

California Department of Fish and Wildlife  
Stream Evaluation Report  
Report No. 2020-01

**HABITAT SUITABILITY CRITERIA FOR JUVENILE  
SALMONIDS IN THE SOUTH FORK EEL RIVER WATERSHED,  
MENDOCINO AND HUMBOLDT COUNTIES**

**APPENDICES**

# TABLE OF CONTENTS

Appendix A: Spring <6 cm Steelhead Dataset .....	3
Appendix B: Spring ≥6 cm Steelhead Dataset .....	17
Appendix C: Spring <6 cm Coho Salmon Dataset.....	31
Appendix D: Spring ≥6 cm Coho Salmon Dataset.....	45
Appendix E: Summer <6 cm Steelhead Dataset .....	59
Appendix F: Summer ≥6 cm Steelhead Dataset .....	73
Appendix G: Summer <6 cm Coho Salmon Dataset .....	87
Appendix H: Summer ≥6 cm Coho Salmon Dataset.....	101

## APPENDIX A: SPRING <6 CM STEELHEAD DATASET

### <6 cm Steelhead Fish Observation Figures

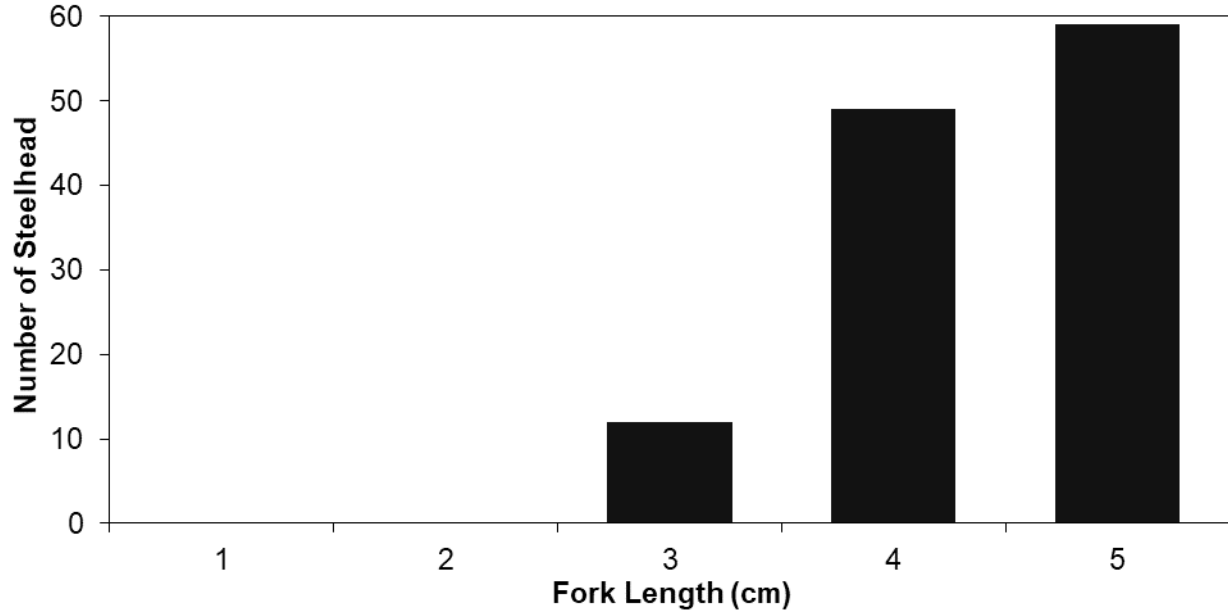


Figure A-1. <6 cm steelhead fork length observations.

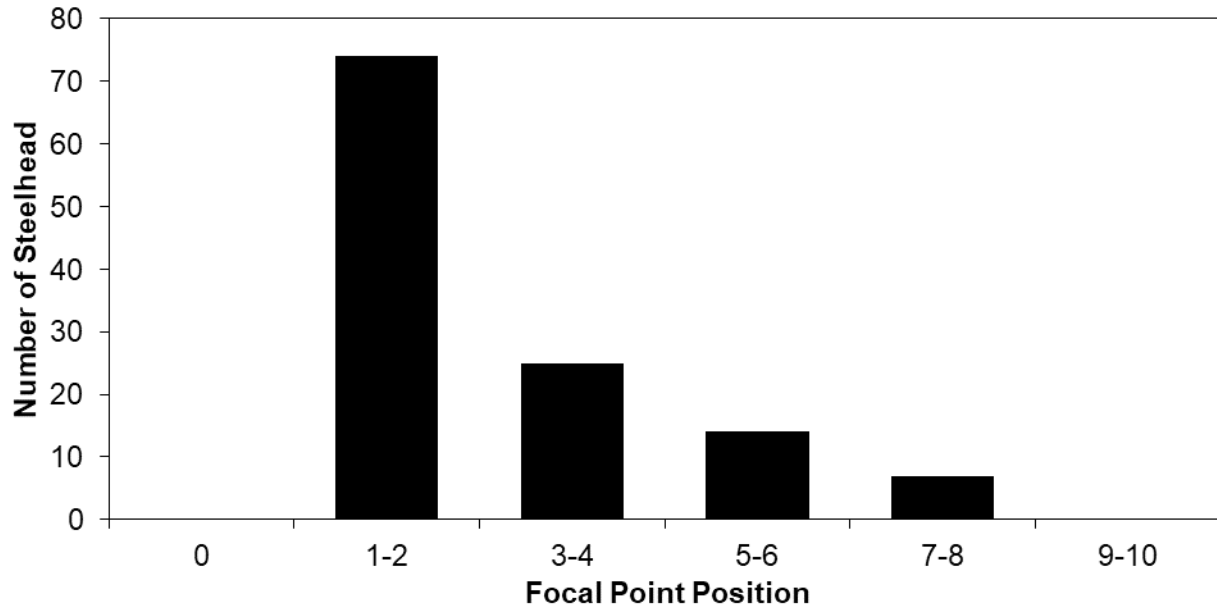


Figure A-2. <6 cm steelhead focal point position observations. Focal position zero signified the bottom of the water column while ten signified the top. The scale of the focal position varied depending on the water depth at the point of observation.

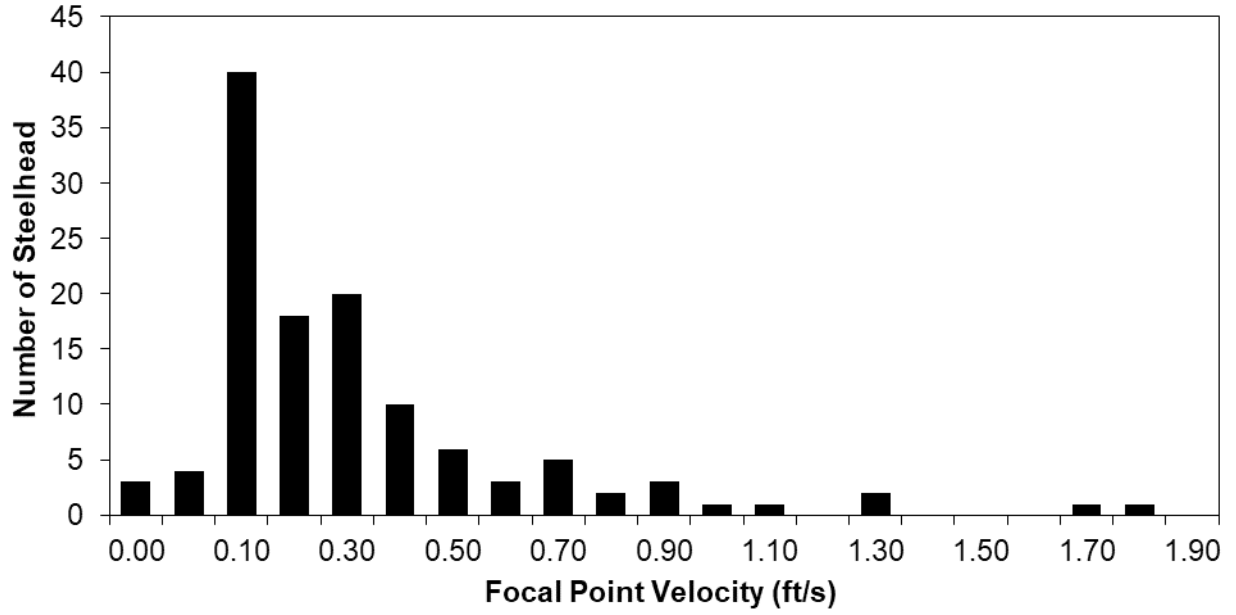


Figure A-3. <6 cm steelhead focal point velocity observations.

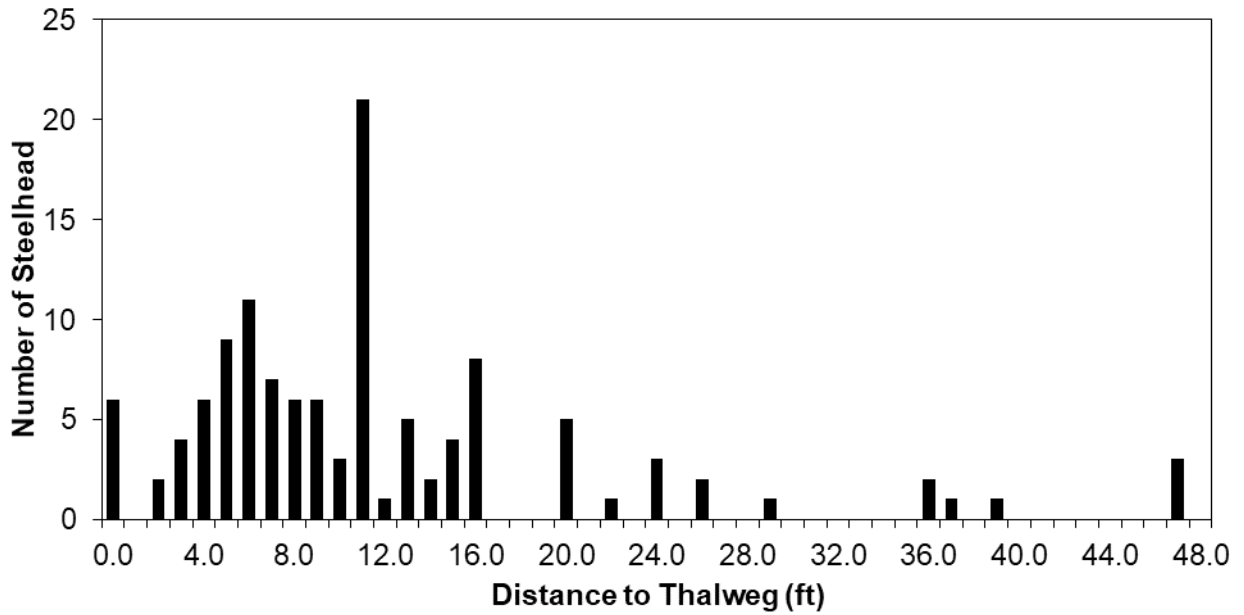


Figure A-4. <6 cm steelhead distance to thalweg observations.

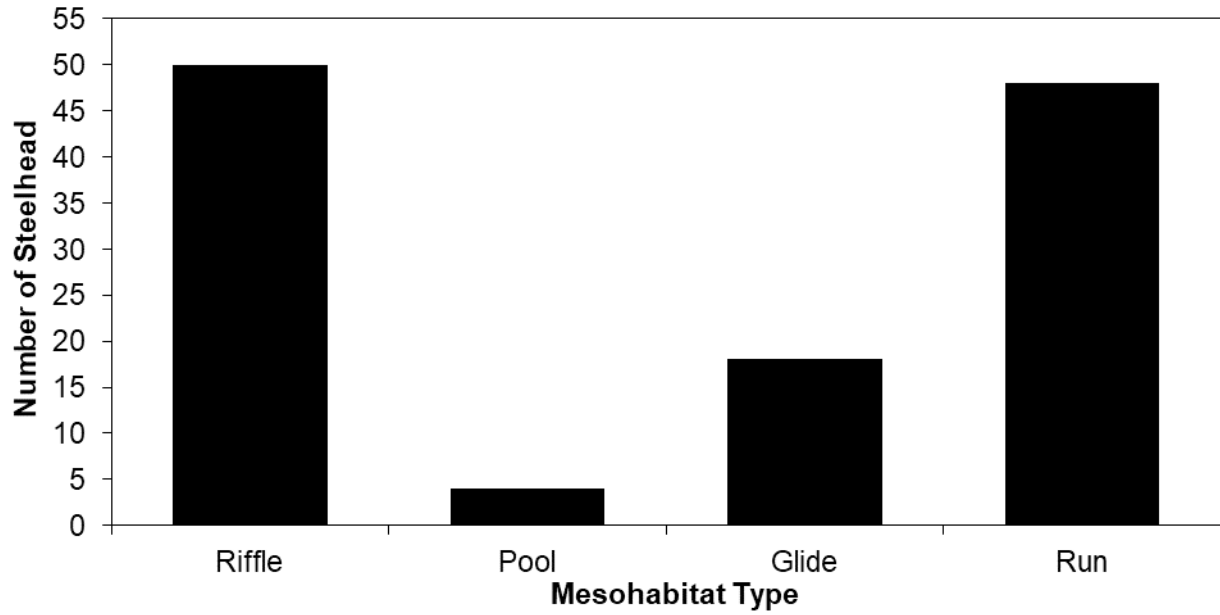


Figure A-5. <6 cm steelhead observed in each mesohabitat type.

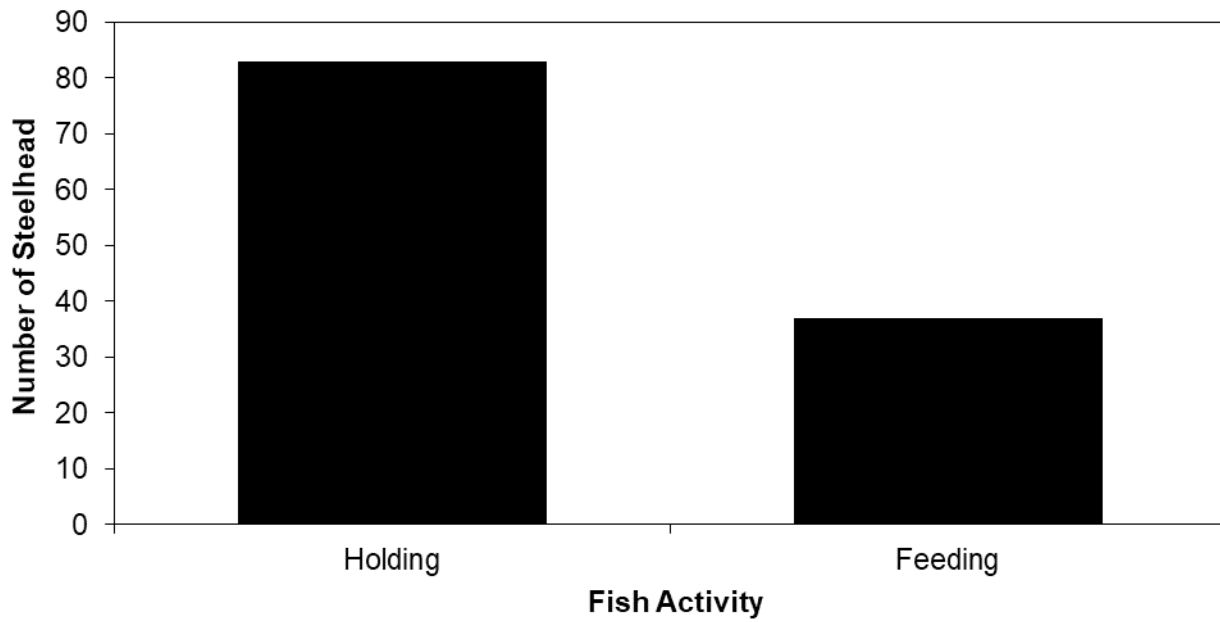


Figure A-6. <6 cm steelhead fish activity observations.

### <6 cm Steelhead Habitat Use vs. Availability Figures

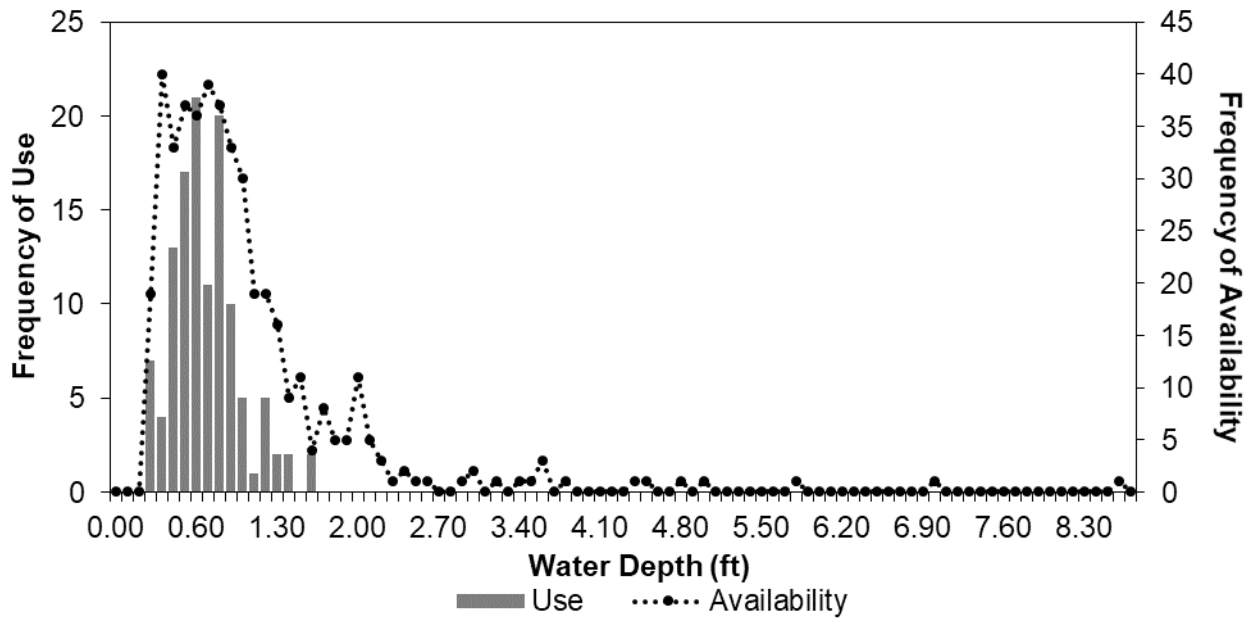


Figure A-7. Frequency distribution of water depth for <6 cm steelhead habitat use versus habitat availability.

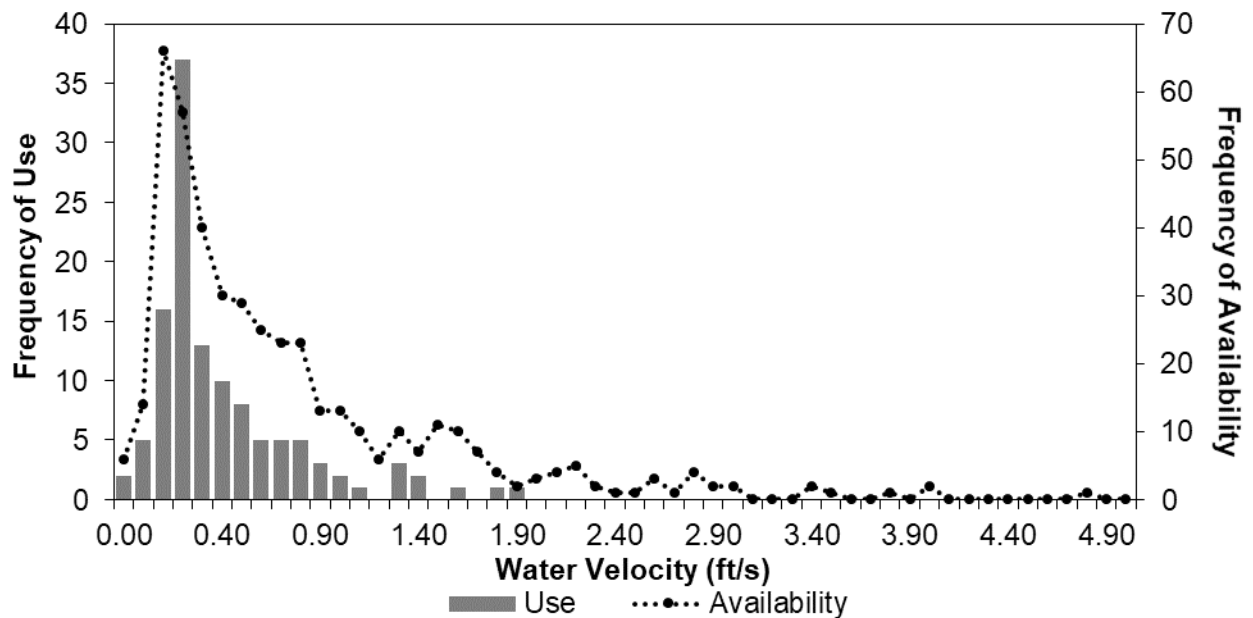


Figure A-8. Frequency distribution of water velocity for <6 cm steelhead habitat use versus habitat availability.

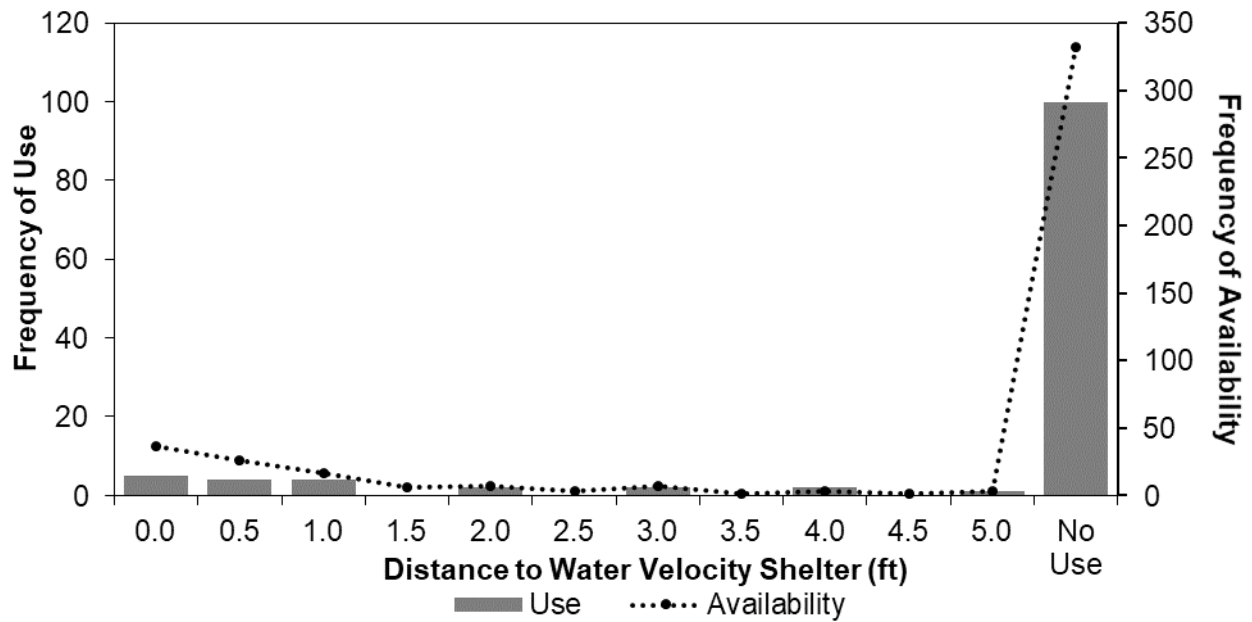


Figure A-9. Frequency distribution of distance to water velocity shelter for <6 cm steelhead habitat use versus habitat availability.

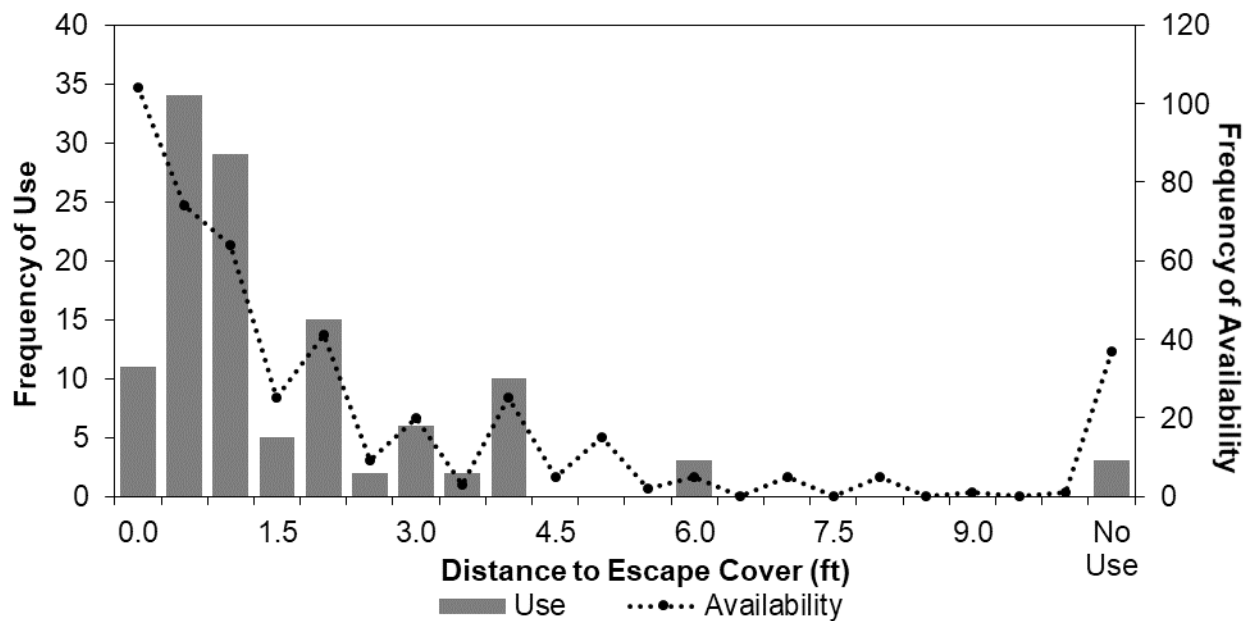


Figure A-10. Frequency distribution of distance to escape cover for <6 cm steelhead habitat use versus habitat availability.

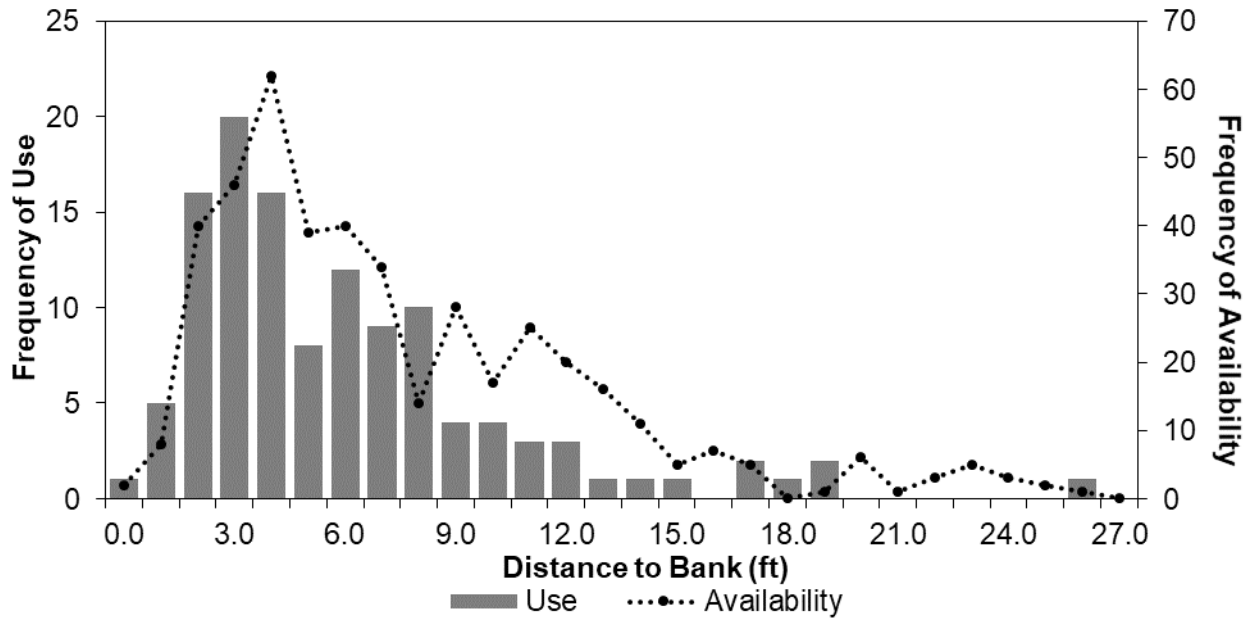


Figure A-11. Frequency distribution of distance to bank for <6 cm steelhead habitat use versus habitat availability.

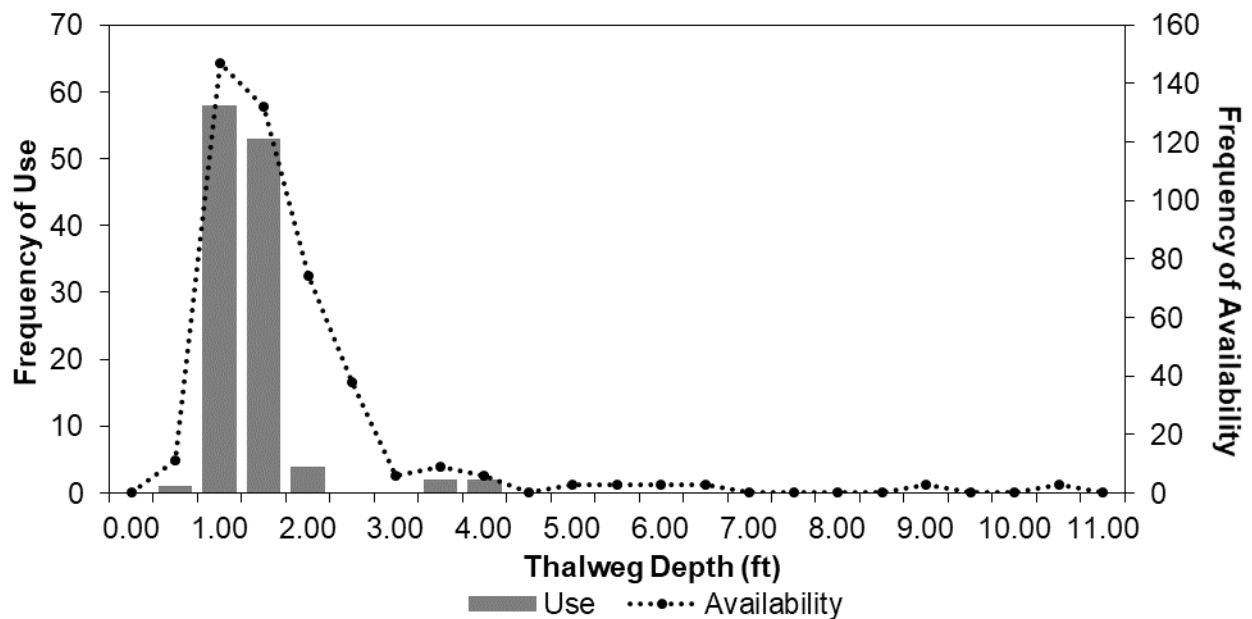


Figure A-12. Frequency distribution of thalweg depth for <6 cm steelhead habitat use versus habitat availability.



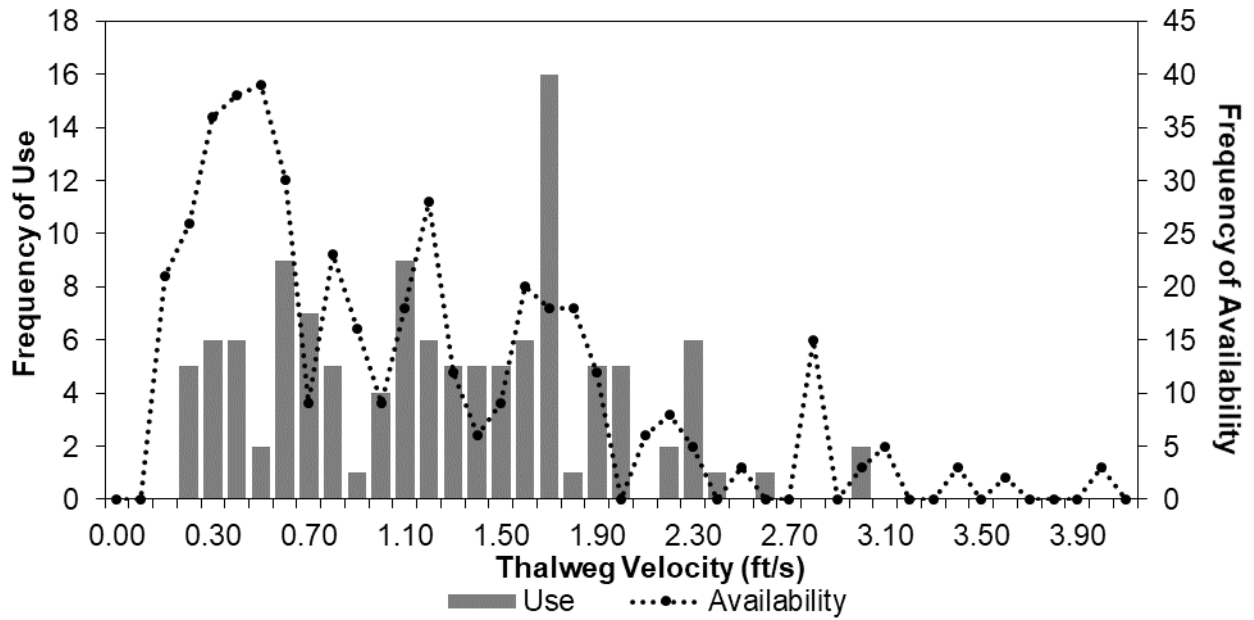


Figure A-13. Frequency distribution of thalweg velocity for <6 cm steelhead habitat use versus habitat availability.

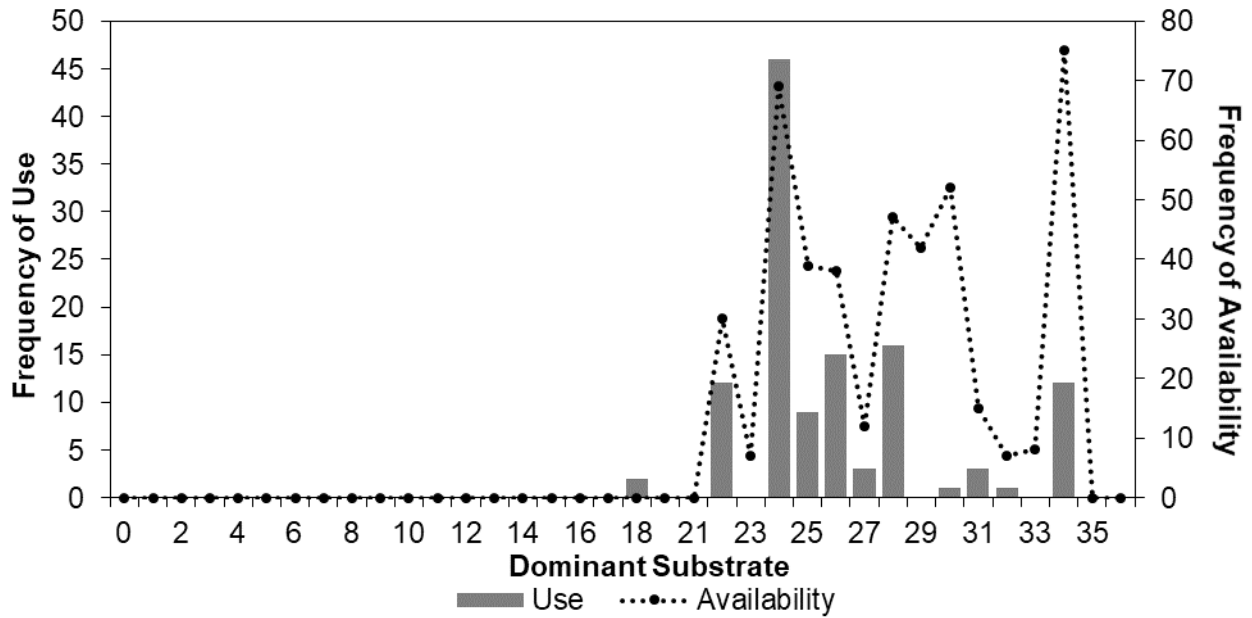


Figure A-14. Frequency distribution of dominant substrate for <6 cm steelhead habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

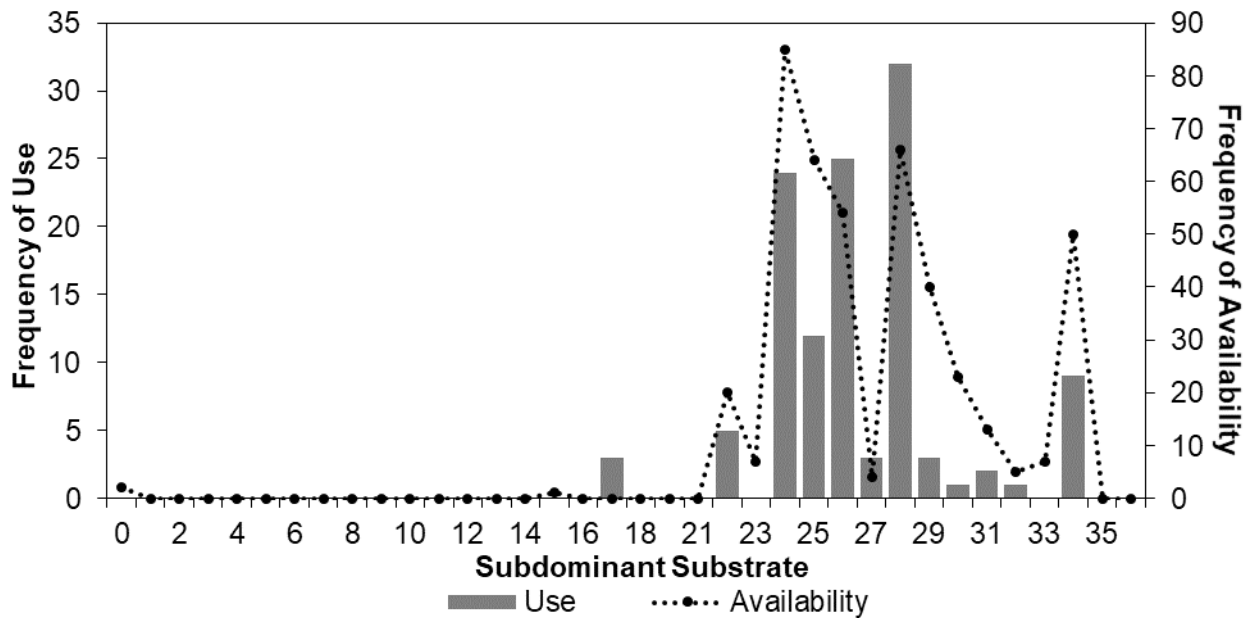


Figure A-15. Frequency distribution of subdominant substrate for <6 cm steelhead habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

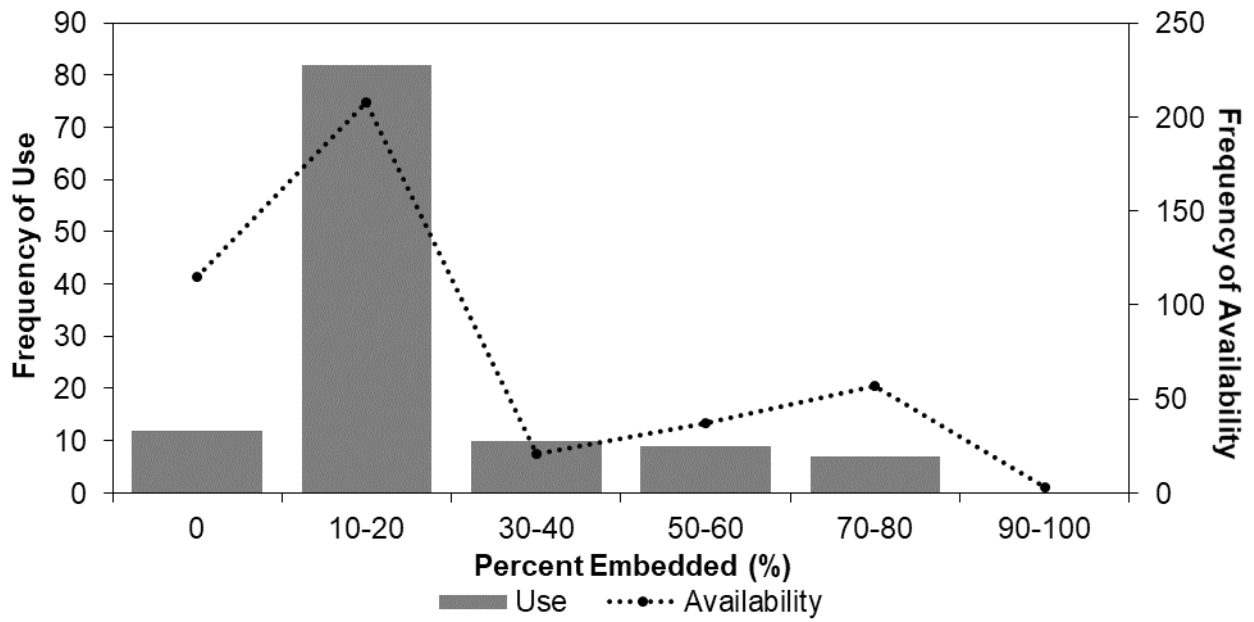


Figure A-16. Frequency distribution of substrate percent embeddedness for <6 cm steelhead habitat use versus habitat availability.

