

Appendix M: R-Plots

Snails (Aquatic and Terrestrial)

Toxicities

Mortality.snail.LC50

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Mosquito Control (41343.1, 40977)

6.3, 6.25

Developed (10990.4, 549)

1.68, 0.08

Corn (7100.3, 2260)

1.08, 0.34

Other Crops (493.0, 0)

0.08, <0.01

Wheat (65.5, 44)

<0.01, <0.01

Nurseries (52.9, 52)

<0.01, <0.01

Vegetables and Ground Fruit (14.0, 13)

<0.01, <0.01

Other Grains (12.6, 12)

<0.01, <0.01

Cotton (11.1, 8)

<0.01, <0.01

Other RowCrops (3.8, 3)

<0.01, <0.01

Pasture (1.7, 1)

<0.01, <0.01

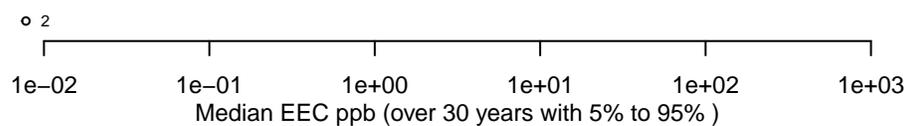
Uses

Orchards and Vineyards (0.4, 0)

<0.01, <0.01

Total Range (655961 acres)

%s (overlap, treated)

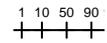


malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:5,6, bin:2
 Royal marstonia (snail) (401) Range

Toxicities

Uses

Mortality.snail.LC50

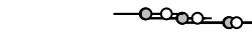


Mosquito Control (711502, 89427)



20.18, 2.54

Developed (194619, 9730)



5.52, 0.28

Corn (32794, 2547)



0.93, 0.07

Cotton (10723, 7922)



0.3, 0.22

Wheat (2568, 645)



0.07, 0.02

Other Crops (1398, 0)



0.04, <0.01

Nurseries (1104, 1104)



0.03, 0.03

Other Grains (819, 757)



0.02, 0.02

Vegetables and Ground Fruit (137, 141)



<0.01, <0.01

Other RowCrops (65, 59)



<0.01, <0.01

Pasture (49, 53)



<0.01, <0.01

Orchards and Vineyards (7, 8)



<0.01, <0.01

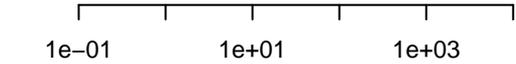
Christmas Trees (7, 6)



<0.01, <0.01

Total Range (3526577 acres)

%s (overlap, treated)



Median EEC ppb (over 30 years with 5% to 95%)

malathion: mal.snail.tox.txt

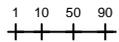
yearly peak 1-d, 4-d, 21-d (from bottom up)

huc:6, bin:2,3,4

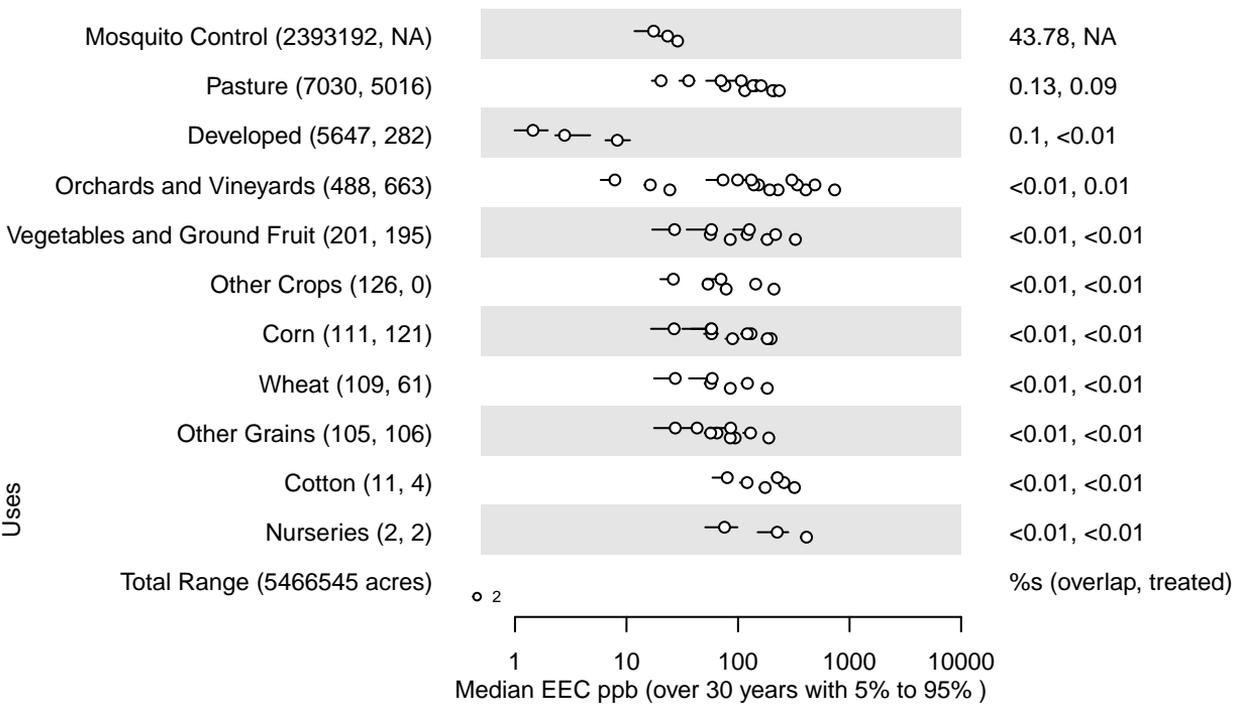
Anthony's riversnail (396) Range

Toxicities

Mortality.snail.LC50



Uses



malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:13, bin:2
 Alamosa springsnail (403) Range

Toxicities

Mortality.snail.LC50

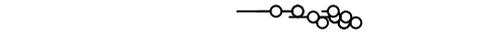


Wheat (1040.3, 1197)



1.19, 1.36

Pasture (972.3, 958)



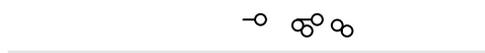
1.11, 1.09

Corn (240.6, 386)



0.27, 0.44

Other Crops (144.0, 0)



0.16, <0.01

Other Grains (50.6, 21)



0.06, 0.02

Developed (48.2, 2)



0.05, <0.01

Vegetables and Ground Fruit (33.2, 35)



0.04, 0.04

Other RowCrops (25.0, 25)



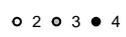
0.03, 0.03

Orchards and Vineyards (0.2, 0)



<0.01, <0.01

Total Range (87717 acres)



%s (overlap, treated)

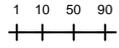
Uses

1e-01 1e+01 1e+03
 Median EEC ppb (over 30 years with 5% to 95%)

malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:17b, bin:2,3,4
 Bruneau Hot springsnail (404) Range

Toxicities

Mortality.snail.LC50

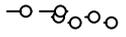


Developed (14276.25, 713)



2.08, 0.1

Wheat (195.37, 64)



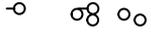
0.03, <0.01

Corn (141.38, 52)



0.02, <0.01

Other Crops (15.34, 0)



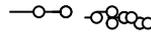
<0.01, <0.01

Nurseries (14.89, 14)



<0.01, <0.01

Pasture (9.00, 9)



<0.01, <0.01

Orchards and Vineyards (1.07, 1)



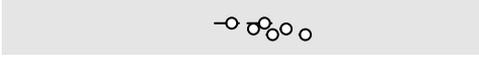
<0.01, <0.01

Other Grains (0.67, 0)



<0.01, <0.01

Other RowCrops (0.07, 0)



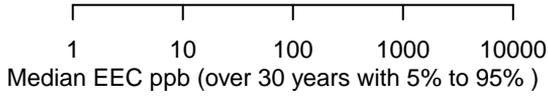
<0.01, <0.01

Total Range (685983 acres)



%s (overlap, treated)

Uses



malathion: mal.snail.tox.txt

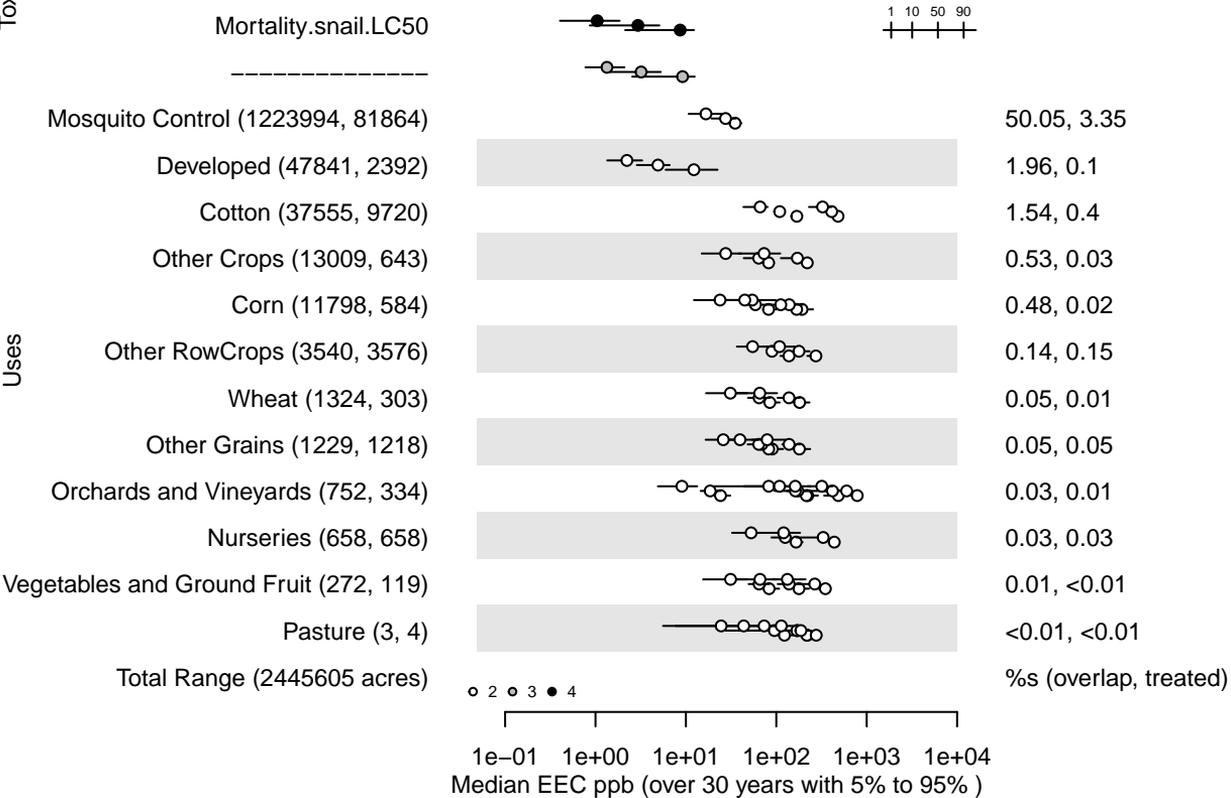
yearly peak 1-d, 4-d, 21-d (from bottom up)

