yes	yes	High
Other Grains	1	no	yes	no	Low
Other Row Crops	1	no	yes	no	Low
Other Crops	2	no	yes	NA	Medium
Soybean	1	no	yes	no	Low
Nursery	1	no	yes	no	Low
OR - Vegetables	1	no	yes	yes	High
OR - Alfalfa	1	no	yes	no	Low

**Table 276. Prey risk hypothesis; Steelhead, Upper Columbia River DPS designated critical habitat and Metolachlor**

<b>Endpoint: Prey</b>			
Use Category	% Overlap	Effect of Exposure	Likelihood of Exposure
Vegetables	1.44	None Expected	Medium
Corn	0.71	None Expected	High
Other Grains	0.08	None Expected	Low
Other Row Crops	0.01	None Expected	Low
Other Crops	1.1	None Expected	Medium
Soybean	0	None Expected	Low
Nursery	0.01	Low	Low
OR – Vegetables	0.71	None Expected	High
OR – Alfalfa	0.24	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 277. Vegetative cover risk hypothesis; Steelhead, Upper Columbia River DPS designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	1.44	High	Medium
Corn	0.71	High	High
Other Grains	0.08	High	Low
Other Row Crops	0.01	High	Low
Other Crops	1.1	High	Medium
Soybean	0	High	Low
Nursery	0.01	High	Low
OR – Vegetables	0.71	High	High
OR – Alfalfa	0.24	High	Low
<b>Terrestrial</b>			
Vegetables	1.44	High	Medium
Corn	0.71	High	High
Other Grains	0.08	High	Low
Other Row Crops	0.01	High	Low
Other Crops	1.1	High	Medium
Soybean	0	High	Low
Nursery	0.01	High	Low
OR – Vegetables	0.71	High	High
OR – Alfalfa	0.24	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 278. Water quality risk hypothesis; Steelhead, Upper Columbia River DPS designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Steelhead, Upper Columbia River DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 279. Effects analysis summary table; Steelhead, Upper Columbia River DPS designated critical habitat and Metolachlor**

	<b>R-plot Derived</b>		<b>Risk Hypothesis Supported? Yes/No</b>
	<b>Risk</b>	<b>Confidence</b>	
<b>Designated Critical Habitat; Risk Hypotheses</b>			
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	High	Medium	Yes

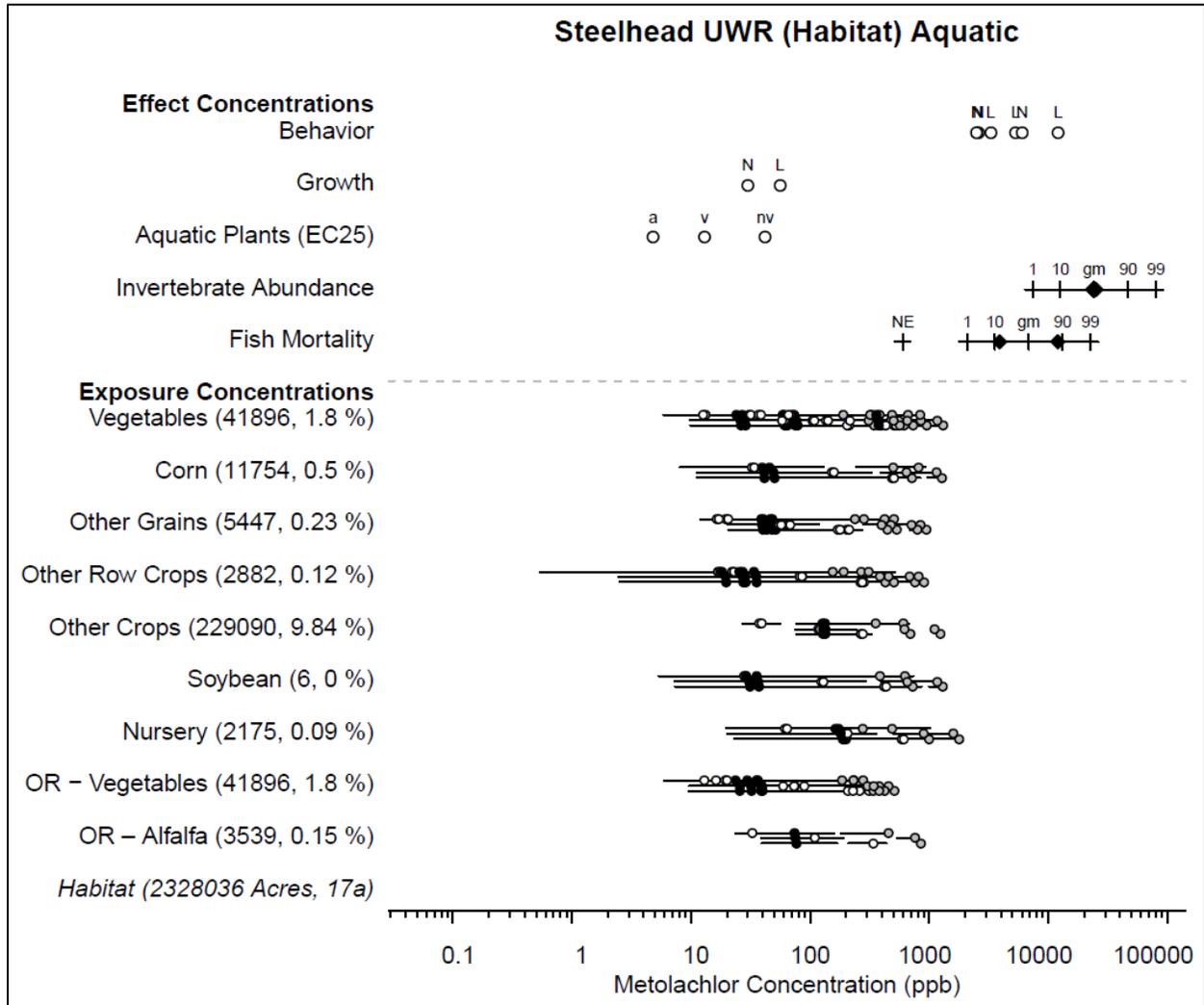
vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Upper Columbia River Steelhead designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Upper Columbia River Steelhead DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**15.3.29 Upper Willamette River Steelhead Designated Critical Habitat; Metolachlor**