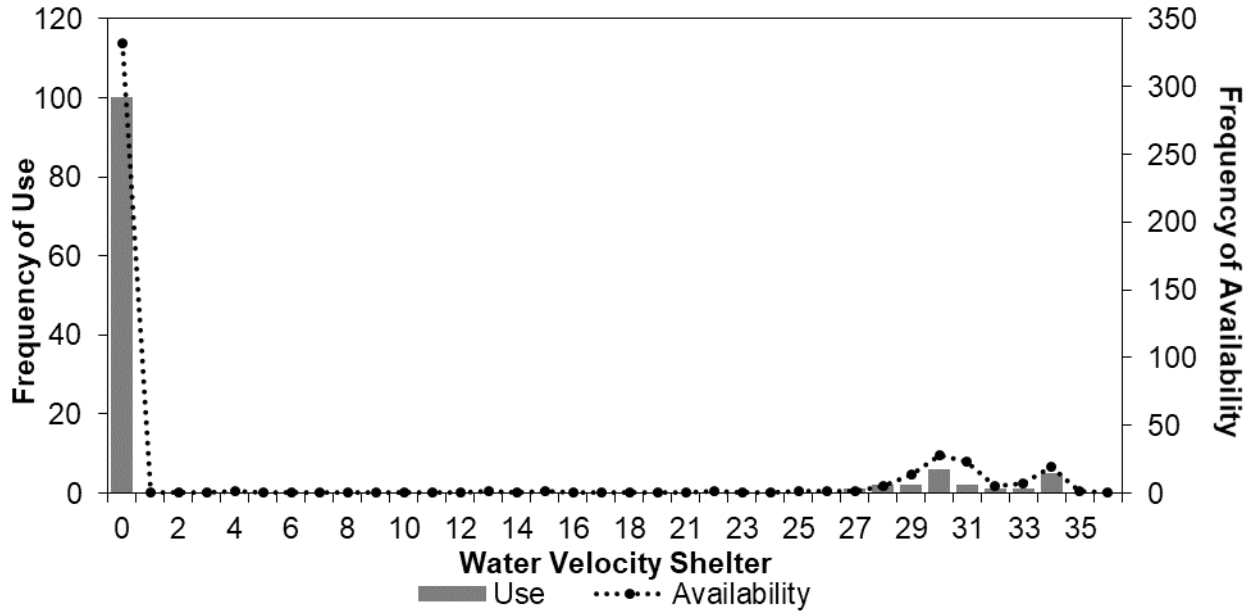


Figure A-17. Frequency distribution of water velocity shelter for <6 cm steelhead habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

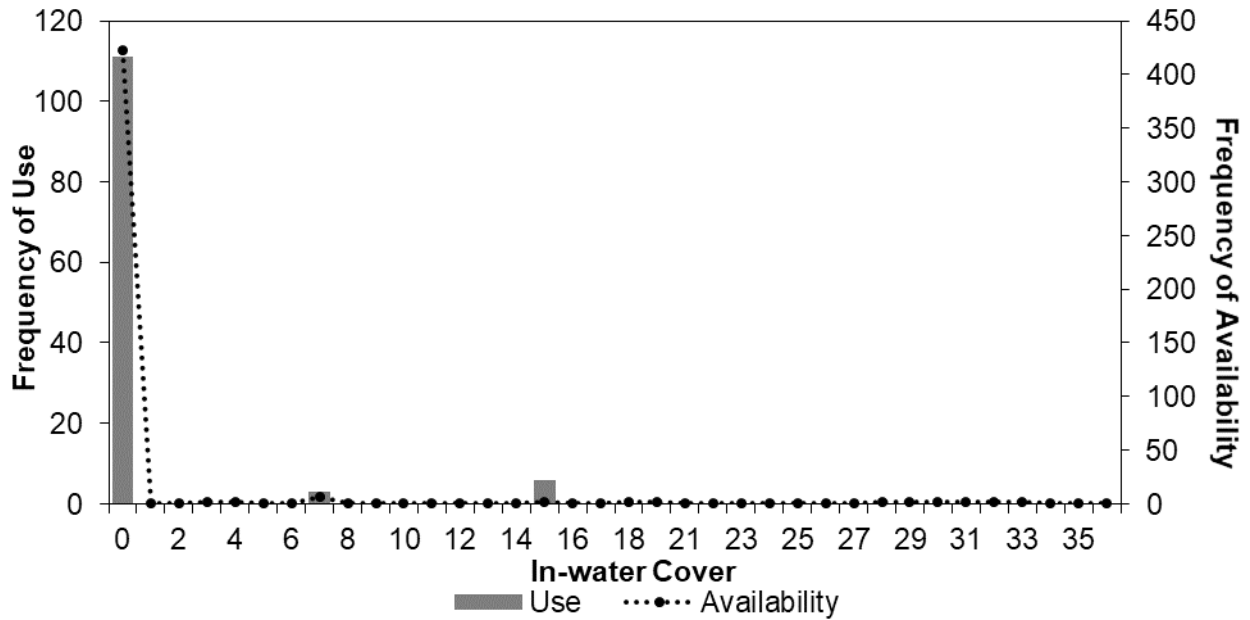


Figure A-18. Frequency distribution of in-water cover for <6 cm steelhead habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

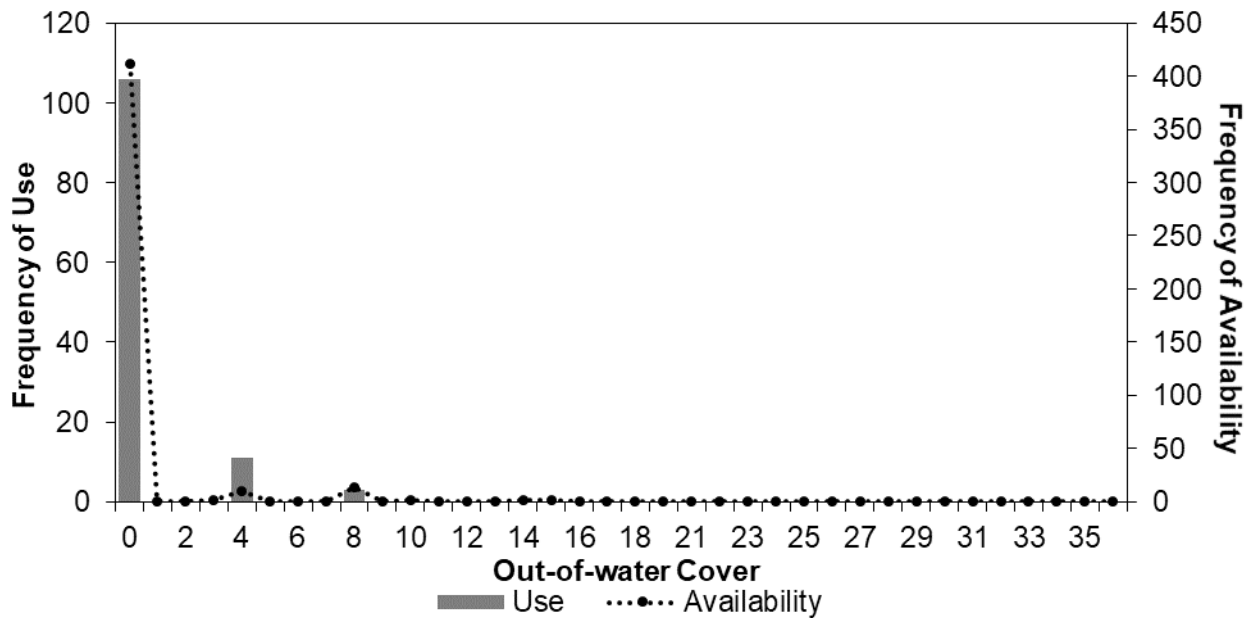


Figure A-19. Frequency distribution of out-of-water cover for <6 cm steelhead habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

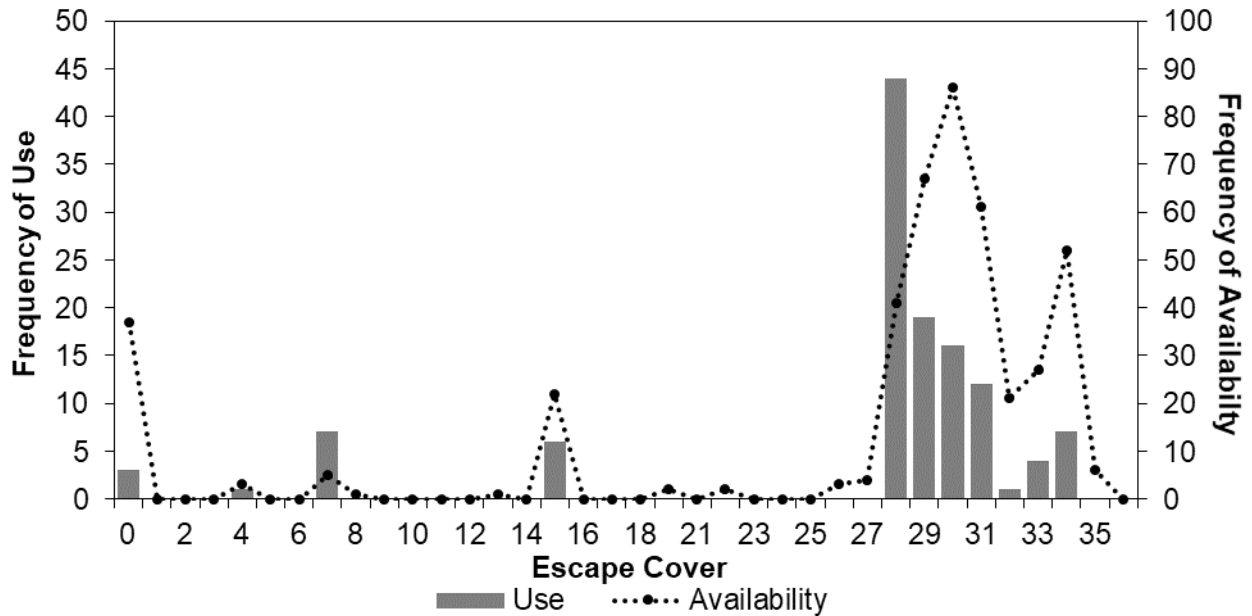


Figure A-20. Frequency distribution of escape cover for <6 cm steelhead habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank



## APPENDIX B: SPRING $\geq 6$ CM STEELHEAD DATASET

### $\geq 6$ cm Steelhead Fish Observation Figures

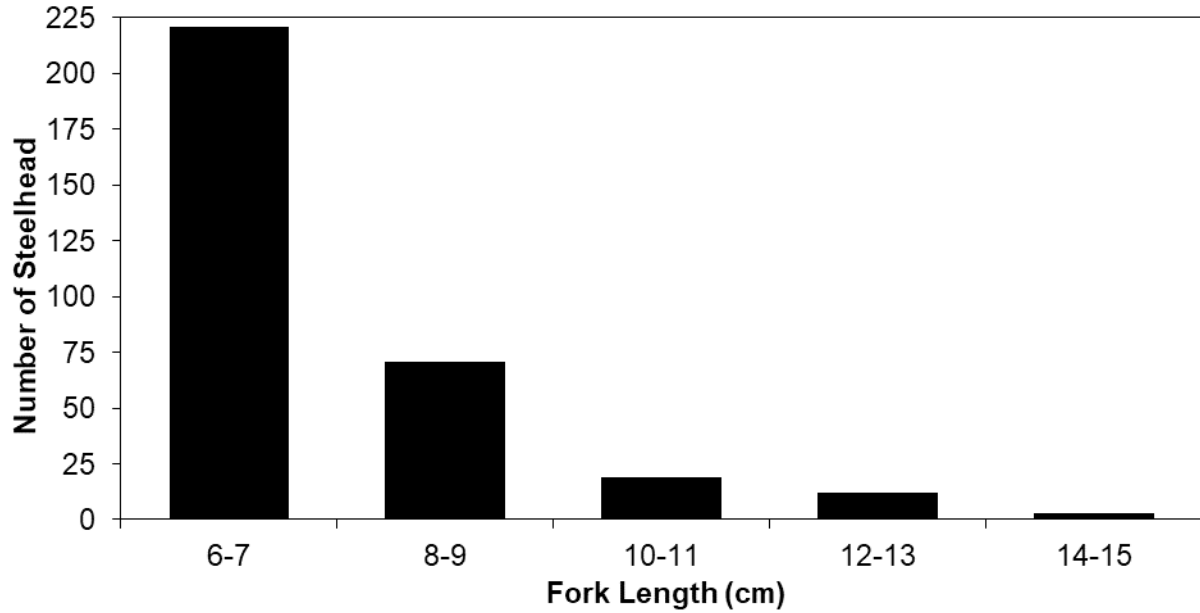


Figure B-1.  $\geq 6$  cm steelhead fork length observations.

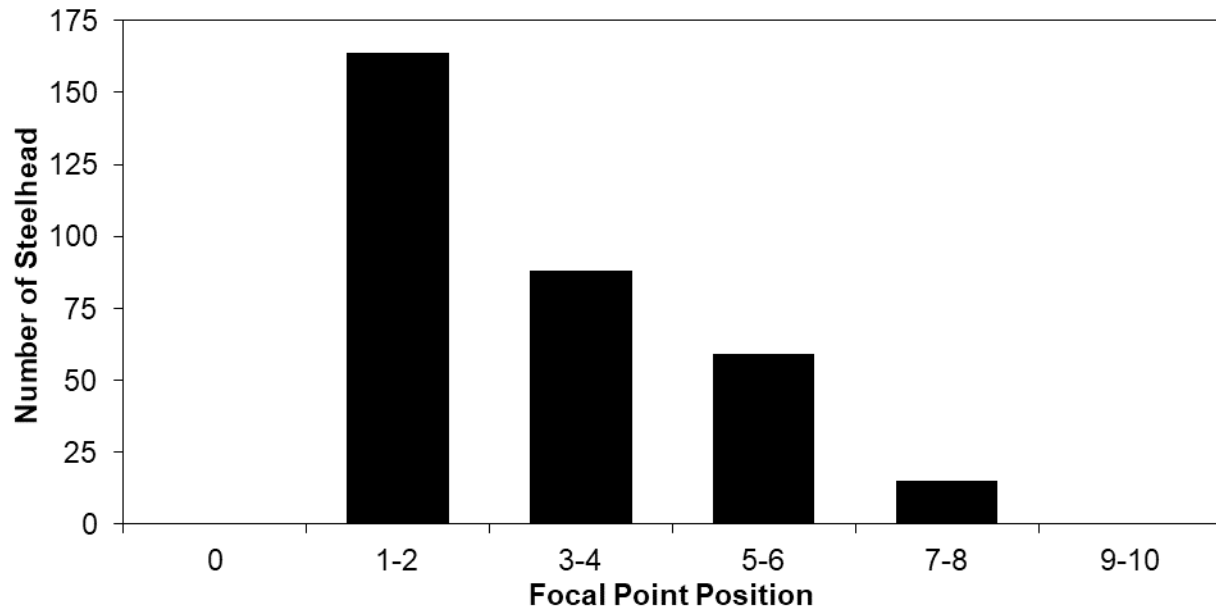


Figure B-2.  $\geq 6$  cm steelhead focal point position observations. Focal position zero signified the bottom of the water column while ten signified the top. The scale of the focal position varied depending on the water depth at the point of observation.

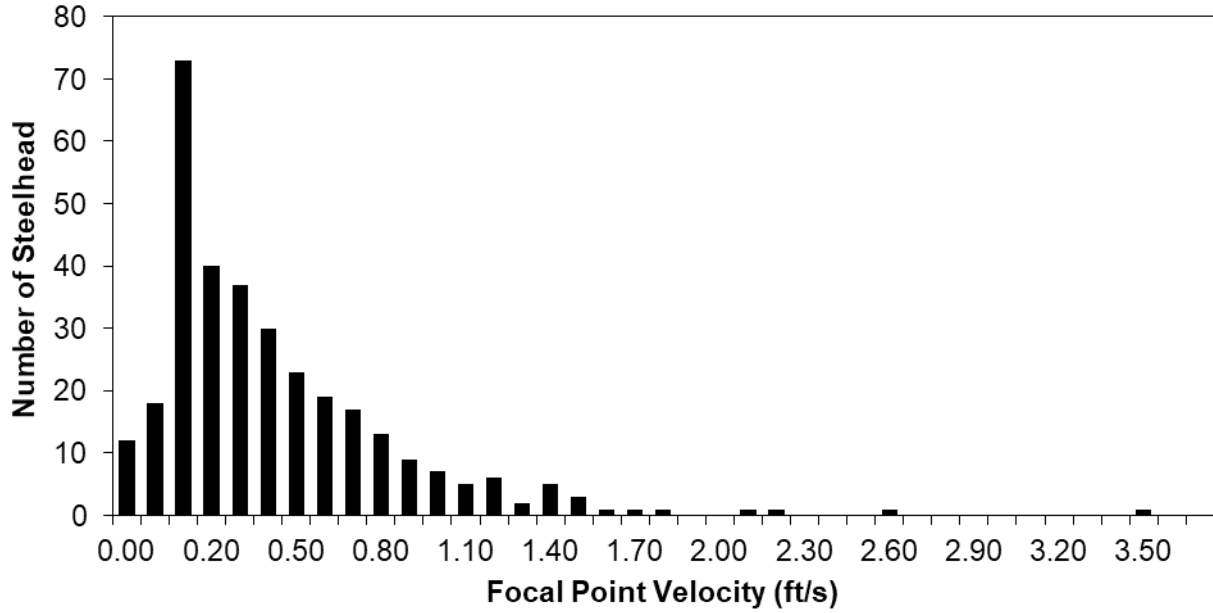


Figure B-3.  $\geq 6$  cm steelhead focal point velocity observations.

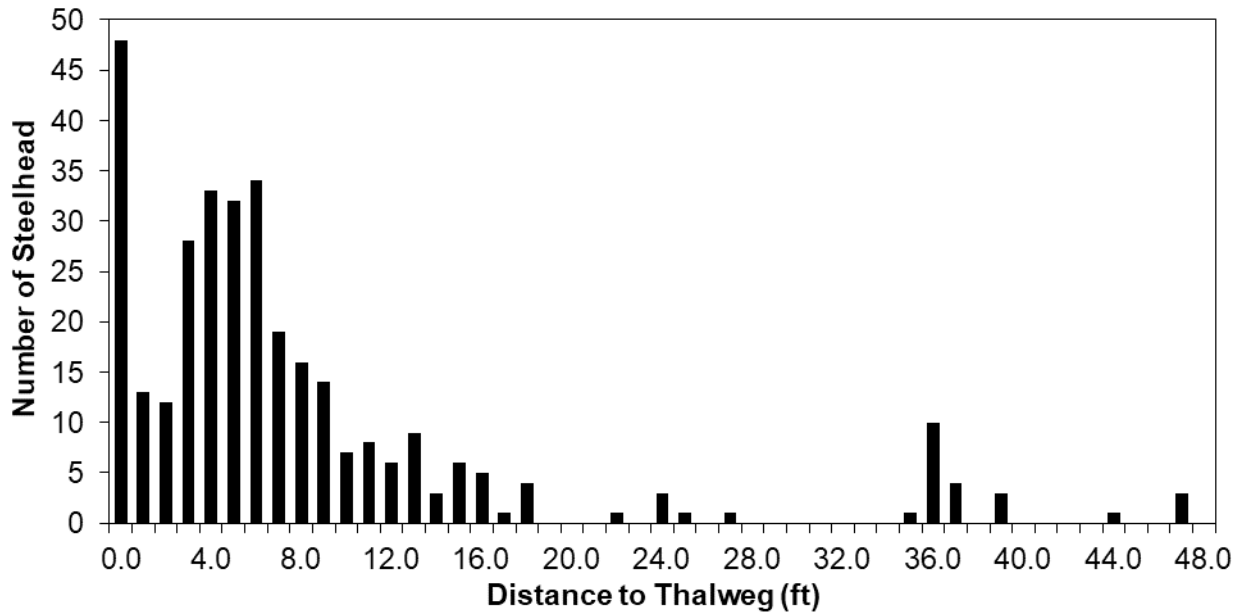


Figure B-4.  $\geq 6$  cm steelhead distance to thalweg observations.

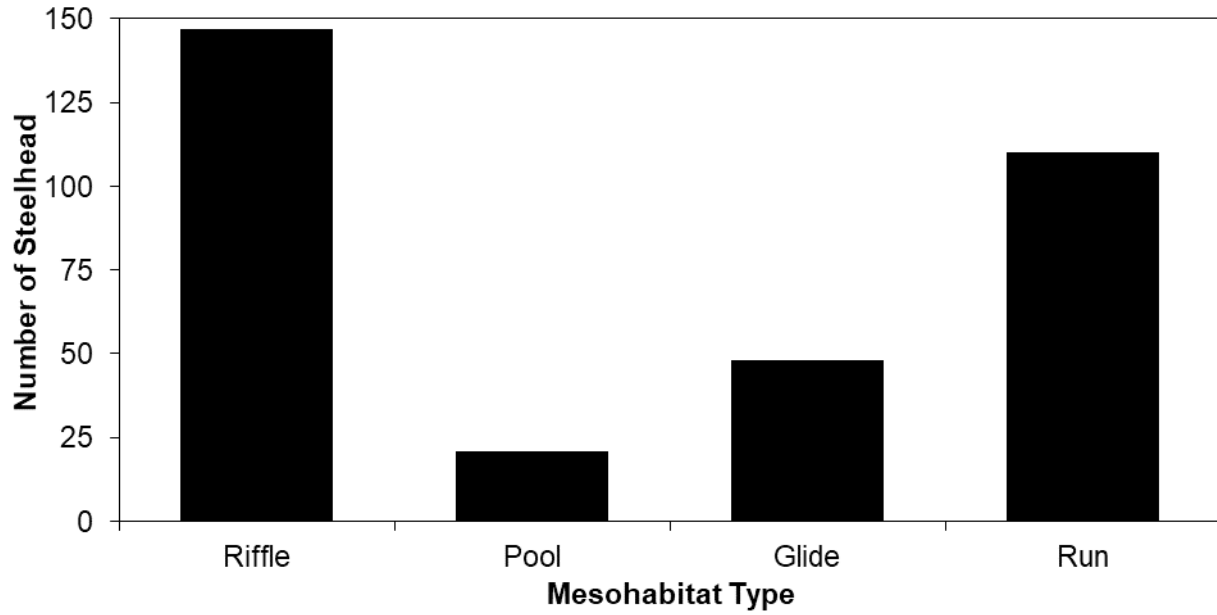


Figure B-5.  $\geq 6$  cm steelhead observed in each mesohabitat type.

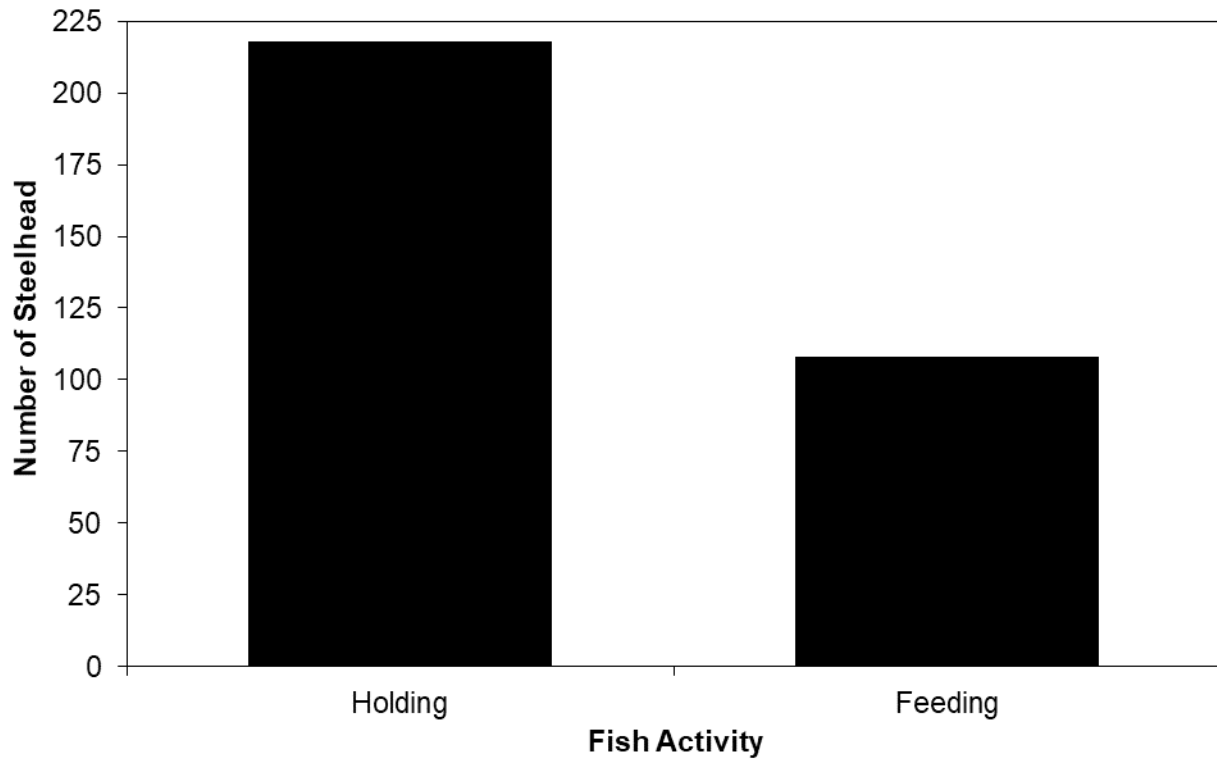


Figure B-6.  $\geq 6$  cm steelhead fish activity observations.

### ≥6 cm Steelhead Habitat Use vs. Availability Figures

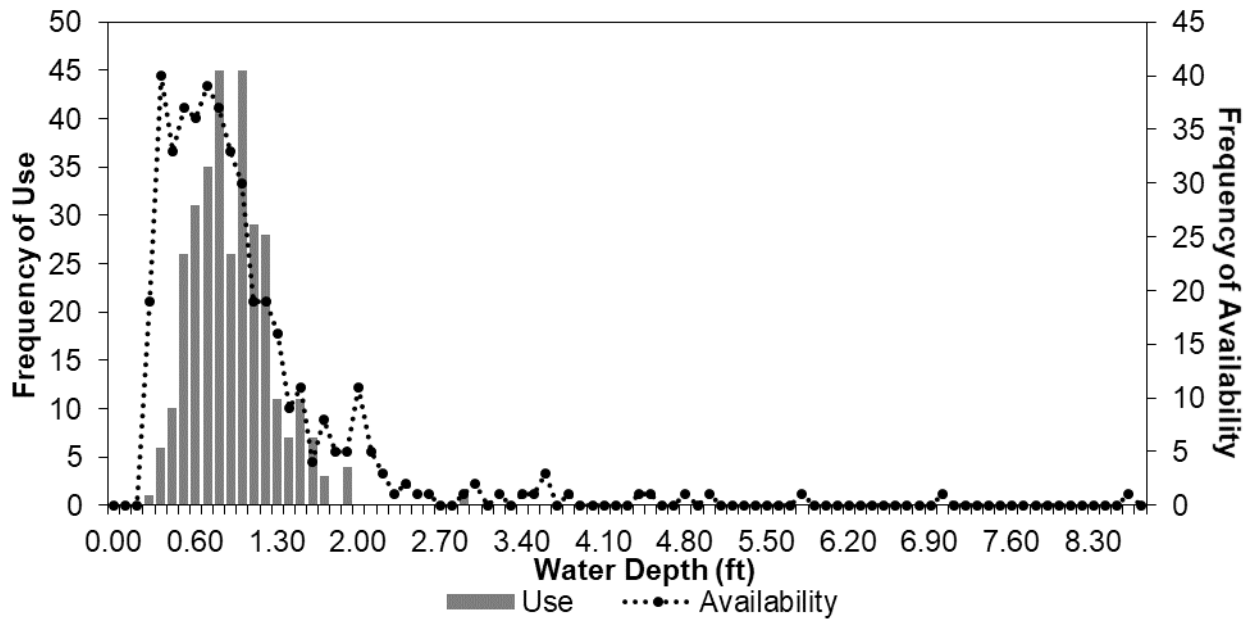


Figure B-7. Frequency distribution of water depth for ≥6 cm steelhead habitat use versus habitat availability.

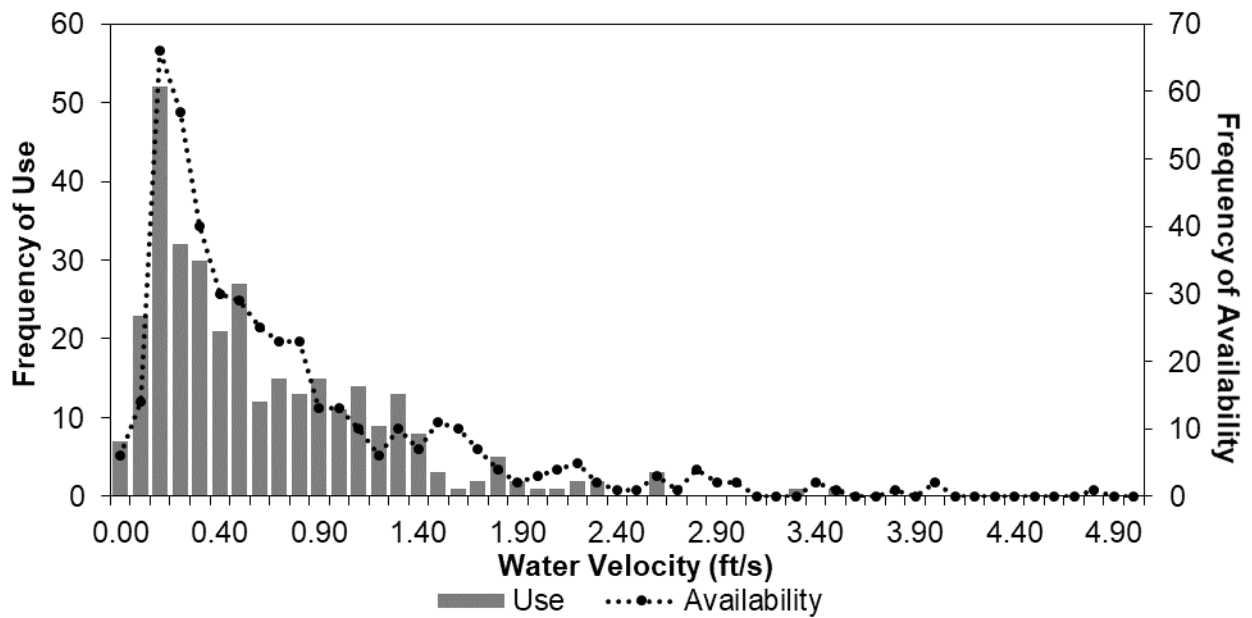


Figure B-8. Frequency distribution of water velocity for ≥6 cm steelhead habitat use versus habitat availability.

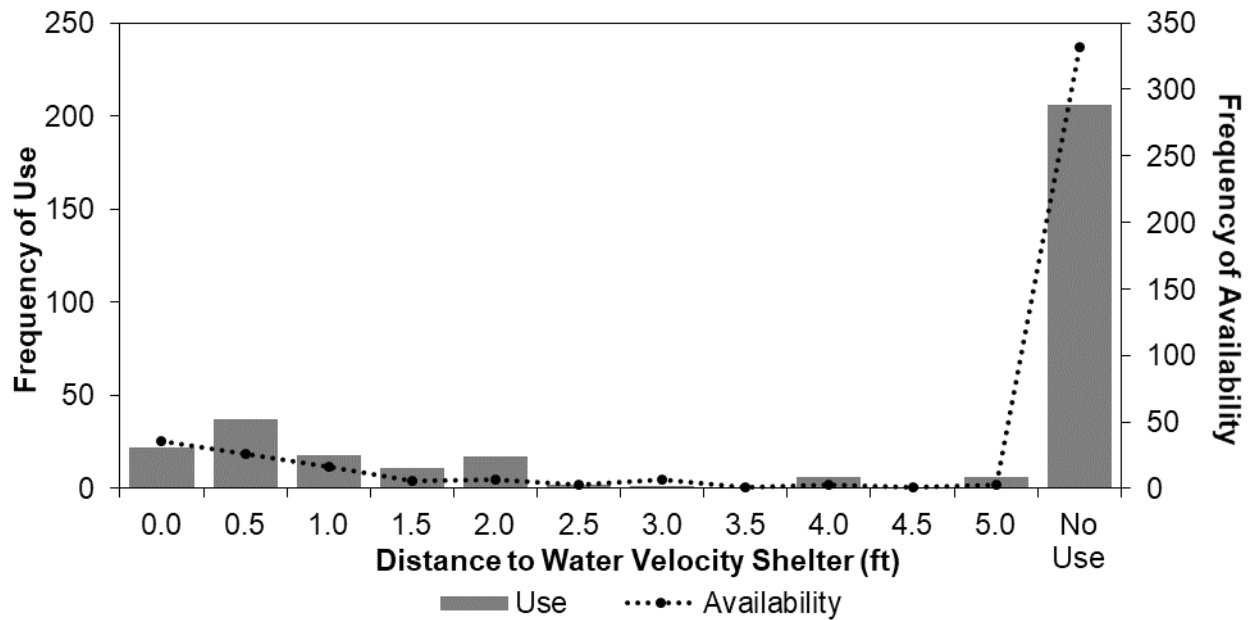


Figure B-9. Frequency distribution of distance to water velocity shelter for  $\geq 6$  cm steelhead habitat use versus habitat availability.

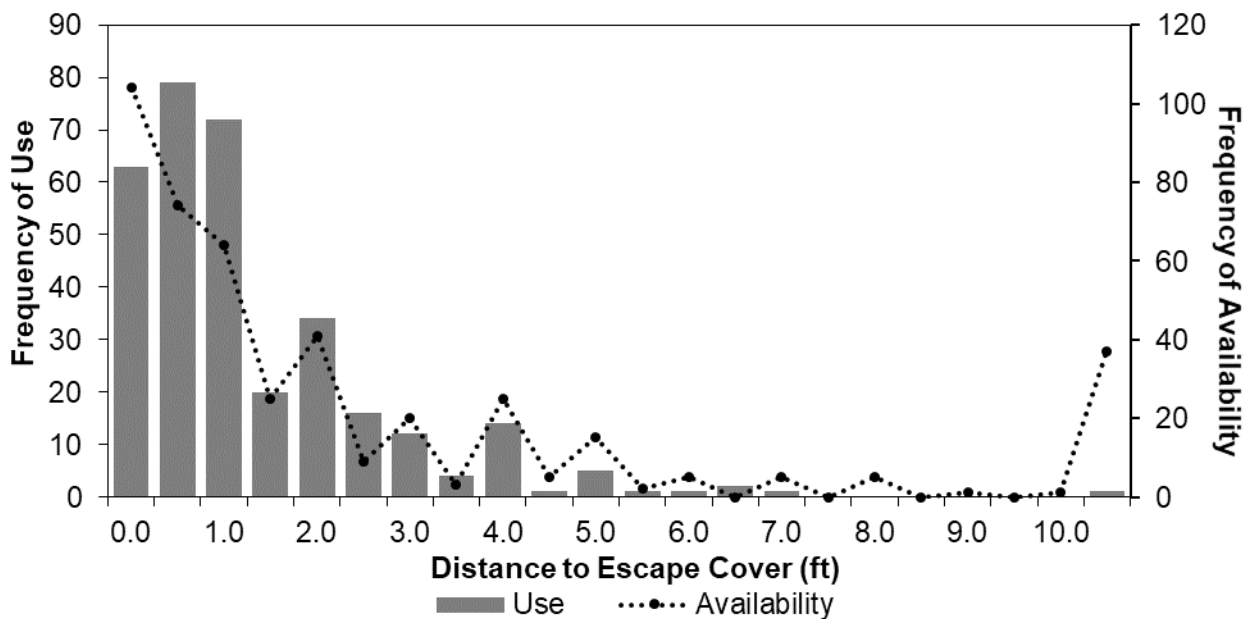


Figure B-10. Frequency distribution of distance to escape cover for  $\geq 6$  cm steelhead habitat use versus habitat availability.

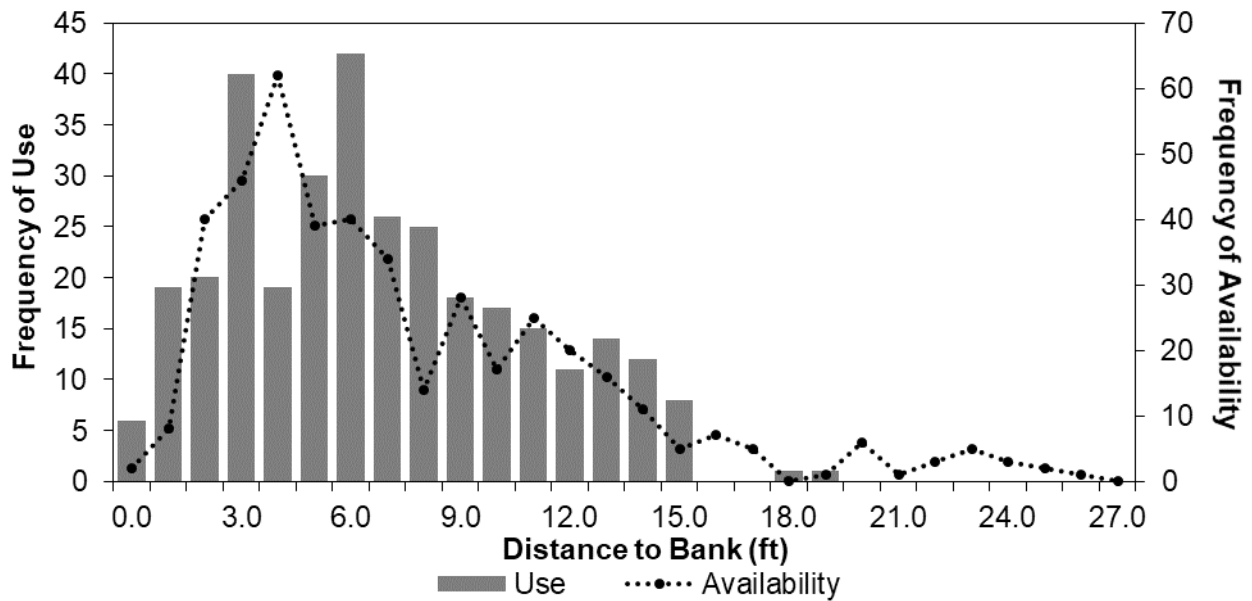


Figure B-11. Frequency distribution for distance to bank for  $\geq 6$  cm steelhead habitat use versus habitat availability.

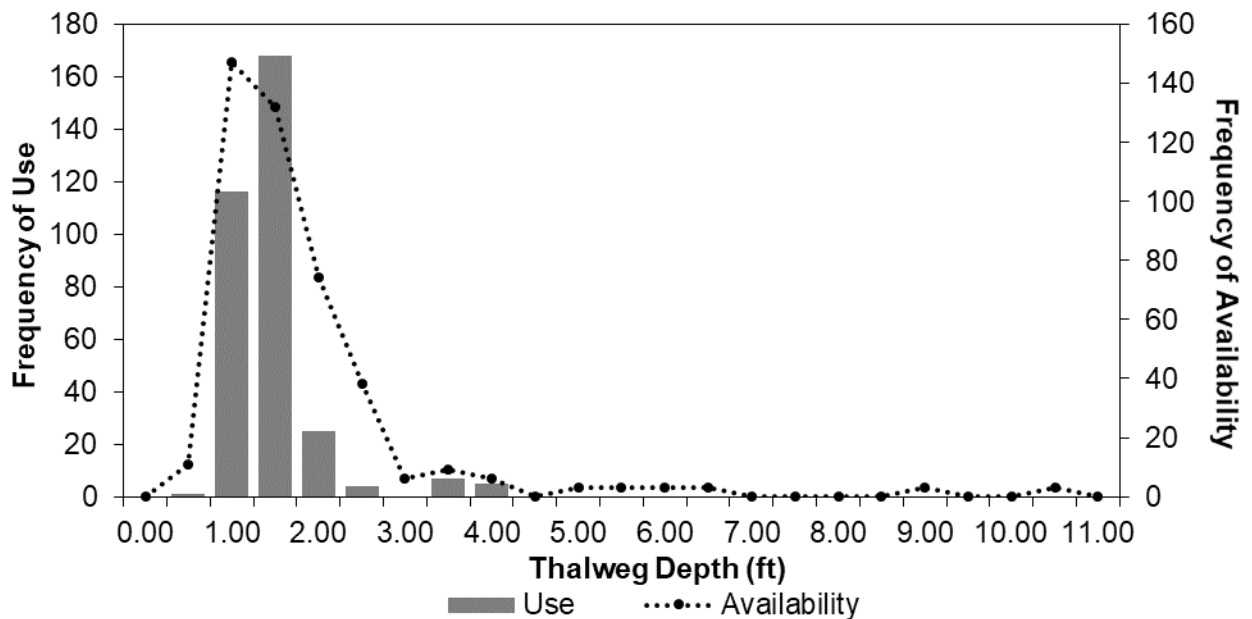


Figure B-12. Frequency distribution of thalweg depth for  $\geq 6$  cm steelhead habitat use versus habitat availability.

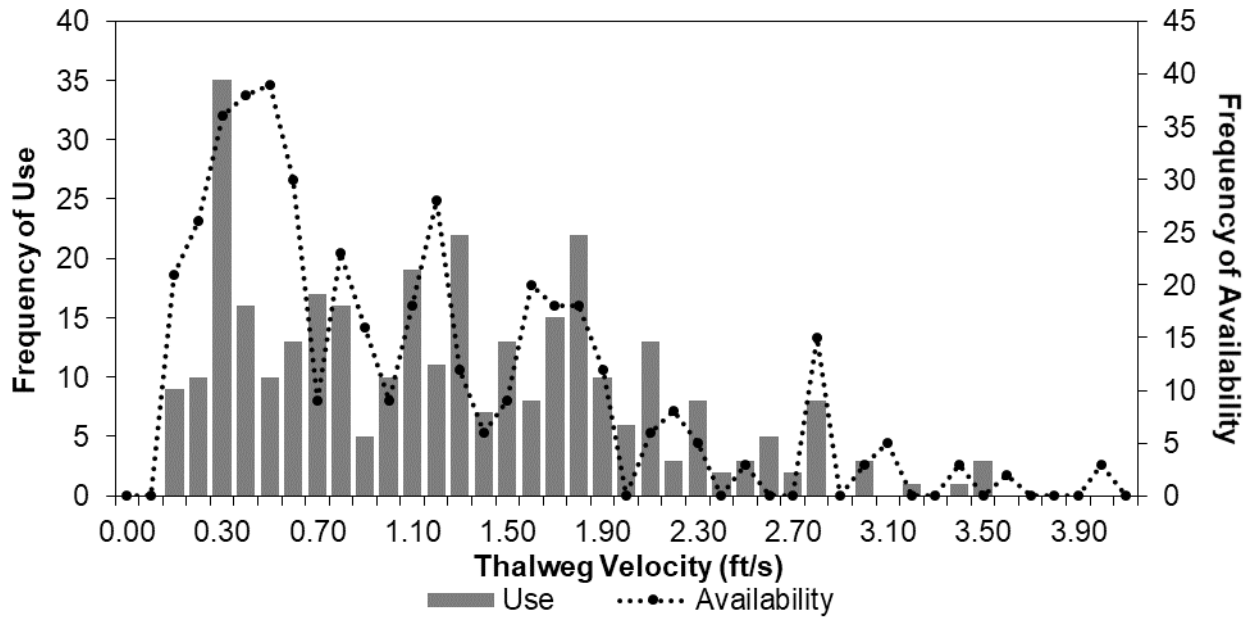


Figure B-13. Frequency distribution of thalweg velocity for  $\geq 6$  cm steelhead habitat use versus habitat availability.

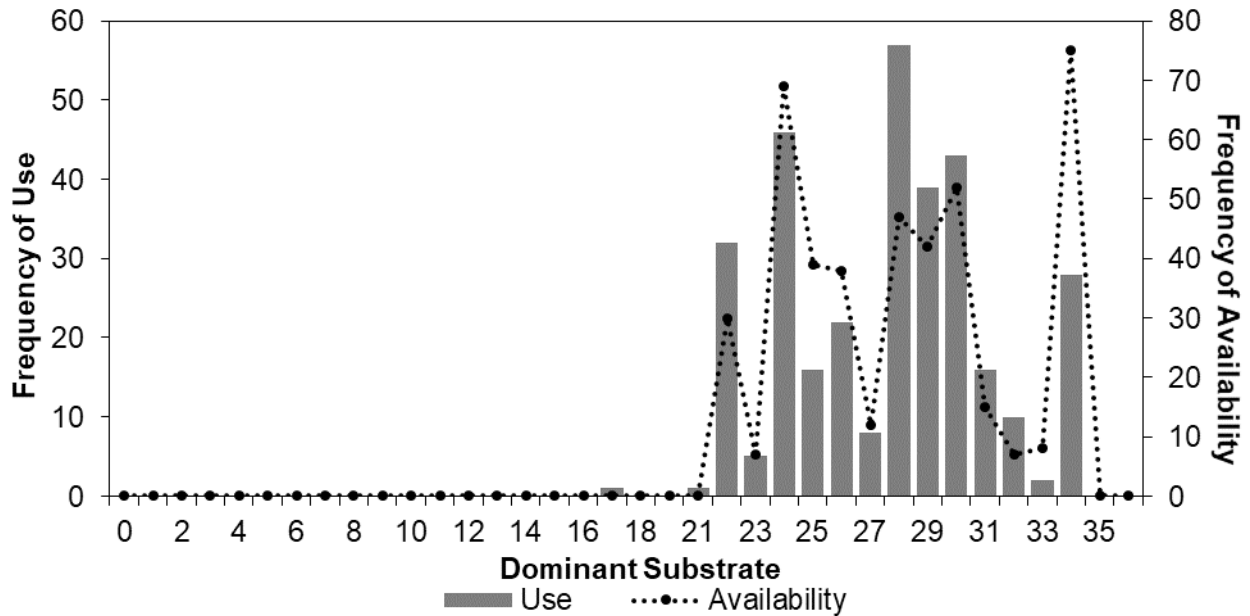


Figure B-14. Frequency distribution of dominant substrate for  $\geq 6$  cm steelhead habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank



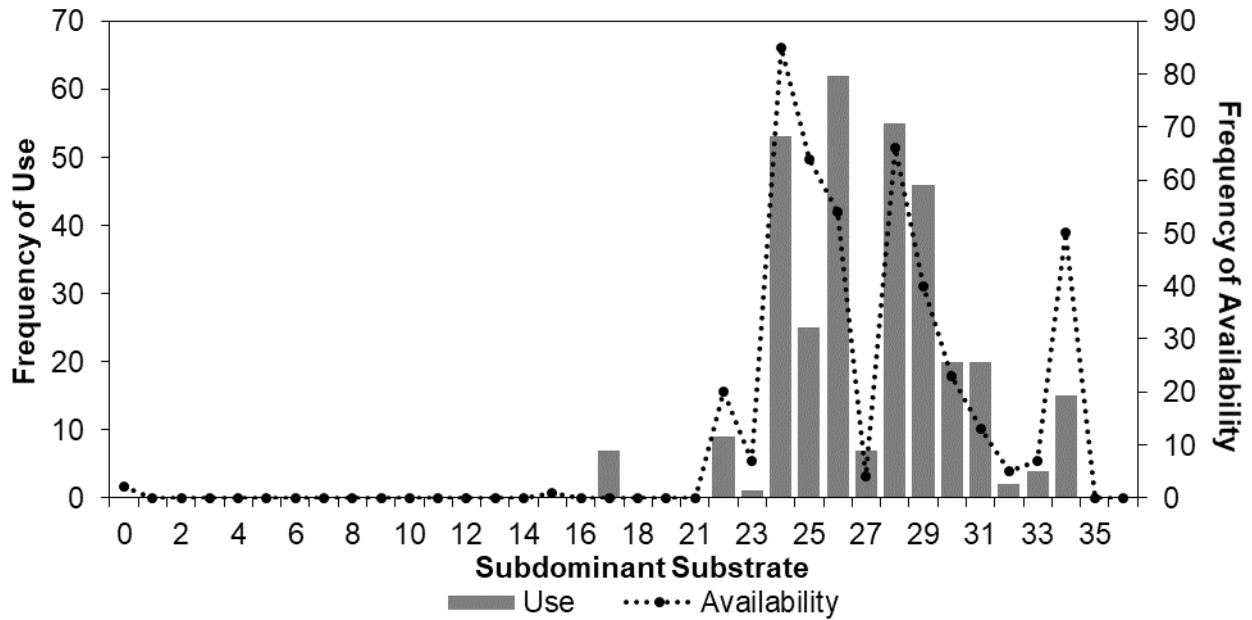


Figure B-15. Frequency distribution of subdominant substrate for  $\geq 6$  cm steelhead habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

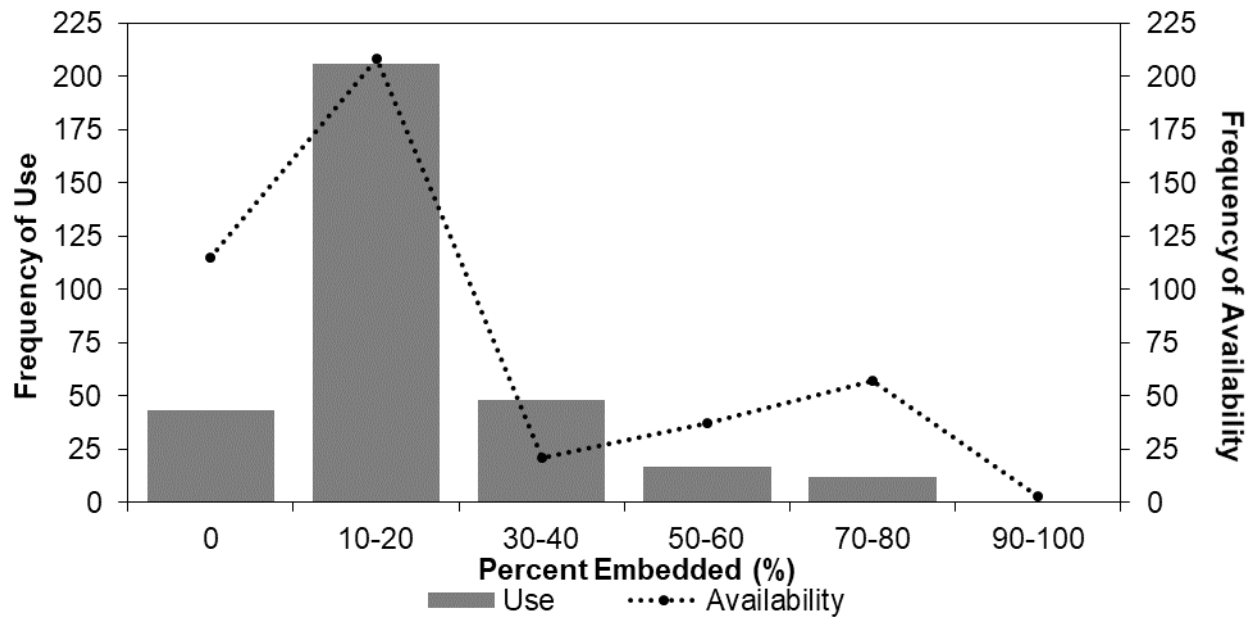


Figure B-16. Frequency distribution of substrate percent embeddedness for  $\geq 6$  cm steelhead habitat use versus habitat availability.