huc:11a, bin:2

Tumbling Creek cavesnail (406) Range

Toxicities

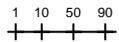
Uses



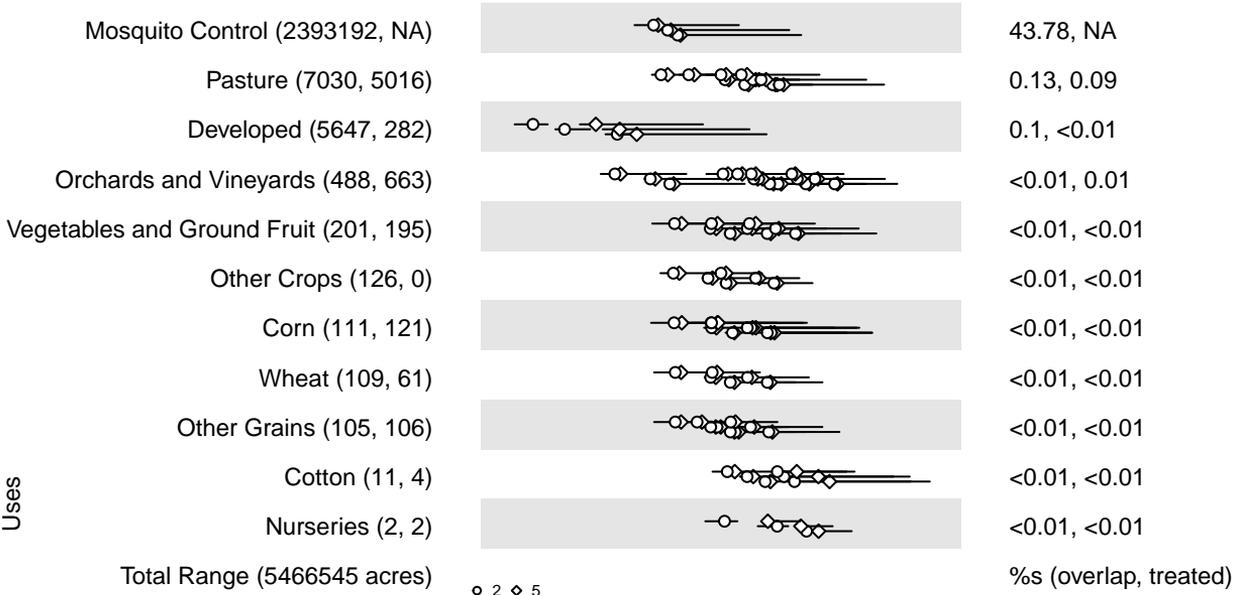
malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:3, bin:2,3,4
 Tulotoma snail (407) Range

Toxicities

Mortality.snail.LC50



Uses



Total Range (5466545 acres)

○ 2 ◇ 5



Median EEC ppb (over 30 years with 5% to 95%)

malathion: mal.snail.tox.txt

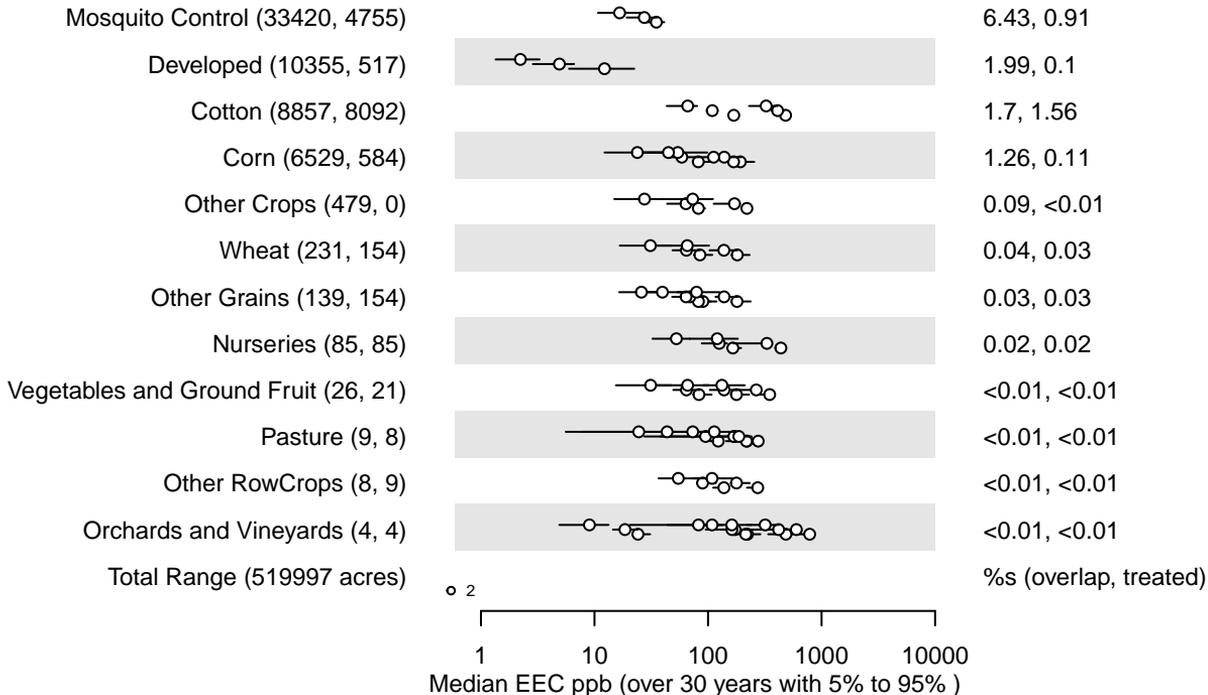
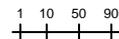
yearly peak 1-d, 4-d, 21-d (from bottom up)

huc:13, bin:2,5

Socorro springsnail (408) Range

Toxicities

Mortality.snail.LC50



Uses

malathion: mal.snail.tox.txt

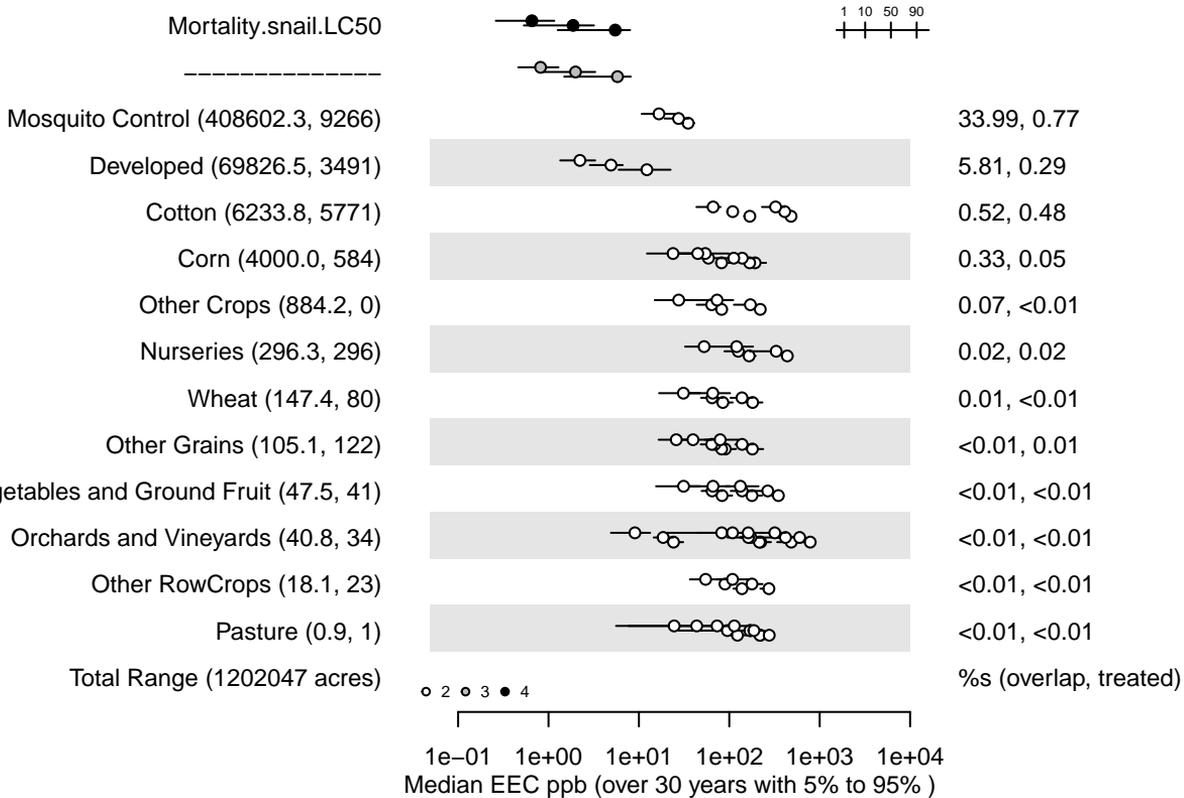
yearly peak 1-d, 4-d, 21-d (from bottom up)

huc:3, bin:2

Lacy elimia (snail) (411) Range

Toxicities

Uses

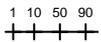


○ 2 ○ 3 ● 4
 1e-01 1e+00 1e+01 1e+02 1e+03 1e+04
 Median EEC ppb (over 30 years with 5% to 95%)

malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:3, bin:2,3,4
 Cylindrical lioplax (snail) (412) Range