**Figure 85. Effects analysis Risk-plot; Steelhead, Upper Willamette River DPS designated critical habitat; aquatic plants and Metolachlor**



**Table 280. Likelihood of exposure determination for Steelhead, Upper Willamette River DPS designated critical habitat and Metolachlor**

	Percent Overlap Category	Persistence	Multiple Applications	Proximity Analysis	Likelihood of Exposure
<b>Vegetables</b>	2	no	yes	NA	<b>Medium</b>
<b>Corn</b>	1	no	yes	yes	<b>High</b>
<b>Other Grains</b>	1	no	yes	yes	<b>High</b>
<b>Other Row Crops</b>	1	no	yes	yes	<b>High</b>
<b>Other Crops</b>	3	no	yes	NA	<b>High</b>
<b>Soybean</b>	1	no	yes	no	<b>Low</b>
<b>Nursery</b>	1	no	yes	no	<b>Low</b>
<b>OR - Vegetables</b>	2	no	yes	NA	<b>Medium</b>
<b>OR - Alfalfa</b>	1	no	yes	no	<b>Low</b>

**Table 281. Prey risk hypothesis; Steelhead, Upper Willamette River DPS designated critical habitat and Metolachlor**

<b>Endpoint: Prey</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
Vegetables	1.8	None Expected	Medium
Corn	0.5	None Expected	High
Other Grains	0.23	None Expected	High
Other Row Crops	0.12	None Expected	High
Other Crops	9.84	None Expected	High
Soybean	0	None Expected	Low
Nursery	0.09	Low	Low
OR – Vegetables	1.8	None Expected	Medium
OR – Alfalfa	0.15	None Expected	Low
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.</b>			

<b>Risk</b>	<b>Confidence</b>	
<b>Low</b>	<b>High</b>	

**Table 282. Vegetative cover risk hypothesis; Steelhead, Upper Willamette River DPS designated critical habitat and Metolachlor**

<b>Endpoint: Vegetative Cover (aquatic and terrestrial plants)</b>			
<b>Use Category</b>	<b>% Overlap</b>	<b>Effect of Exposure</b>	<b>Likelihood of Exposure</b>
<b>Aquatic</b>			
Vegetables	1.8	High	Medium
Corn	0.5	High	High
Other Grains	0.23	High	High
Other Row Crops	0.12	High	High
Other Crops	9.84	High	High
Soybean	0	High	Low
Nursery	0.09	High	Low
OR – Vegetables	1.8	High	Medium
OR – Alfalfa	0.15	High	Low
<b>Terrestrial</b>			
Vegetables	1.8	High	Medium
Corn	0.5	High	High
Other Grains	0.23	High	High
Other Row Crops	0.12	High	High
Other Crops	9.84	High	High
Soybean	0	High	Low
Nursery	0.09	High	Low
OR – Vegetables	1.8	High	Medium
OR – Alfalfa	0.15	High	Low

<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to vegetative cover in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>High</b>	<b>Medium</b>	

**Table 283. Water quality risk hypothesis; Steelhead, Upper Willamette River DPS designated critical habitat and Metolachlor**

<b>Endpoint: Water Quality</b>		
Compromised water quality occurs when anticipated concentrations of the stressors of the action achieve toxic levels in designated critical habitat. However, the anticipated metolachlor levels within the designated critical habitat of the Steelhead, Upper Willamette River DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. The likelihood of attaining toxic concentrations increases with frequency of application, use of the maximum rates, and the proximity to designated critical habitats. Other chemicals within formulations or added to tank mixes may increase the extent of water quality degradation.		
<b>Risk Hypothesis: Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.</b>		
<b>Risk</b>	<b>Confidence</b>	
<b>Medium</b>	<b>Low</b>	