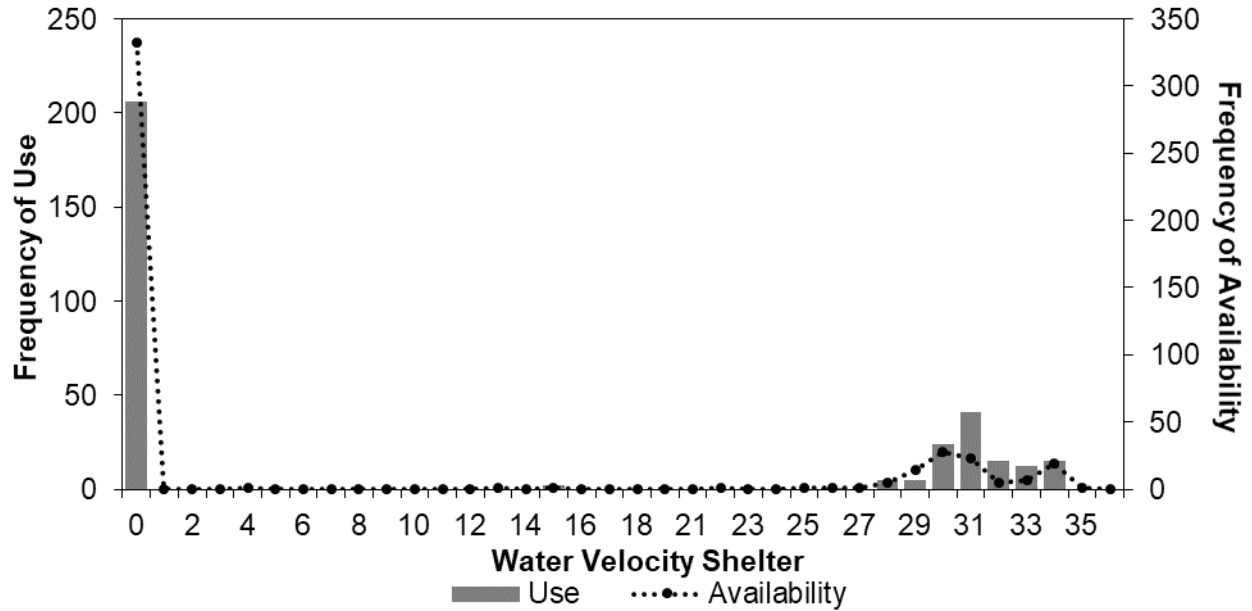


Figure B-17. Frequency distribution of water velocity shelter for  $\geq 6$  cm steelhead habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

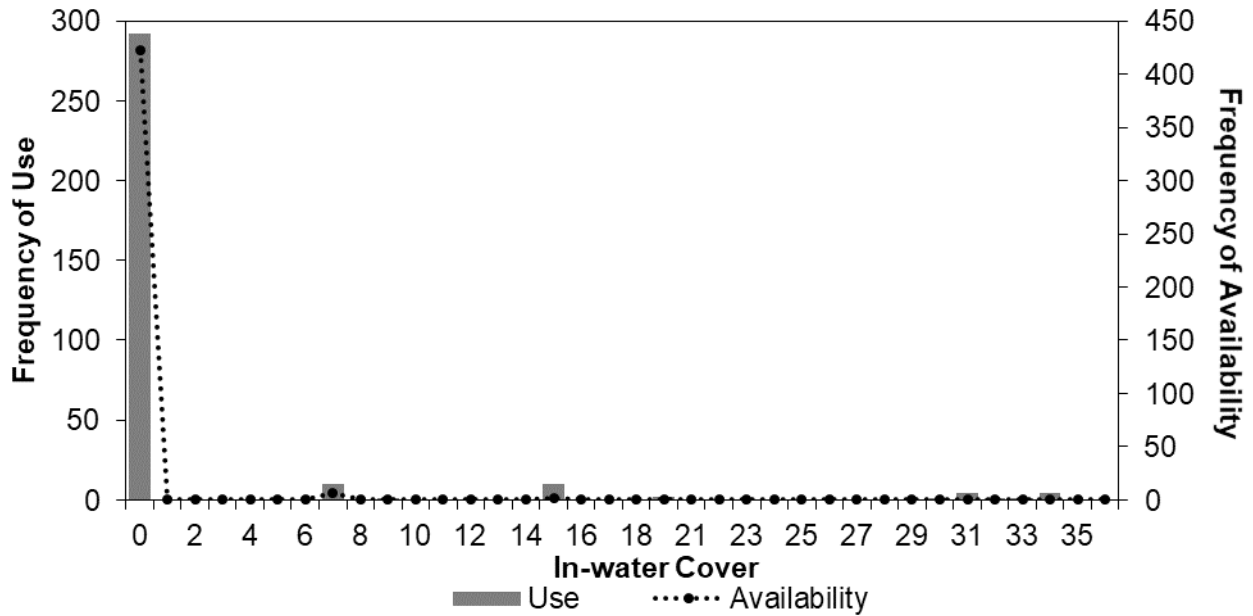


Figure B-18. Frequency distribution of in-water cover for  $\geq 6$  cm steelhead habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

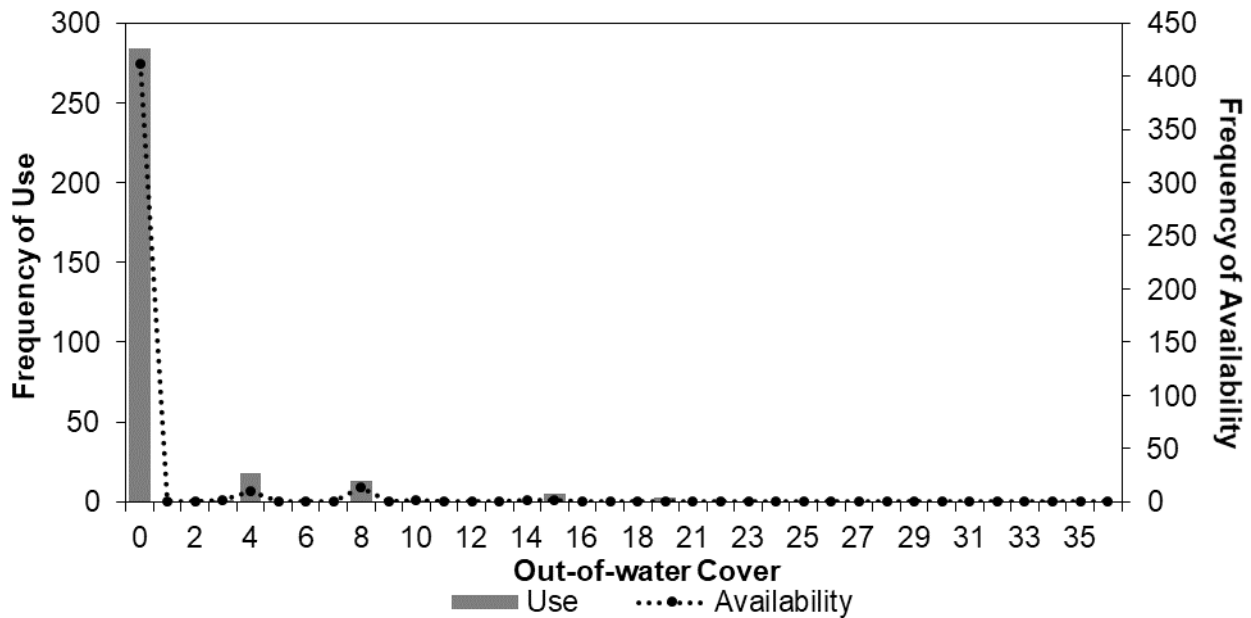


Figure B-19. Frequency distribution of out-of-water cover for  $\geq 6$  cm steelhead habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

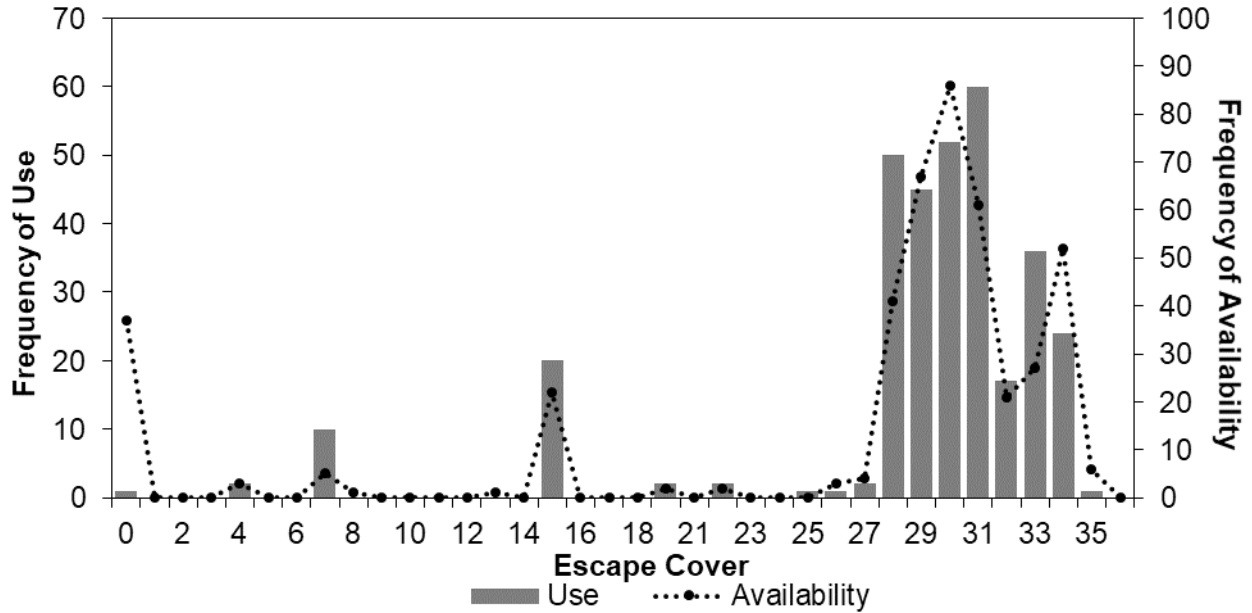


Figure B-20. Frequency distribution of escape cover for  $\geq 6$  cm steelhead habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

## APPENDIX C: SPRING <6 CM COHO SALMON DATASET

### <6 cm Coho Salmon Fish Observation Figures

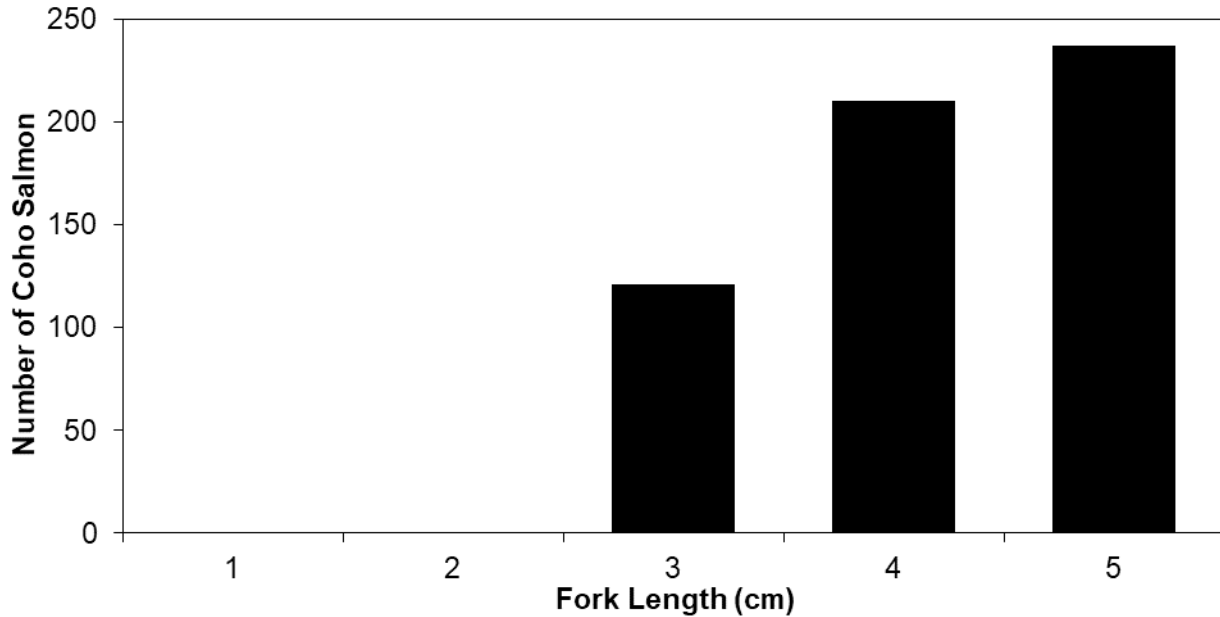


Figure C-1. <6 cm Coho Salmon fork length observations.

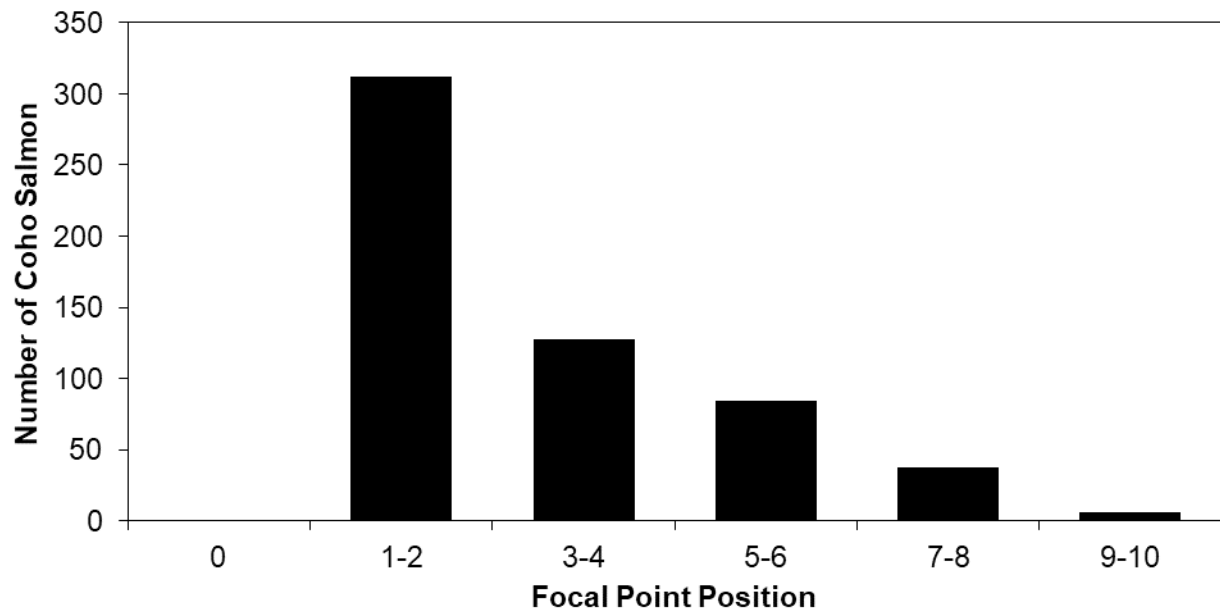


Figure C-2. <6 cm Coho Salmon focal point position observations. Focal position zero signified the bottom of the water column while ten signified the top. The scale of the focal position varied depending on the water depth at the point of observation.

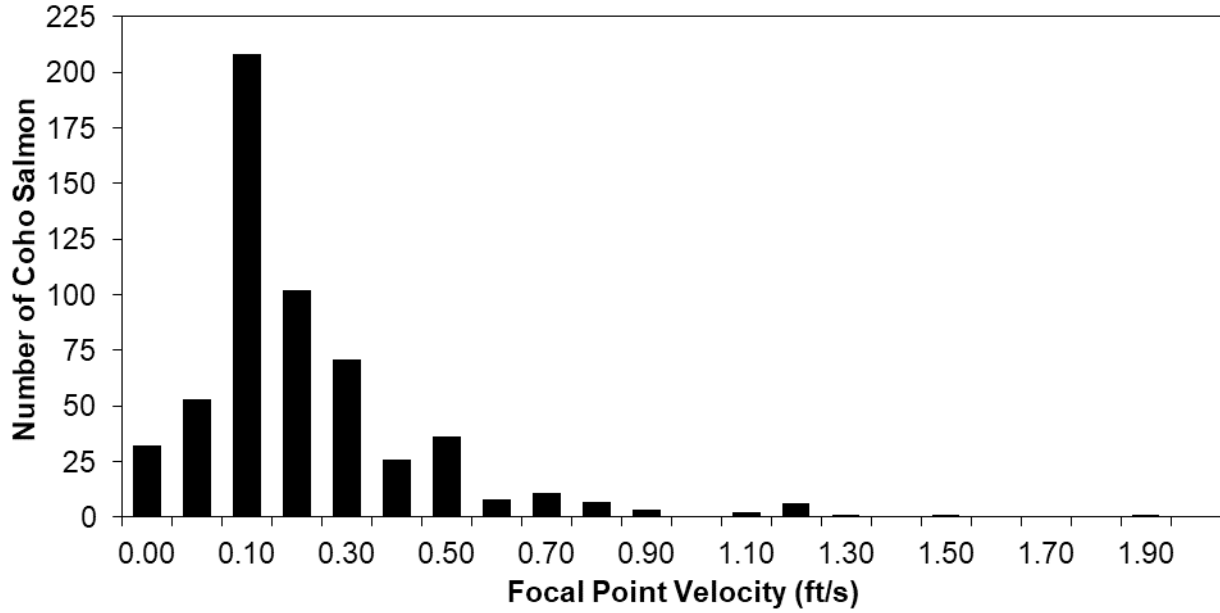


Figure C-3. <6 cm Coho Salmon focal point velocity observations.

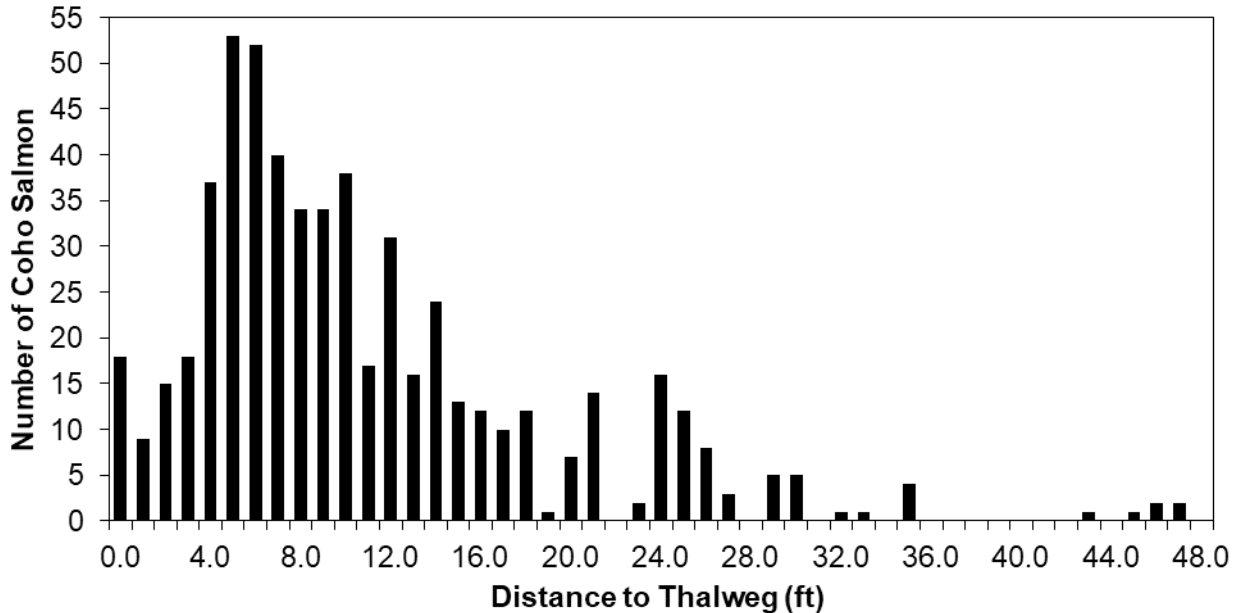


Figure C-4. <6 cm Coho Salmon distance to thalweg observations.



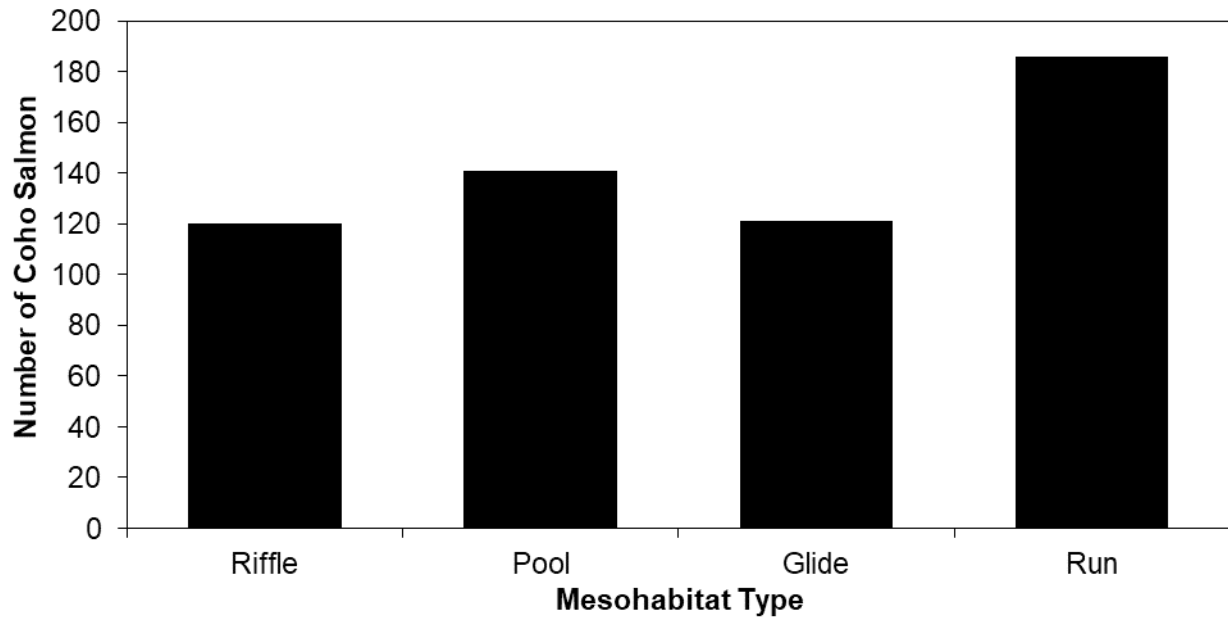


Figure C-5. <6 cm Coho Salmon observed in each mesohabitat type.

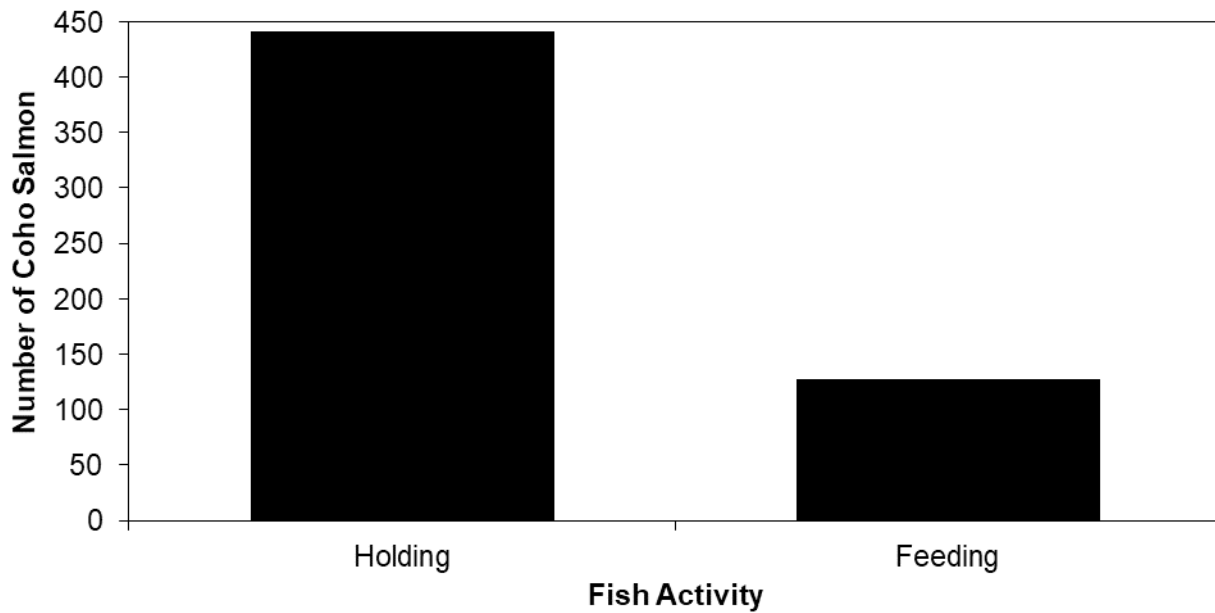


Figure C-6. <6 cm Coho Salmon fish activity observations.

### <6 cm Coho Salmon Habitat Use vs. Habitat Availability Figures

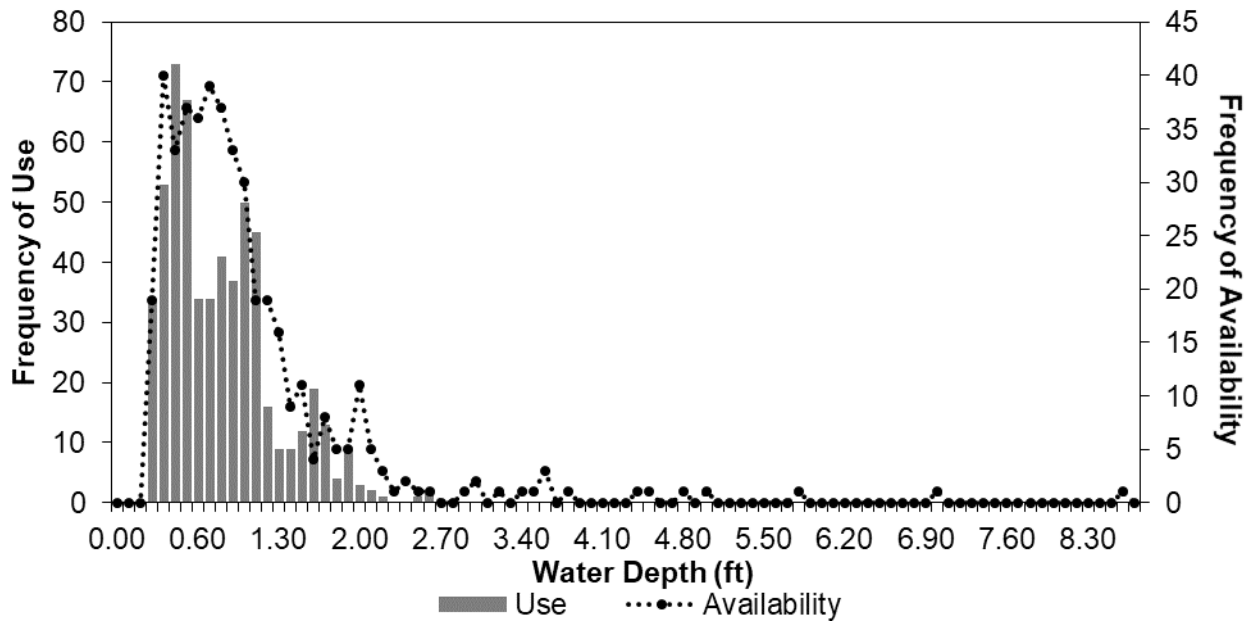


Figure C-7. Frequency distribution of water depth for <6 cm Coho Salmon habitat use versus habitat availability.

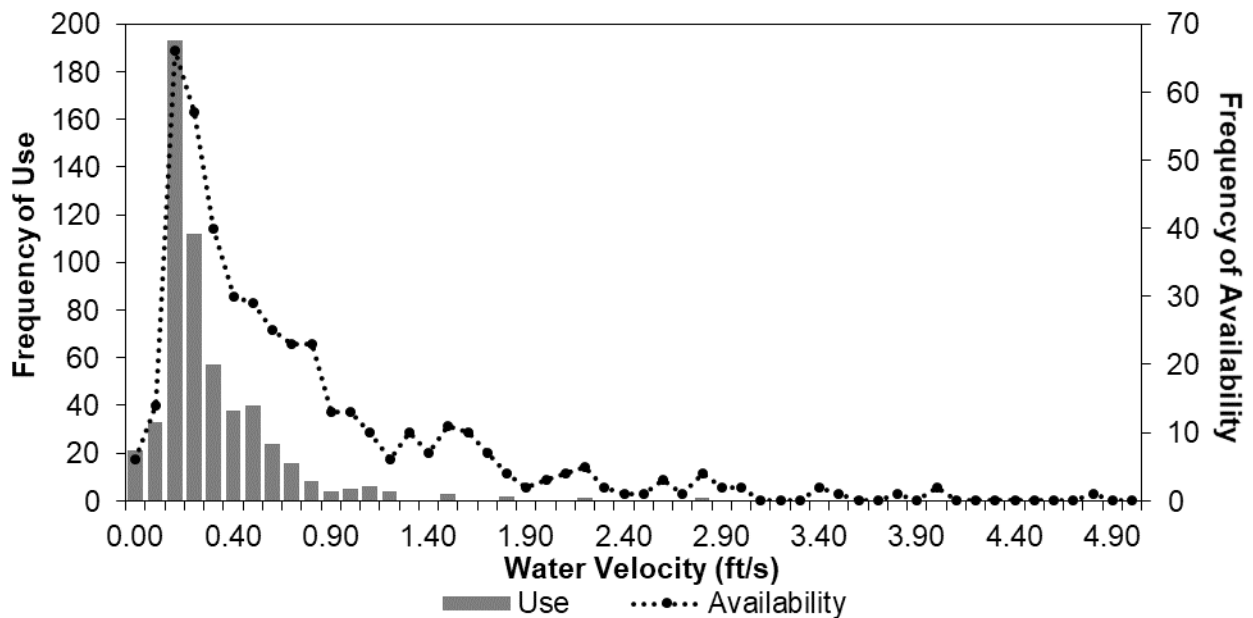


Figure C-8. Frequency distribution of water velocity for <6 cm Coho Salmon habitat use versus habitat availability.

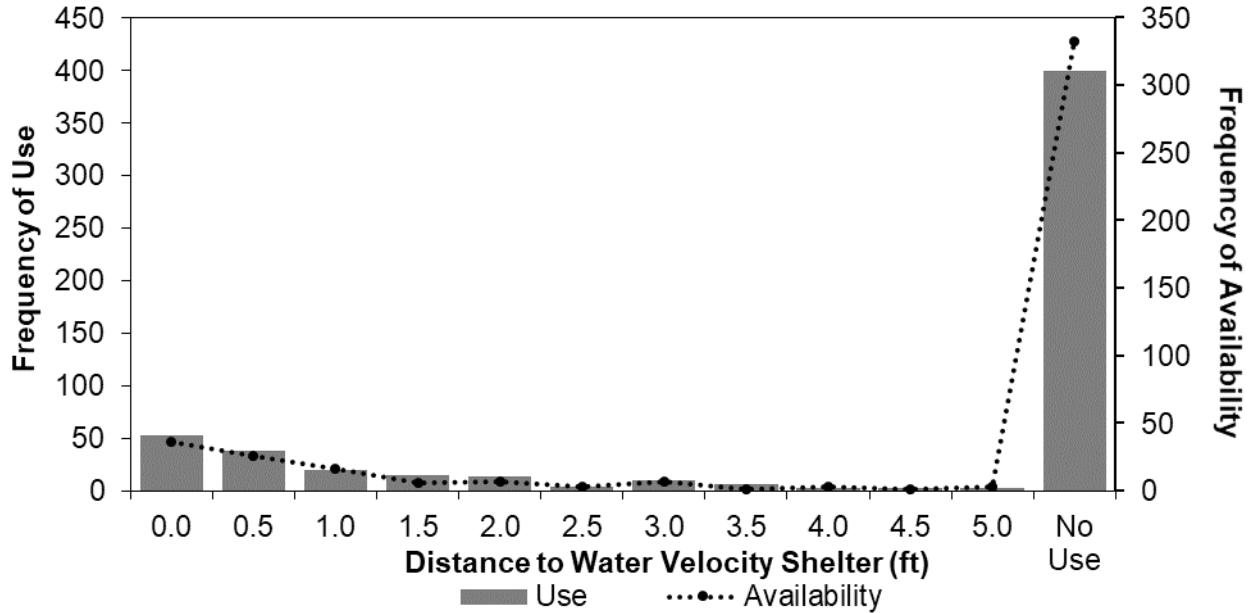


Figure C-9. Frequency distribution of distance to water velocity shelter for <6 cm Coho Salmon habitat use versus habitat availability.

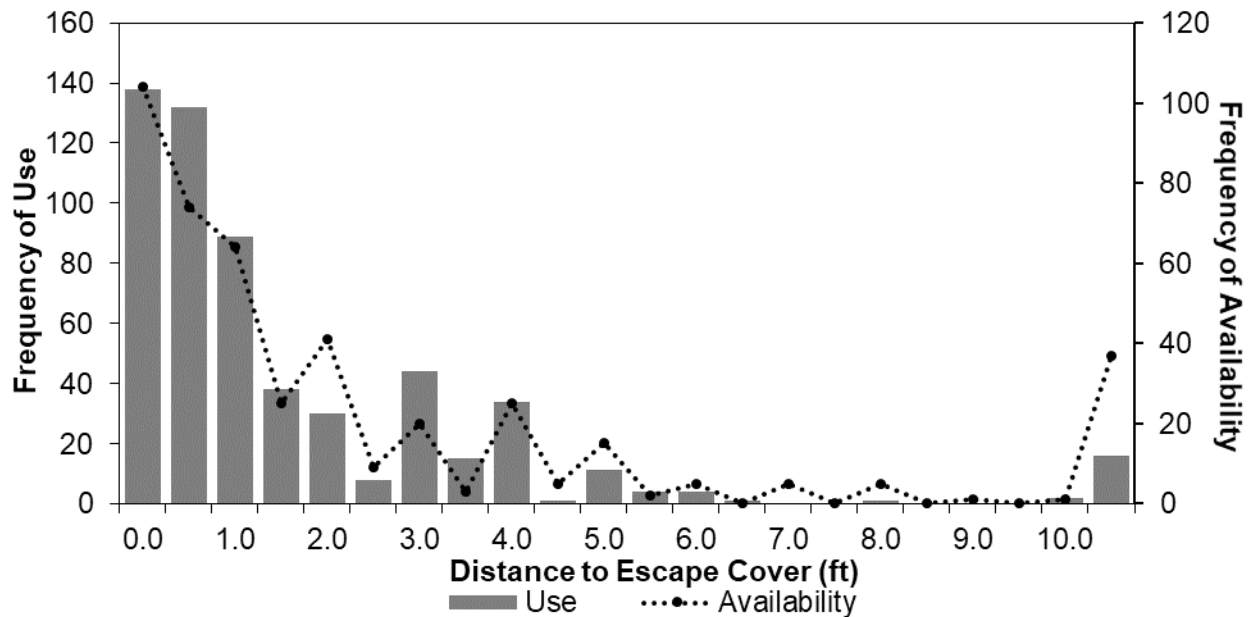


Figure C-10. Frequency distribution of distance to escape cover for <6 cm Coho Salmon habitat use versus habitat availability.

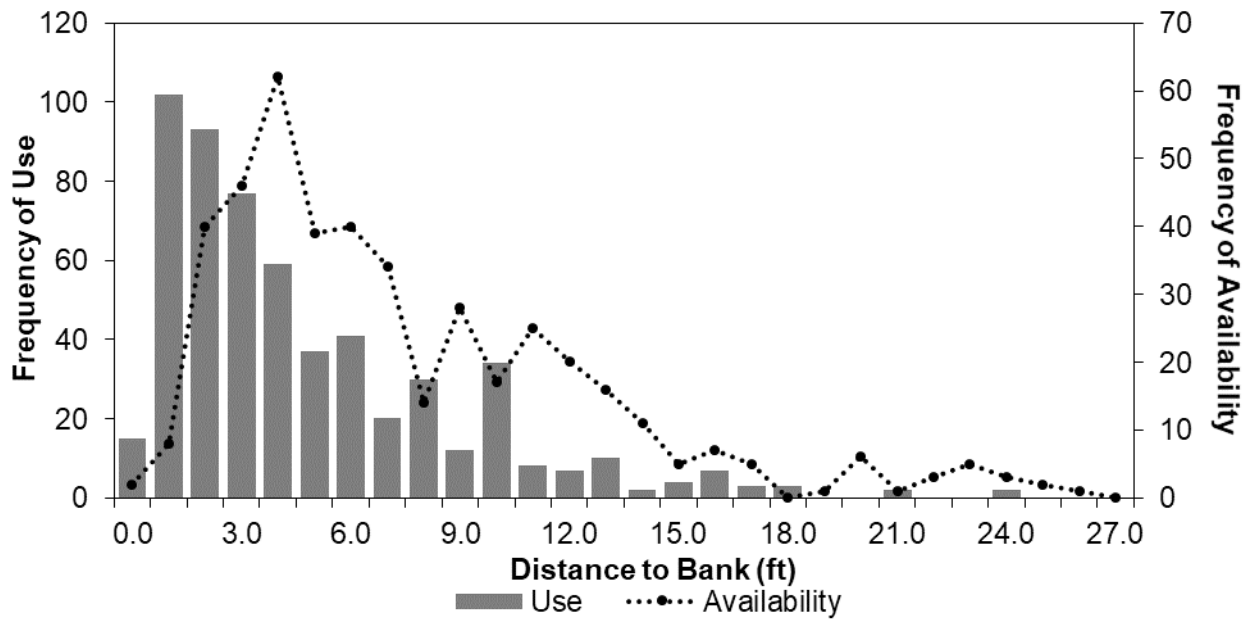


Figure C-11. Frequency distribution of distance to bank for <6 cm Coho Salmon habitat use versus habitat availability.

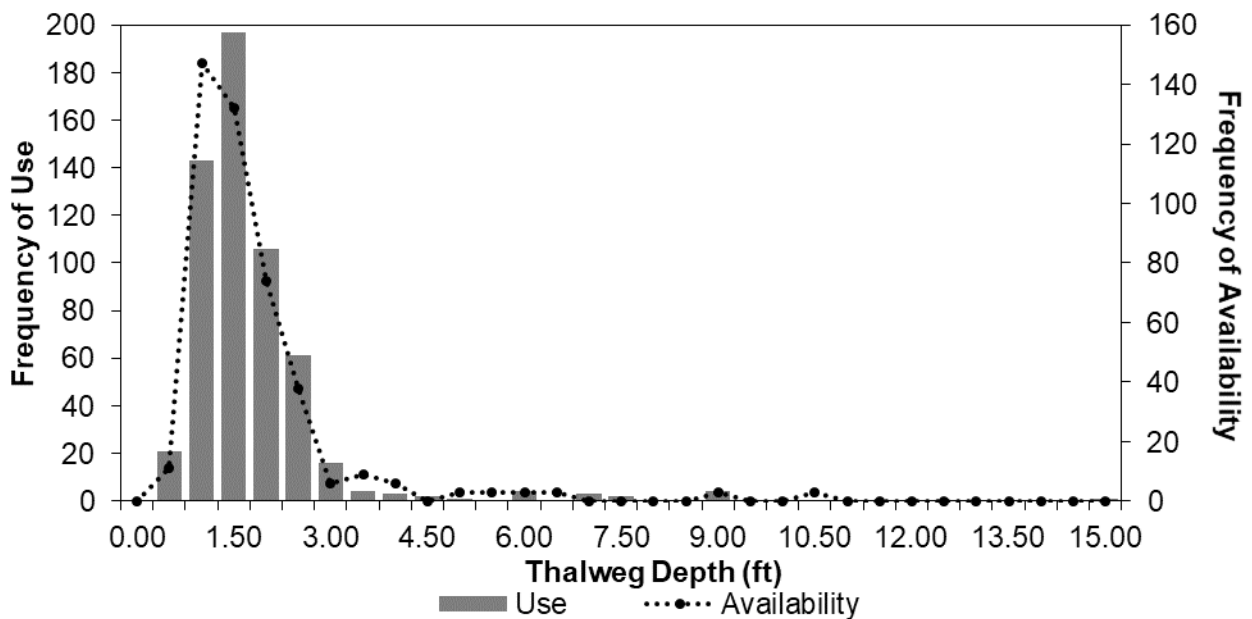


Figure C-12. Frequency distribution of thalweg depth for <6 cm Coho Salmon habitat use versus habitat availability.

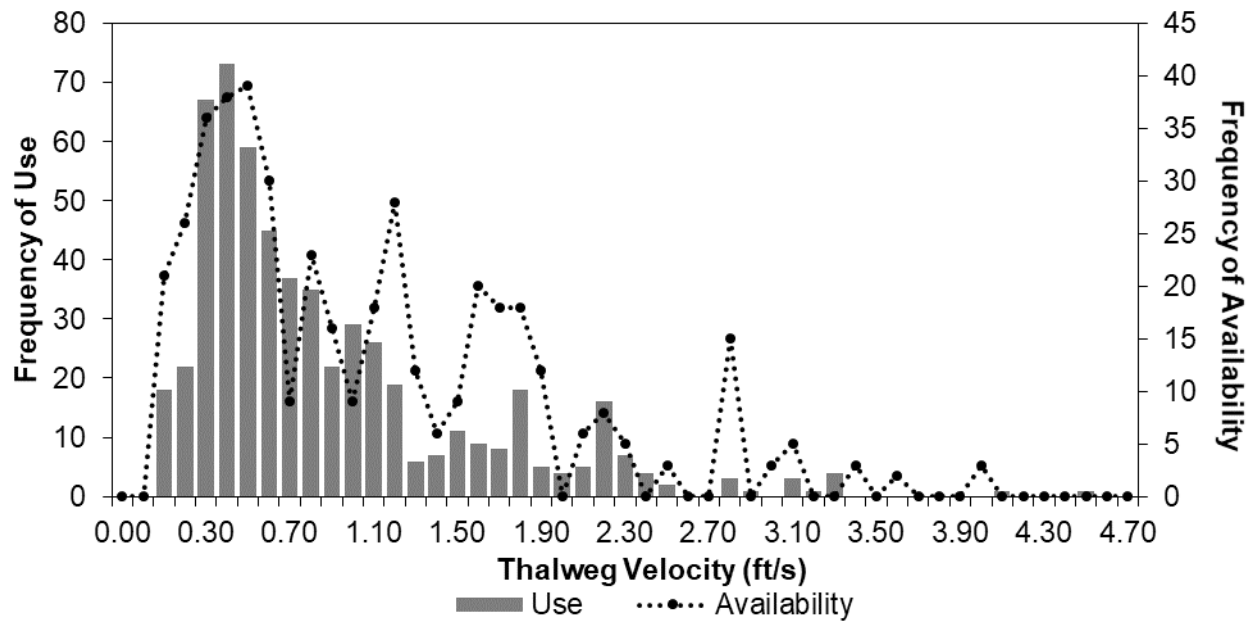


Figure C-13. Frequency distribution of thalweg velocity for <6 cm Coho Salmon habitat use versus habitat availability.

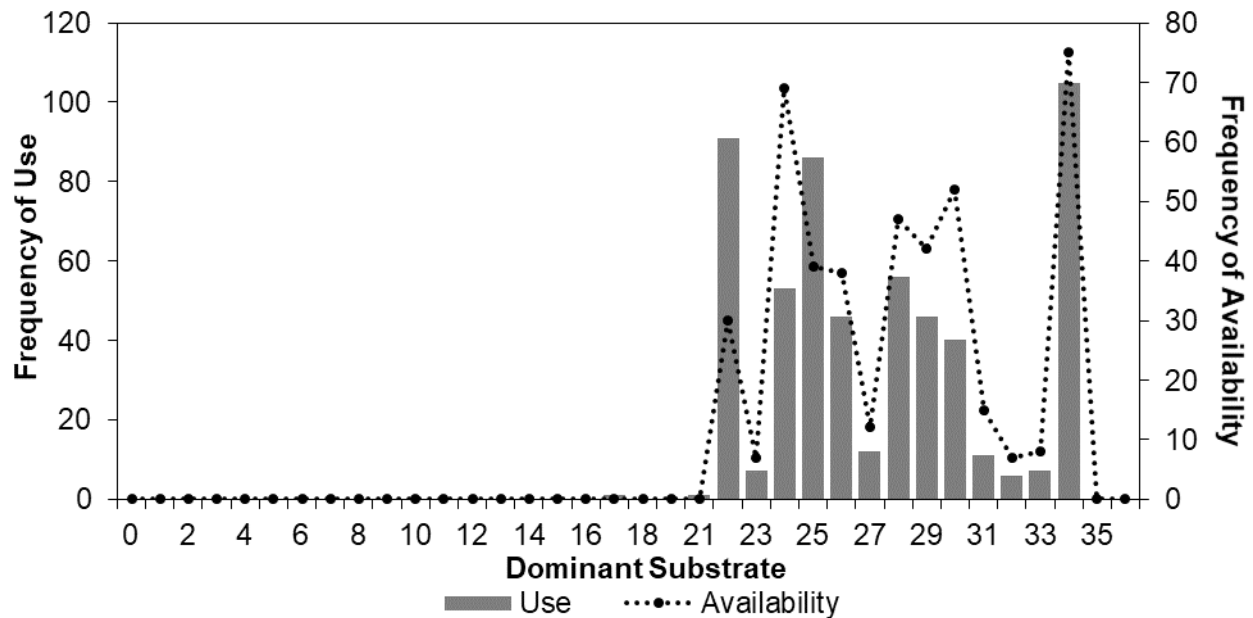


Figure C-14. Frequency distribution of dominant substrate for <6 cm Coho Salmon habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

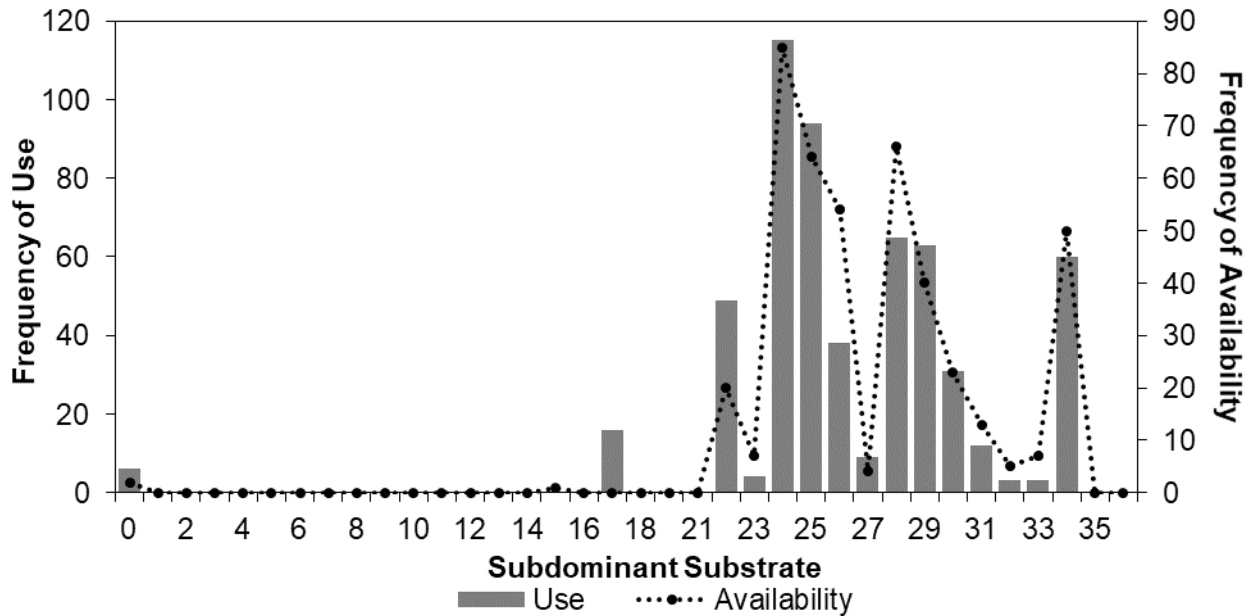


Figure C-15. Frequency distribution of subdominant substrate for <6 cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

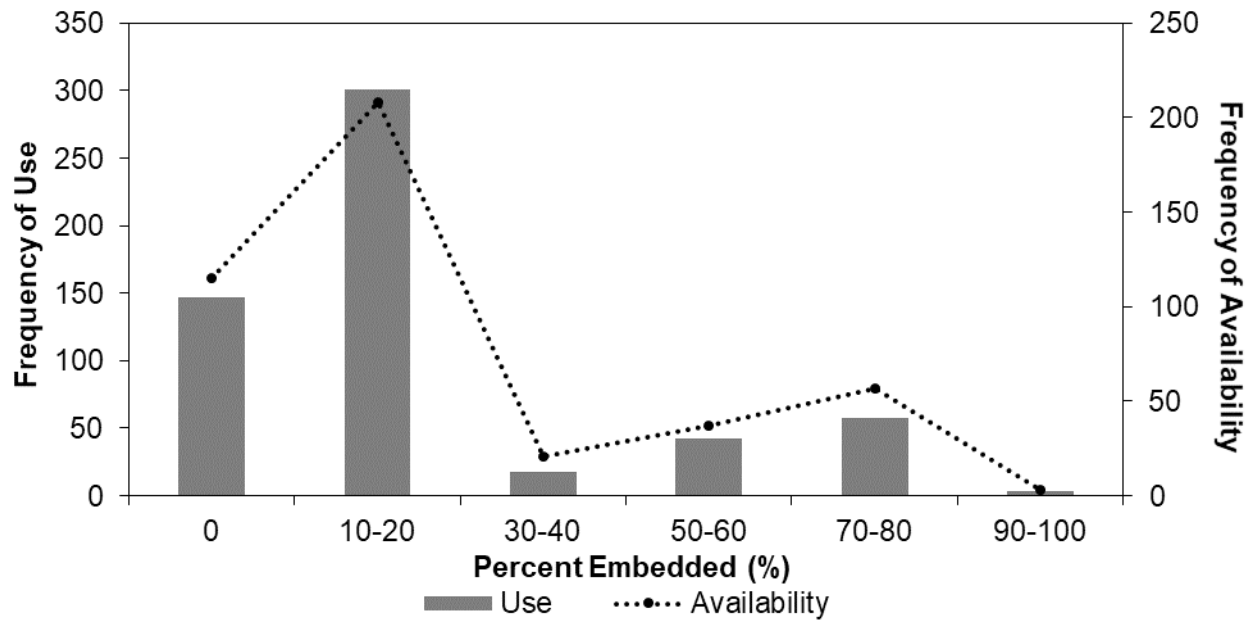


Figure C-16. Frequency distribution of substrate percent embeddedness for <6 cm Coho Salmon habitat use versus habitat availability.