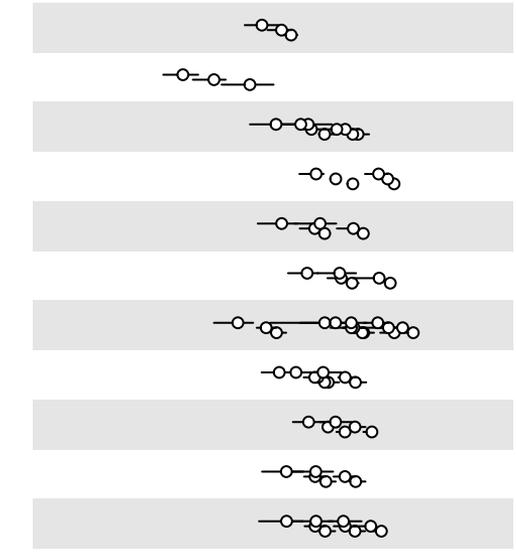
Toxicities

Mortality.snail.LC50



Uses

- Mosquito Control (134737, 5466)
- Developed (33082, 1654)
- Corn (330, 96)
- Cotton (282, 180)
- Other Crops (234, 0)
- Nurseries (92, 91)
- Orchards and Vineyards (32, 28)
- Other Grains (18, 18)
- Other RowCrops (12, 16)
- Wheat (11, 7)
- Vegetables and Ground Fruit (7, 7)
- Total Range (545293 acres)



24.71, 1

6.07, 0.3

0.06, 0.02

0.05, 0.03

0.04, <0.01

0.02, 0.02

<0.01, <0.01

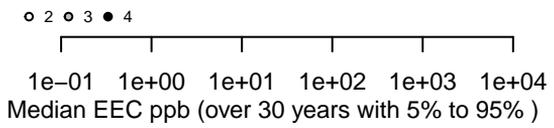
<0.01, <0.01

<0.01, <0.01

<0.01, <0.01

<0.01, <0.01

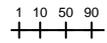
%s (overlap, treated)



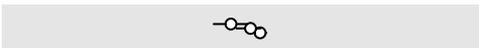
malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:3, bin:2,3,4
 Flat pebblesnail (413) Range

Toxicities

Mortality.snail.LC50

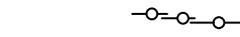


Mosquito Control (551747.0, 18166)



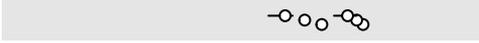
55.56, 1.83

Developed (37704.9, 1885)



3.8, 0.19

Cotton (10143.7, 9124)



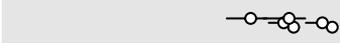
1.02, 0.92

Corn (7230.6, 584)



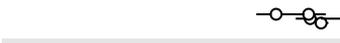
0.73, 0.06

Other Crops (1100.6, 0)



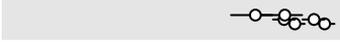
0.11, <0.01

Nurseries (802.3, 802)



0.08, 0.08

Wheat (184.1, 136)



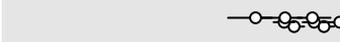
0.02, 0.01

Other Grains (163.1, 173)



0.02, 0.02

Vegetables and Ground Fruit (59.4, 51)



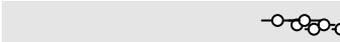
<0.01, <0.01

Orchards and Vineyards (25.8, 17)



<0.01, <0.01

Other RowCrops (12.9, 15)



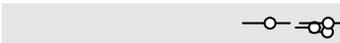
<0.01, <0.01

Pasture (2.8, 4)



<0.01, <0.01

Christmas Trees (0.1, 0)

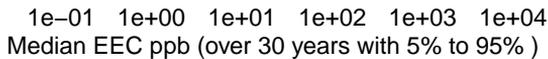


<0.01, <0.01

Total Range (993025 acres)

%s (overlap, treated)

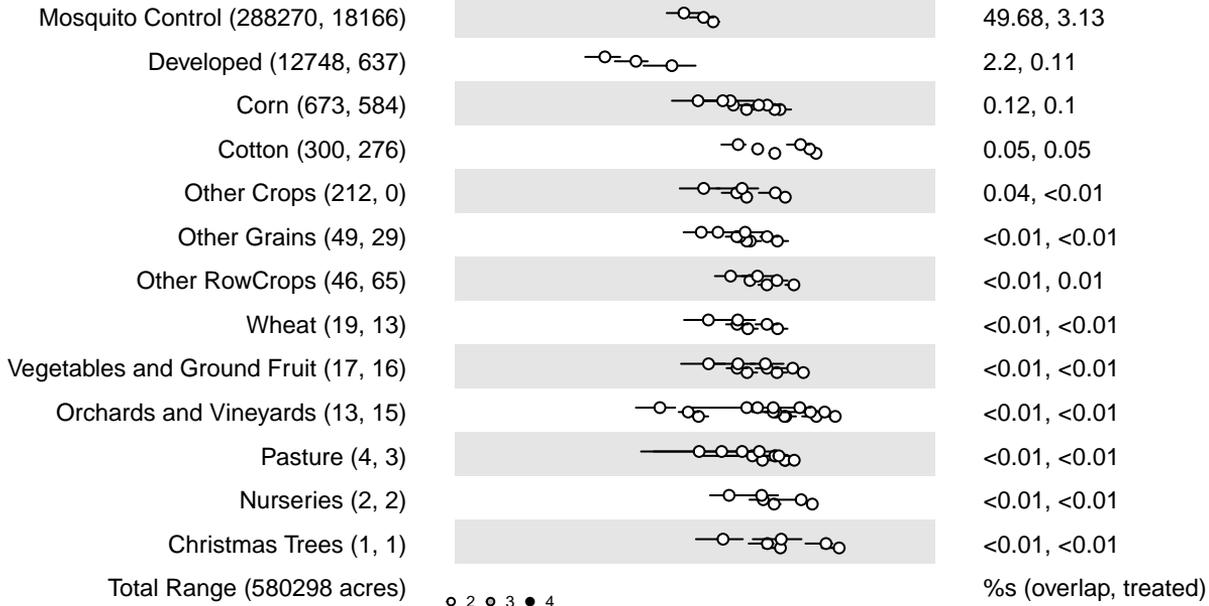
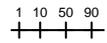
Uses



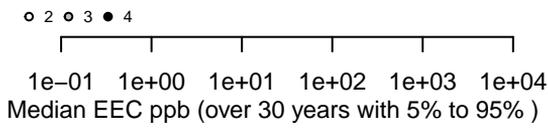
malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:3, bin:2,3,4
 Painted rocksnail (414) Range

Toxicities

Mortality.snail.LC50



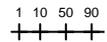
Uses



malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:3, bin:2,3,4
 Plicate rocksnail (415) Range

Toxicities

Mortality.snail.LC50



Uses

Mosquito Control (134738, 5466)

14.97, 0.61

Developed (72870, 3643)

8.1, 0.4

Other Crops (582, 0)

0.06, <0.01

Corn (517, 175)

0.06, 0.02

Cotton (455, 322)

0.05, 0.04

Nurseries (98, 98)

0.01, 0.01

Orchards and Vineyards (40, 35)

<0.01, <0.01

Wheat (32, 16)

<0.01, <0.01

Other Grains (24, 24)

<0.01, <0.01

Vegetables and Ground Fruit (20, 16)

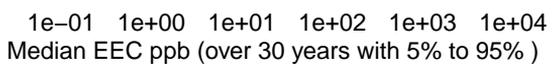
<0.01, <0.01

Other RowCrops (20, 24)

<0.01, <0.01

Total Range (899841 acres)

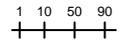
%s (overlap, treated)