**Table 284. Effects analysis summary table; Steelhead, Upper Willamette River DPS designated critical habitat and Metolachlor**

Designated Critical Habitat; Risk Hypotheses	R-plot Derived		Risk Hypothesis Supported? Yes/No
	Risk	Confidence	
Exposure to the stressors of the action is sufficient to reduce the conservation value via reductions in prey in migration, and rearing sites.	Low	High	No
Exposure to the stressors of the action is sufficient to reduce the conservation value via impacts to	High	Medium	Yes

vegetative cover in migration, spawning, and rearing sites.			
Exposure to the stressors of the action is sufficient to reduce the conservation value via degradation of water quality in migration, spawning, and rearing sites.	Medium	Low	No

**Designated Critical Habitat Effects Analysis Summary**

We anticipate that the stressors of the action will negatively affect some physical and biological features of Upper Willamette River Steelhead designated critical habitat. The anticipated metolachlor levels within the designated critical habitat of the Upper Willamette River DPS are not expected to substantially impact the overall abundance and therefore availability of aquatic invertebrates. We characterized risk associated with effects to aquatic and terrestrial vegetation as high and our confidence in this risk is medium. Although we anticipate some impacts to riparian vegetation, we expect these impacts to be primarily to the emergence of a subset of species with little impact to the existing vegetation. Adverse effects to aquatic vegetative cover are anticipated in low volume flowing and static habitats, with greater uncertainty of effects in larger habitats with higher flow rates. We did find support for the vegetative cover risk hypothesis due primarily to impacts to aquatic vegetation. However, we did not find support for the other risk hypotheses. Although adverse effects to aquatic vegetation are anticipated, we expect them to be limited in scope. Overall the risk is medium and the confidence associated with that risk is low due to the exposures predicted in critical habitats over the 15-year duration of the action.



**Table 285. Summary of risk and confidence determinations for products containing 1,3-D and designated critical habitats of Pacific Salmonids.**

Salmon Type	ESU/DPS	Risk	Confidence
Chum	Columbia River	Medium	Low
Chum	Hood Canal summer-run	Low	Medium
Chinook	California Coastal	Low	Medium
Chinook	CA Central Valley spring-run	Medium	Low
Chinook	Lower Columbia River	Medium	Low
Chinook	Puget Sound	Medium	Low
Chinook	Sacramento River winter-run	Medium	Low
Chinook	Snake River fall-run	Medium	Low
Chinook	Snake River spring/summer-run	Medium	Low
Chinook	Upper Columbia River spring-run	Medium	Low
Chinook	Upper Willamette River	Medium	Low
Coho	Central California Coast	Low	Medium
Coho	Lower Columbia River	Medium	Low
Coho	Oregon Coast	Low	Medium
Coho	S. Oregon N. California Coast	Low	Medium
Sockeye	Ozette Lake	Low	Medium
Sockeye	Snake River	Medium	Low
Steelhead	CA Central Valley	Medium	Low
Steelhead	Central California Coast	Low	Medium
Steelhead	Lower Columbia River	Medium	Low
Steelhead	Middle Columbia River	Medium	Low
Steelhead	Northern California	Low	Medium
Steelhead	Puget Sound	Medium	Low
Steelhead	Snake River Basin	Medium	Low
Steelhead	South-Central California Coast	Medium	Low
Steelhead	Southern California	Medium	Low

Steelhead	Upper Columbia River	Medium	Low
Steelhead	Upper Willamette River	Medium	Low

**Table 286. Summary of risk and confidence determinations for metolachlor and desingated critical habitats of Pacific Salmonids.**

Salmon Type	ESU/DPS	Risk	Confidence
Chum	Columbia River	Medium	Low
Chum	Hood Canal summer-run	Low	High
Chinook	California Coastal	Low	High
Chinook	CA Central Valley spring-run	Medium	Low
Chinook	Lower Columbia River	Medium	Low
Chinook	Puget Sound	Medium	Low
Chinook	Sacramento River winter-run	Medium	Low
Chinook	Snake River fall-run	Medium	Low
Chinook	Snake River spring/summer-run	Medium	Low
Chinook	Upper Columbia River spring-run	Medium	Low
Chinook	Upper Willamette River	Medium	Low
Coho	Central California Coast	Low	High
Coho	Lower Columbia River	Medium	Low
Coho	Oregon Coast	Low	High
Coho	S. Oregon N. California Coast	Low	High
Sockeye	Ozette Lake	Low	High
Sockeye	Snake River	Low	High
Steelhead	CA Central Valley	Medium	Low
Steelhead	Central California Coast	Medium	Low
Steelhead	Lower Columbia River	Medium	Low
Steelhead	Middle Columbia River	Medium	Low
Steelhead	Northern California	Low	High

Steelhead	Puget Sound	Medium	Low
Steelhead	Snake River Basin	Medium	Low
Steelhead	South-Central California Coast	Medium	Low
Steelhead	Southern California	Medium	Low
Steelhead	Upper Columbia River	Medium	Low
Steelhead	Upper Willamette River	Medium	Low