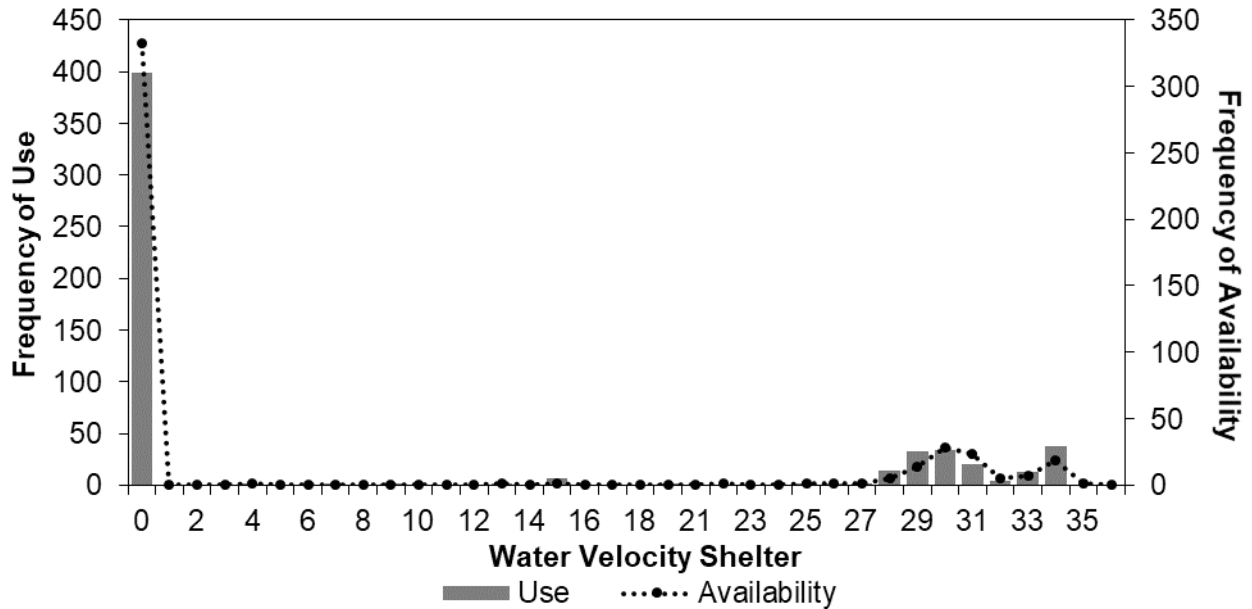


Figure C-17. Frequency distribution of water velocity shelter for <6 cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

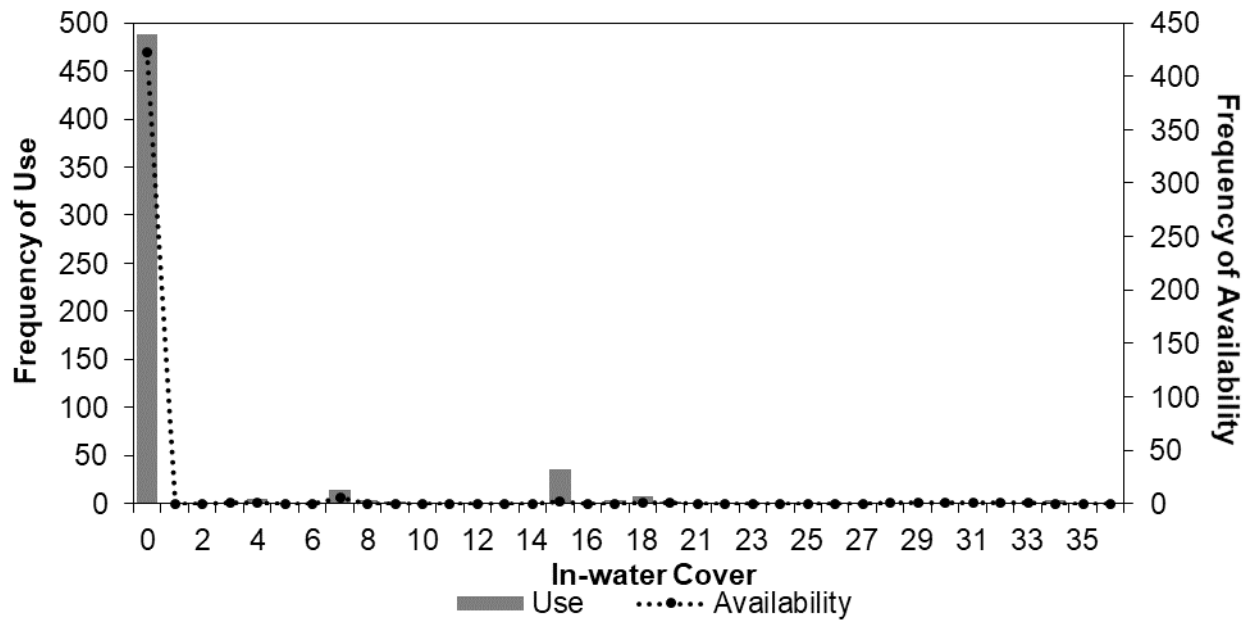


Figure C-18. Frequency distribution of in-water cover for <6 cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

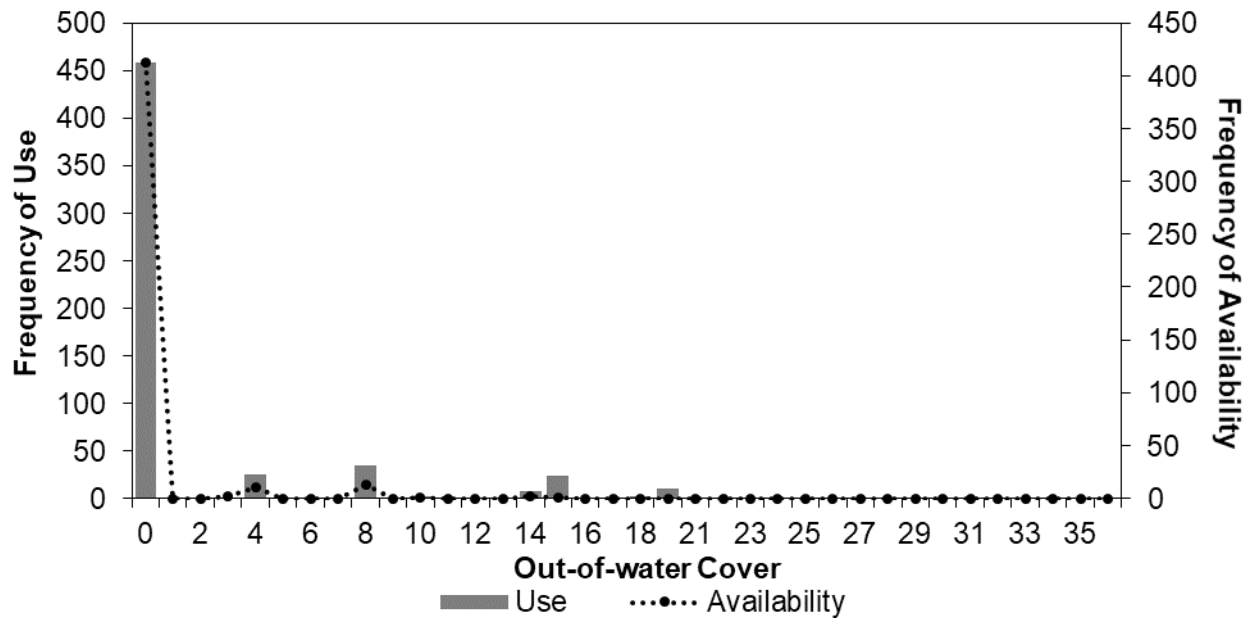


Figure C-19. Frequency distribution of out-of-water cover for <6 cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

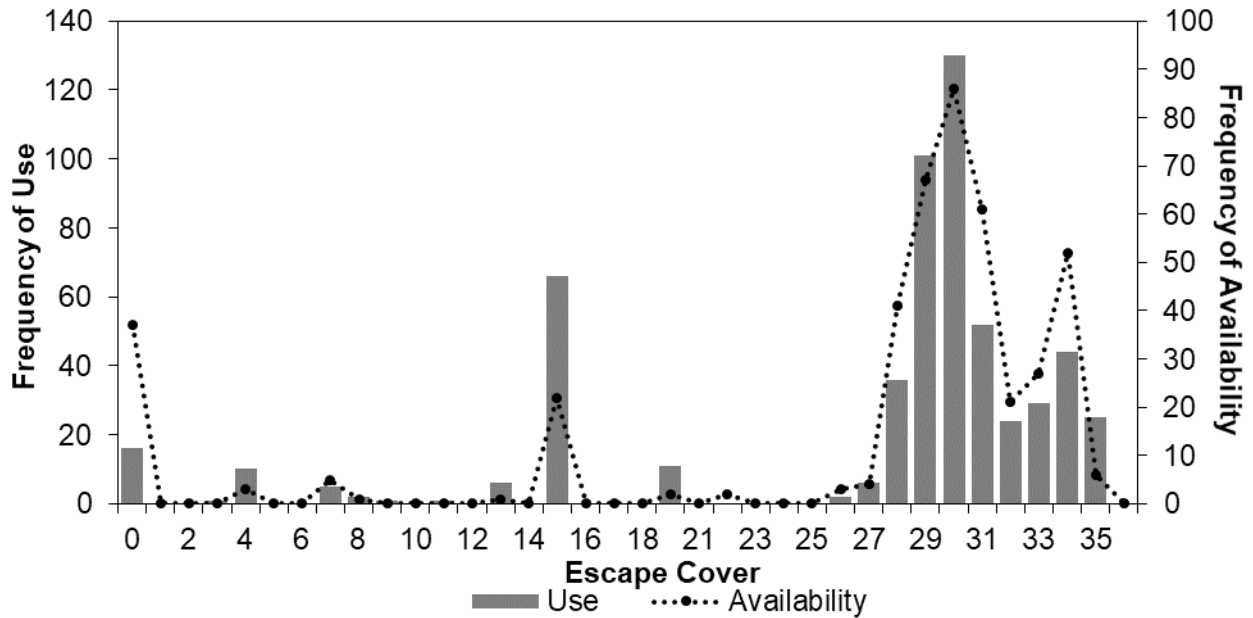


Figure C-20. Frequency distribution of escape cover for <6 cm Coho Salmon habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

## APPENDIX D: SPRING $\geq 6$ CM COHO SALMON DATASET

### $\geq 6$ cm Coho Salmon Fish Observation Figures

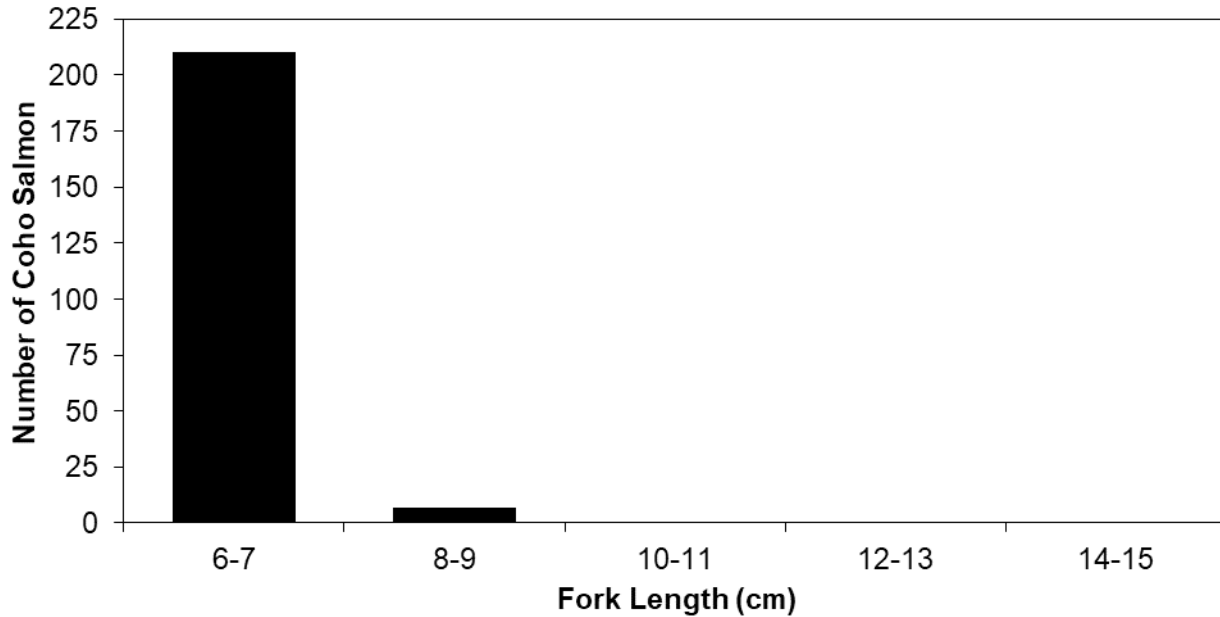


Figure D-1.  $\geq 6$  cm Coho Salmon fork length observations.

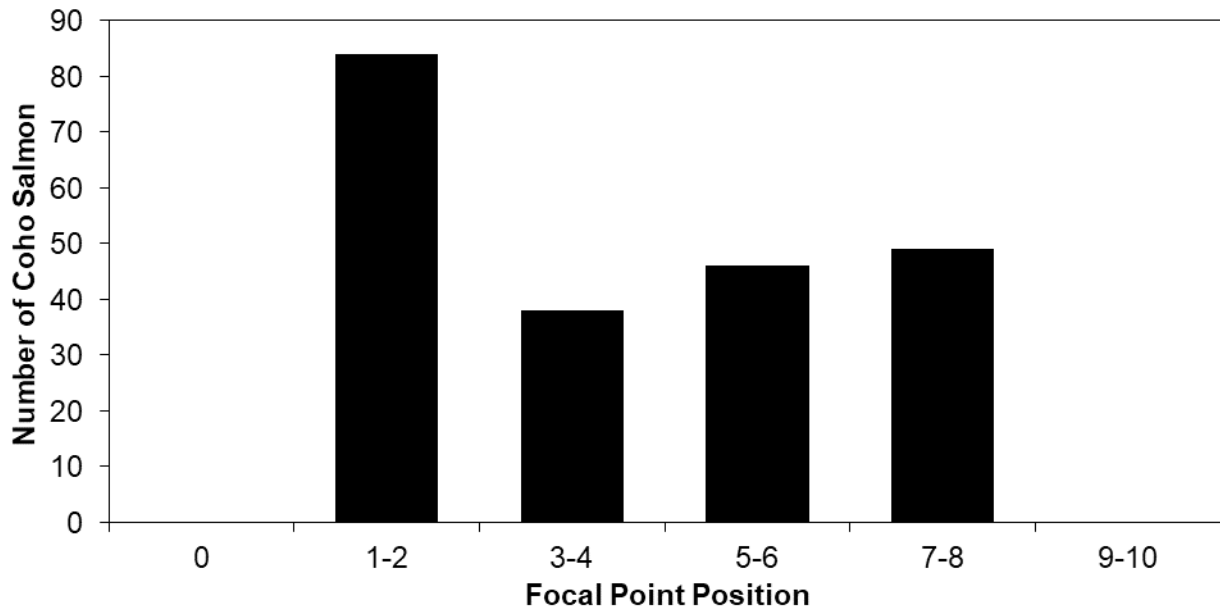


Figure D-2.  $\geq 6$  cm Coho Salmon focal point position observations. Focal position zero signified the bottom of the water column while ten signified the top. The scale of the focal position varied depending on the water depth at the point of observation.

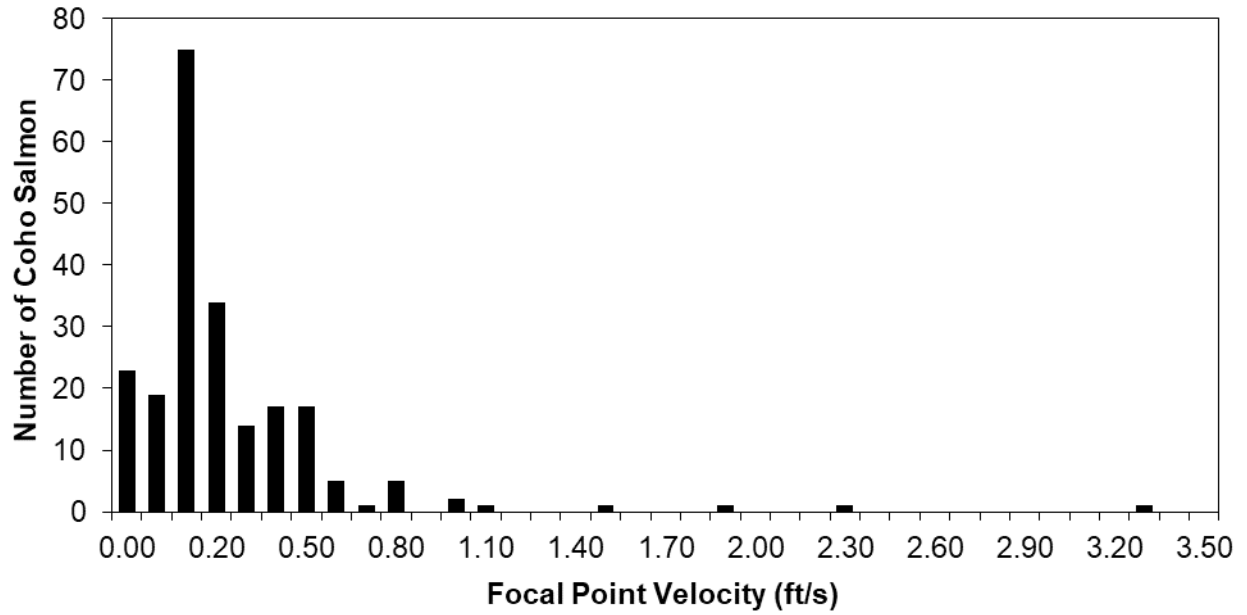


Figure D-3.  $\geq 6$  cm Coho Salmon focal point velocity observations.

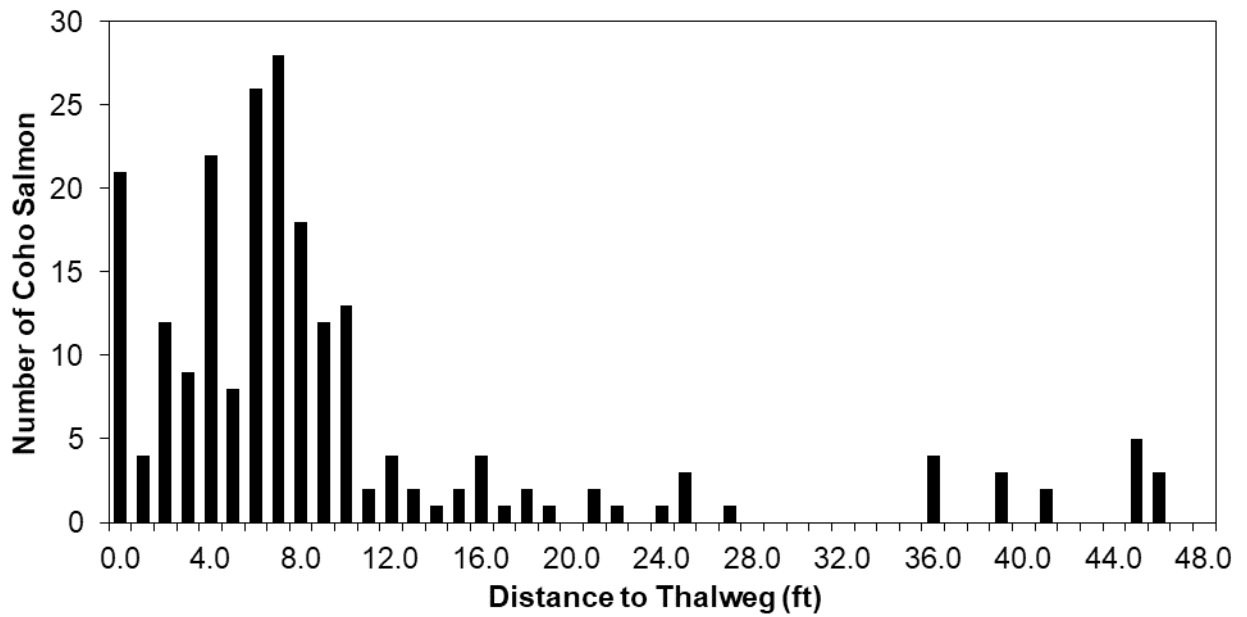


Figure D-4.  $\geq 6$  cm Coho Salmon distance to thalweg observations.

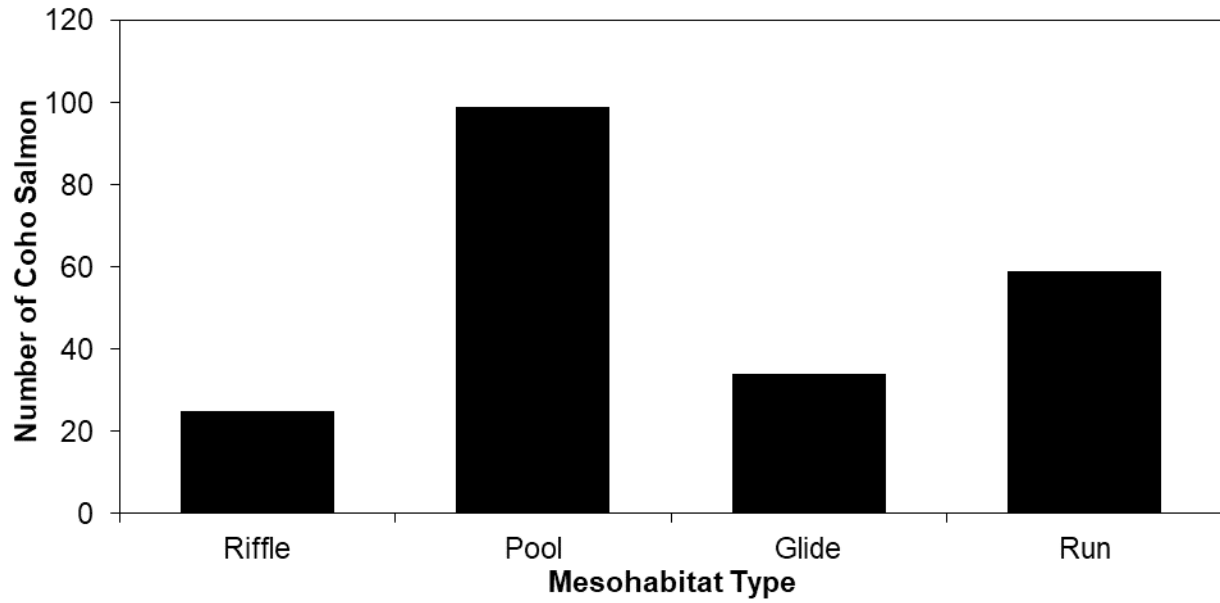


Figure D-5.  $\geq 6$  cm Coho Salmon observed in each mesohabitat type.

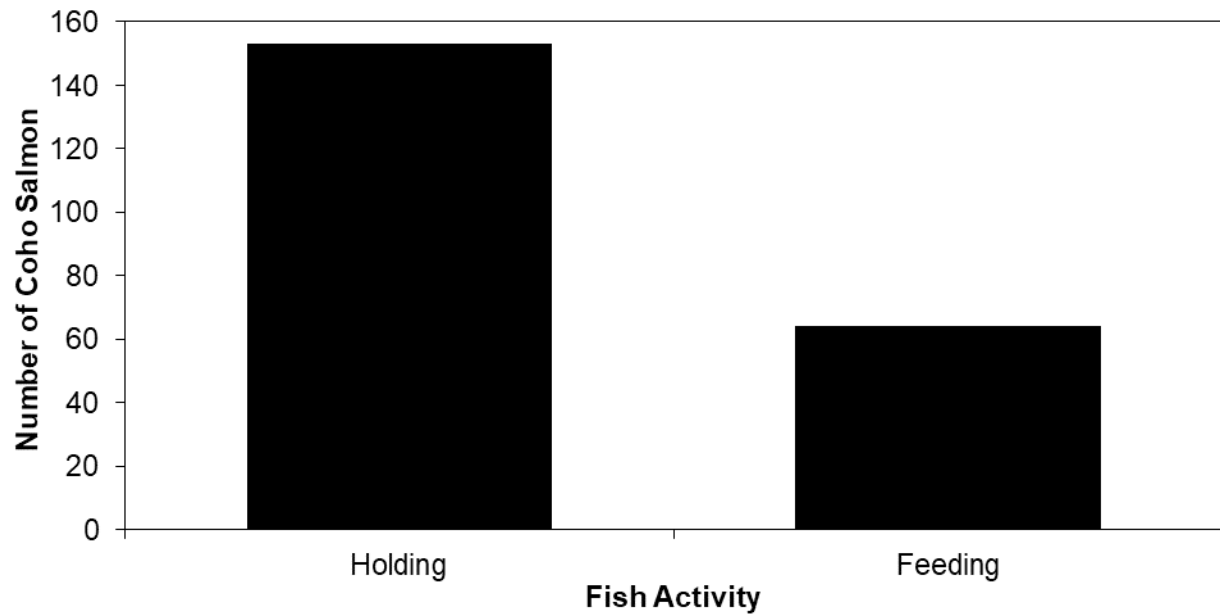


Figure D-6.  $\geq 6$  cm Coho Salmon fish activity observations.

### ≥6 cm Coho Salmon Habitat Use vs. Habitat Availability Figures

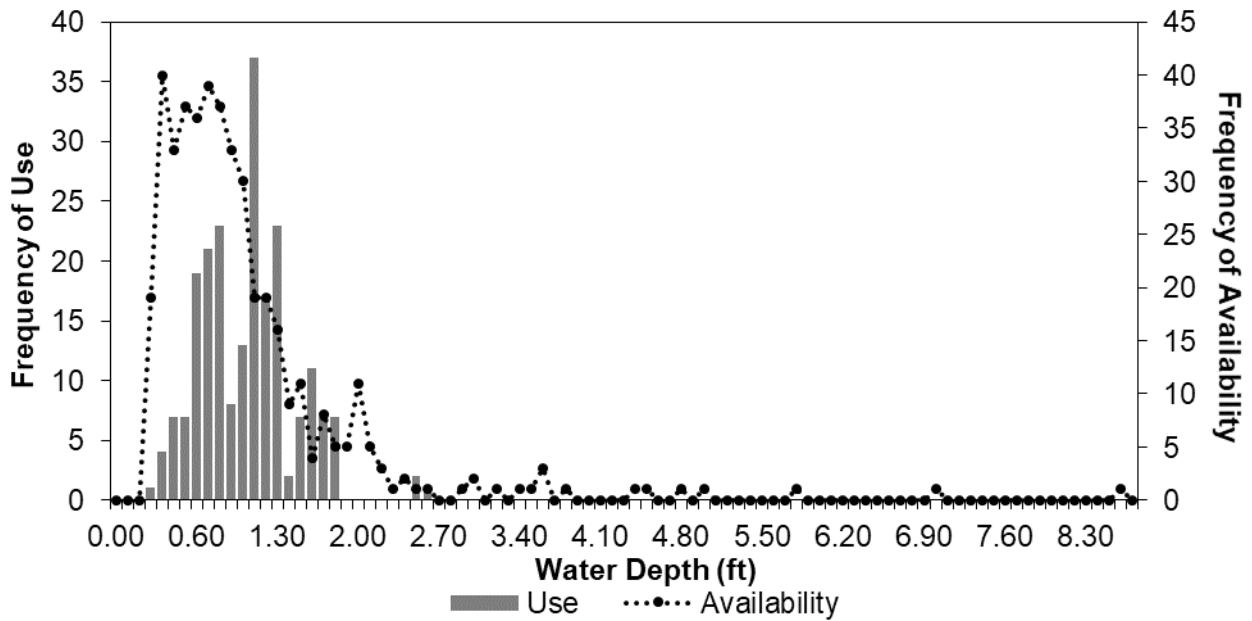


Figure D-7. Frequency distribution of water depth for ≥6 cm Coho Salmon habitat use versus habitat availability.

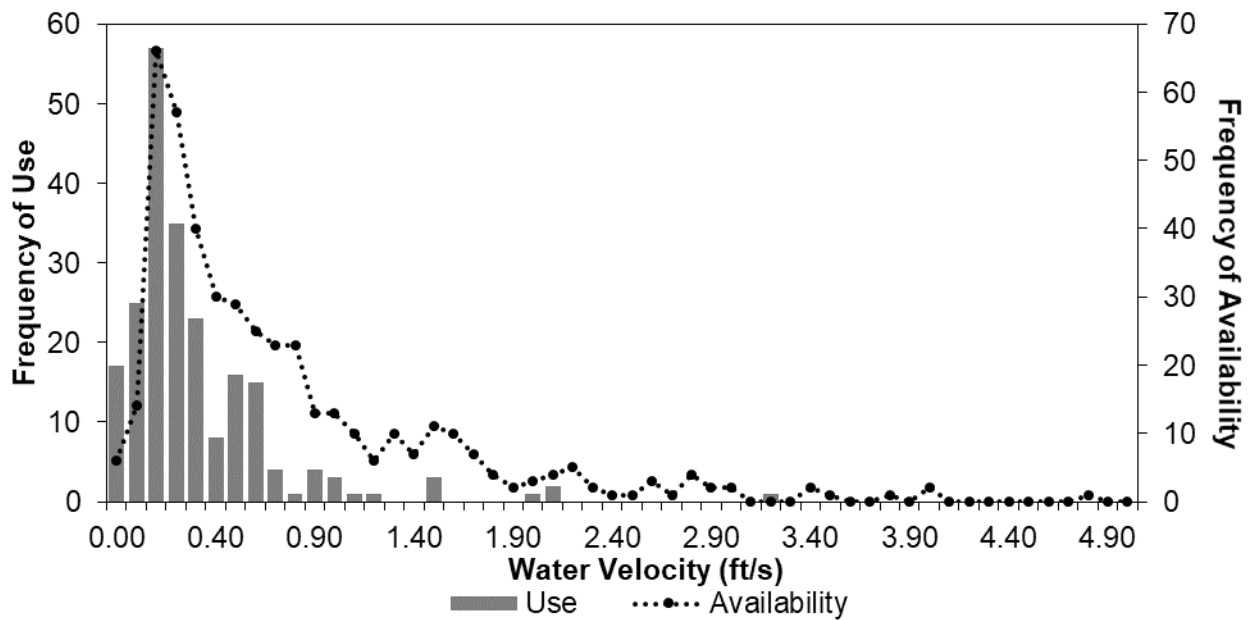


Figure D-8. Frequency distribution of water velocity for ≥6 cm Coho Salmon habitat use versus habitat availability.



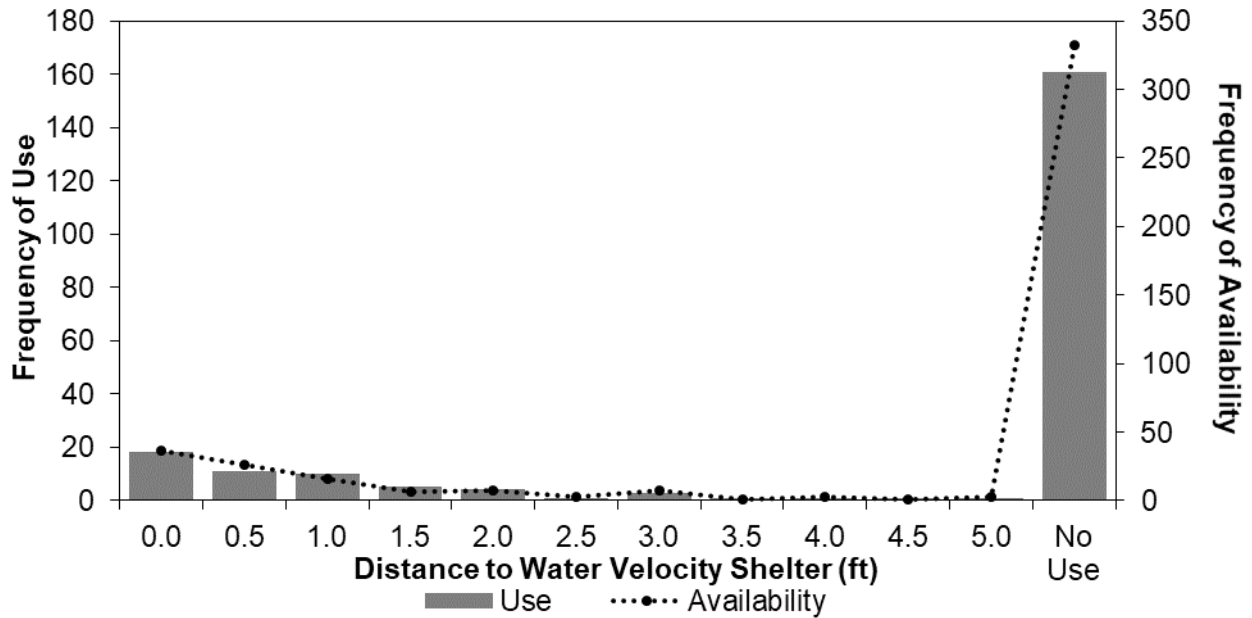


Figure D-9. Frequency distribution of distance to water velocity shelter for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

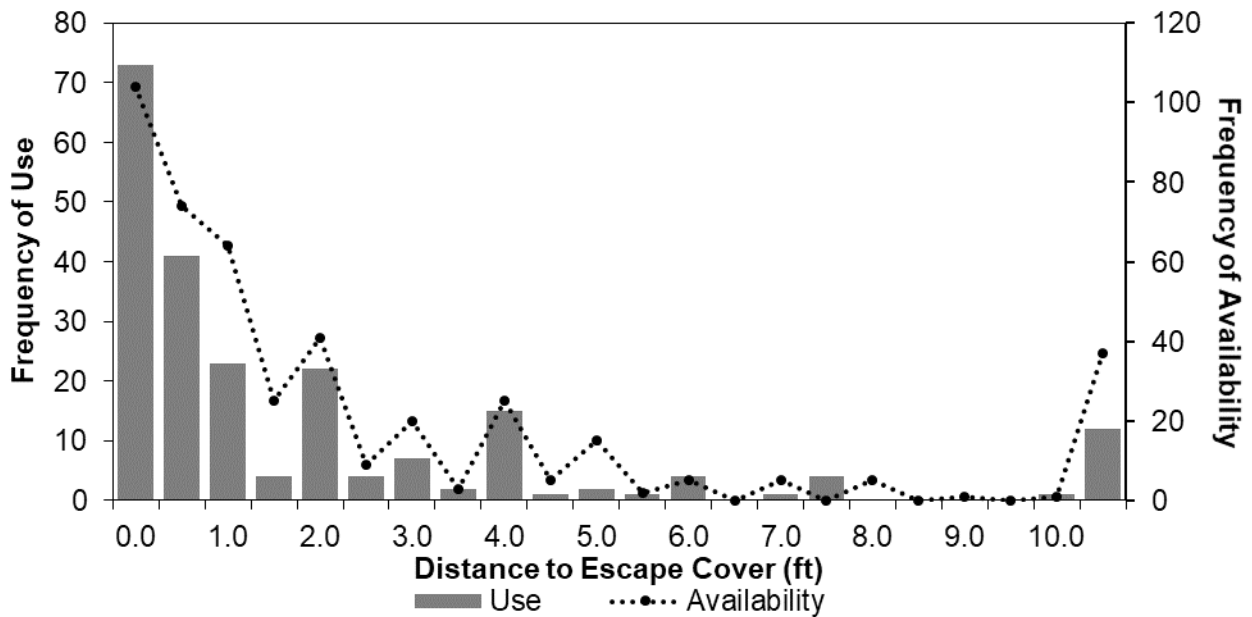


Figure D-10. Frequency distribution of distance to escape cover for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

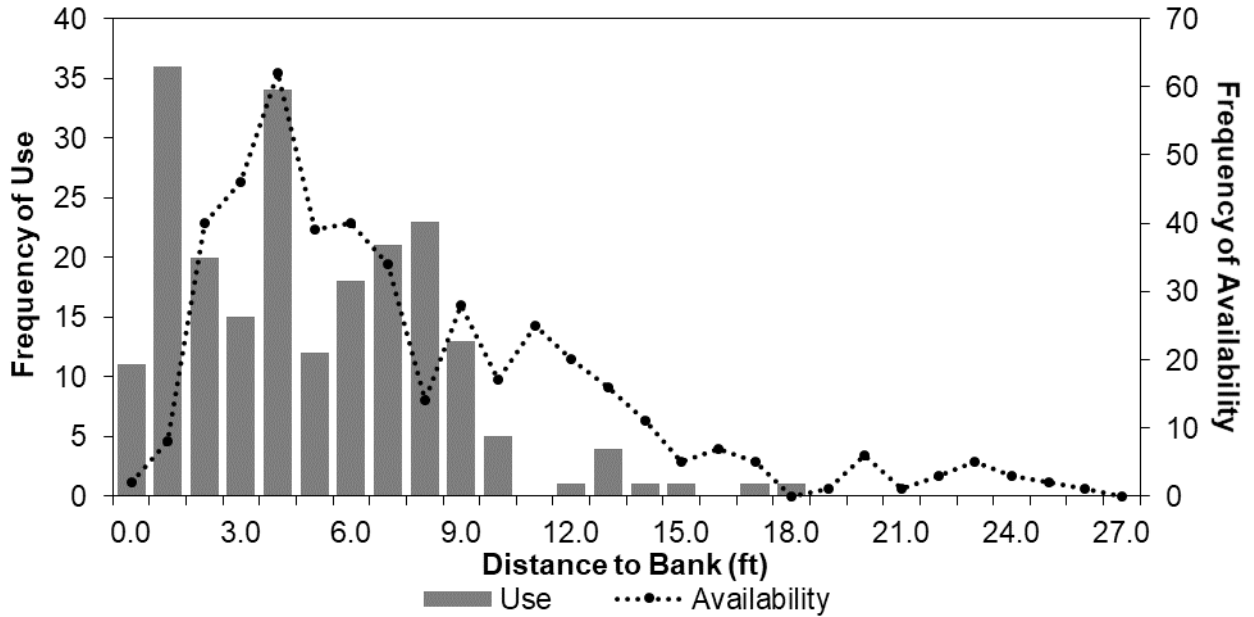


Figure D-11. Frequency distribution of distance to bank for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

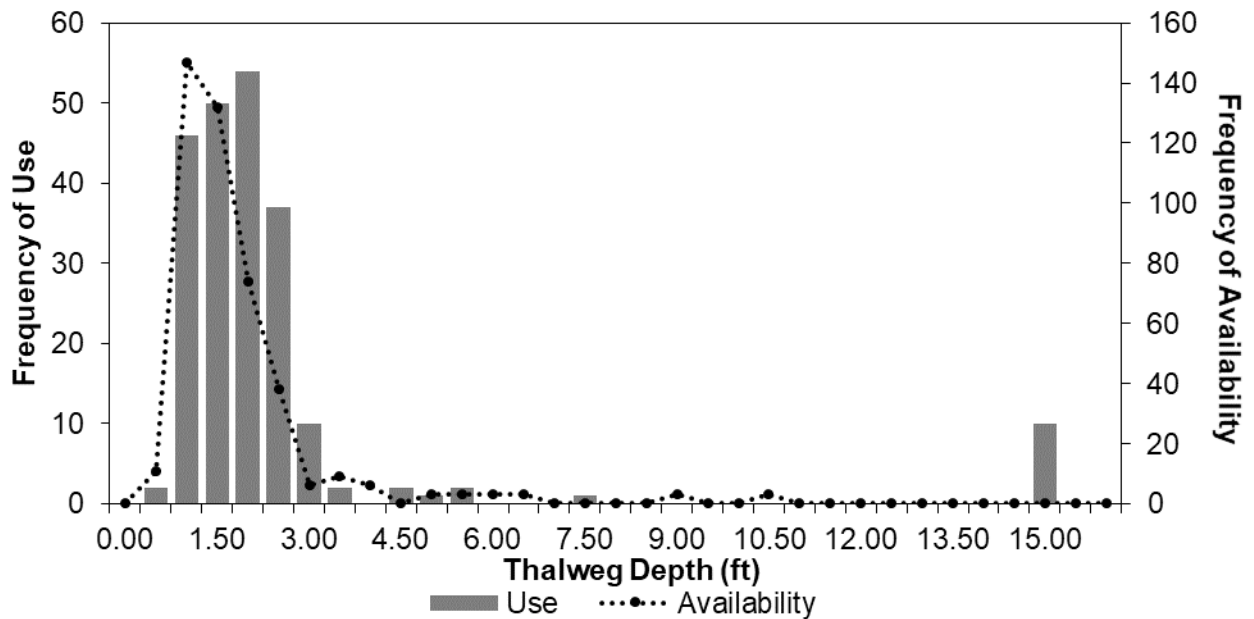


Figure D-12. Frequency distribution of thalweg depth for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

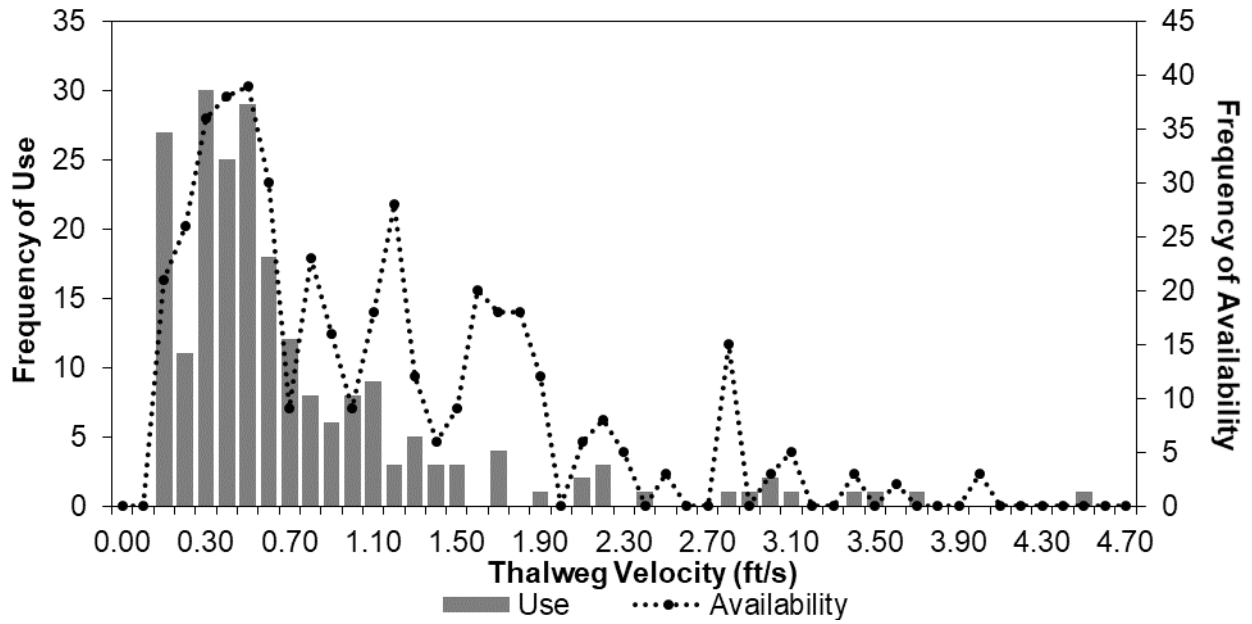


Figure D-13. Frequency distribution of thalweg velocity for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

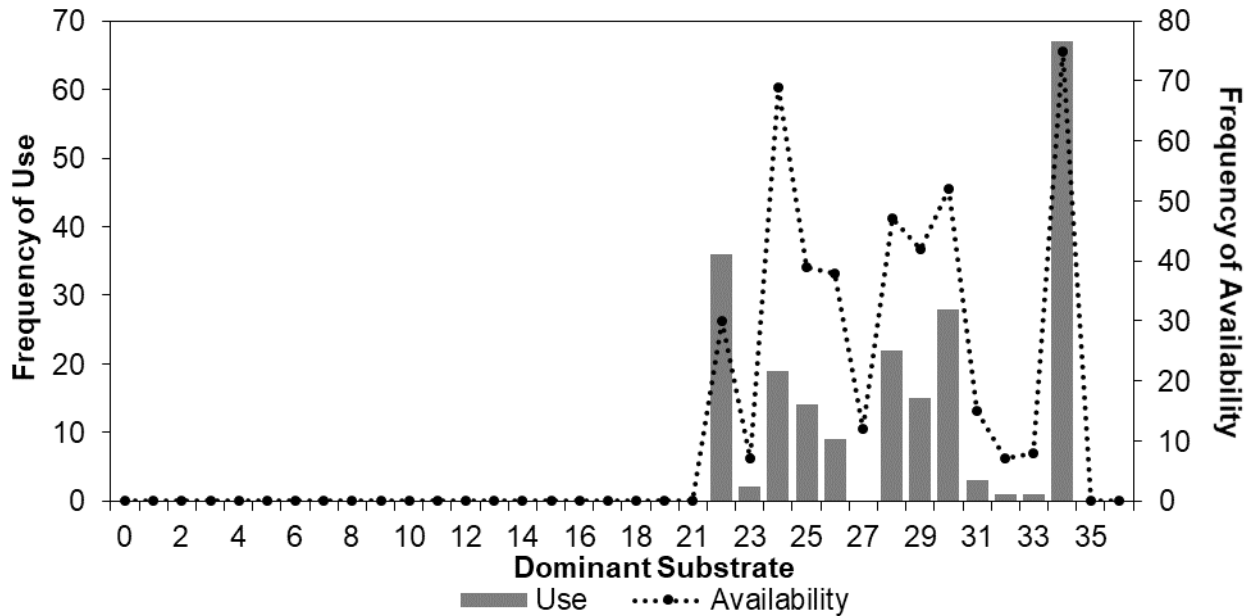


Figure D-14. Frequency distribution of dominant substrate for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