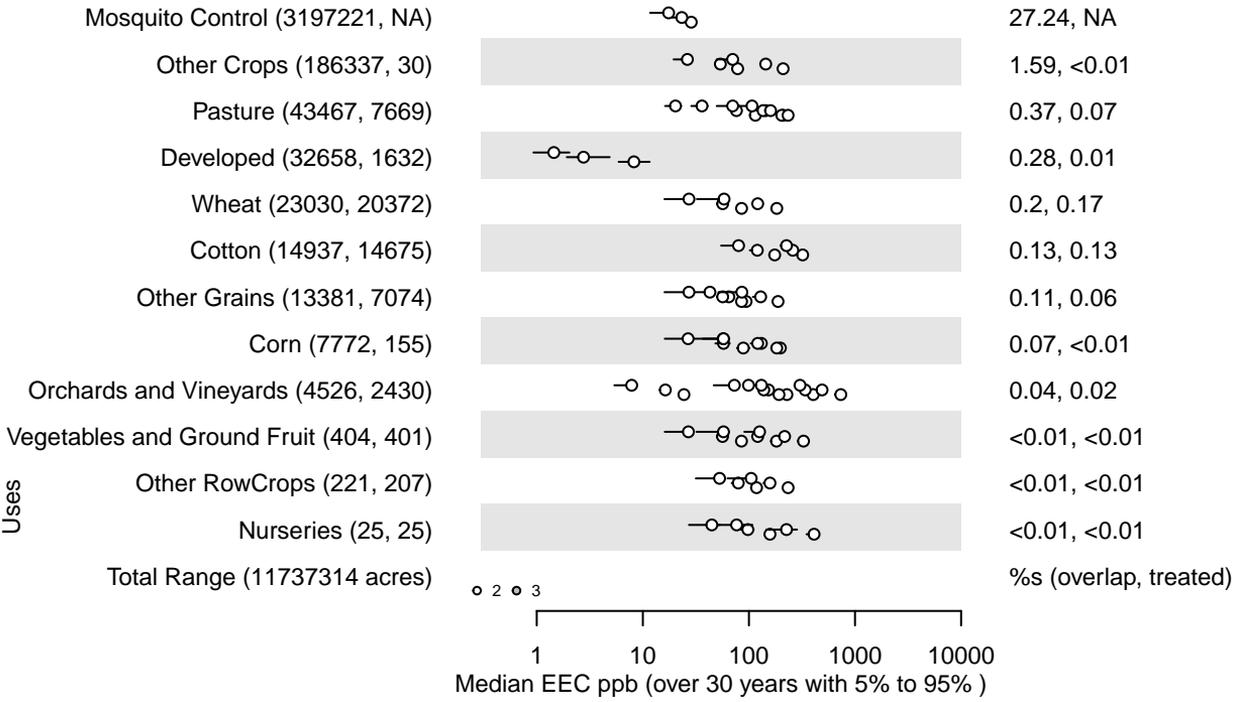
malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:3, bin:2,3,4
 Round rocksnail (416) Range

Toxicities

Mortality.snail.LC50



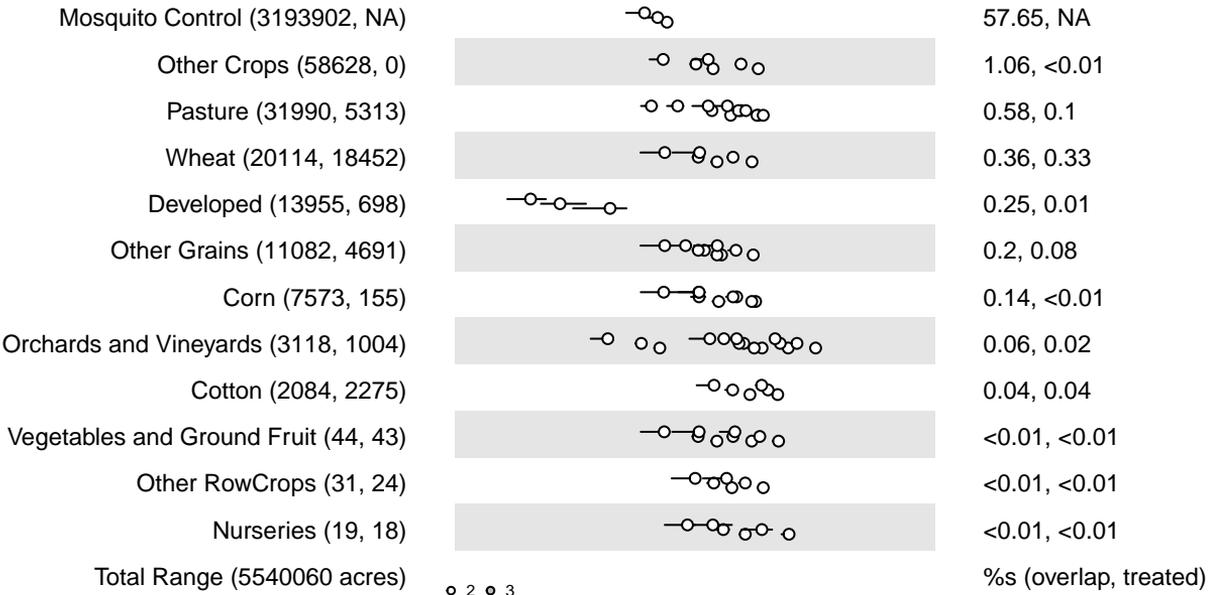
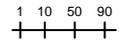
Uses



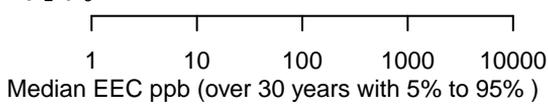
malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:12b,13, bin:2,3
 Pecos assiminea snail (1245) Range

Toxicities

Mortality.snail.LC50



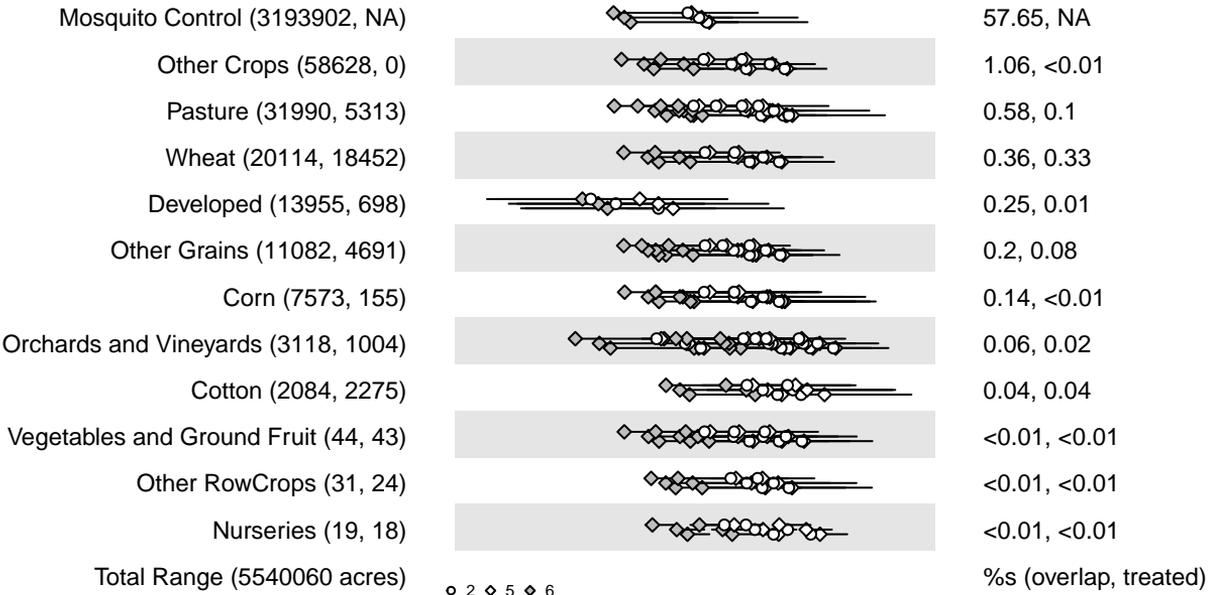
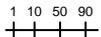
Uses



malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:12b,13, bin:2,3
 Roswell springsnail (1246) Range

Toxicities

Mortality.snail.LC50



Uses

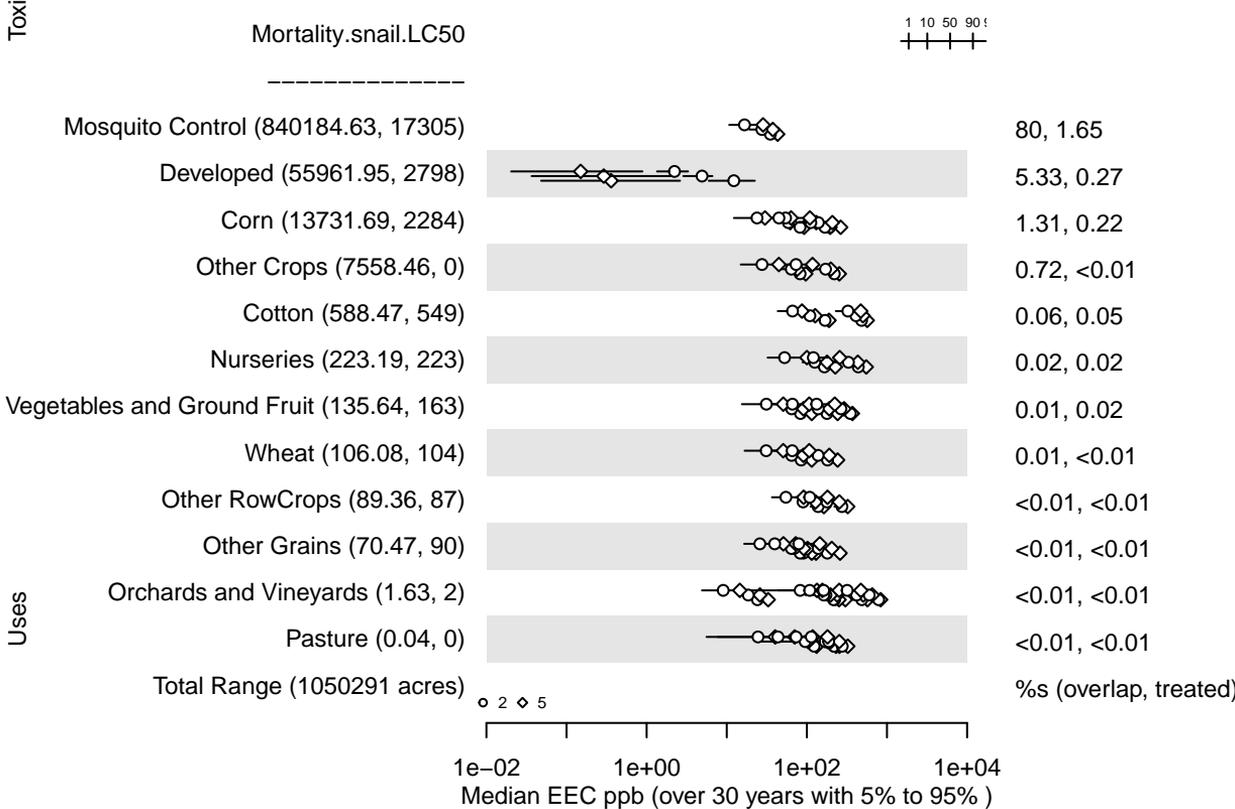
○ 2 ◇ 5 ◆ 6

1e-01 1e+00 1e+01 1e+02 1e+03 1e+04
Median EEC ppb (over 30 years with 5% to 95%)

malathion: mal.snail.tox.txt
yearly peak 1-d, 4-d, 21-d (from bottom up)
huc:12b,13, bin:2,5,6
Koster's springsnail (1247) Range

Toxicities

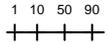
Uses



malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:3, bin:2,5
 Magnificent ramshorn (1358) Range

Toxicities

Mortality.snail.LC50



Other Crops (172.6, 0)



0.13, <0.01

Developed (40.1, 2)



0.03, <0.01

Orchards and Vineyards (11.3, 6)



<0.01, <0.01

Corn (3.1, 0)



<0.01, <0.01

Pasture (1.8, 2)



<0.01, <0.01

Other Grains (1.1, 1)



<0.01, <0.01

Cotton (0.6, 0)



<0.01, <0.01

Wheat (0.4, 0)



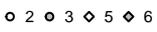
<0.01, <0.01

Vegetables and Ground Fruit (0.1, 0)

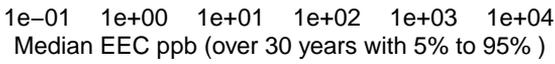


<0.01, <0.01

Total Range (128656 acres)



%s (overlap, treated)



malathion: mal.snail.tox.txt

yearly peak 1-d, 4-d, 21-d (from bottom up)

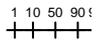
huc:15a,15b, bin:2,3,5,6

San Bernardino springsnail (1380) Range

Uses

Toxicities

Mortality.snail.LC50

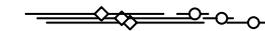


Mosquito Control (439010.3, 18166)



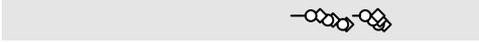
35.79, 1.48

Developed (55576.0, 2778)



4.53, 0.23

Cotton (20716.1, 10505)



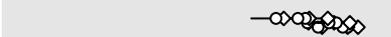
1.69, 0.86

Other Crops (9839.6, 35)



0.8, <0.01

Corn (7468.4, 1588)



0.61, 0.13

Other Grains (873.7, 773)



0.07, 0.06

Nurseries (587.8, 587)



0.05, 0.05

Wheat (332.3, 165)



0.03, 0.01

Other RowCrops (125.4, 102)



0.01, <0.01

Orchards and Vineyards (42.5, 35)



<0.01, <0.01

Vegetables and Ground Fruit (16.7, 13)



<0.01, <0.01

Pasture (3.0, 4)



<0.01, <0.01

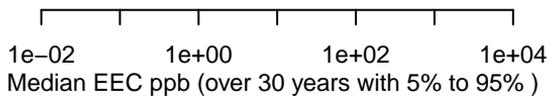
Christmas Trees (0.1, 0)



<0.01, <0.01

Total Range (1226760 acres)

%s (overlap, treated)



Uses

malathion: mal.snail.tox.txt

yearly peak 1-d, 4-d, 21-d (from bottom up)

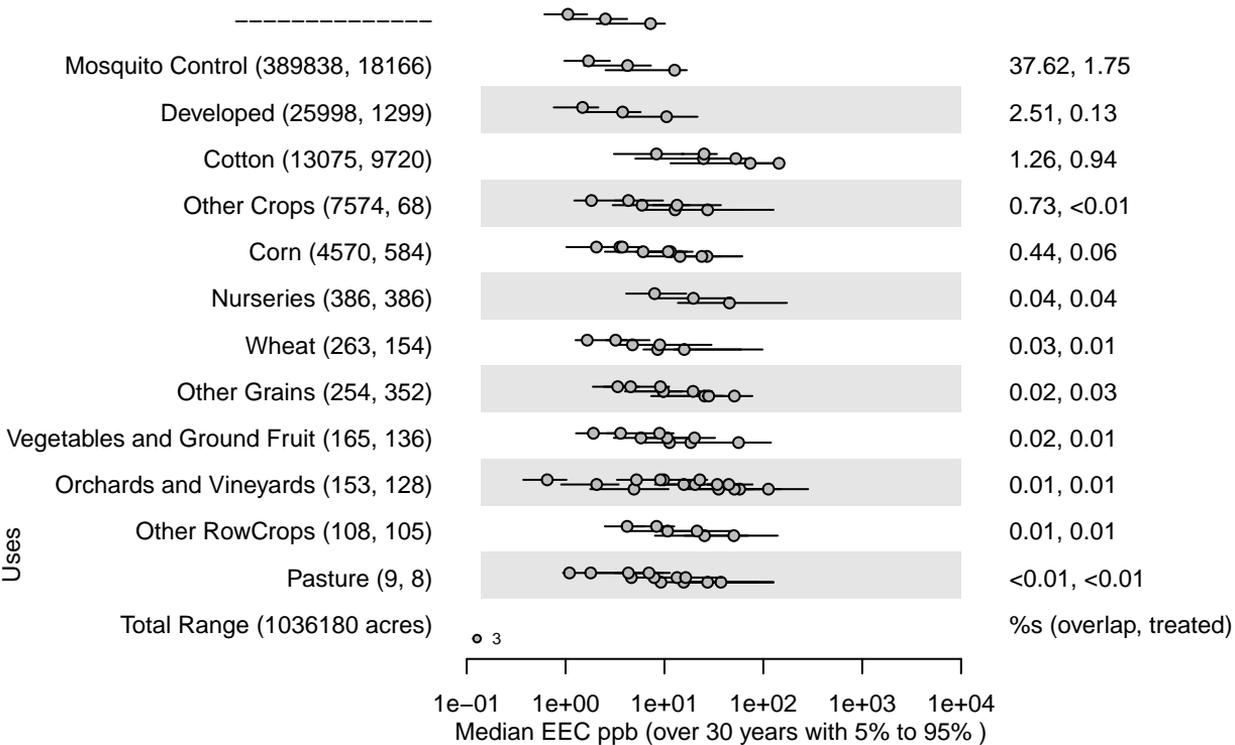
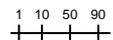
huc:3,6, bin:2,3,4,5

Interrupted (=Georgia) Rocksnail (2561) Range

Toxicities

Uses

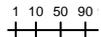
Mortality.snail.LC50



malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:3, bin:3
 Rough hornsnail (3364) Range

Toxicities

Mortality.snail.LC50



Mosquito Control (532940, 93945)

37.62, 6.63

Corn (53001, 2609)

3.74, 0.18

Developed (30984, 1549)

2.19, 0.11

Cotton (22681, 10778)

1.6, 0.76

Other Crops (891, 0)

0.06, <0.01

Other Grains (686, 718)

0.05, 0.05

Wheat (547, 272)

0.04, 0.02

Nurseries (92, 92)

<0.01, <0.01

Other RowCrops (70, 64)

<0.01, <0.01

Orchards and Vineyards (13, 13)

<0.01, <0.01

Vegetables and Ground Fruit (7, 5)

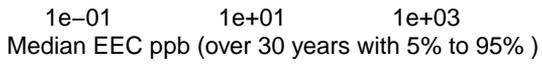
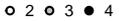
<0.01, <0.01

Pasture (4, 4)

<0.01, <0.01

Total Range (1416578 acres)

%s (overlap, treated)