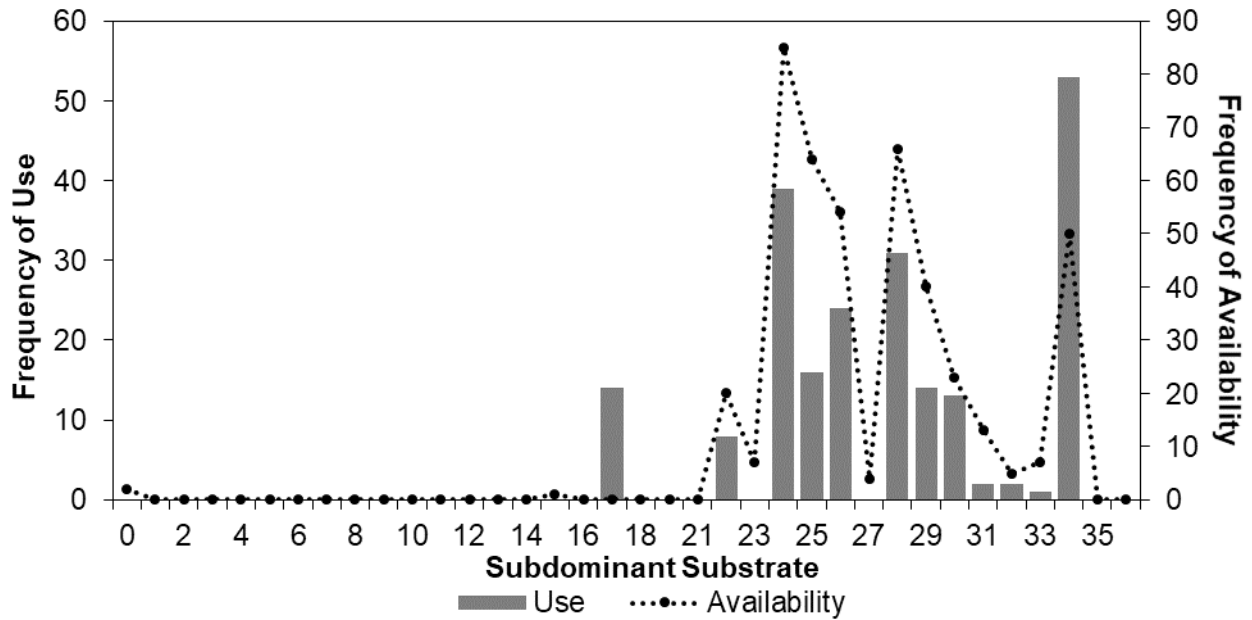


Figure D-15. Frequency distribution of subdominant substrate for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

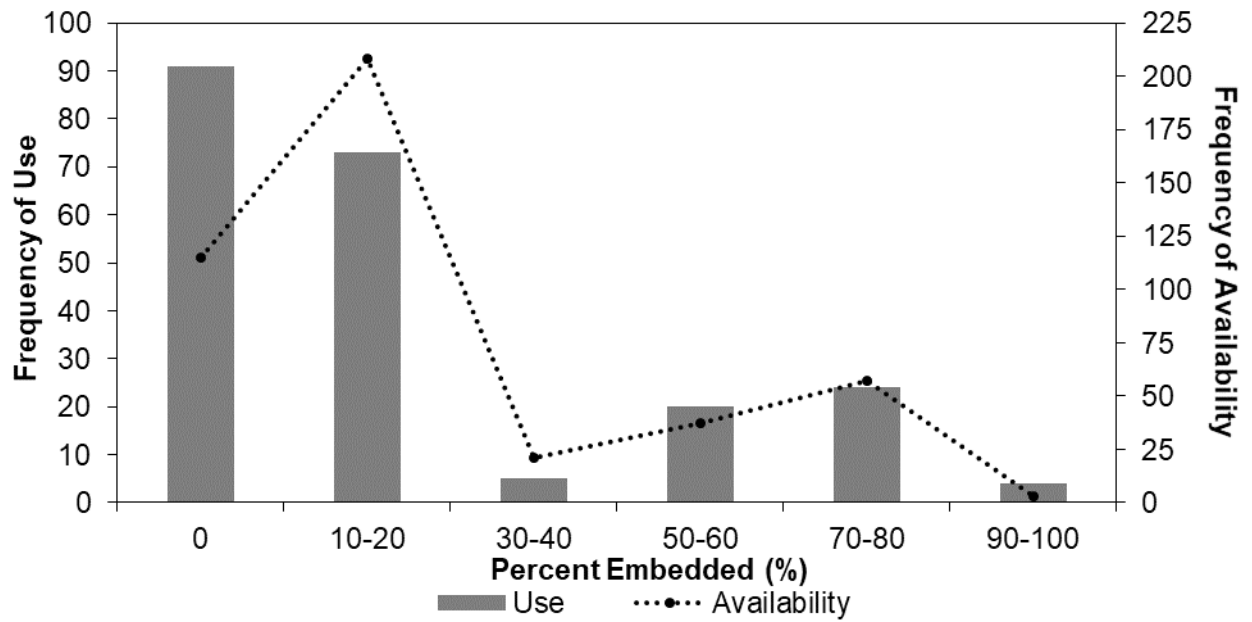


Figure D-16. Frequency distribution of substrate percent embeddedness for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

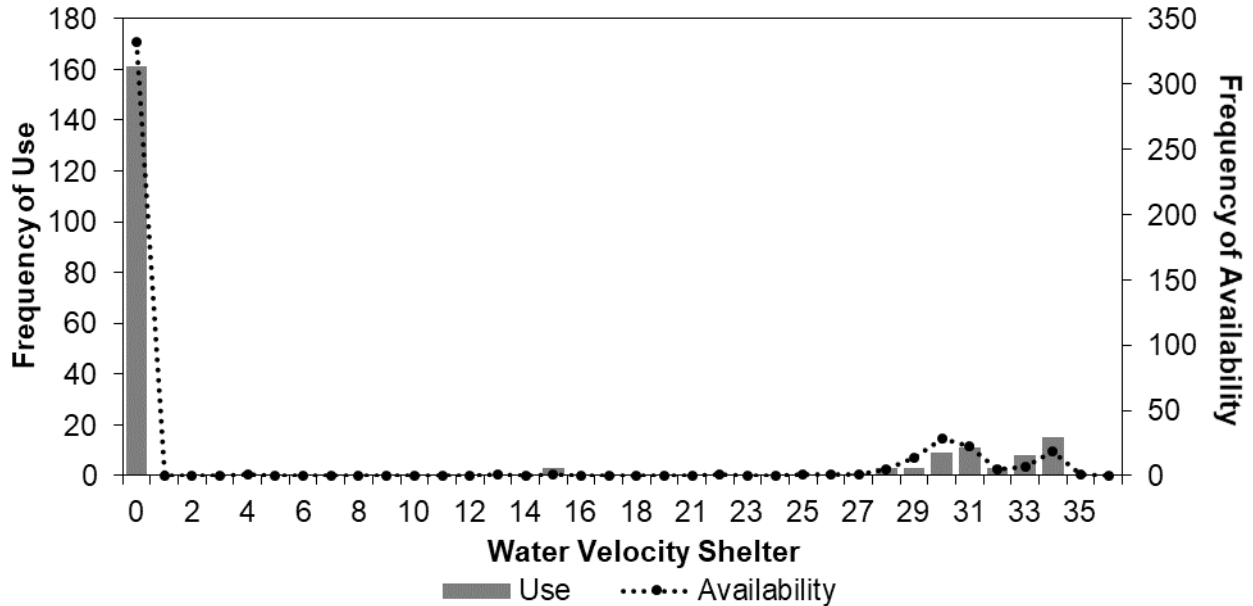


Figure D-17. Frequency distribution of water velocity shelter for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

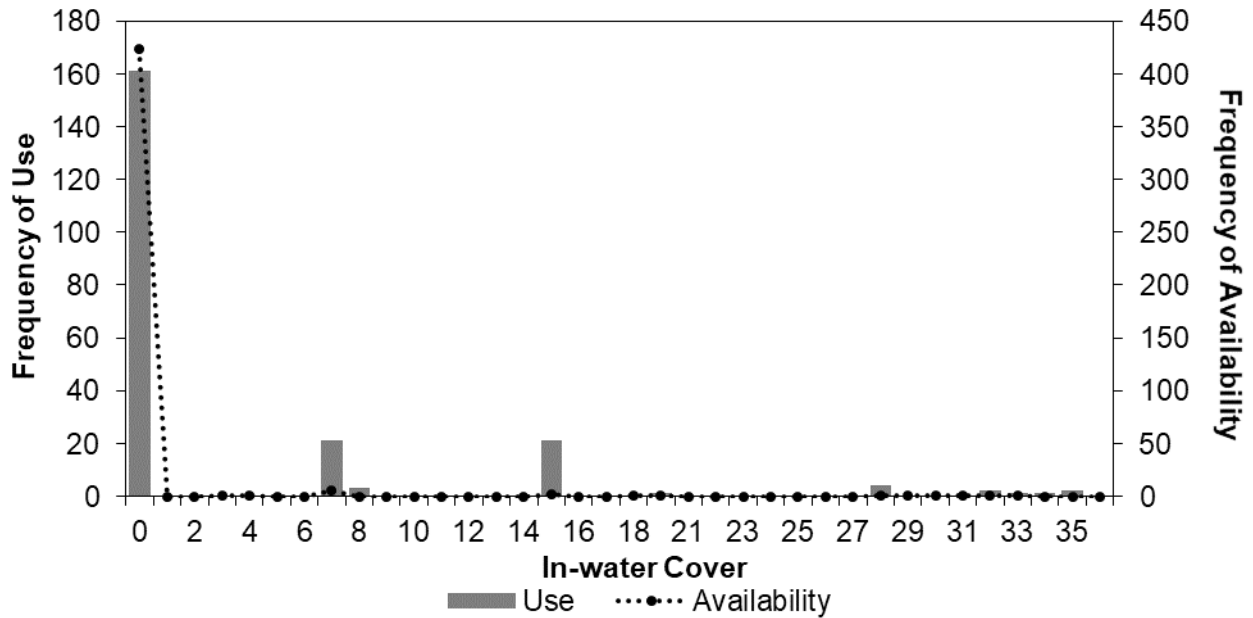


Figure D-18. Frequency distribution of in-water cover for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank



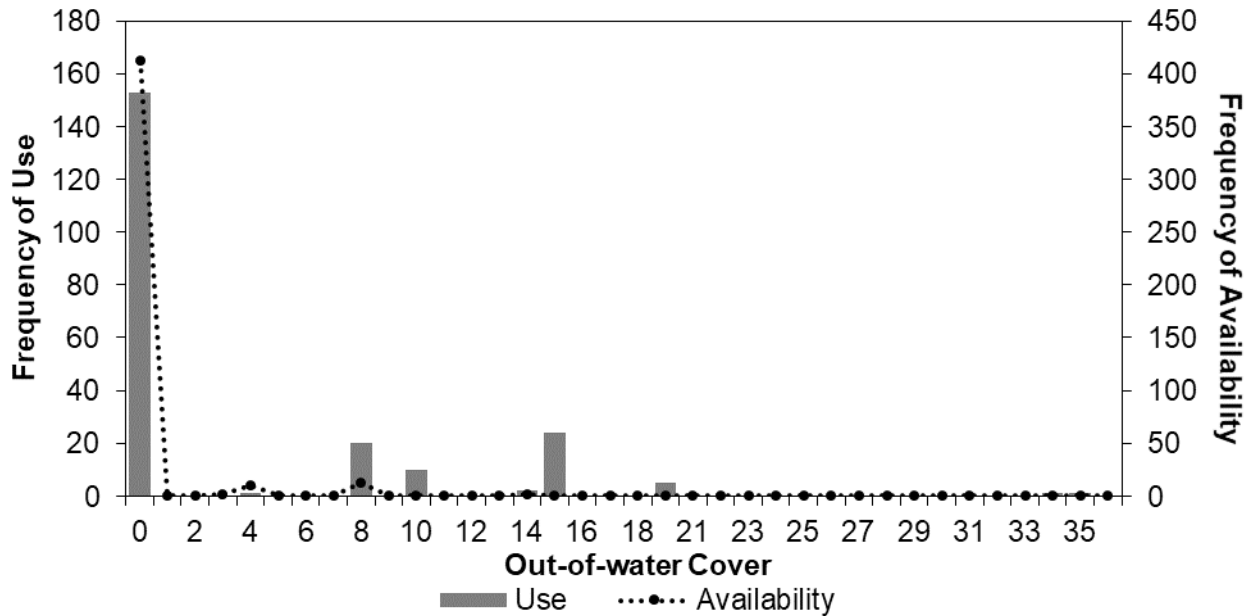


Figure D-19. Frequency distribution of out-of-water cover for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

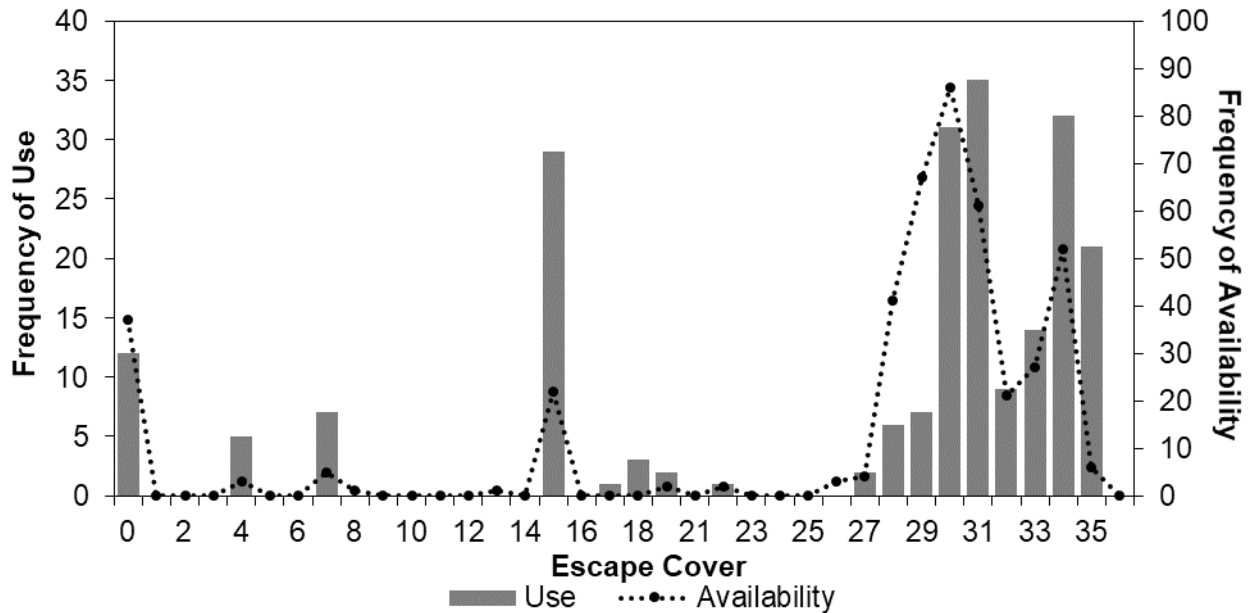


Figure D-20. Frequency distribution of escape cover for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

## APPENDIX E: SUMMER <6 CM STEELHEAD DATASET

### <6 cm Steelhead Fish Observation Figures

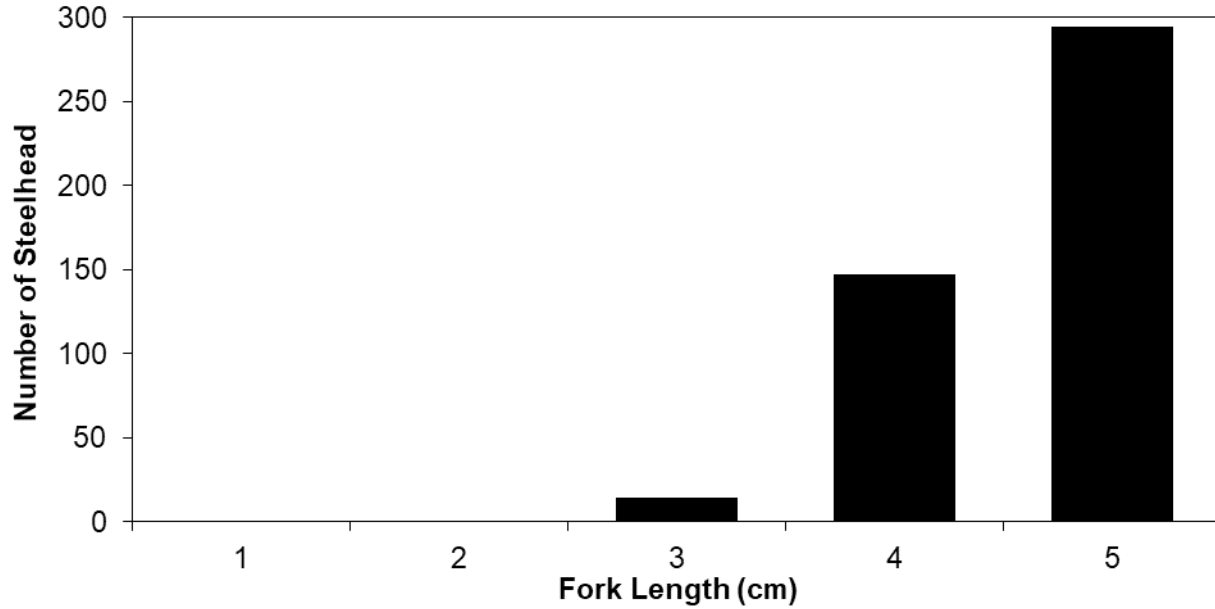


Figure E-1. <6 cm steelhead fork length observations.

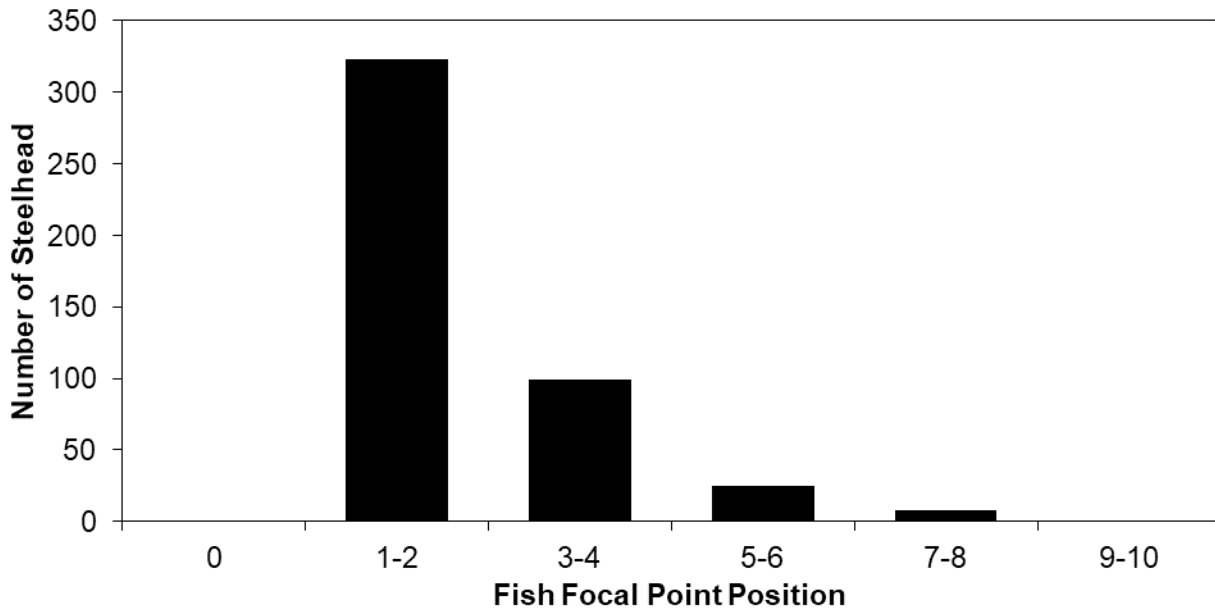


Figure E-2. <6 cm steelhead focal point position observations. Focal position zero signified the bottom of the water column while ten signified the top. The scale of the focal position varied depending on the water depth at the point of observation.

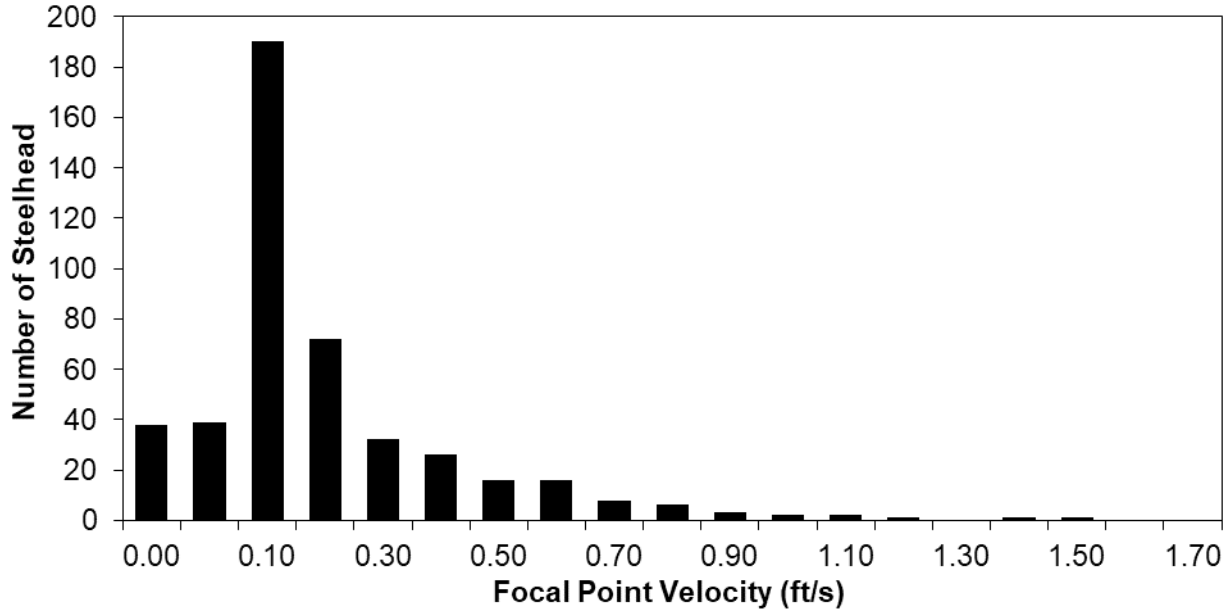


Figure E-3. <6 cm steelhead focal point velocity observations.

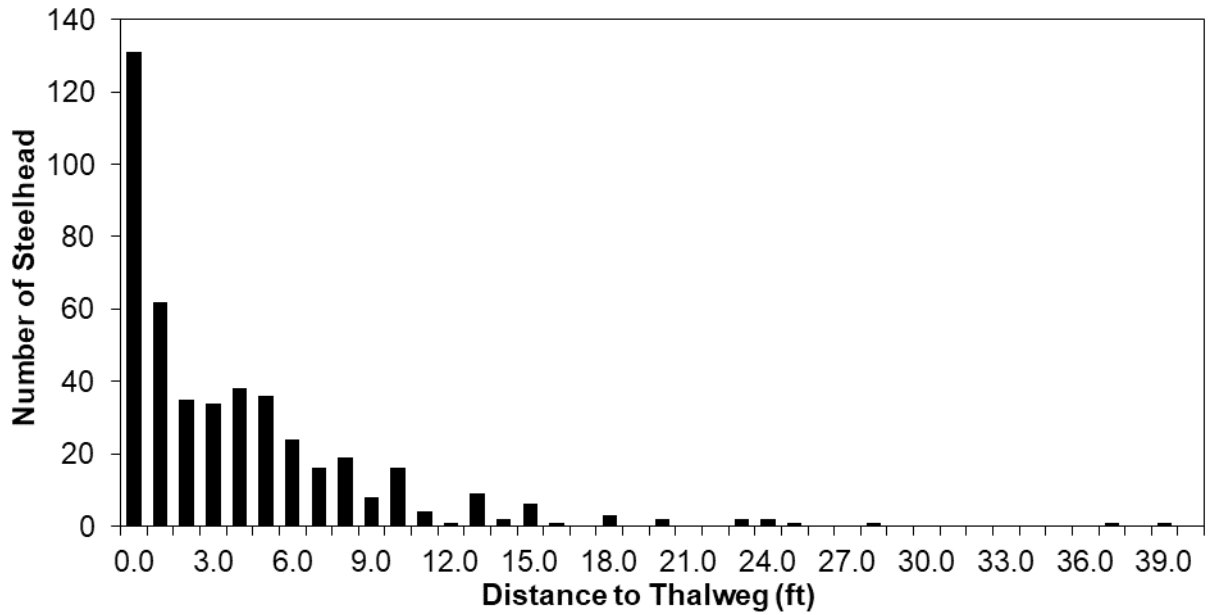


Figure E-4. <6 cm steelhead distance to thalweg observations.

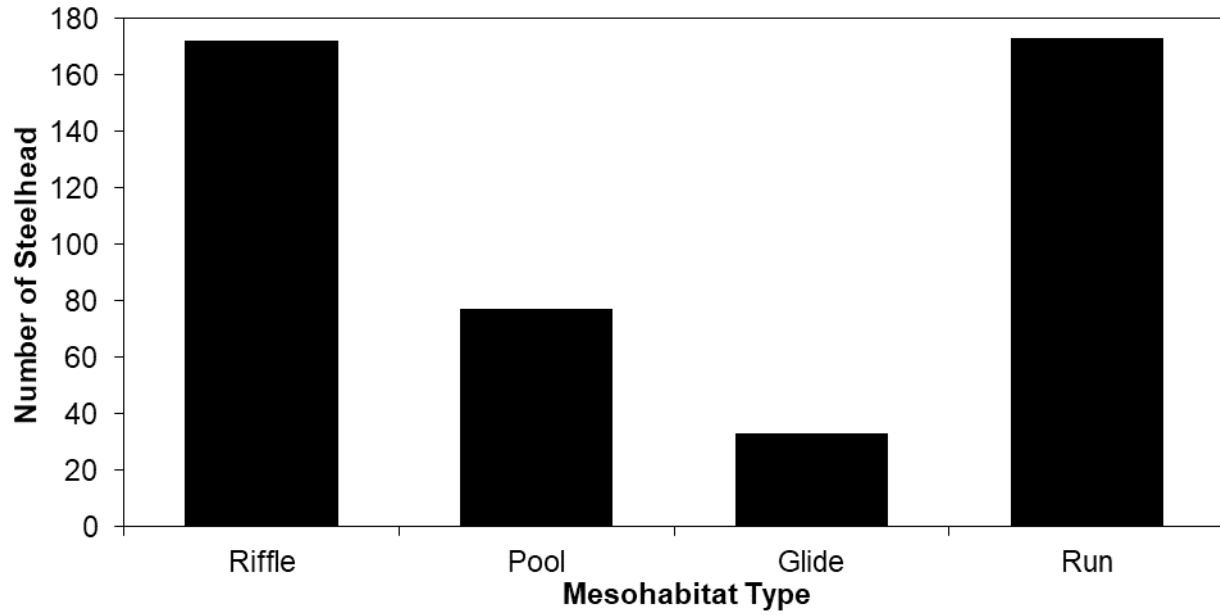


Figure E-5. <6 cm steelhead observed in each mesohabitat type.

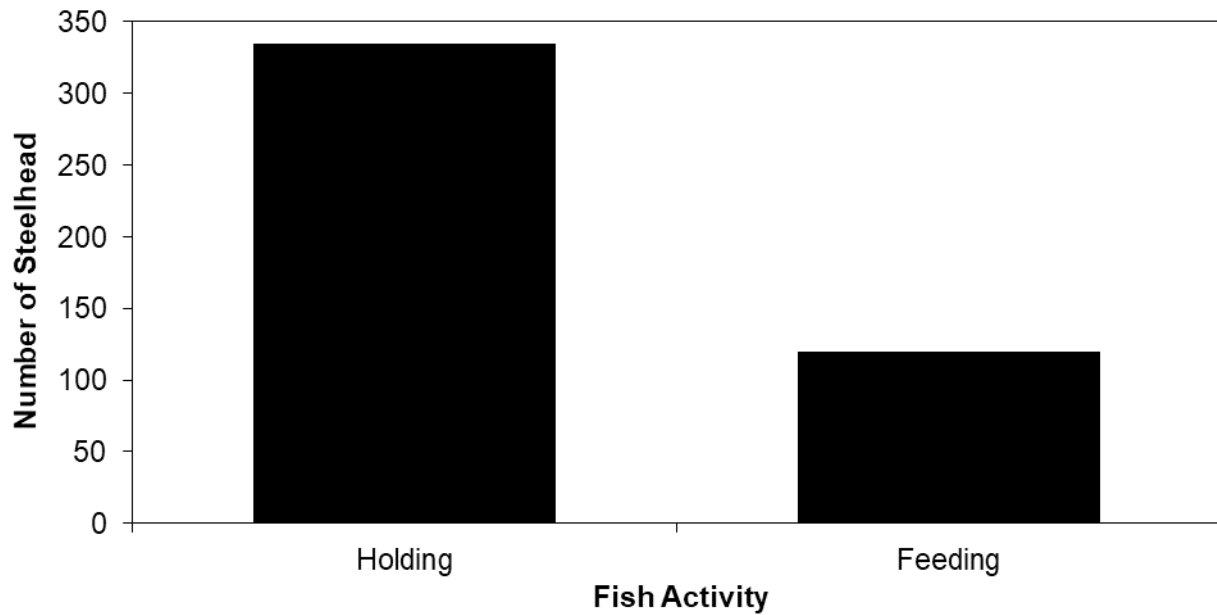


Figure E-6. <6 cm steelhead fish activity observations.

### <6 cm Steelhead Habitat Use vs. Availability Figures

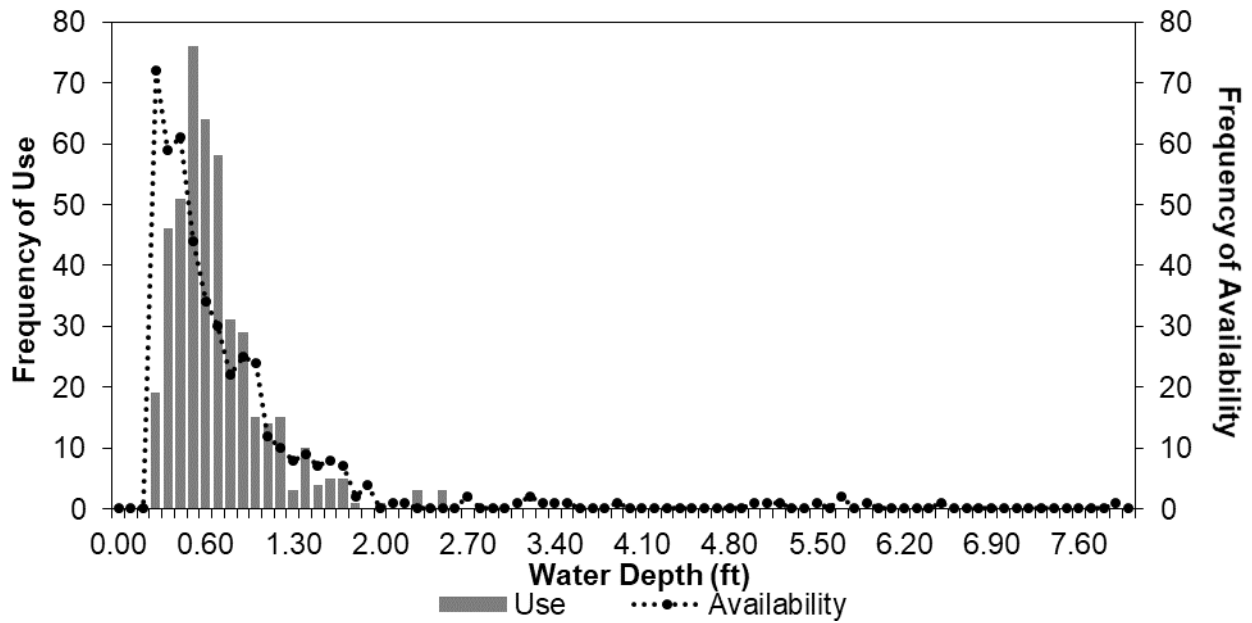


Figure E-7. Frequency distribution of water depth for <6 cm steelhead habitat use versus habitat availability.

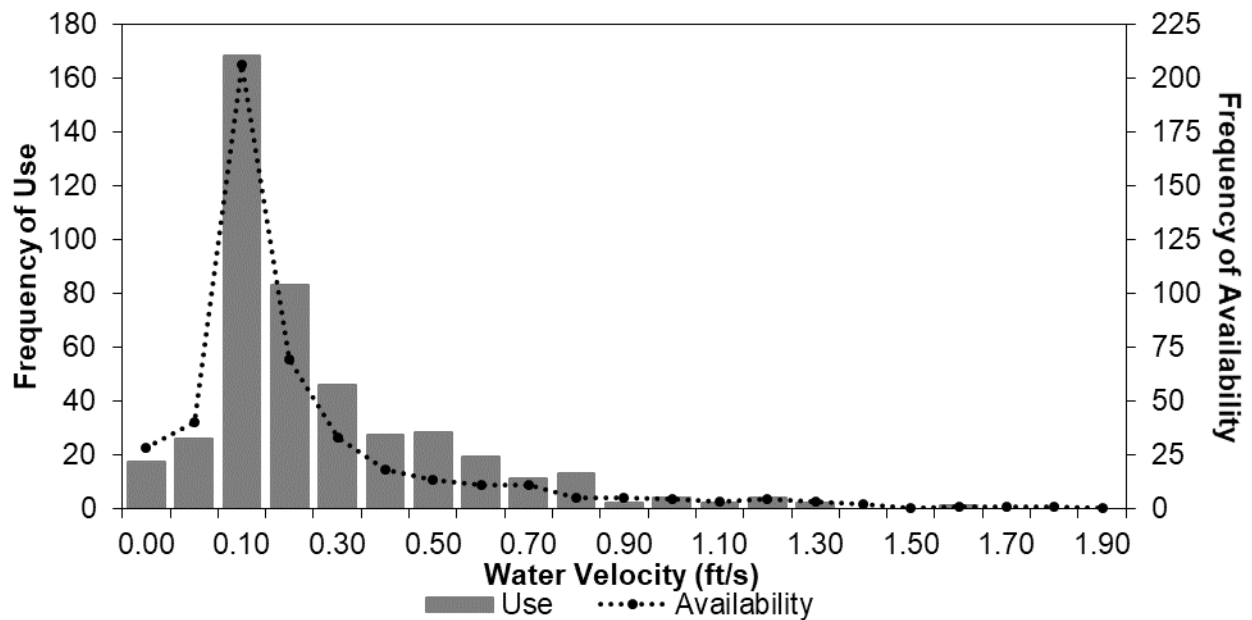


Figure E-8. Frequency distribution of water velocity for <6 cm steelhead habitat use versus habitat availability.

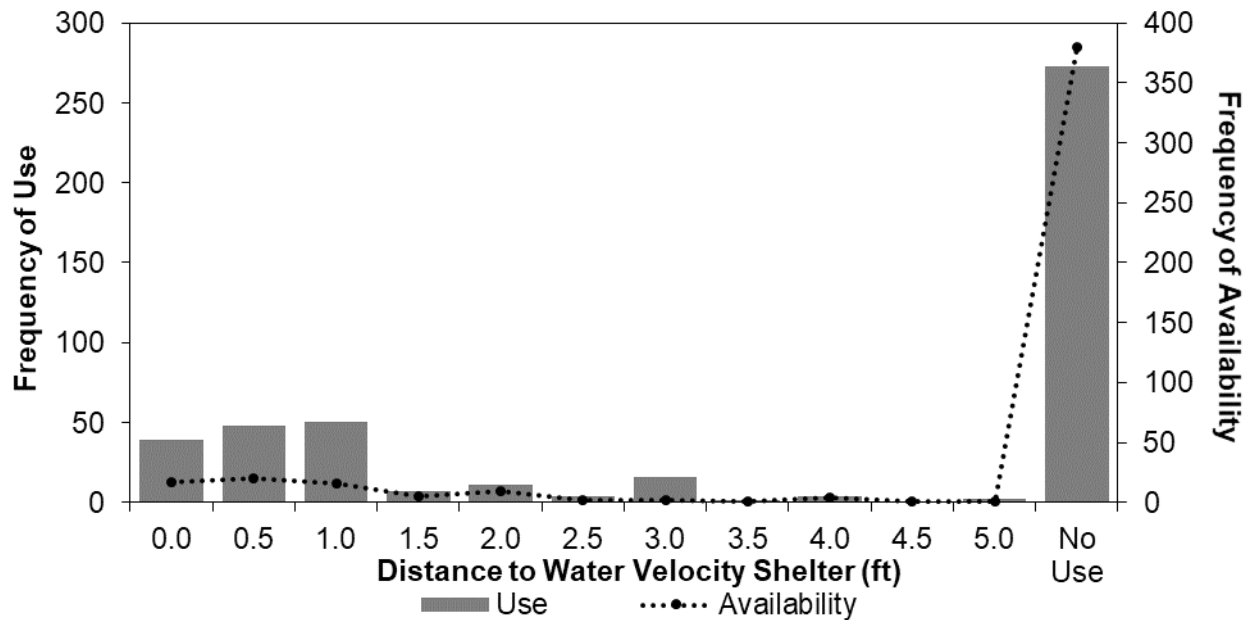


Figure E-9. Frequency distribution of distance to water velocity shelter for <6 cm steelhead habitat use versus habitat availability.

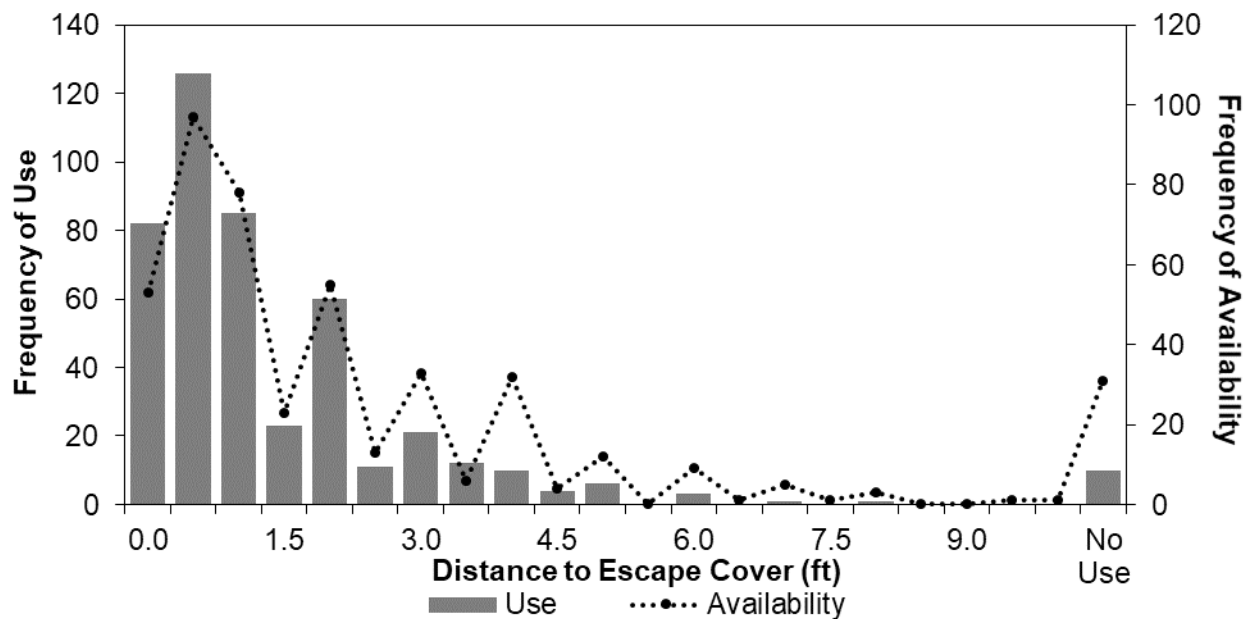


Figure E-10. Frequency distribution of distance to escape cover for <6 cm steelhead habitat use versus habitat availability.

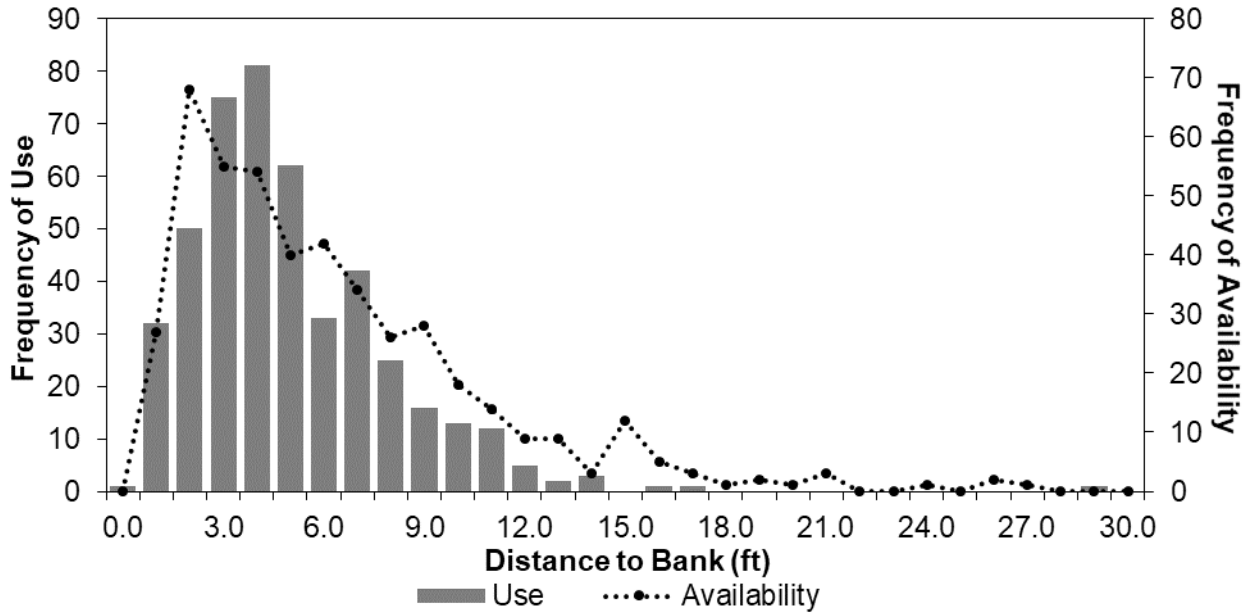


Figure E-11. Frequency distribution of distance to bank for <6 cm steelhead habitat use versus habitat availability.

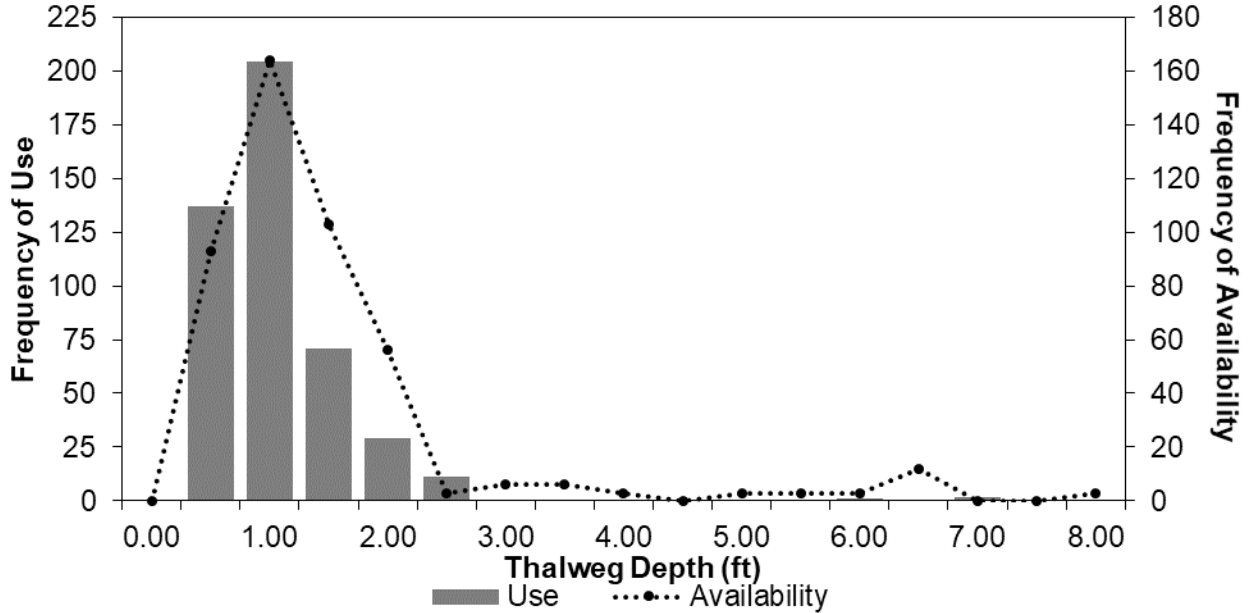


Figure E-12. Frequency distribution of thalweg depth for <6 cm steelhead habitat use versus habitat availability.



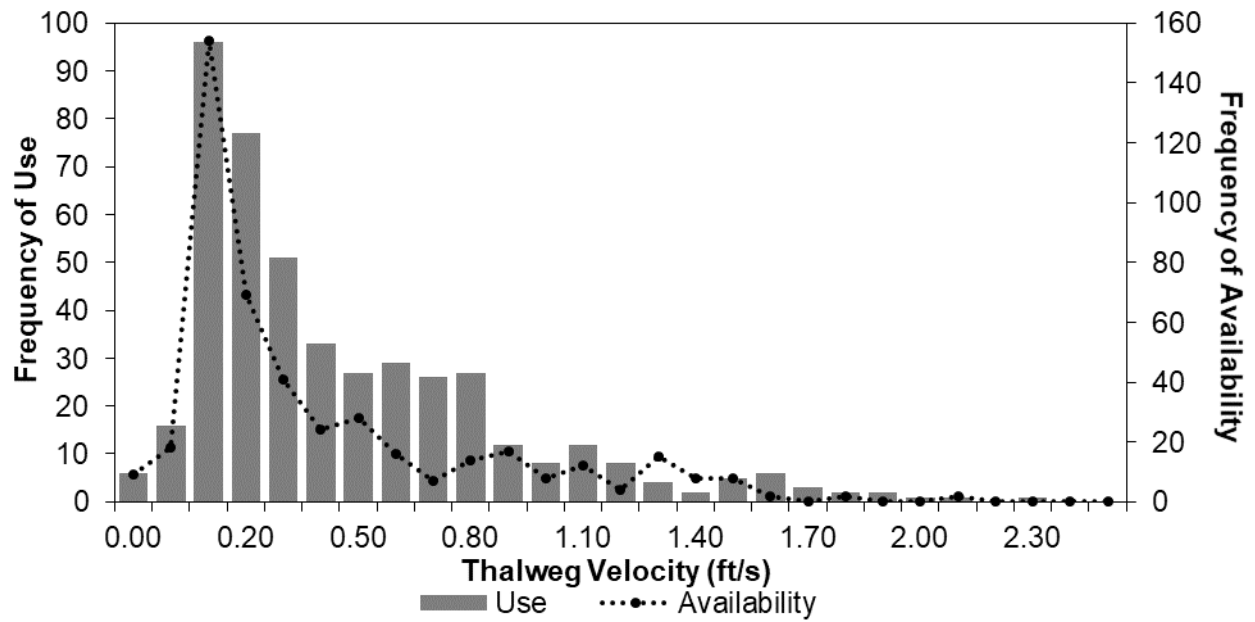


Figure E-13. Frequency distribution of thalweg velocity for <6 cm steelhead habitat use versus habitat availability.