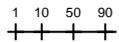


Uses

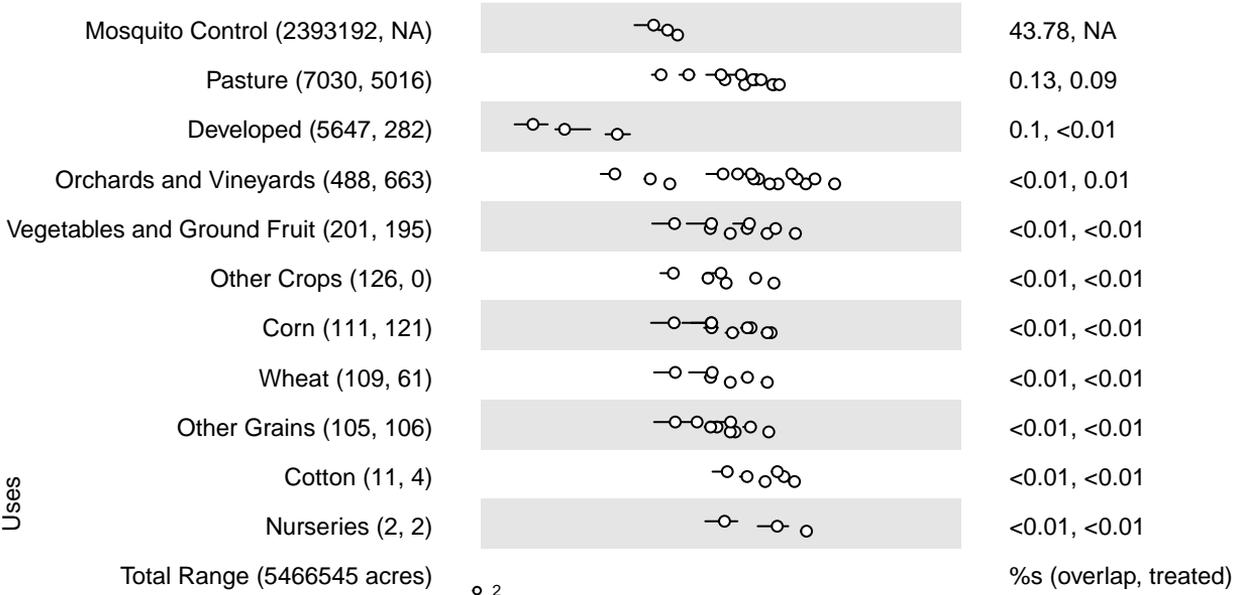
malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:6, bin:2,3,4
 Anthony's riversnail (3842) Range

Toxicities

Mortality.snail.LC50



Uses



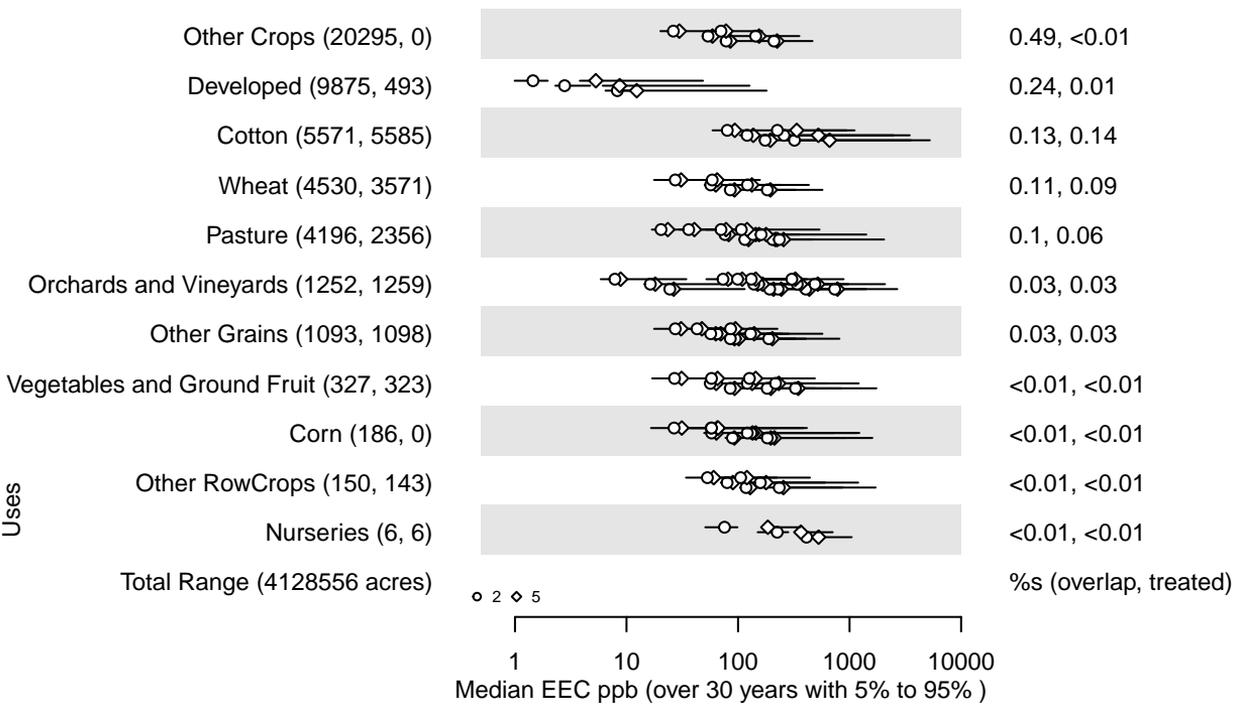
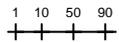
1 10 100 1000 10000
 Median EEC ppb (over 30 years with 5% to 95%)

malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:13, bin:2
 Chupadera springsnail (4162) Range

Toxicities

Uses

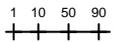
Mortality.snail.LC50



malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:13, bin:2,5
 Diamond Tryonia (4437) Range

Toxicities

Mortality.snail.LC50



Uses

Other Crops (115114, 30)

Developed (10686, 534)

Cotton (10211, 9752)

Pasture (7758, 2356)

Mosquito Control (3319, NA)

Wheat (2365, 2121)

Other Grains (1528, 1681)

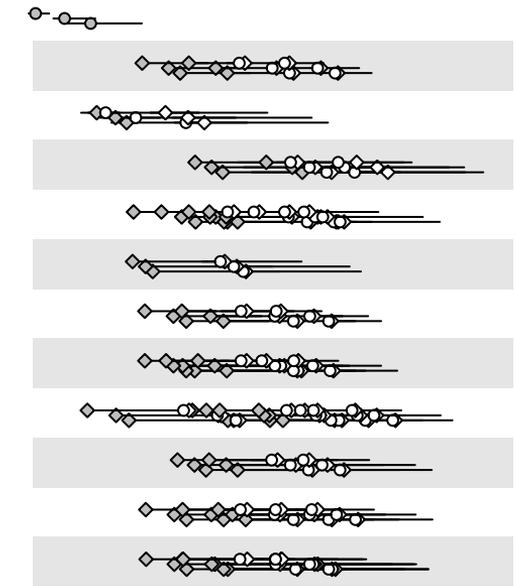
Orchards and Vineyards (427, 312)

Other RowCrops (172, 170)

Vegetables and Ground Fruit (141, 171)

Corn (24, 0)

Total Range (4331681 acres)



2.66, <0.01

0.25, 0.01

0.24, 0.23

0.18, 0.05

0.08, NA

0.05, 0.05

0.04, 0.04

<0.01, <0.01

<0.01, <0.01

<0.01, <0.01

<0.01, <0.01

○ 2 ○ 3 ◇ 5 ◇ 6

%s (overlap, treated)

Median EEC ppb (over 30 years with 5% to 95%)

malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:13, bin:2,3,5,6
 Phantom Springsnail (4479) Range

Toxicities

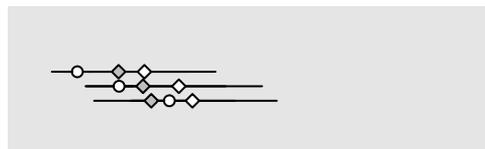
Mortality.snail.LC50

1 10 50 90



Uses

Developed (72, 3)



0.02, <0.01

Total Range (315529 acres)

%s (overlap, treated)

○ 2 ○ 3 ○ 4 ○ 5 ○ 6

1 10 100 1000 10000
 Median EEC ppb (over 30 years with 5% to 95%)

malathion: mal.snail.tox.txt

yearly peak 1-d, 4-d, 21-d (from bottom up)

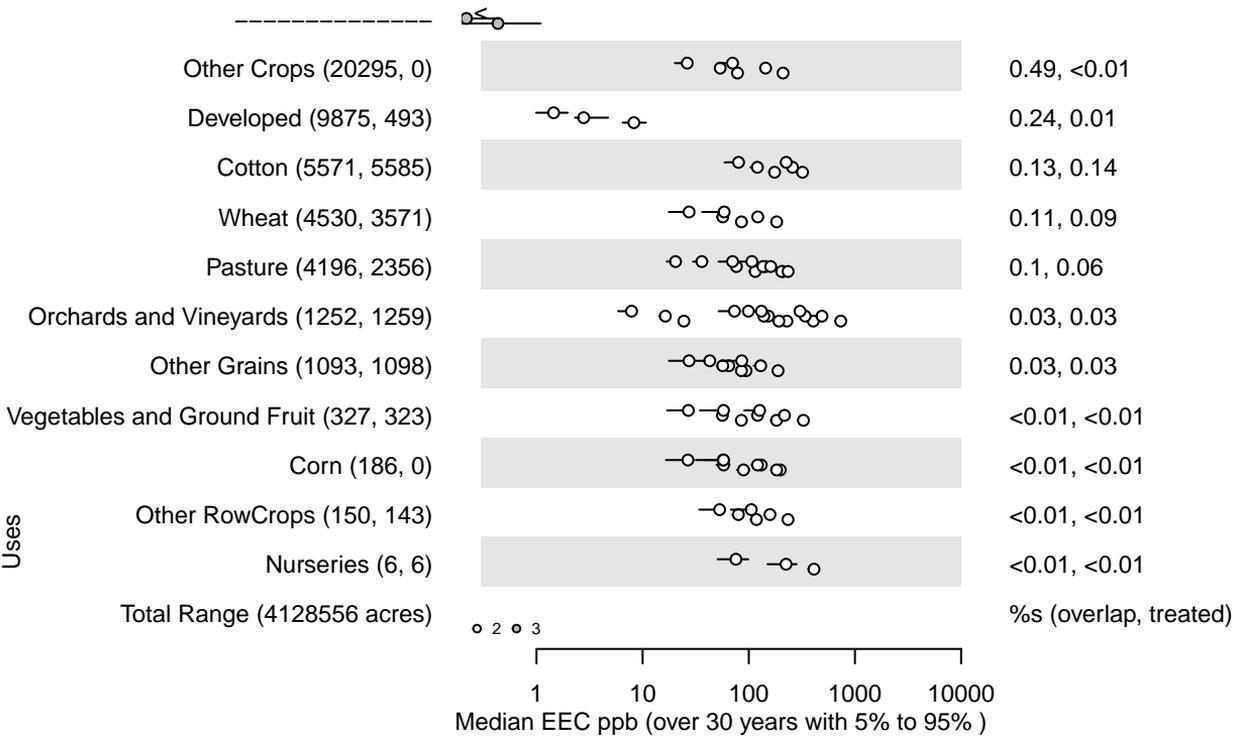
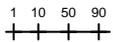
huc:15a, bin:2,3,5,6