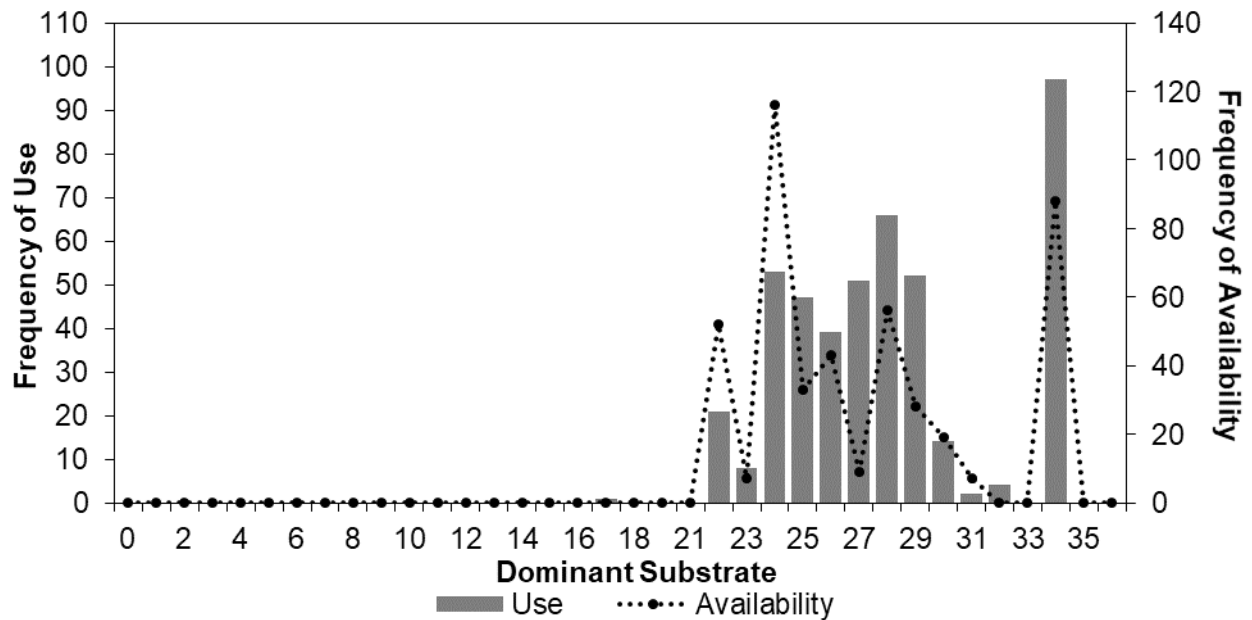


Figure E-14. Frequency distribution of dominant substrate for <6 cm steelhead habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

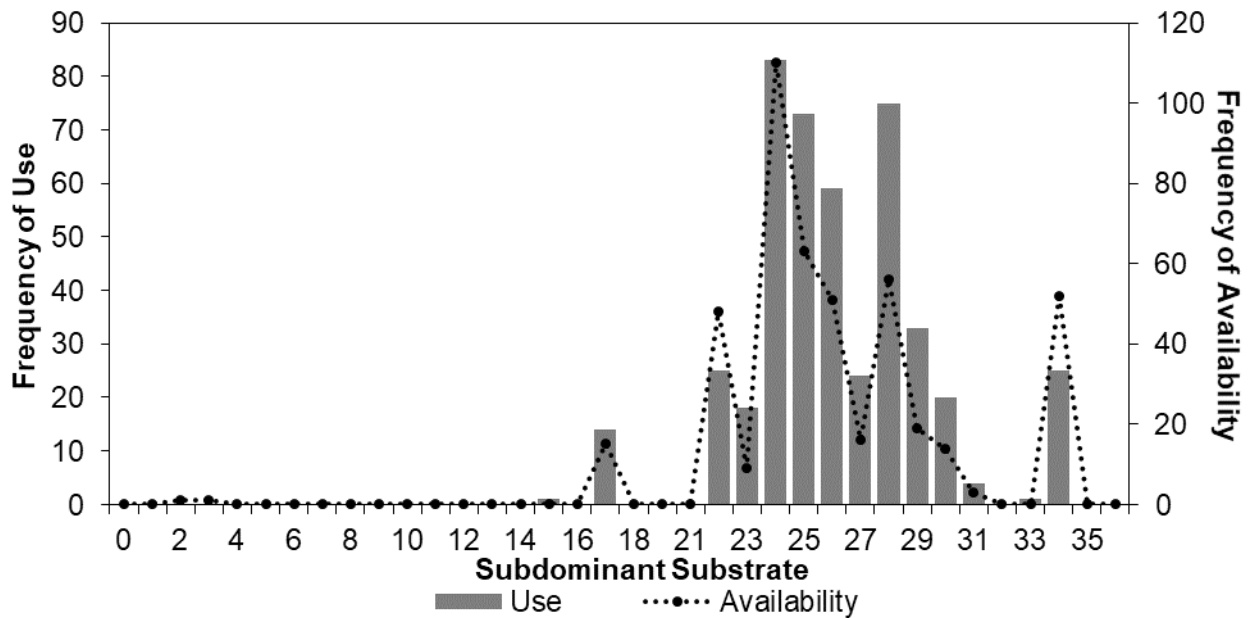


Figure E-15. Frequency distribution of subdominant substrate for <6 cm steelhead habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

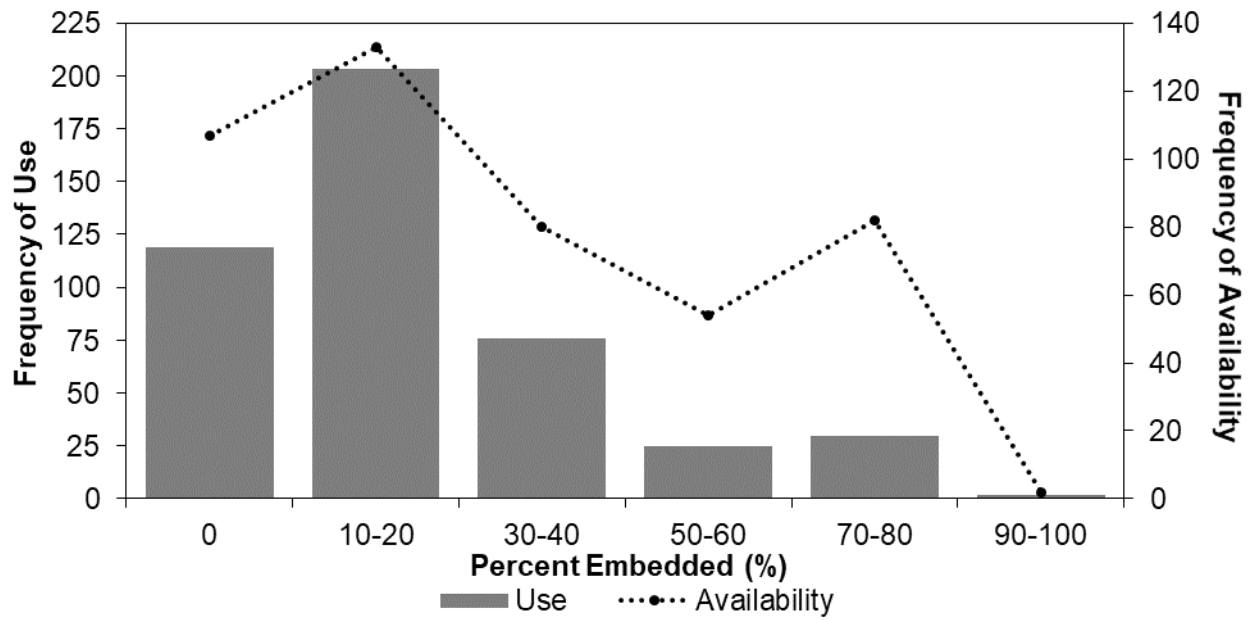


Figure E-16. Frequency distribution of substrate percent embeddedness for <6 cm steelhead habitat use versus habitat availability.

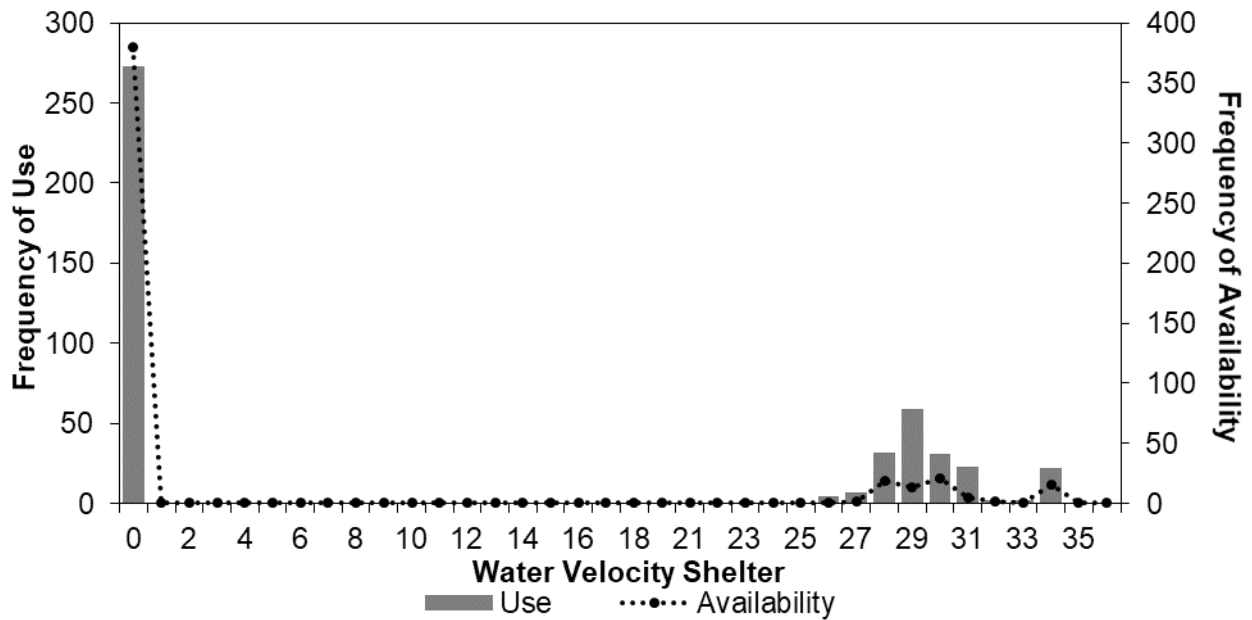


Figure E-17. Frequency distribution of water velocity shelter for <6 cm steelhead habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

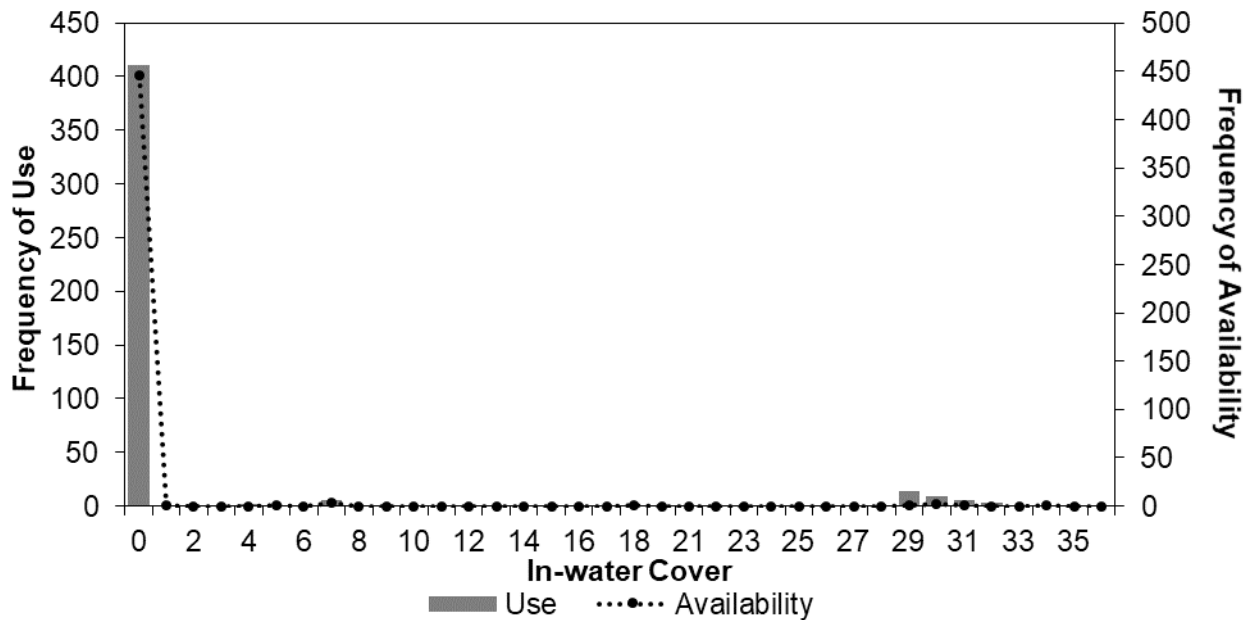


Figure E-18. Frequency distribution of in-water cover for <6 cm steelhead habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

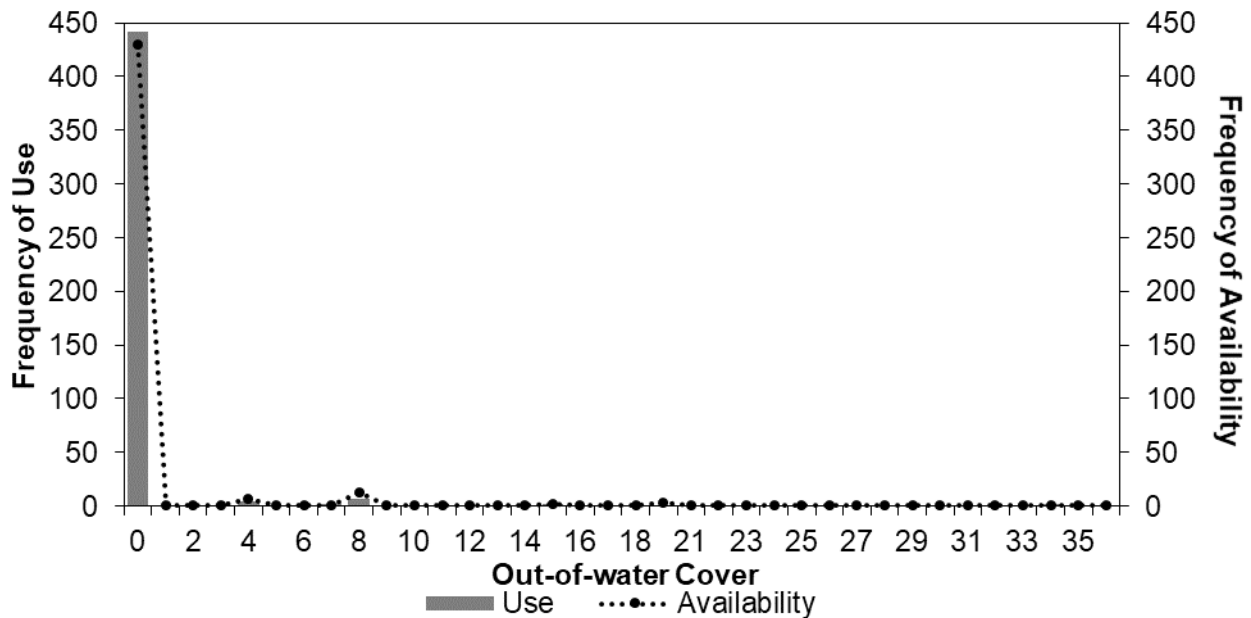


Figure E-19. Frequency distribution of out-of-water cover for <6 cm steelhead habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

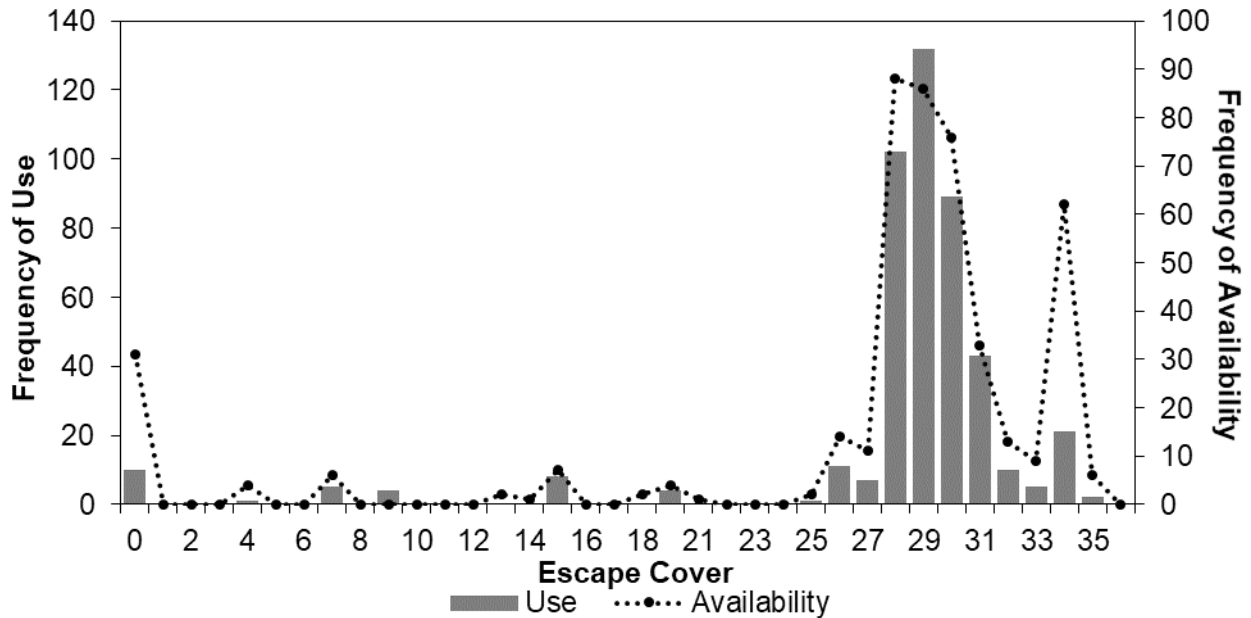


Figure E-20. Frequency distribution of escape cover for <6 cm steelhead habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank



## APPENDIX F: SUMMER $\geq 6$ CM STEELHEAD DATASET

### $\geq 6$ cm Steelhead Fish Observation Figures

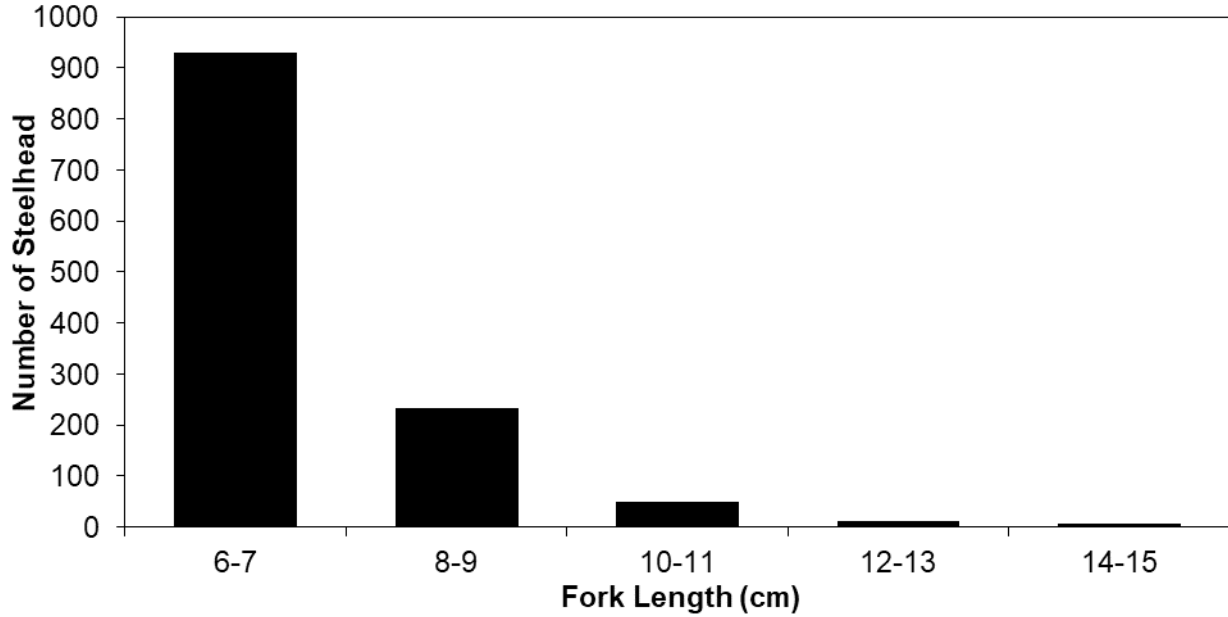


Figure F-1.  $\geq 6$  cm steelhead fork length observations.

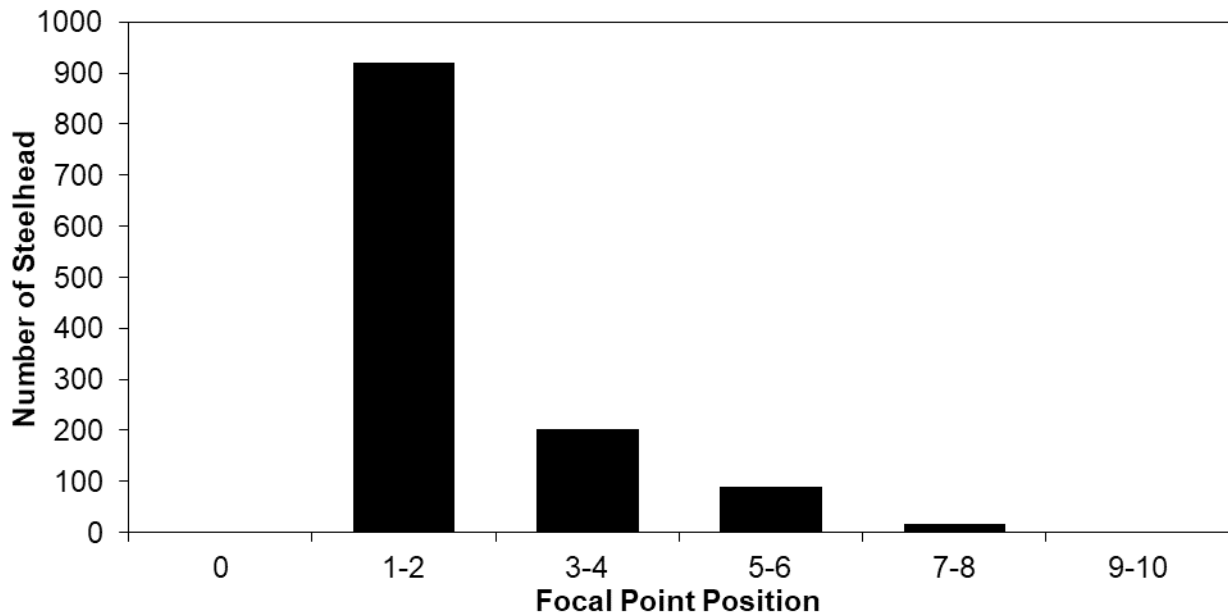


Figure F-2.  $\geq 6$  cm steelhead focal point position observations. Focal position zero signified the bottom of the water column while ten signified the top. The scale of the focal position varied depending on the water depth at the point of observation.

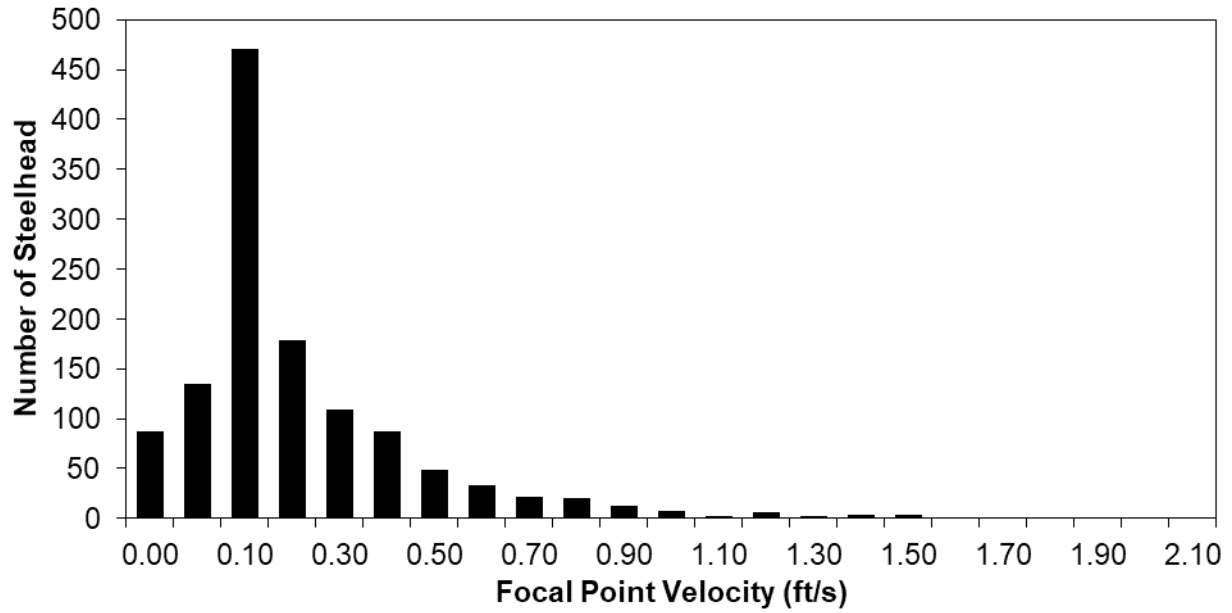


Figure F-3.  $\geq 6$  cm steelhead focal point velocity observations.

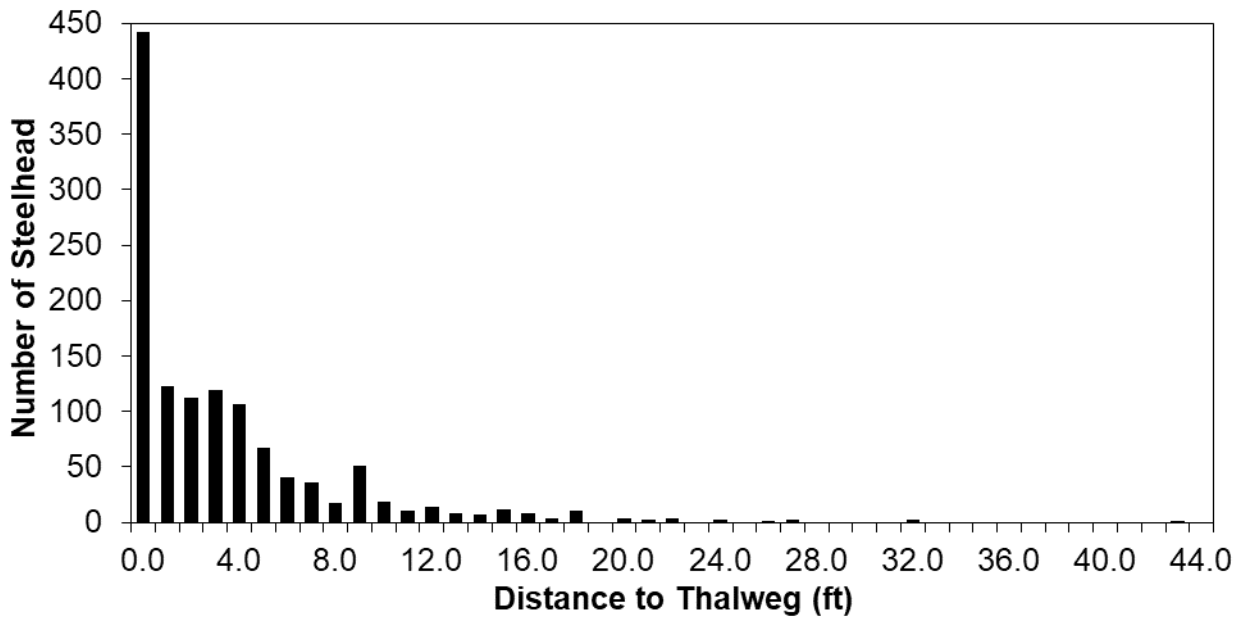


Figure F-4.  $\geq 6$  cm steelhead distance to thalweg observations.

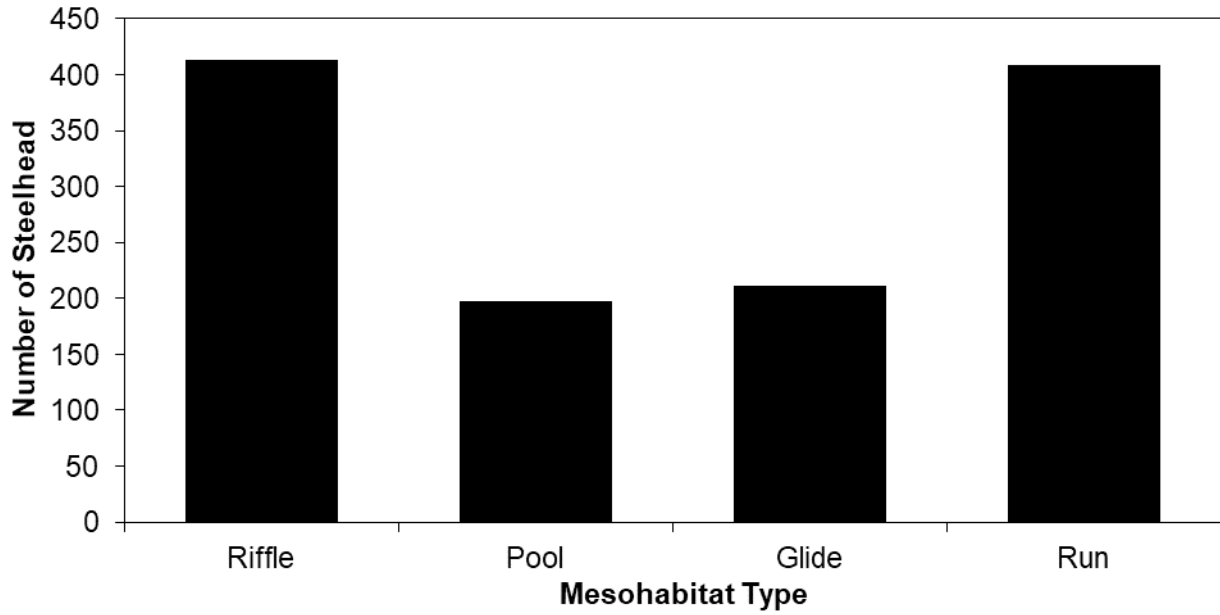


Figure F-5.  $\geq 6$  cm steelhead observed in each mesohabitat type.

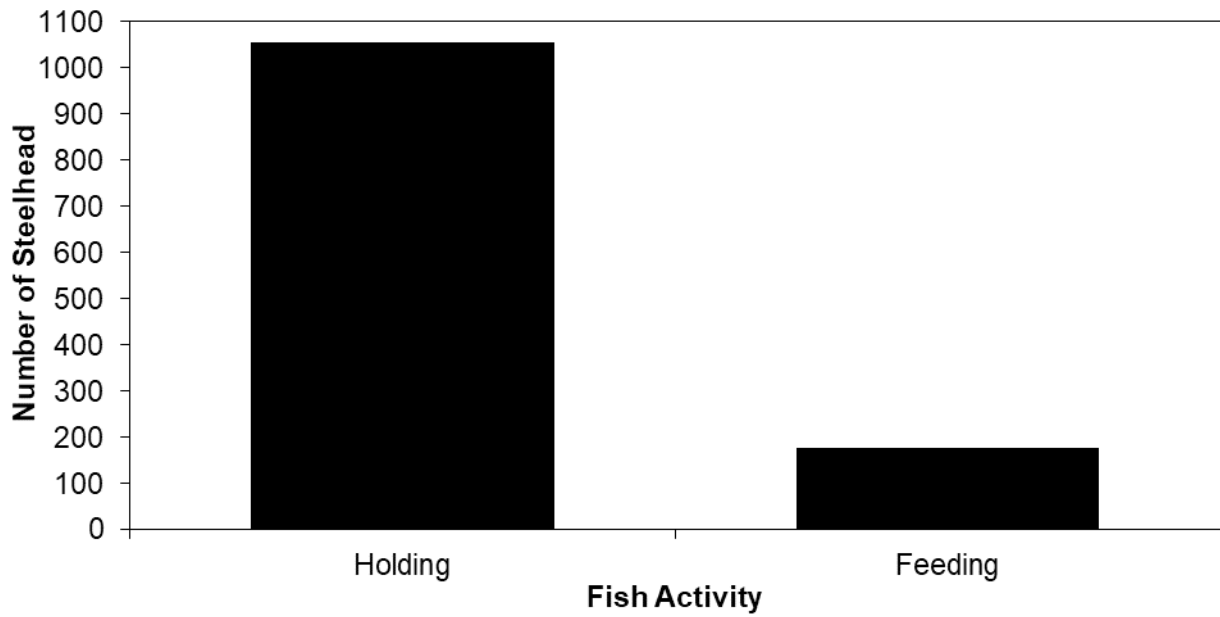


Figure F-6.  $\geq 6$  cm steelhead fish activity observations.

### ≥6 cm Steelhead Habitat Use vs. Availability Figures

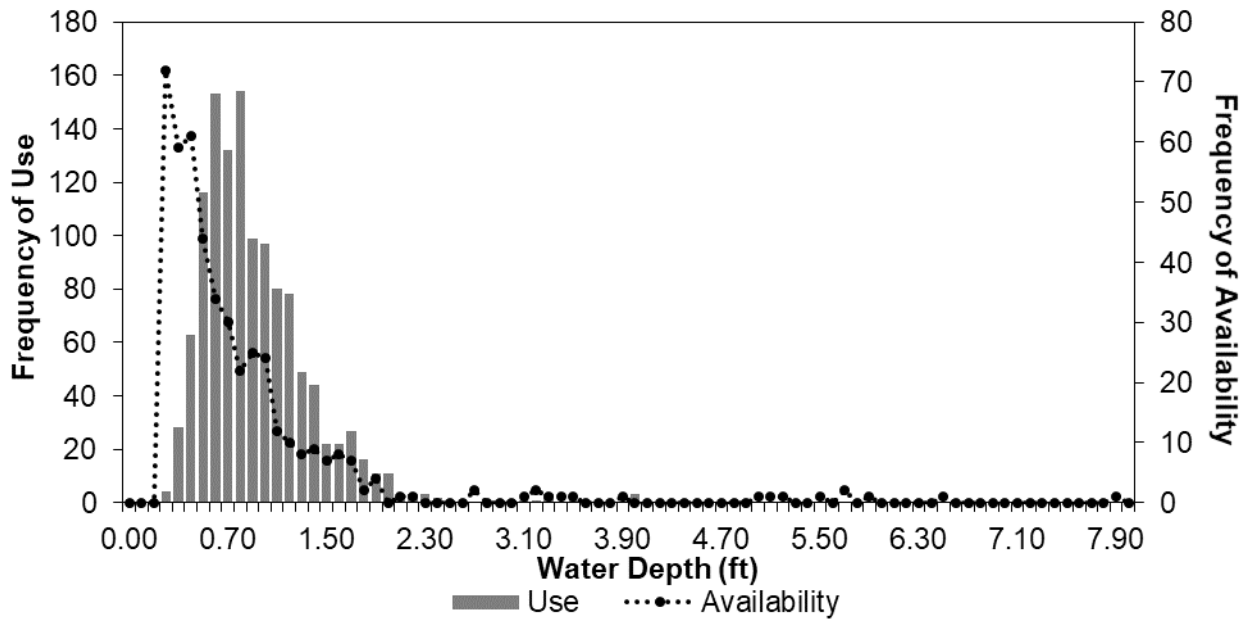


Figure F-7. Frequency distribution of water depth for ≥6 cm steelhead habitat use versus habitat availability.

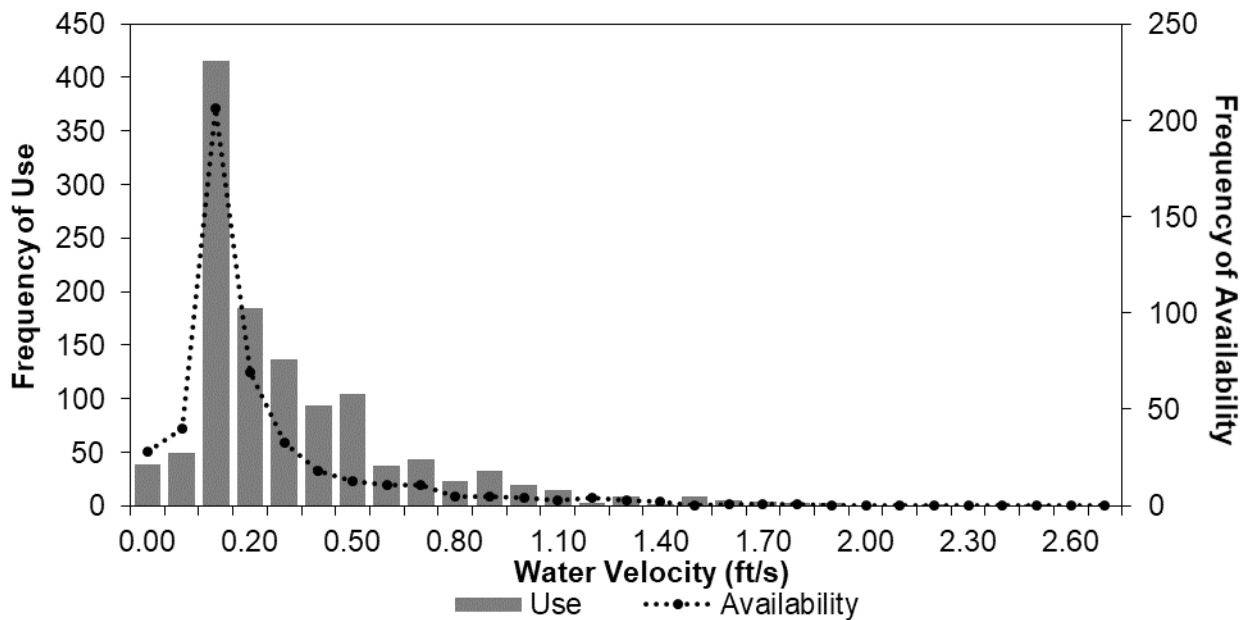


Figure F-8. Frequency distribution of water velocity for ≥6 cm steelhead habitat use versus habitat availability.

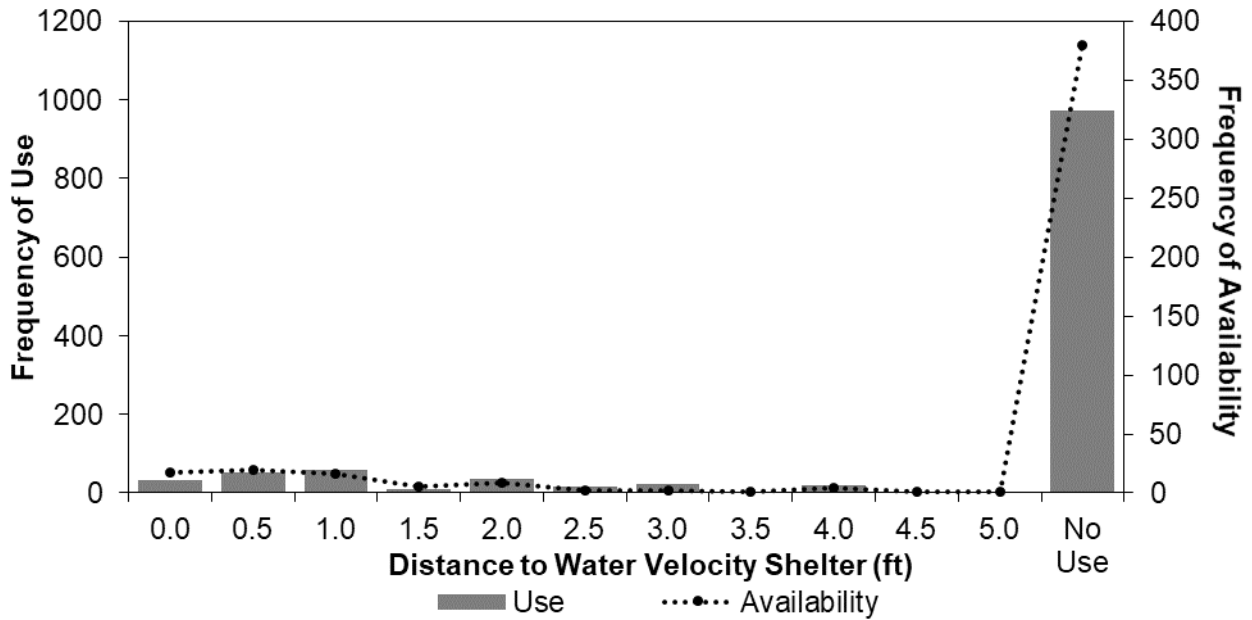


Figure F-9. Frequency distribution of distance to water velocity shelter for  $\geq 6$  cm steelhead habitat use versus habitat availability.

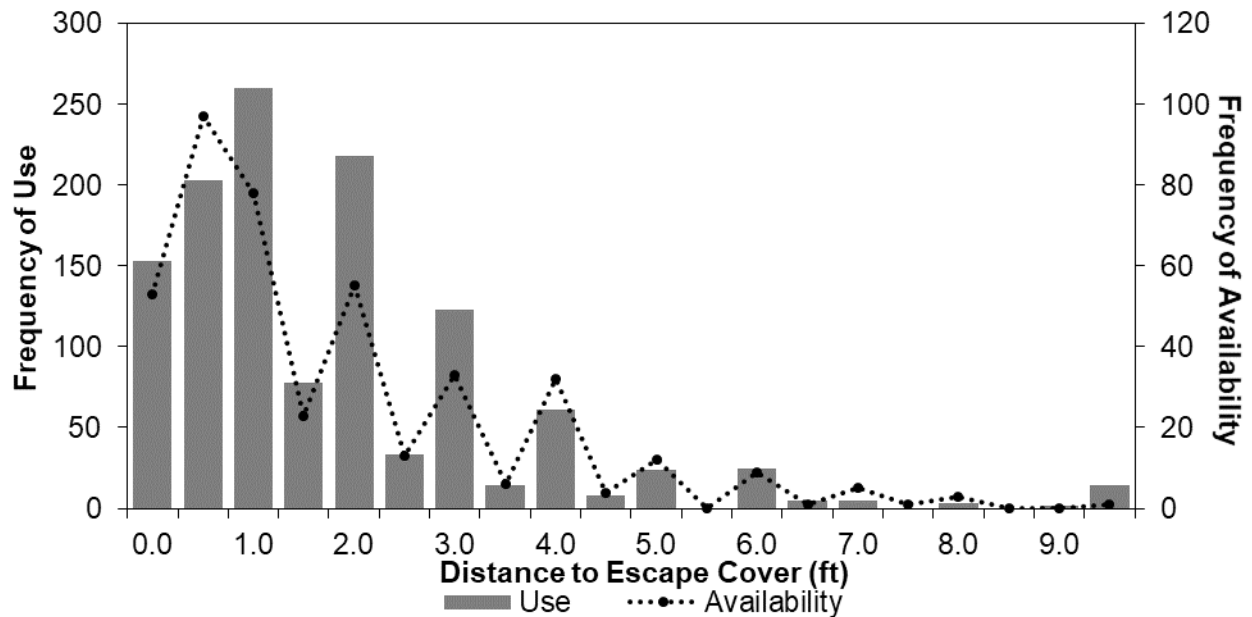


Figure F-10. Frequency distribution of distance to escape cover for  $\geq 6$  cm steelhead habitat use versus habitat availability.

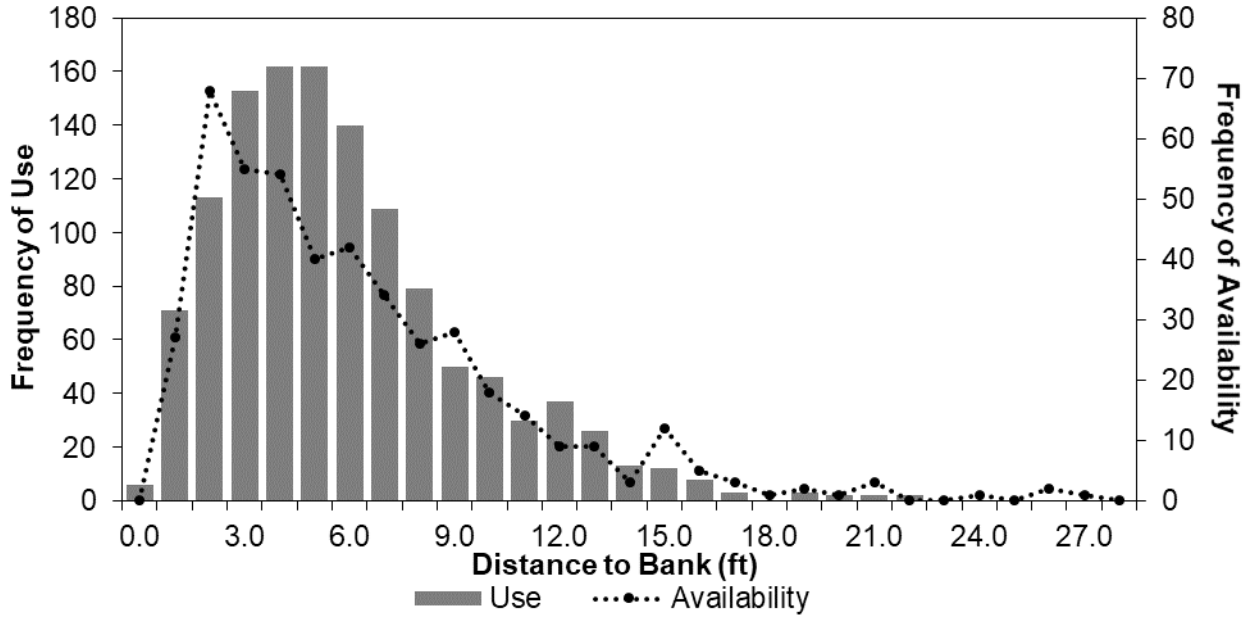


Figure F-11. Frequency distribution of distance to bank for  $\geq 6$  cm steelhead habitat use versus habitat availability.

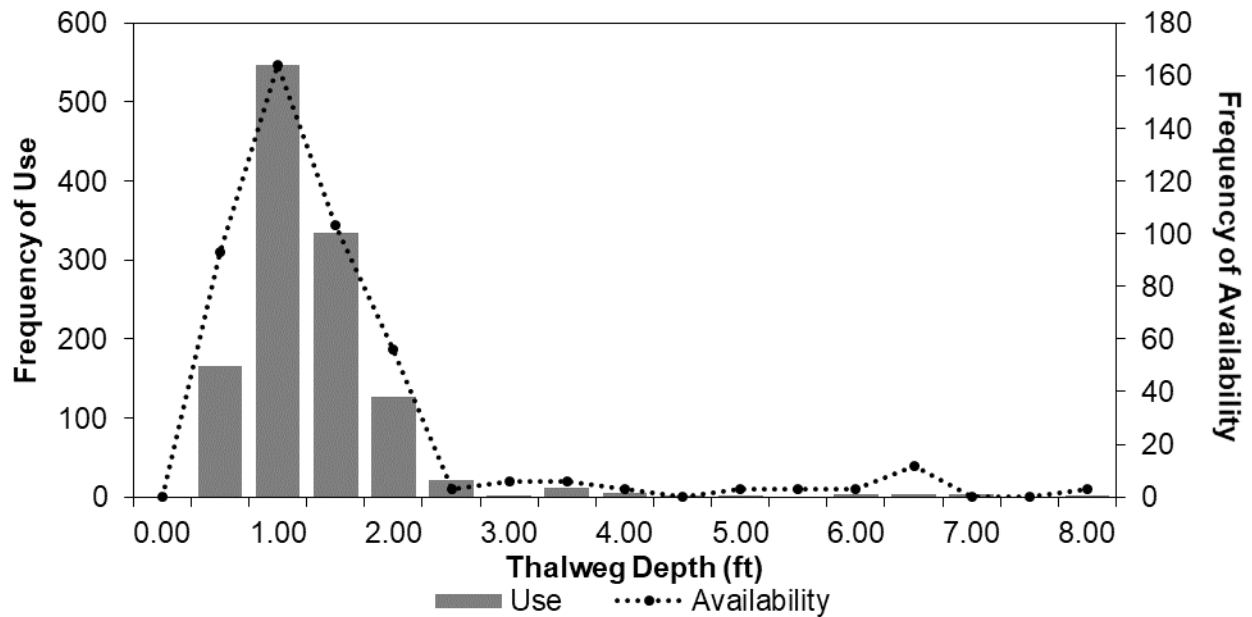


Figure F-12. Frequency distribution of thalweg depth for  $\geq 6$  cm steelhead habitat use versus habitat availability.

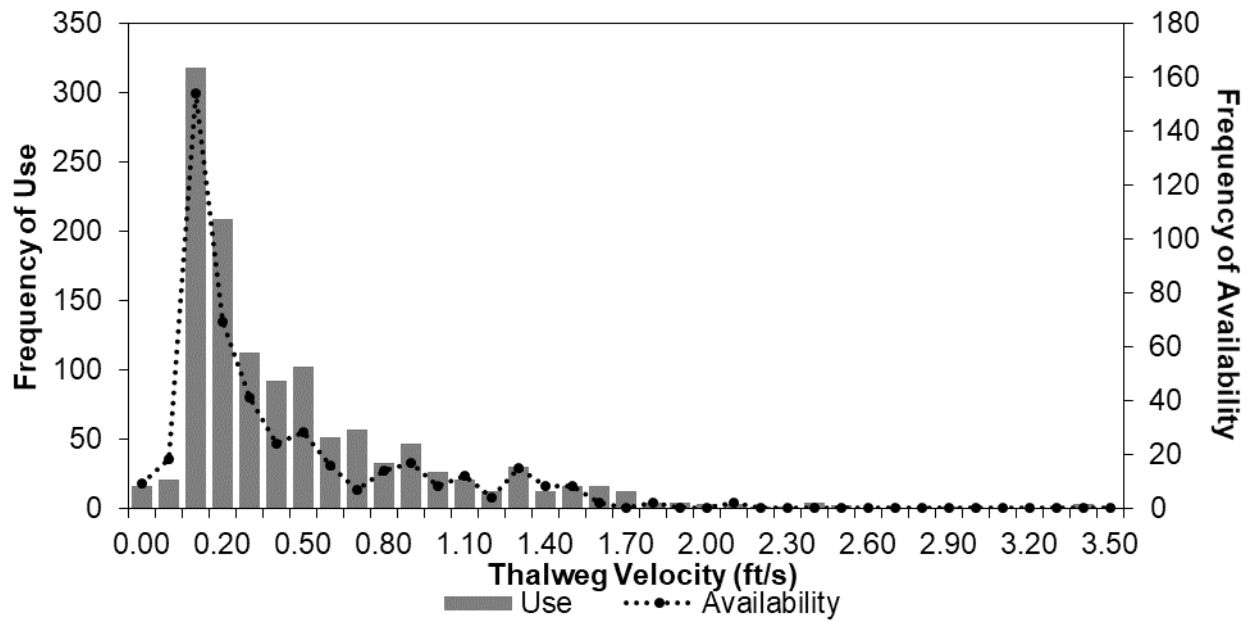


Figure F-13. Frequency distribution of thalweg velocity for  $\geq 6$  cm steelhead habitat use versus habitat availability.

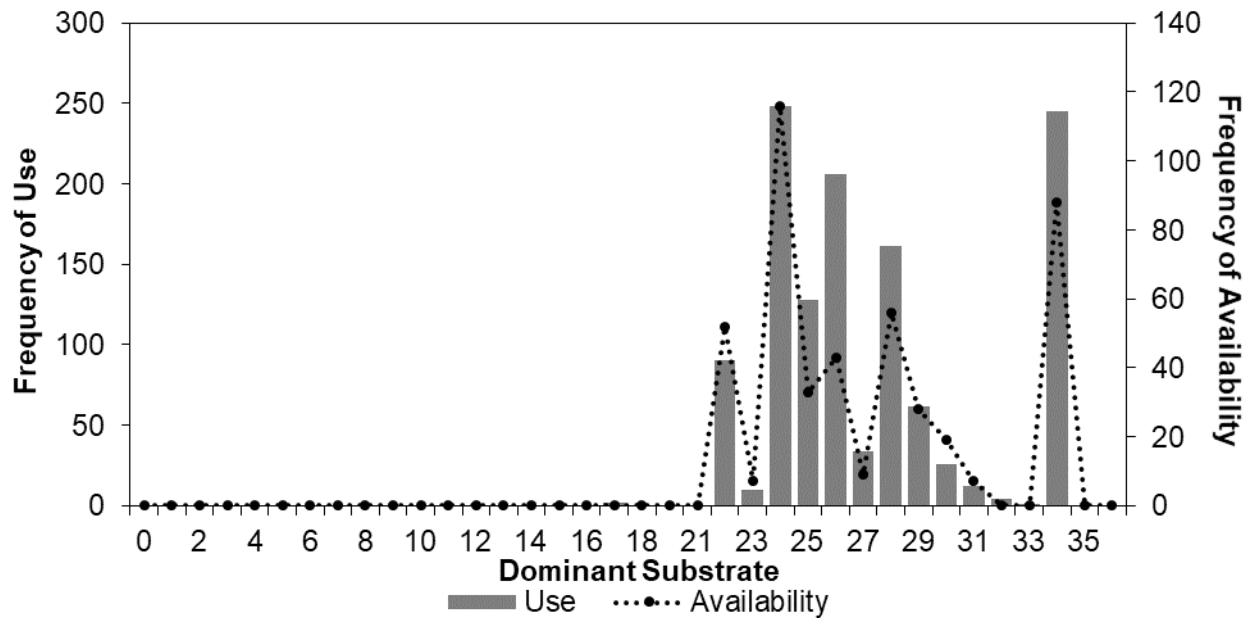


Figure F-14. Frequency distribution of dominant substrate for  $\geq 6$  cm steelhead habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank



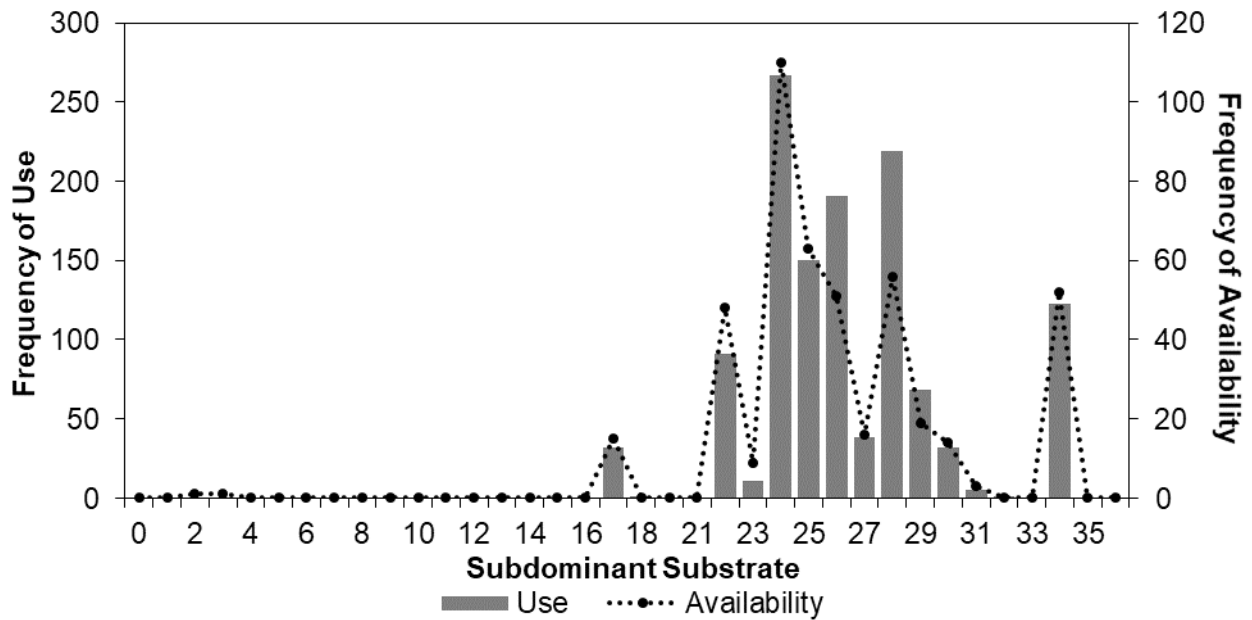


Figure F-15. Frequency distribution of subdominant substrate for  $\geq 6$  cm steelhead habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

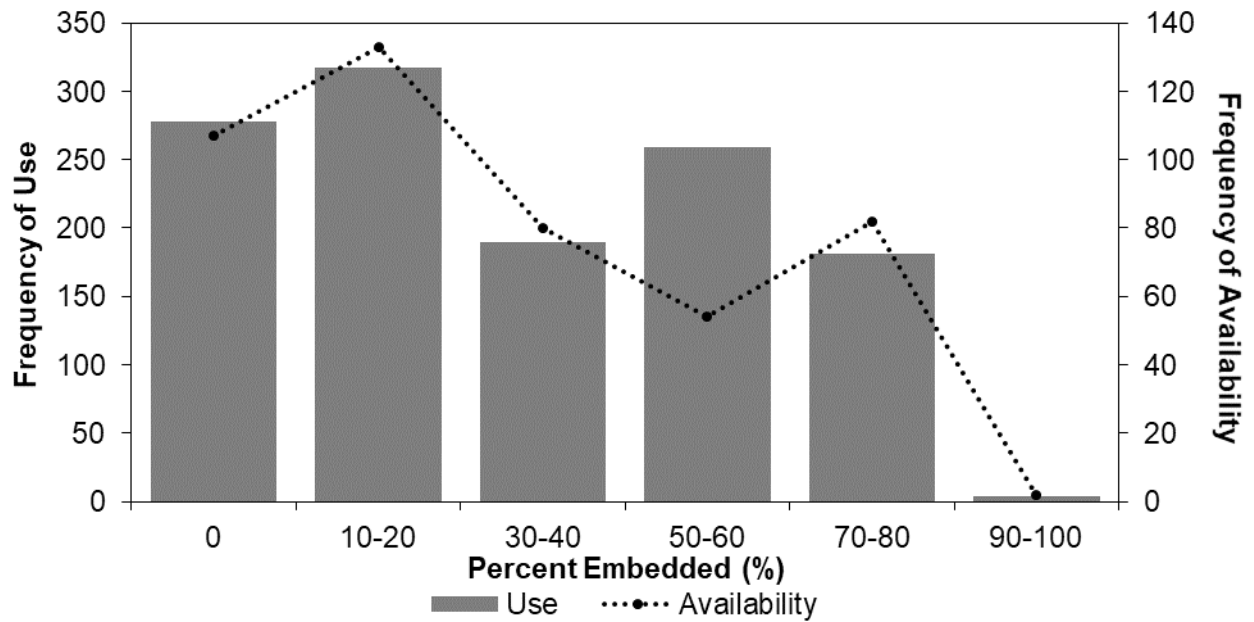


Figure F-16. Frequency distribution of substrate percent embeddedness for  $\geq 6$  cm steelhead habitat use versus habitat availability.

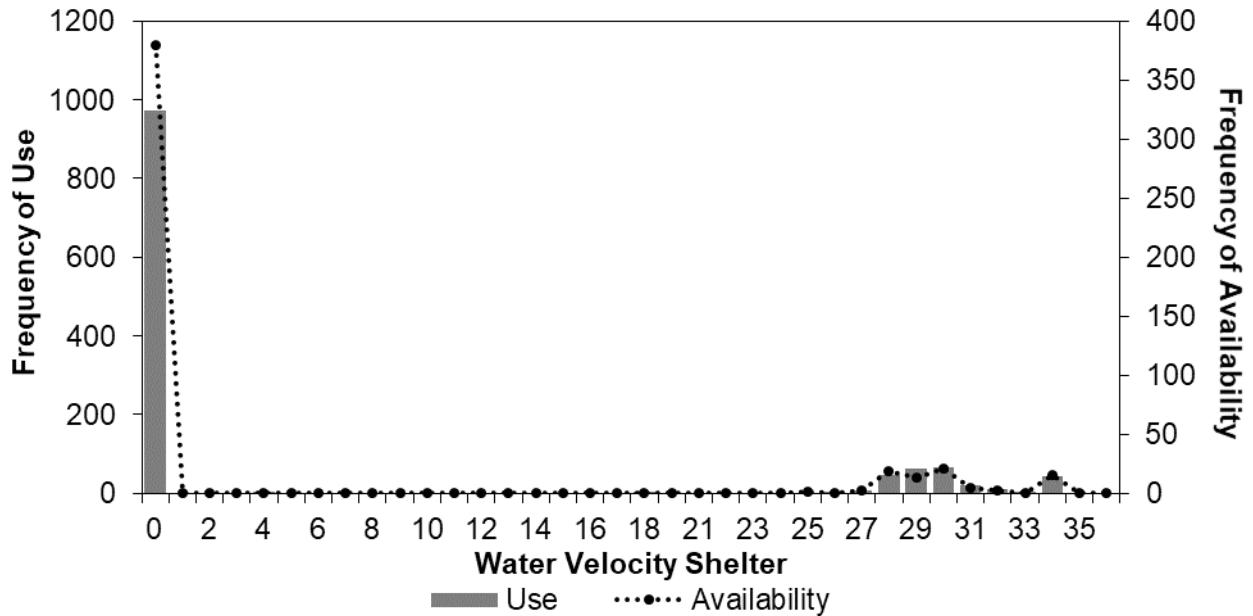


Figure F-17. Frequency distribution of water velocity shelter for  $\geq 6$  cm steelhead habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

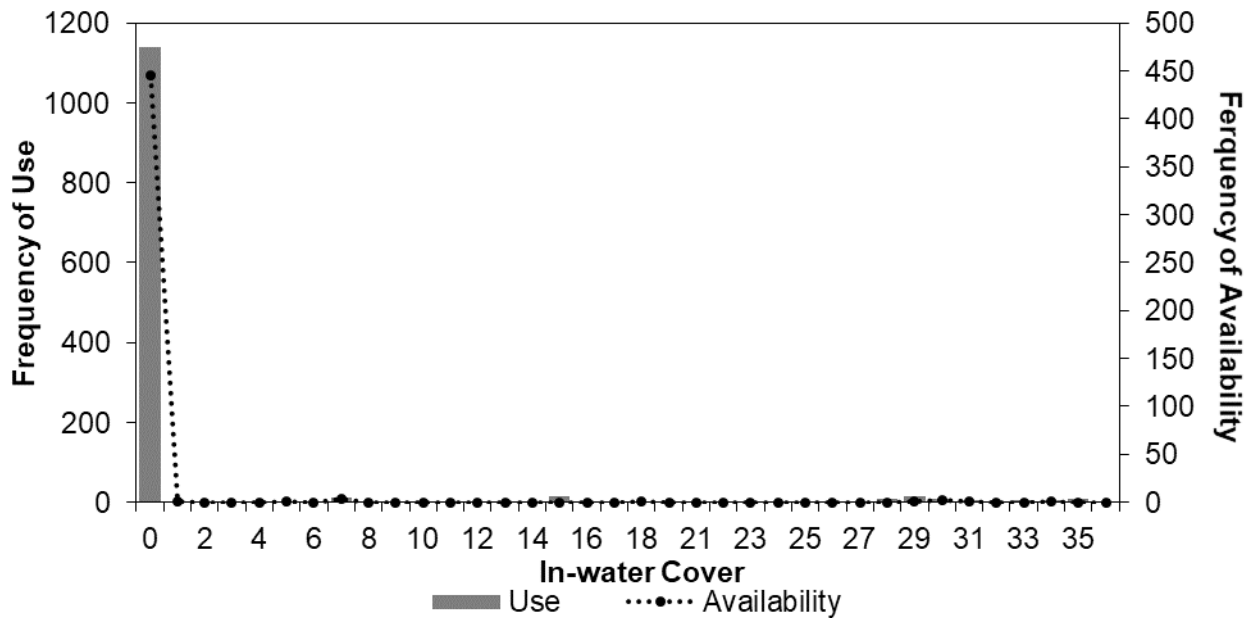


Figure F-18. Frequency distribution of in-water cover for  $\geq 6$  cm steelhead habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

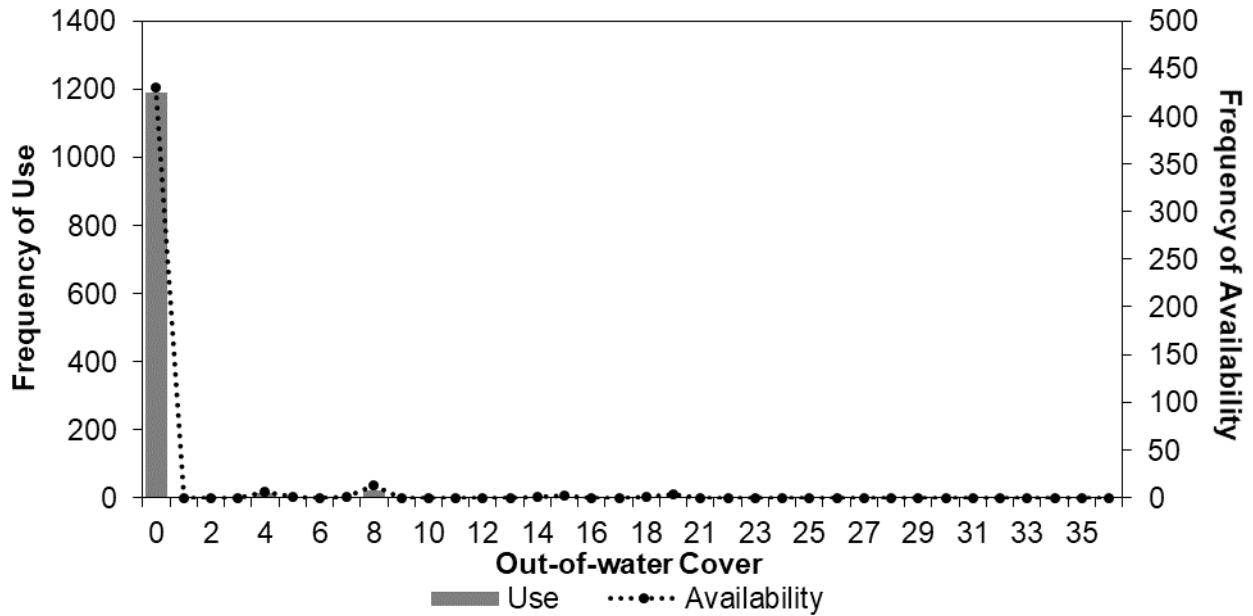


Figure F-19. Frequency distribution of out-of-water cover for  $\geq 6$  cm steelhead habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

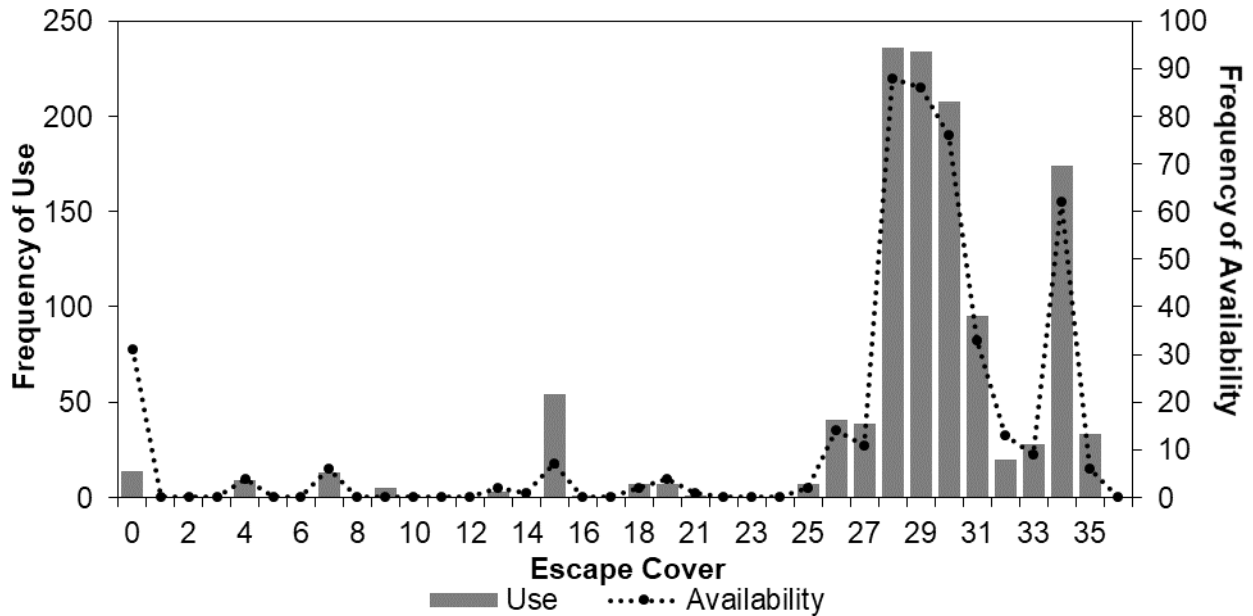


Figure F-20. Frequency distribution of escape cover for  $\geq 6$  cm steelhead habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

## APPENDIX G: SUMMER <6 CM COHO SALMON DATASET

### <6 cm Coho Salmon Fish Observation Figures

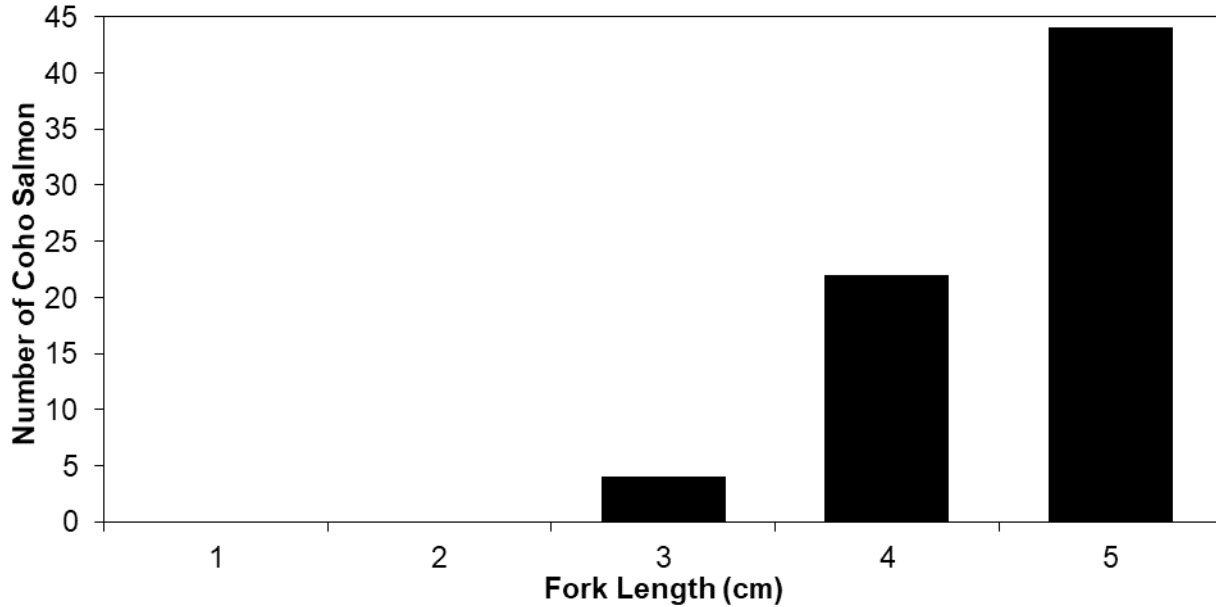


Figure G-1. <6 cm Coho Salmon fork length observations.

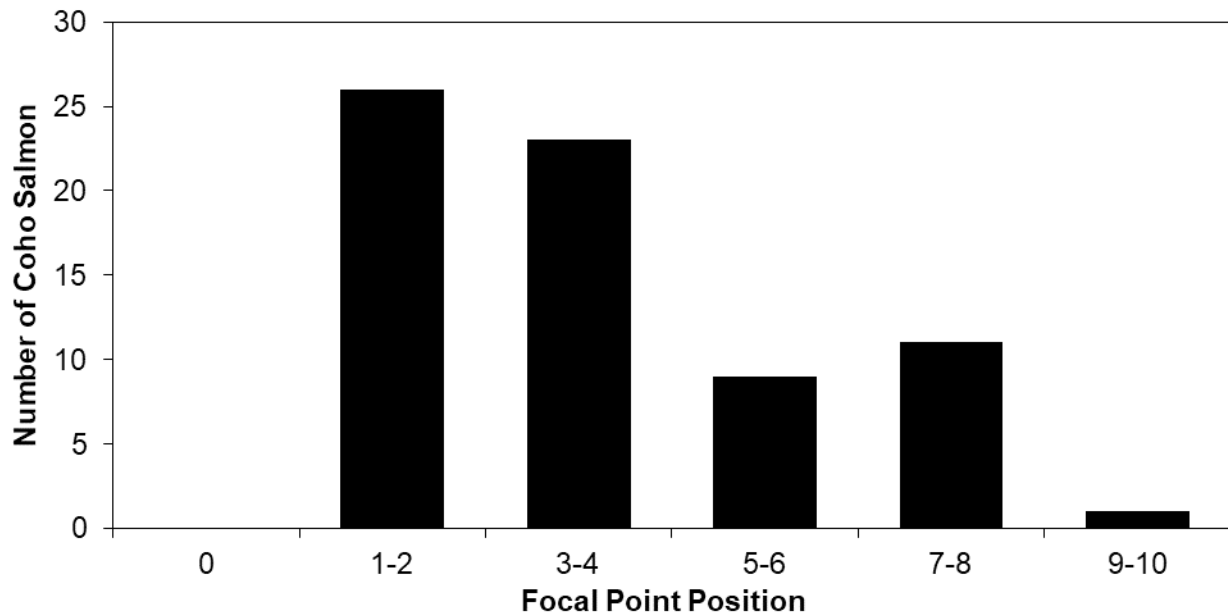


Figure G-2. <6 cm Coho Salmon focal point position observations. Focal position zero signified the bottom of the water column while ten signified the top. The scale of the focal position varied depending on the water depth at the point of observation.

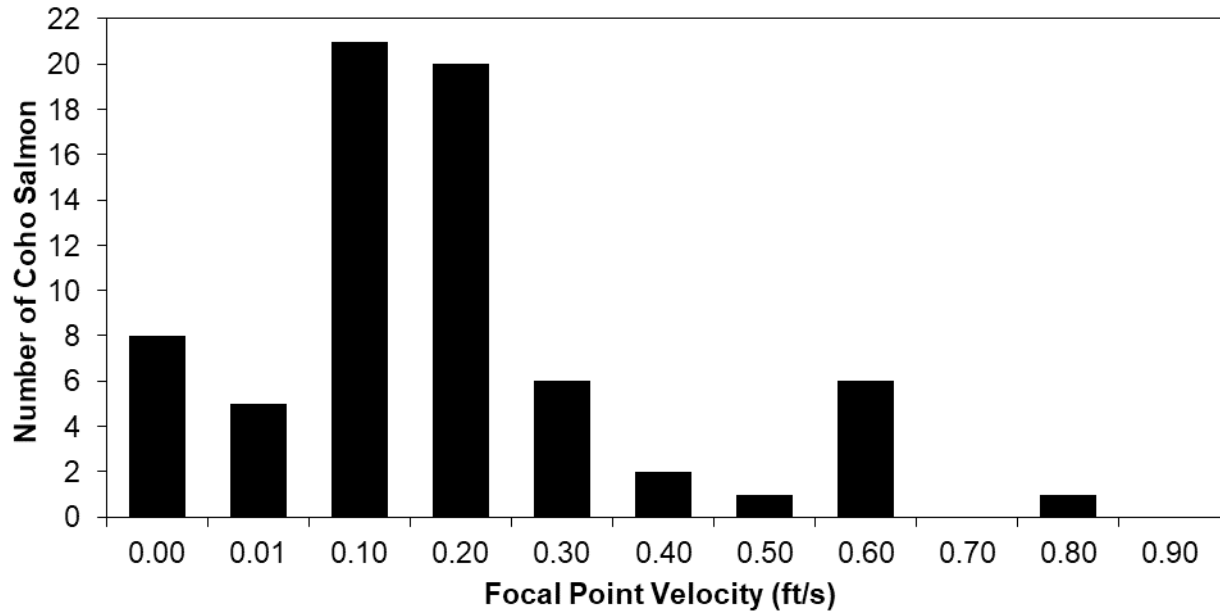


Figure G-3. <6 cm Coho Salmon focal point velocity observations.

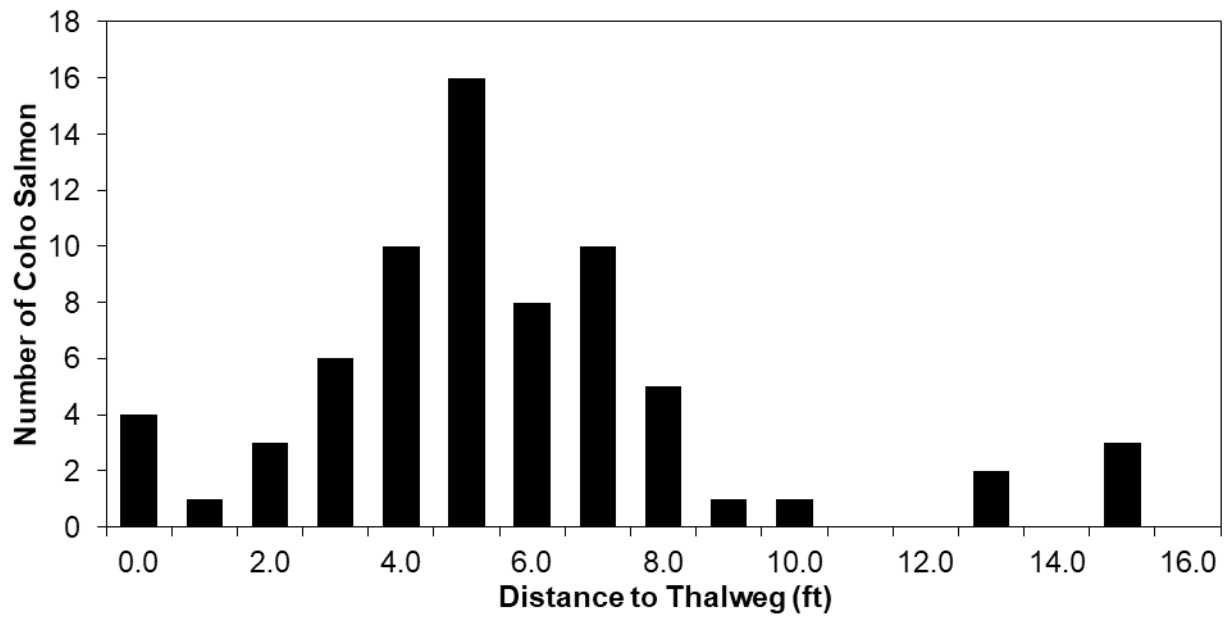


Figure G-4. <6 cm Coho Salmon distance to thalweg observations.



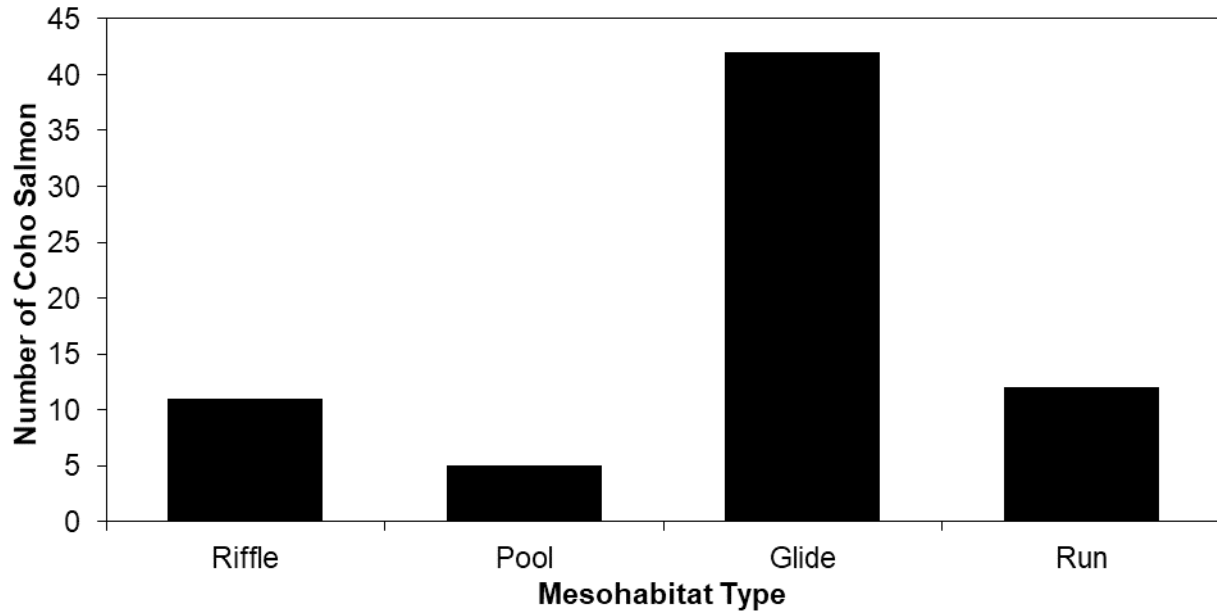


Figure G-5. <6 cm Coho Salmon observed in each mesohabitat type.

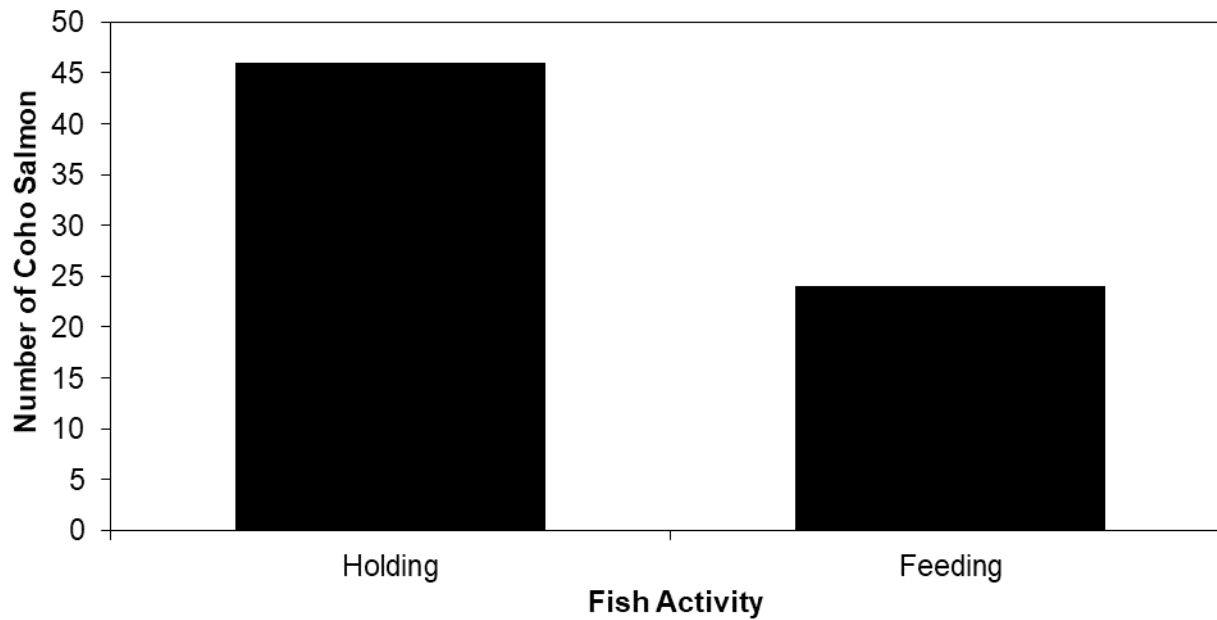


Figure G-6. <6 cm Coho Salmon fish activity observations.

### <6 cm Coho Salmon Habitat Use vs. Habitat Availability Figures

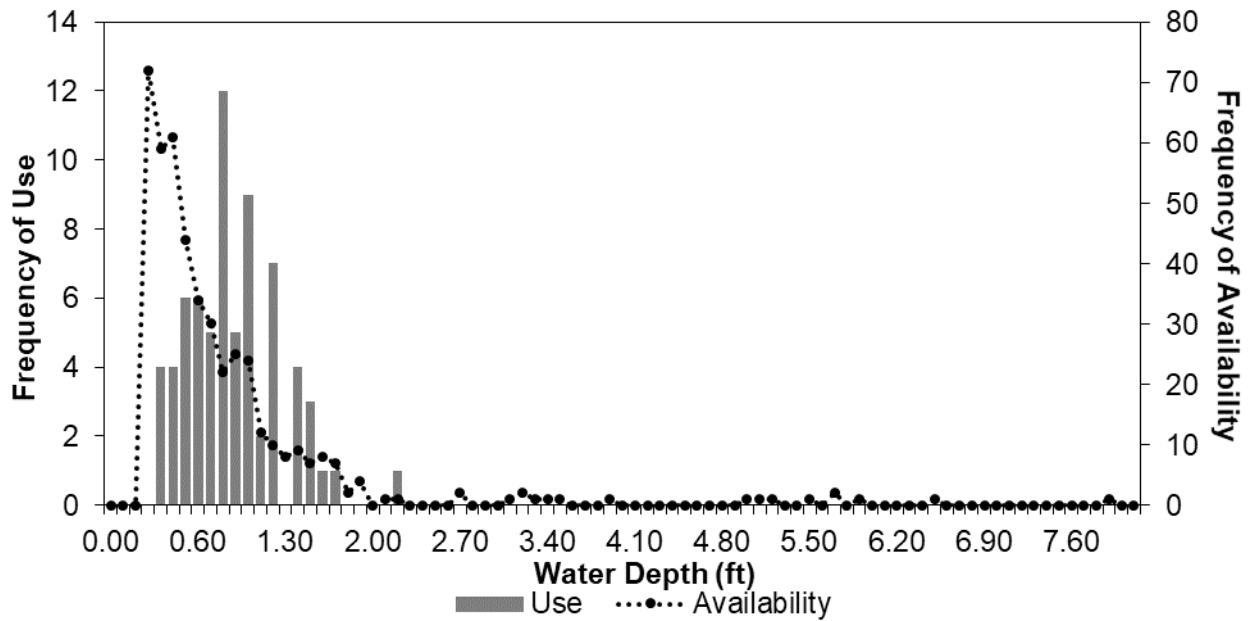


Figure G-7. Frequency distribution of water depth for <6 cm Coho Salmon habitat use versus habitat availability.

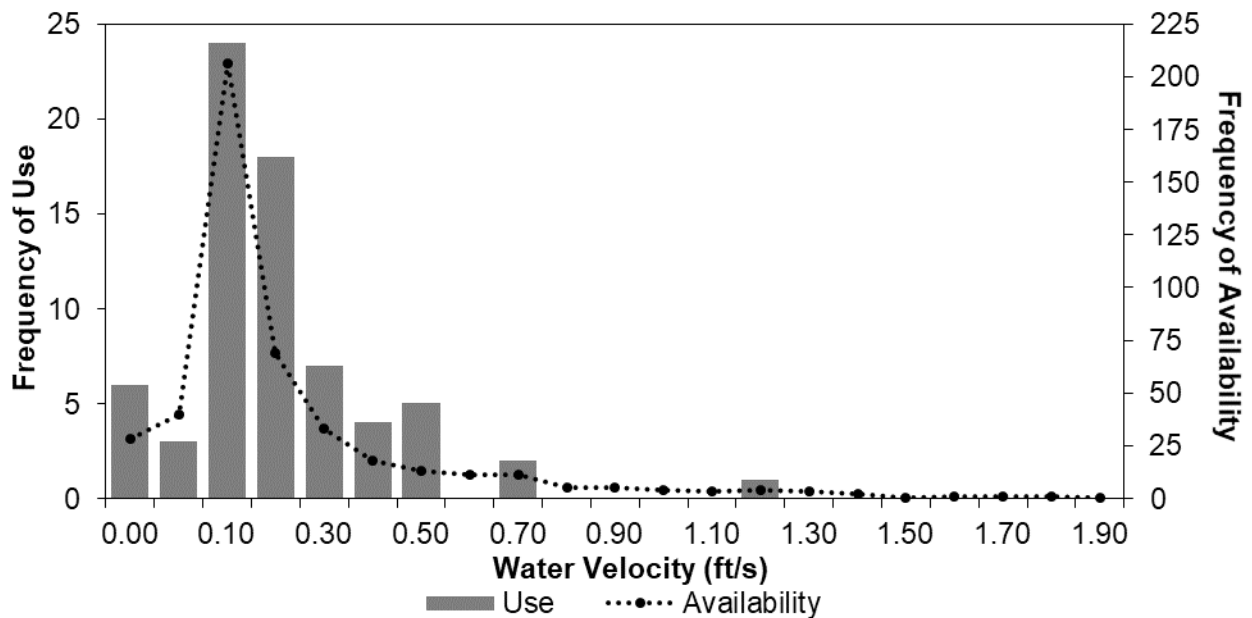


Figure G-8. Frequency distribution of water velocity for <6 cm Coho Salmon habitat use versus habitat availability.

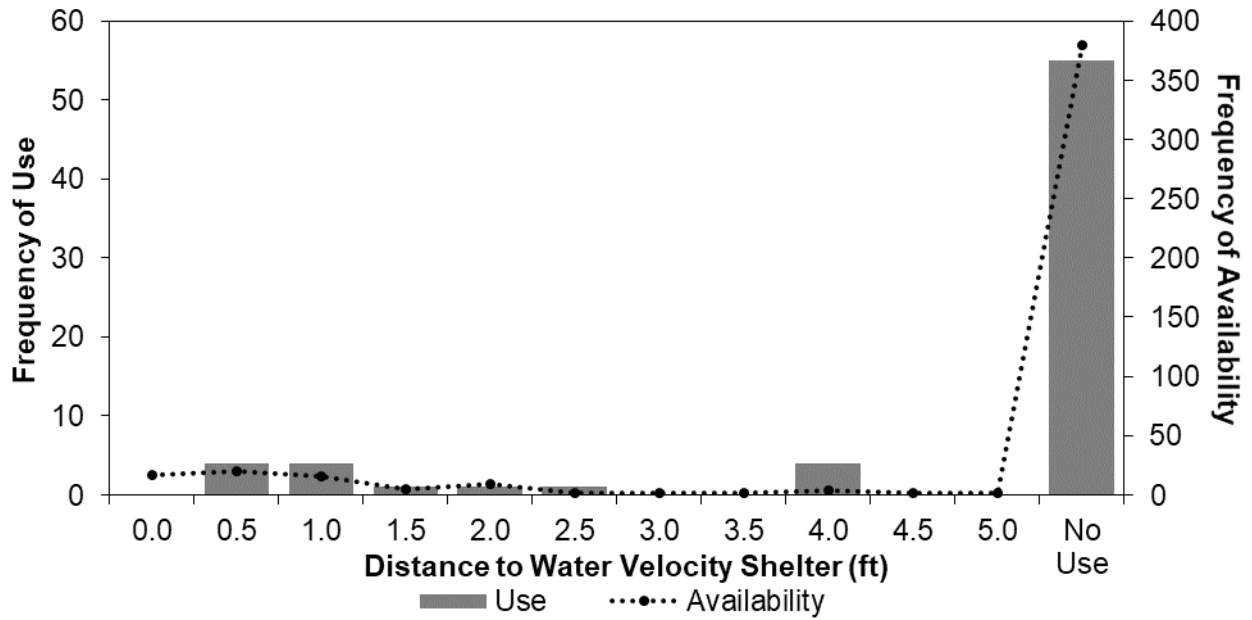


Figure G-9. Frequency distribution of distance to water velocity shelter for <6 cm Coho Salmon habitat use versus habitat availability.

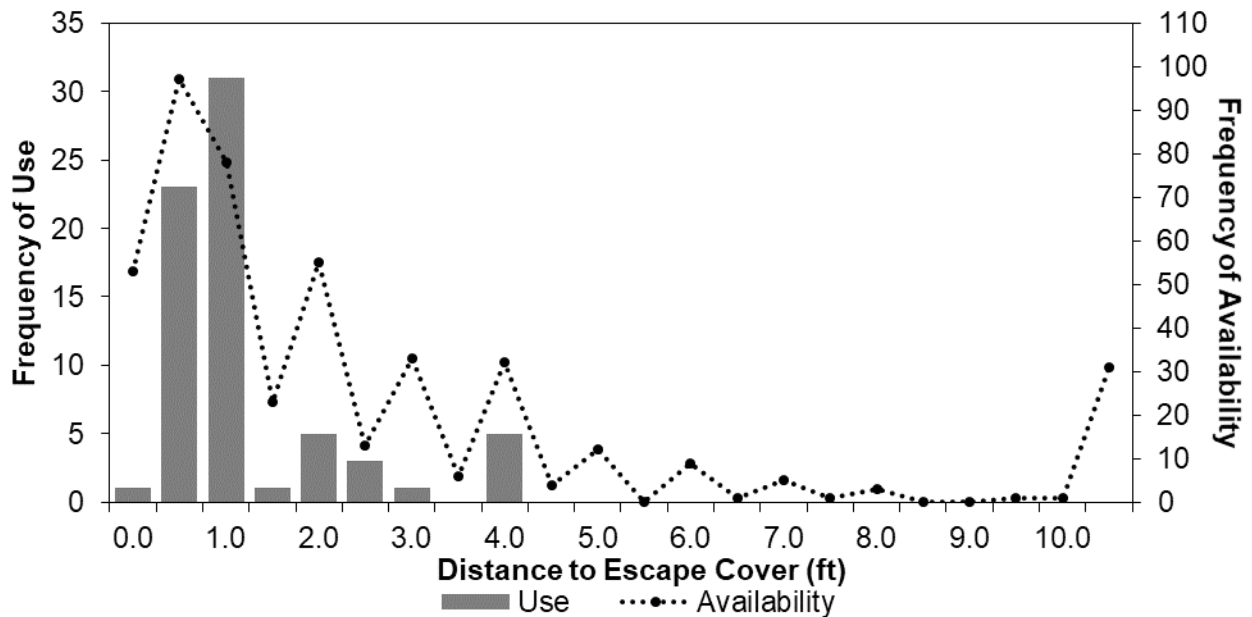


Figure G-10. Frequency distribution of distance to escape cover for <6 cm Coho Salmon habitat use versus habitat availability.