Three Forks Springsnail (4766) Range

Toxicities

Uses

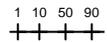
Mortality.snail.LC50



malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:13, bin:2,3
 Gonzales tryonia (5362) Range

Toxicities

Mortality.snail.LC50



Uses

Other Crops (115114, 30)

2.66, <0.01

Developed (10686, 534)

0.25, 0.01

Cotton (10211, 9752)

0.24, 0.23

Pasture (7758, 2356)

0.18, 0.05

Mosquito Control (3319, NA)

0.08, NA

Wheat (2365, 2121)

0.05, 0.05

Other Grains (1528, 1681)

0.04, 0.04

Orchards and Vineyards (427, 312)

<0.01, <0.01

Other RowCrops (172, 170)

<0.01, <0.01

Vegetables and Ground Fruit (141, 171)

<0.01, <0.01

Corn (24, 0)

<0.01, <0.01

Total Range (4331681 acres)

%s (overlap, treated)

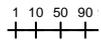


1e-01 1e+00 1e+01 1e+02 1e+03 1e+04
 Median EEC ppb (over 30 years with 5% to 95%)

malathion: mal.snail.tox.txt
 yearly peak 1-d, 4-d, 21-d (from bottom up)
 huc:13, bin:2,3,5,6,7
 Phantom Tryonia (6138) Range

Toxicities

Mortality.snail.LC50



Mosquito Control (434300.4, 60882)



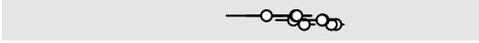
16.07, 2.25

Developed (150457.8, 7522)



5.57, 0.28

Corn (14062.0, 2302)



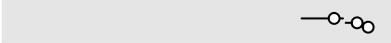
0.52, 0.09

Wheat (2470.1, 439)



0.09, 0.02

Nurseries (738.3, 738)



0.03, 0.03

Other Crops (701.2, 0)



0.03, <0.01

Other Grains (493.7, 351)



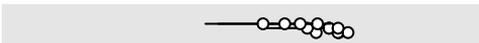
0.02, 0.01

Cotton (73.2, 40)



<0.01, <0.01

Pasture (67.4, 71)



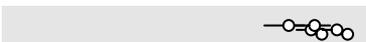
<0.01, <0.01

Vegetables and Ground Fruit (41.1, 42)



<0.01, <0.01

Other RowCrops (27.0, 30)



<0.01, <0.01

Orchards and Vineyards (1.2, 0)



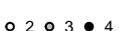
<0.01, <0.01

Christmas Trees (0.7, 0)

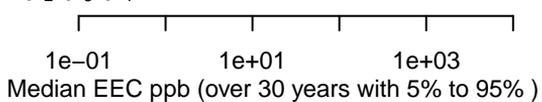


<0.01, <0.01

Total Range (2703236 acres)



%s (overlap, treated)



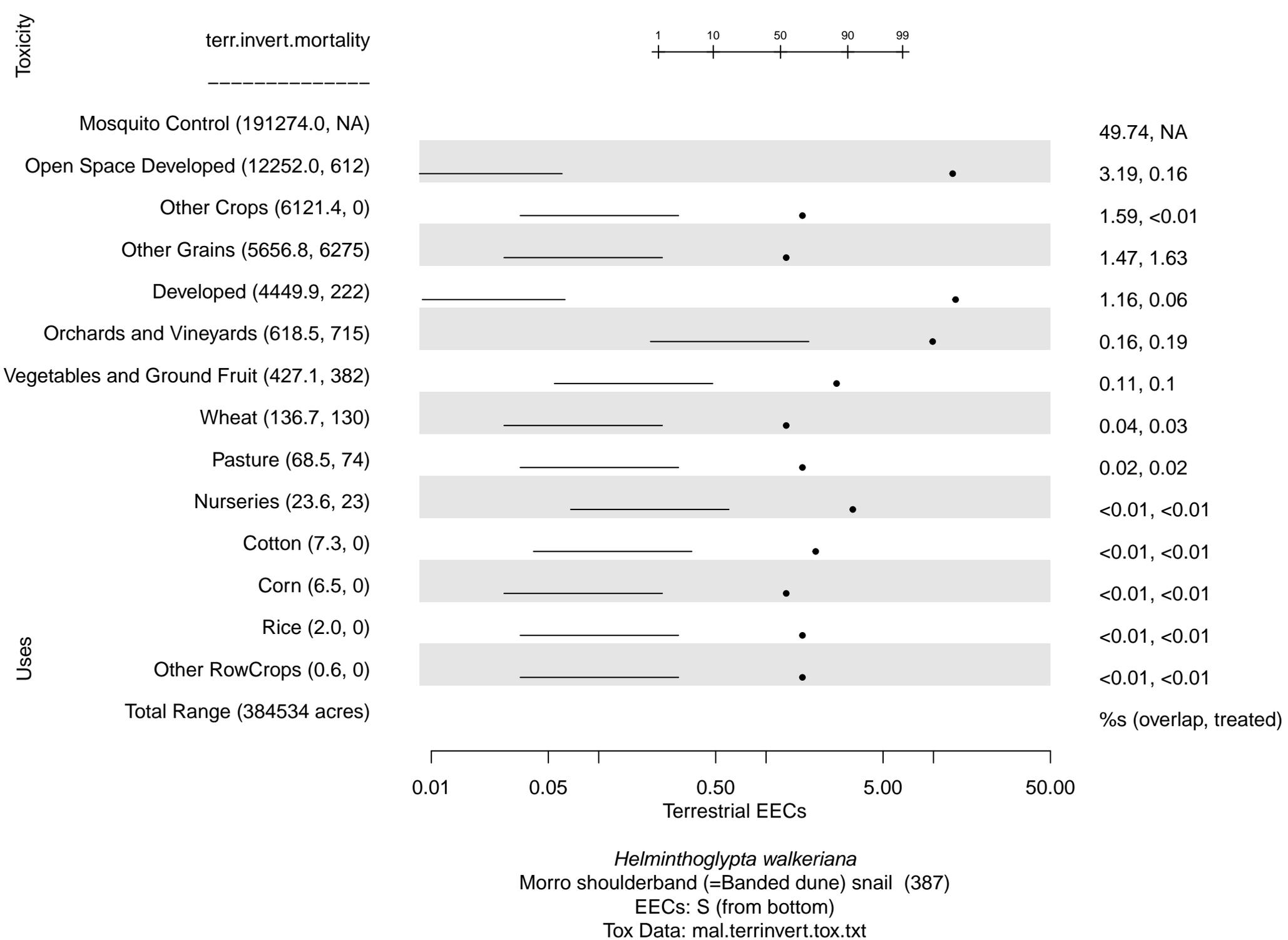
malathion: mal.snail.tox.txt

yearly peak 1-d, 4-d, 21-d (from bottom up)

huc:6, bin:2,3,4

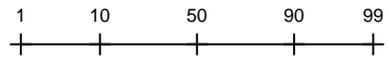
Anthony's riversnail (9507) Range

Uses

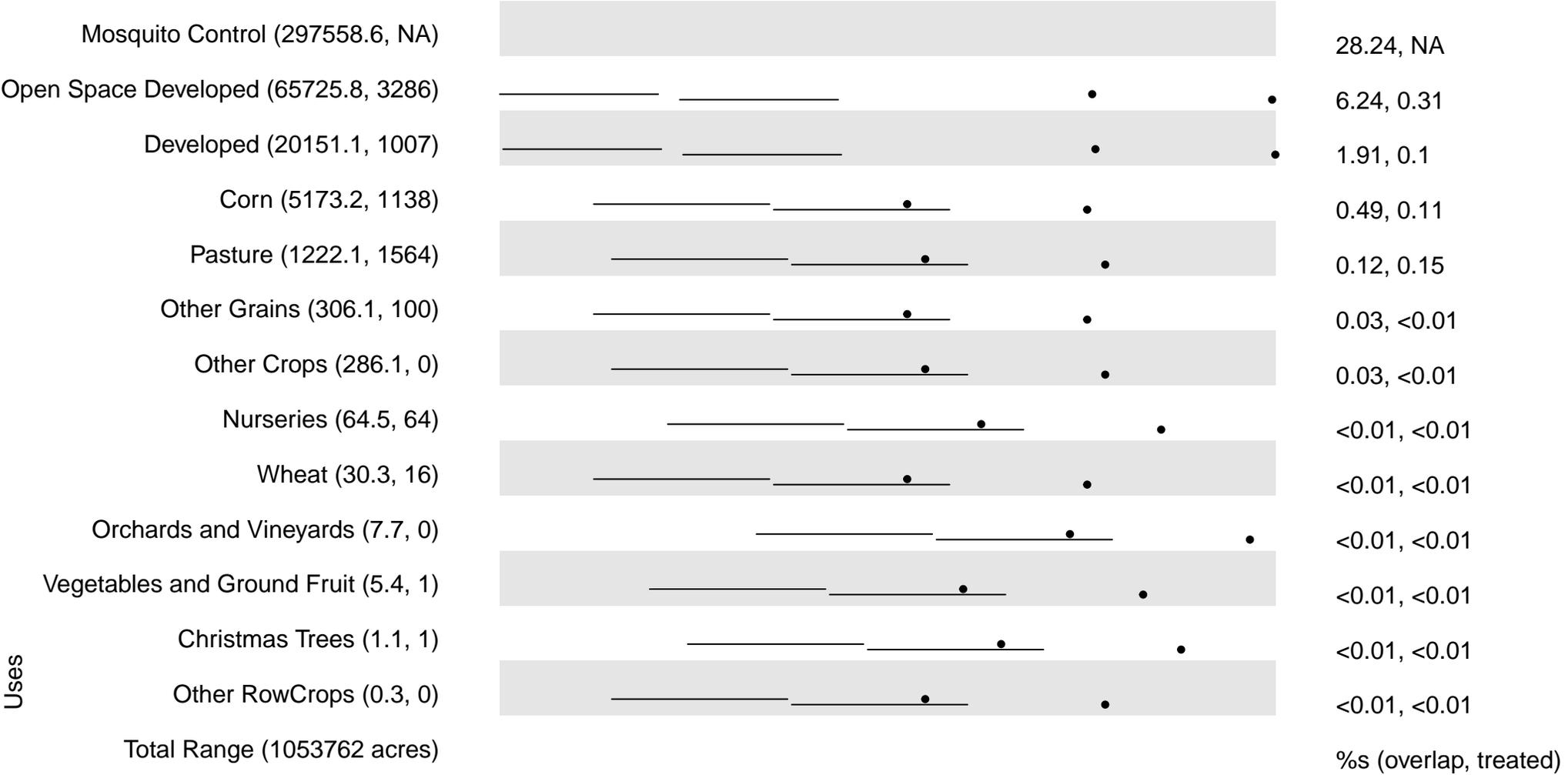


Toxicity

terr.invert.mortality



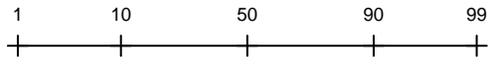
Uses



Triodopsis platysayoides
 Flat-spined three-toothed snail (390)
 EECs: Arth, Sfp (from bottom)
 Tox Data: mal.terrinvert.tox.txt

Toxicity

terr.invert.mortality

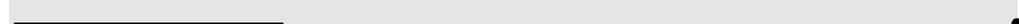


Open Space Developed (3385.37, 169)



0.98, 0.05

Developed (820.51, 41)



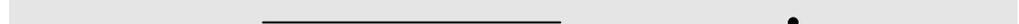
0.24, 0.01

Corn (121.86, 160)



0.04, 0.05

Vegetables and Ground Fruit (82.10, 58)



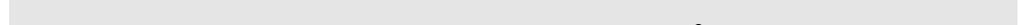
0.02, 0.02

Other Crops (58.95, 0)



0.02, <0.01

Wheat (31.67, 0)



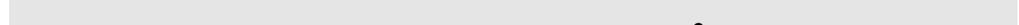
<0.01, <0.01

Pasture (6.97, 5)



<0.01, <0.01

Other Grains (3.22, 3)



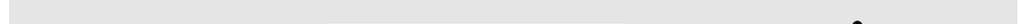
<0.01, <0.01

Nurseries (0.89, 0)



<0.01, <0.01

Christmas Trees (0.89, 0)



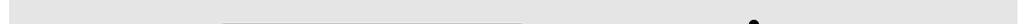
<0.01, <0.01

Orchards and Vineyards (0.70, 0)



<0.01, <0.01

Cotton (0.04, 0)

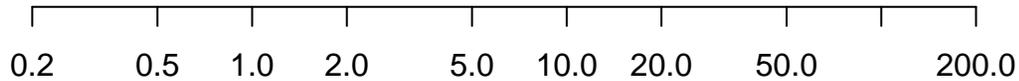


<0.01, <0.01

Total Range (345992 acres)

%s (overlap, treated)

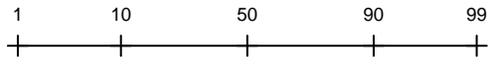
Uses



Patara clarki nantahala
 noonday globe (392)
 EECs: Bp (from bottom)
 Tox Data: mal.terrinvert.tox.txt

Toxicity

terr.invert.mortality



Mosquito Control (345420, 0)

93.73, <0.01

Corn (20527, 1660)

5.57, 0.45

Open Space Developed (14612, 730)

3.97, 0.2

Developed (5634, 281)

1.53, 0.08

Cotton (2501, 2545)

0.68, 0.69

Uses

Wheat (273, 254)

0.07, 0.07

Nurseries (221, 220)

0.06, 0.06

Other Crops (163, 0)

0.04, <0.01

Other Grains (52, 43)

0.01, 0.01

Pasture (16, 16)

<0.01, <0.01

Other RowCrops (10, 10)

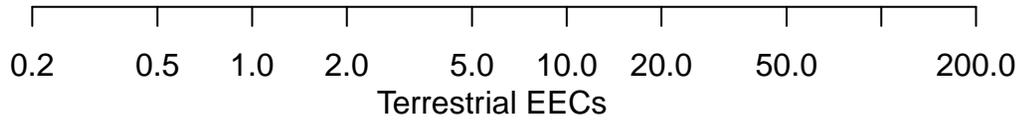
<0.01, <0.01

Vegetables and Ground Fruit (10, 16)

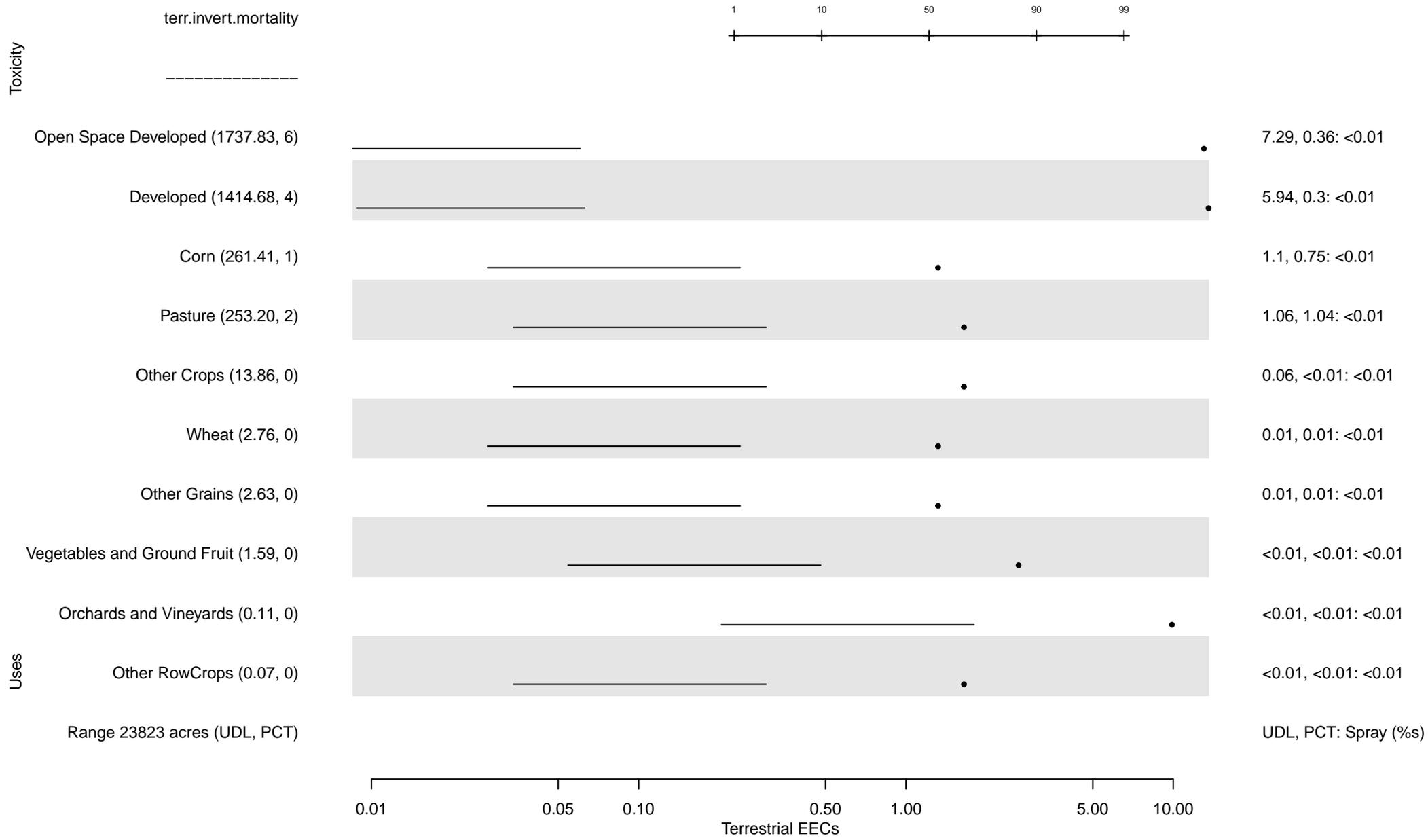
<0.01, <0.01

Total Range (368510 acres)

%s (overlap, treated)



Anguispira picta
 Painted snake coiled forest snail (393)
 EECs: Bp (from bottom)
 Tox Data: mal.terrinvert.tox.txt



Polygyriscus virginianus
 Virginia fringed mountain snail (395)
 EECs: S (from bottom)
 Tox Data: mal.terrinvert.tox.txt