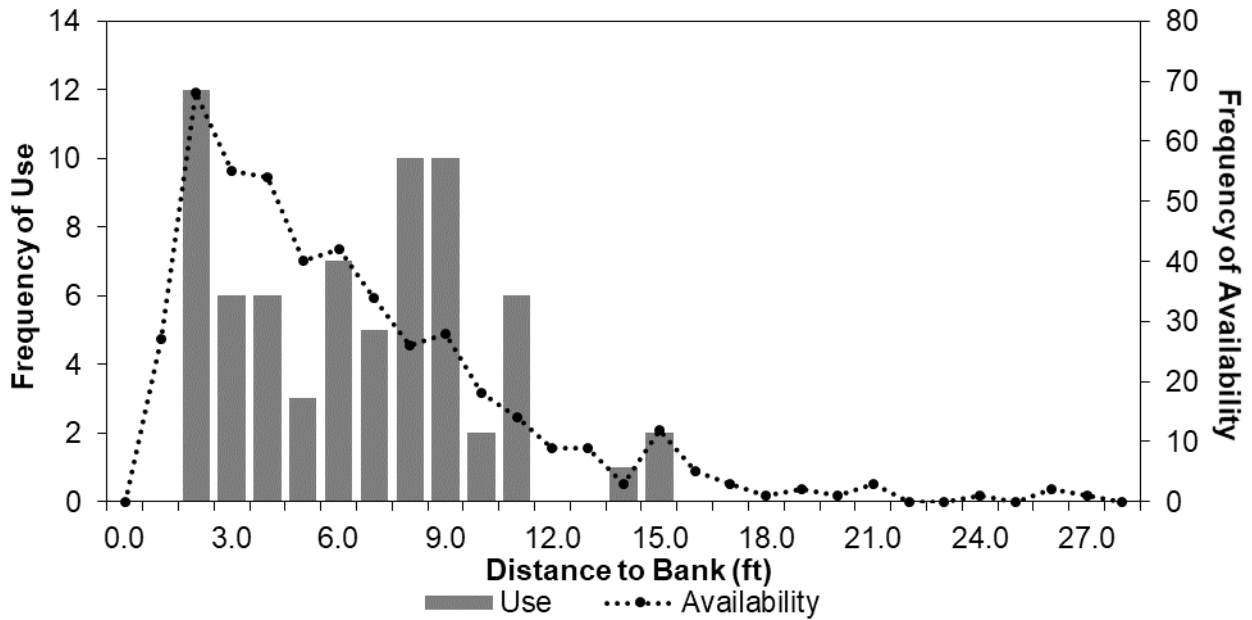


Figure G-11. Frequency distribution of distance to bank for <6 cm Coho Salmon habitat use versus habitat availability.

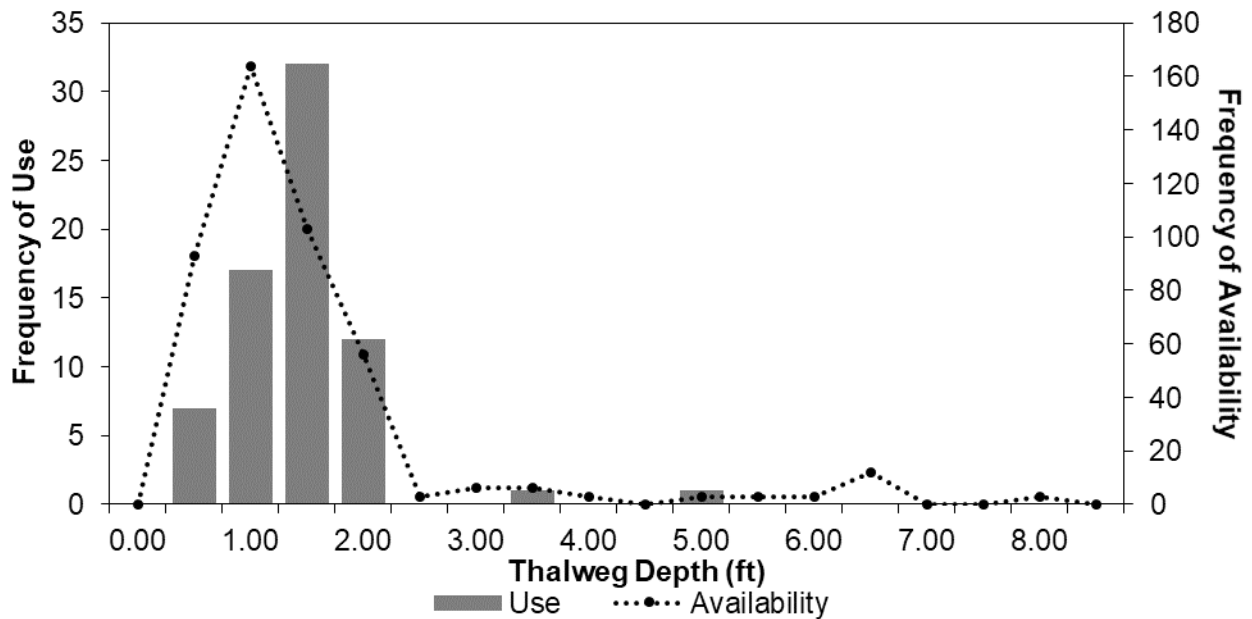


Figure G-12. Frequency distribution of thalweg depth for <6 cm Coho Salmon habitat use versus habitat availability.

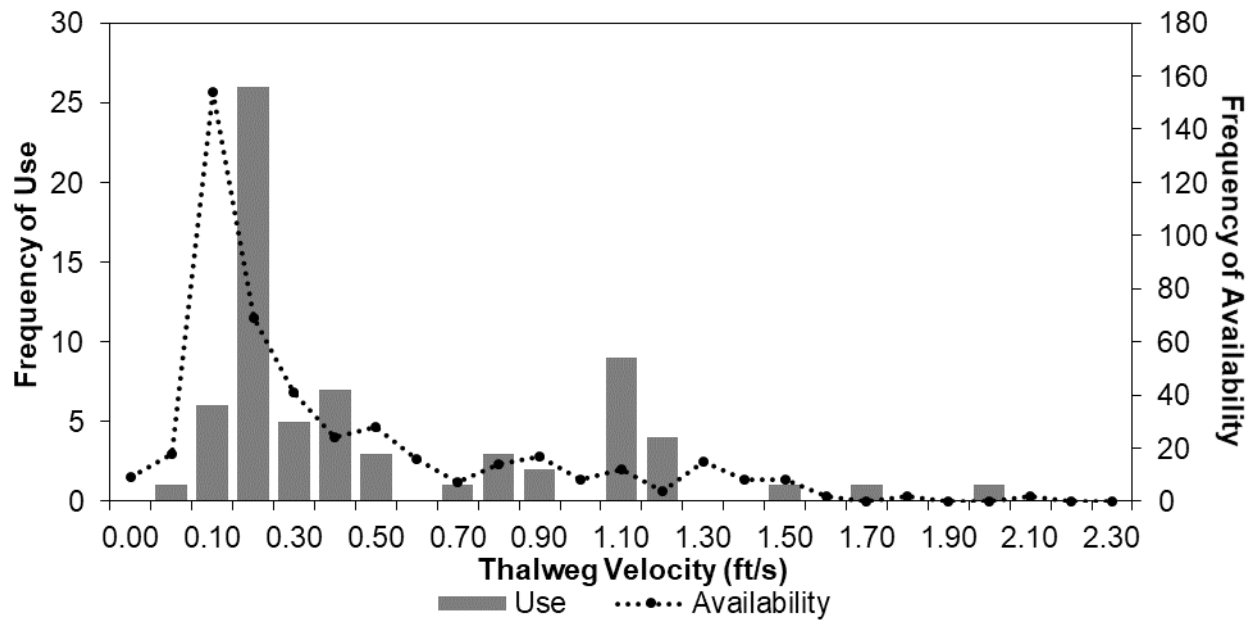


Figure G-13. Frequency distribution of thalweg velocity for <6 cm Coho Salmon habitat use versus habitat availability.

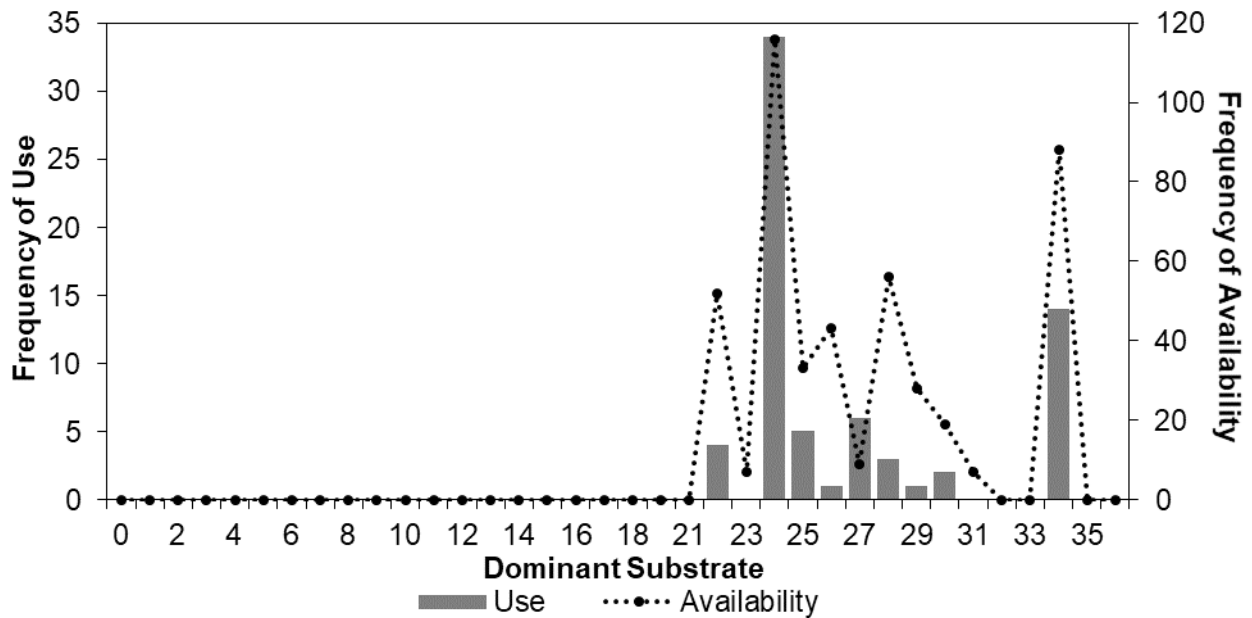


Figure G-14. Frequency distribution of dominant substrate for <6 cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

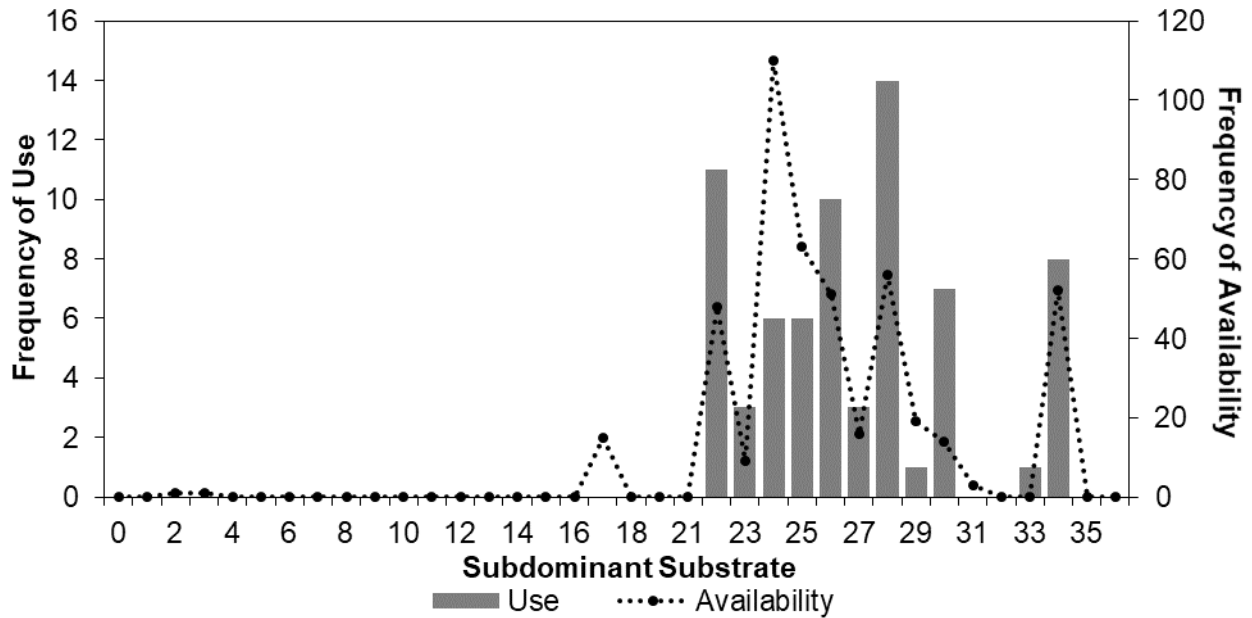


Figure G-15. Frequency distribution of subdominant substrate for <6 cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

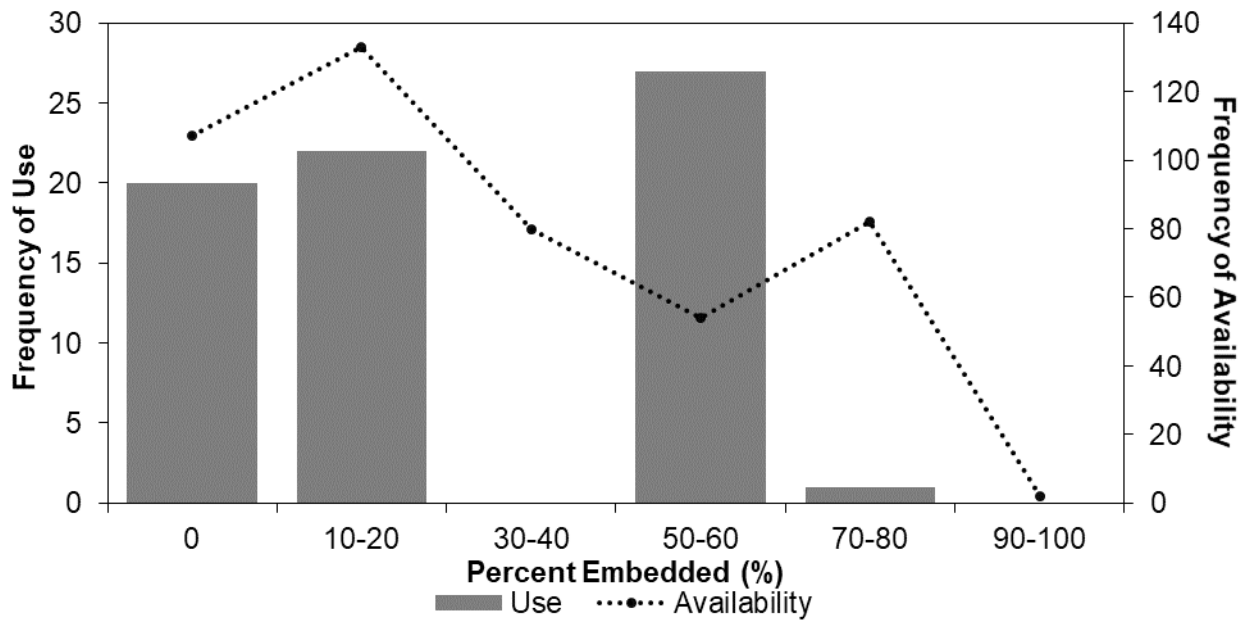


Figure G-16. Frequency distribution of substrate percent embeddedness for <6 cm Coho Salmon habitat use versus habitat availability.



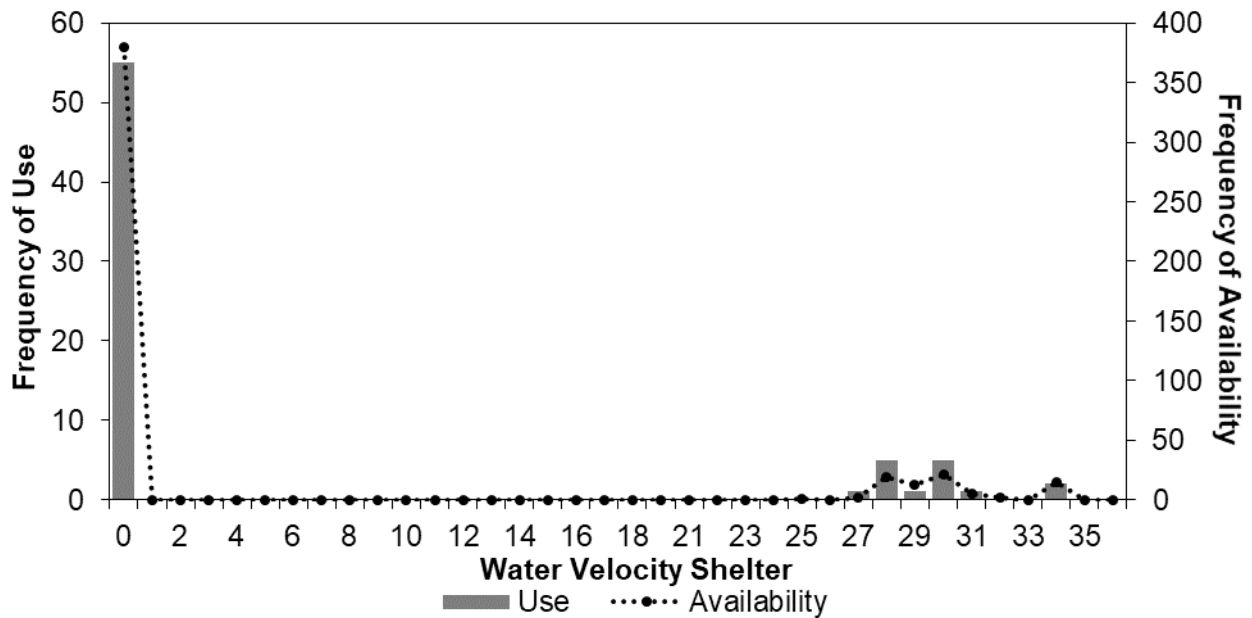


Figure G-17. Frequency distribution of water velocity shelter for <6 cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

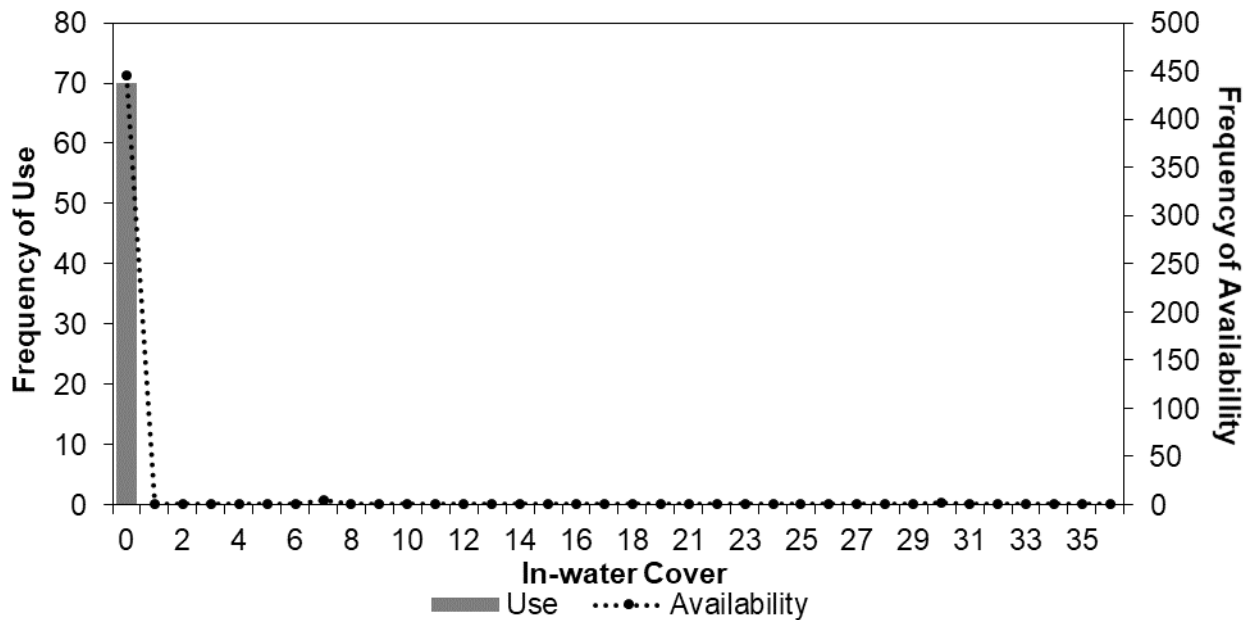


Figure G-18. Frequency distribution of in-water cover for <6 cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

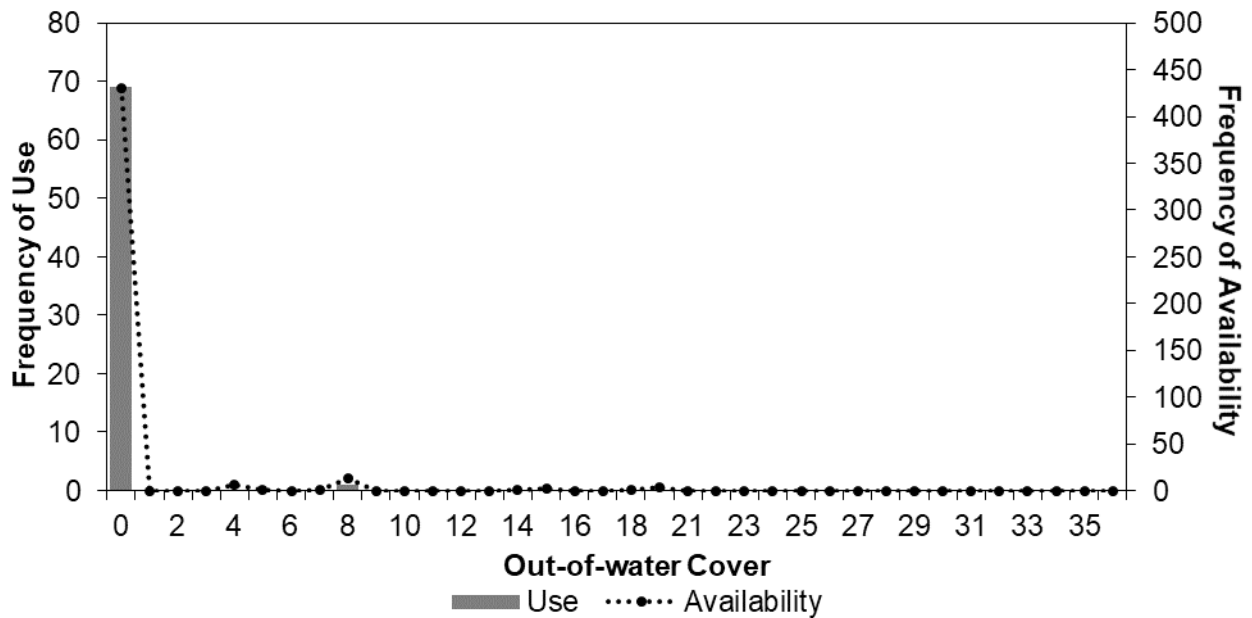


Figure G-19. Frequency distribution of out-of-water cover for <6 cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

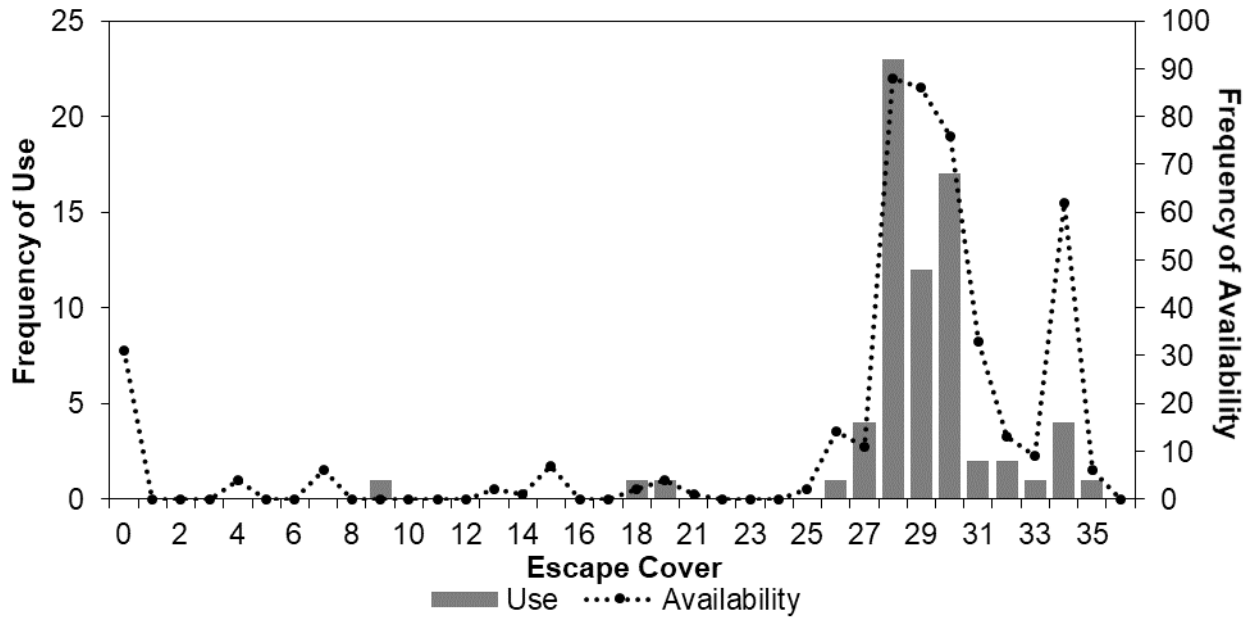


Figure G-20. Frequency distribution of escape cover for <6 cm Coho Salmon habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

## APPENDIX H: SUMMER ≥6 CM COHO SALMON DATASET

### ≥6 cm Coho Salmon Fish Observation Figures

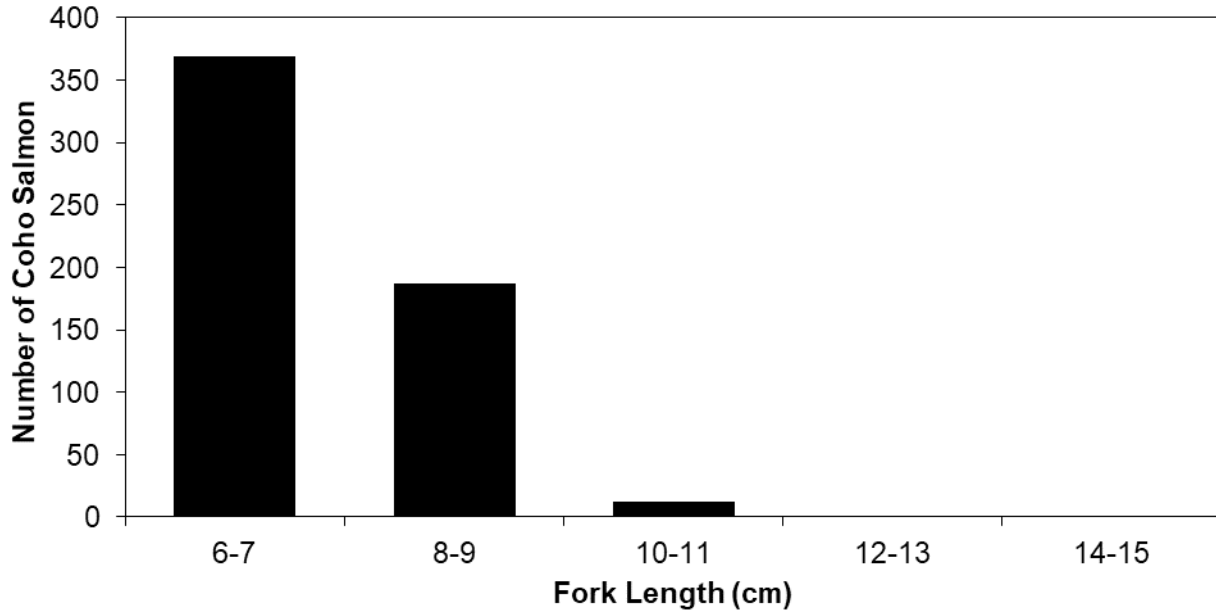


Figure H-1. ≥6 cm Coho Salmon fork length observations.

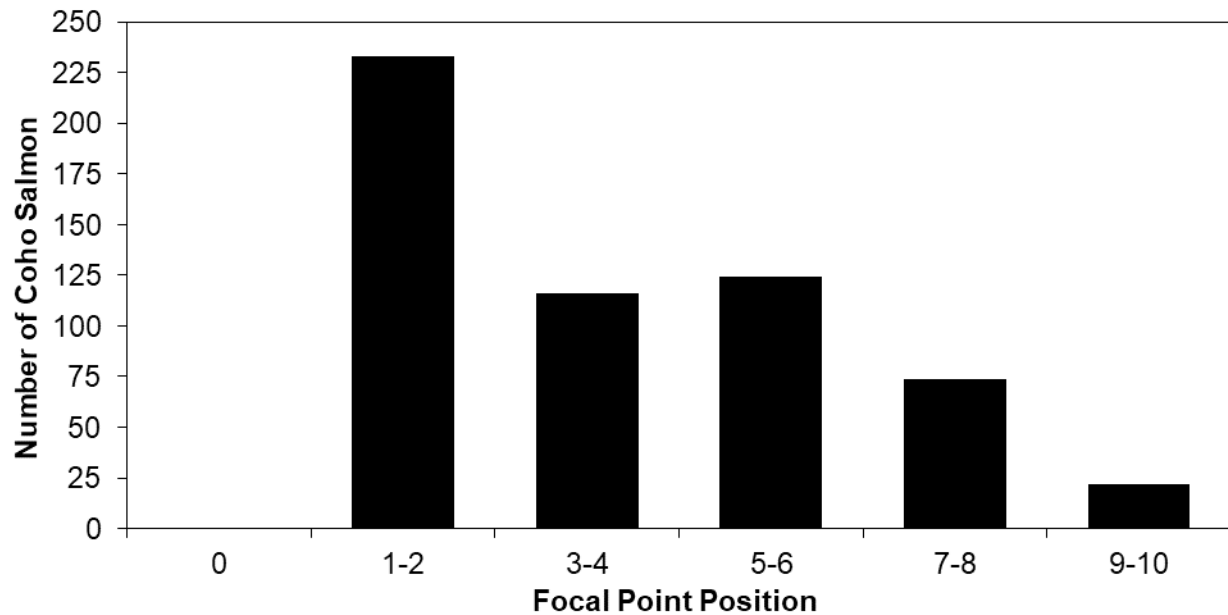


Figure H-2. ≥6 cm Coho Salmon focal point position observations. Focal position zero signified the bottom of the water column while ten signified the top. The scale of the focal position varied depending on the water depth at the point of observation.

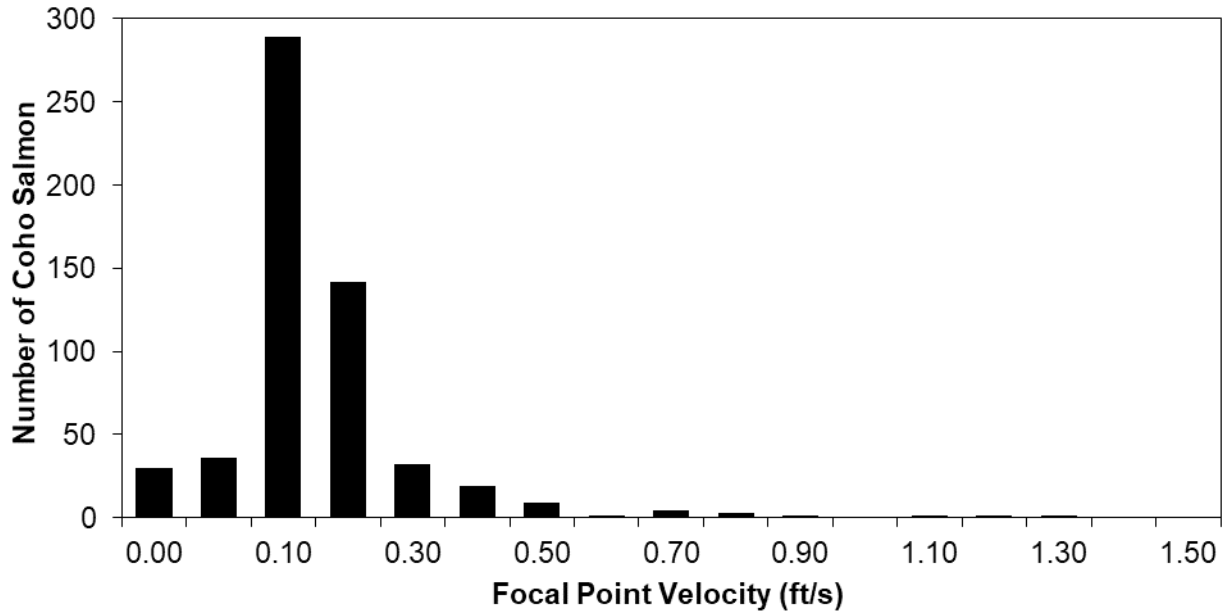


Figure H-3.  $\geq 6$  cm Coho Salmon focal point velocity observations.

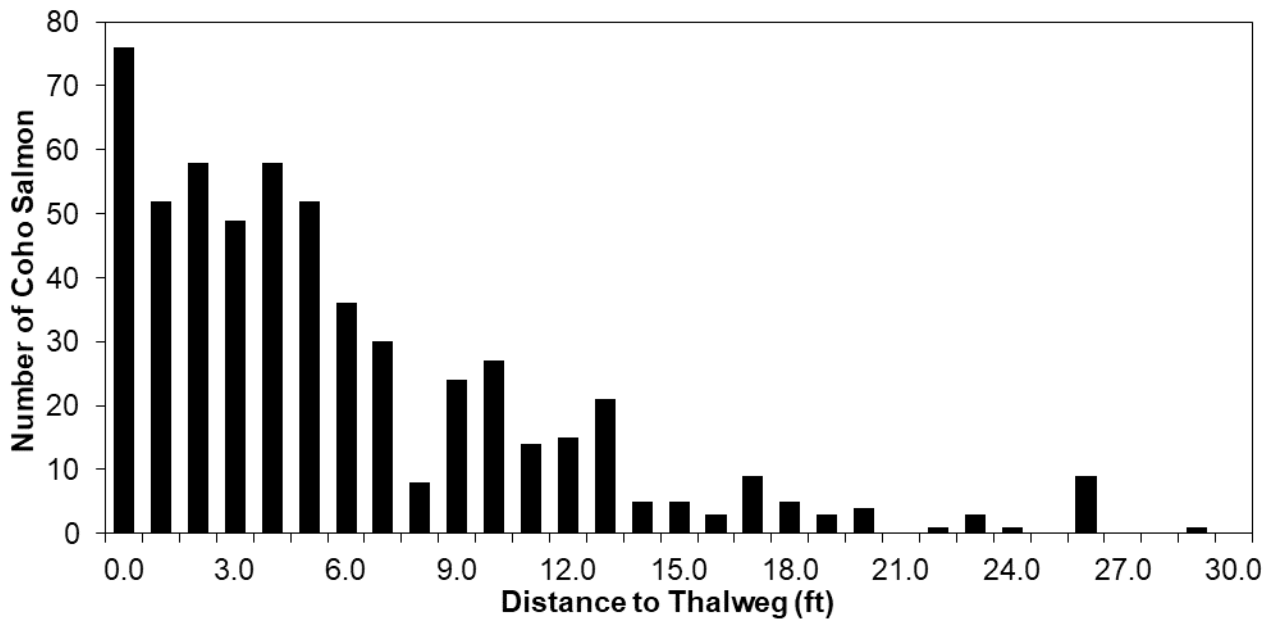


Figure H-4.  $\geq 6$  cm Coho Salmon distance to thalweg observations.

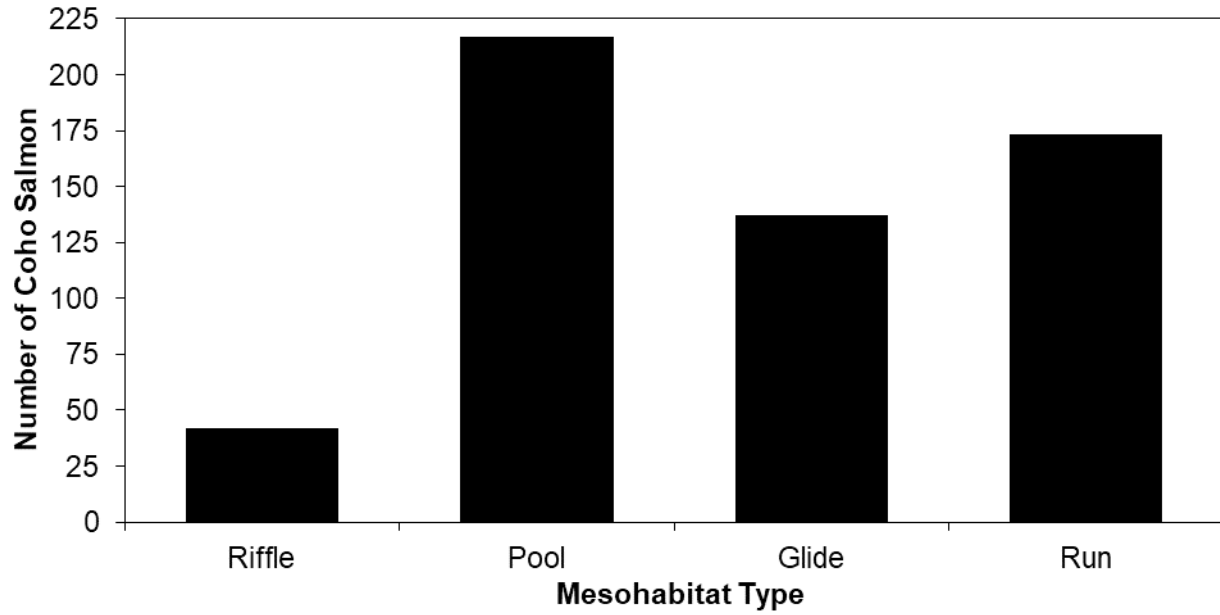


Figure H-5.  $\geq 6$  cm Coho Salmon observed in each mesohabitat type.

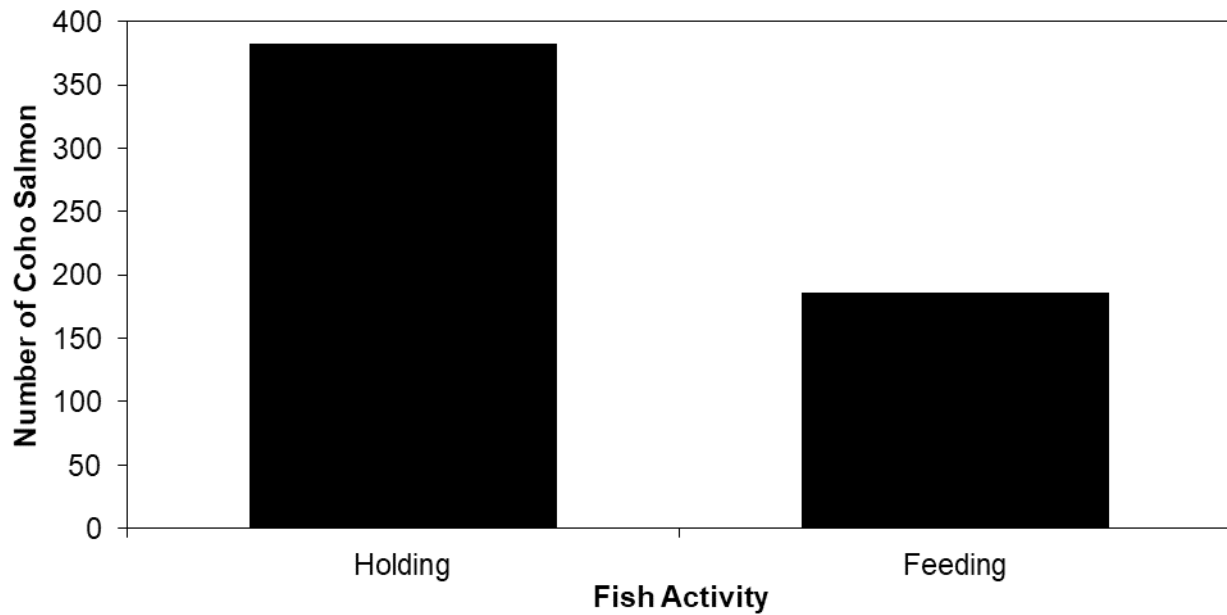


Figure H-6.  $\geq 6$  cm Coho Salmon fish activity observations.

**≥6 cm Coho Salmon Habitat Use vs. Habitat Availability Figures**

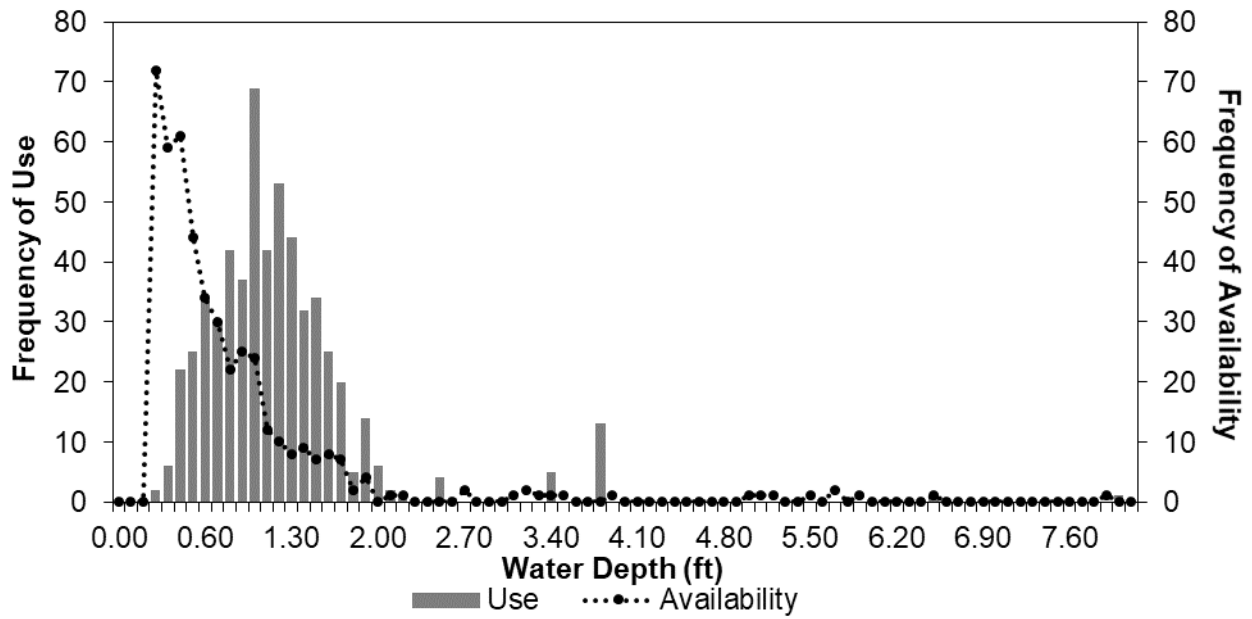


Figure H-7. Frequency distribution of water depth for ≥6 cm Coho Salmon habitat use versus habitat availability.

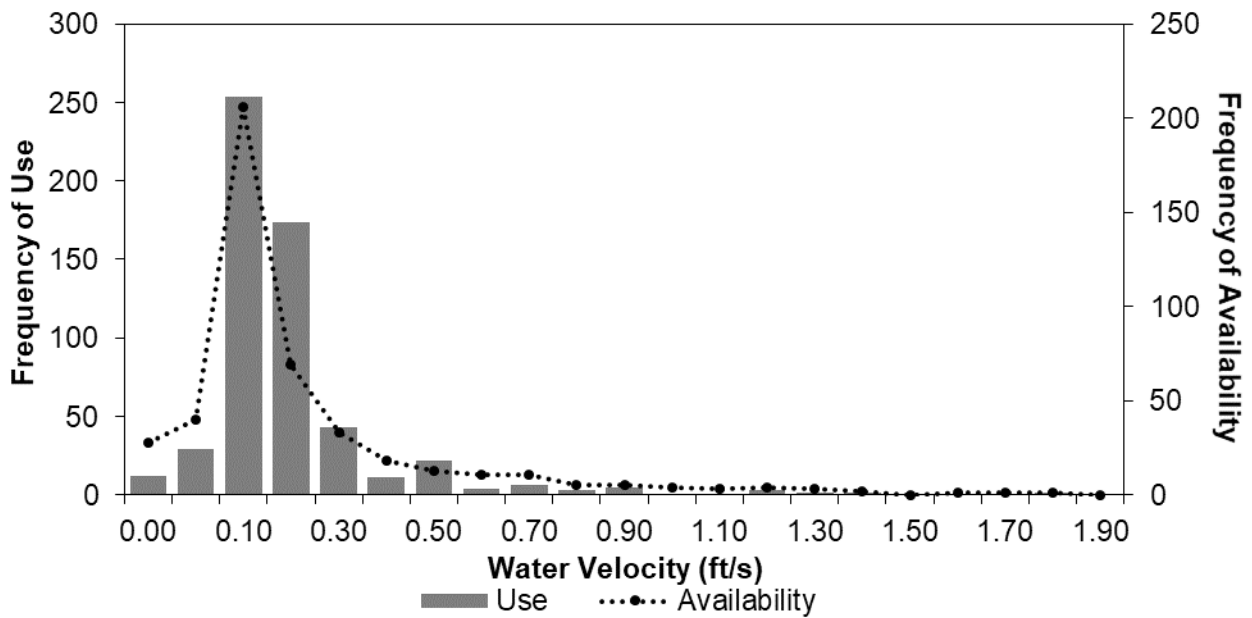


Figure H-8. Frequency distribution of water velocity for ≥6 cm Coho Salmon habitat use versus habitat availability.



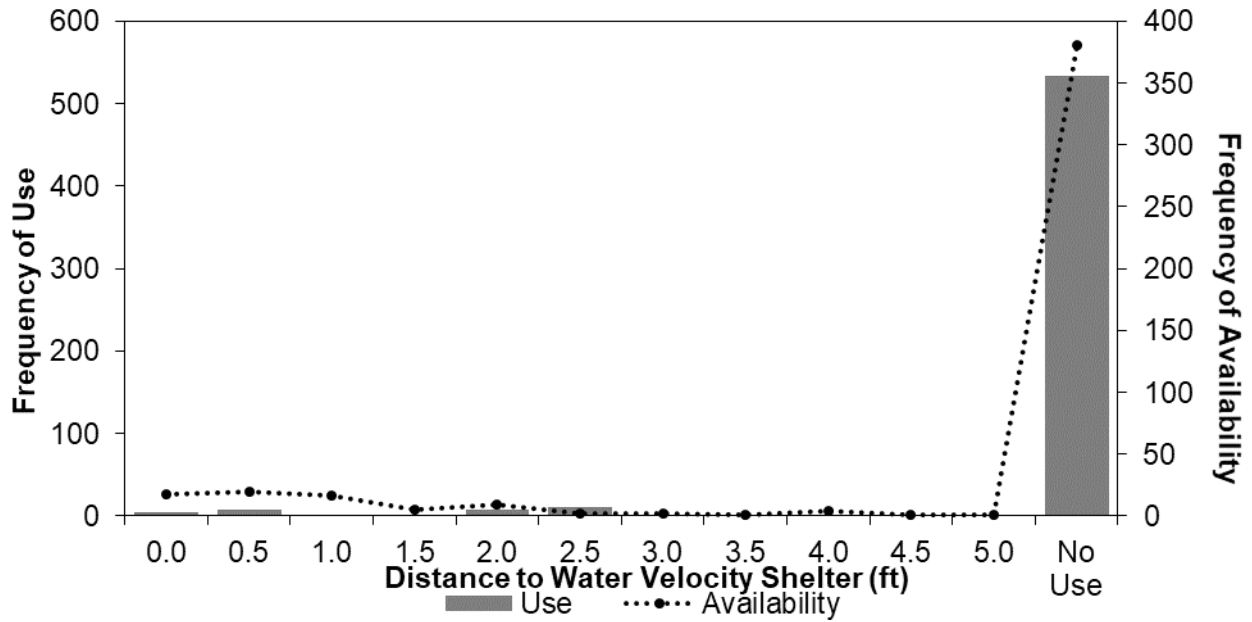


Figure H-9. Frequency distribution of distance to water velocity shelter for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

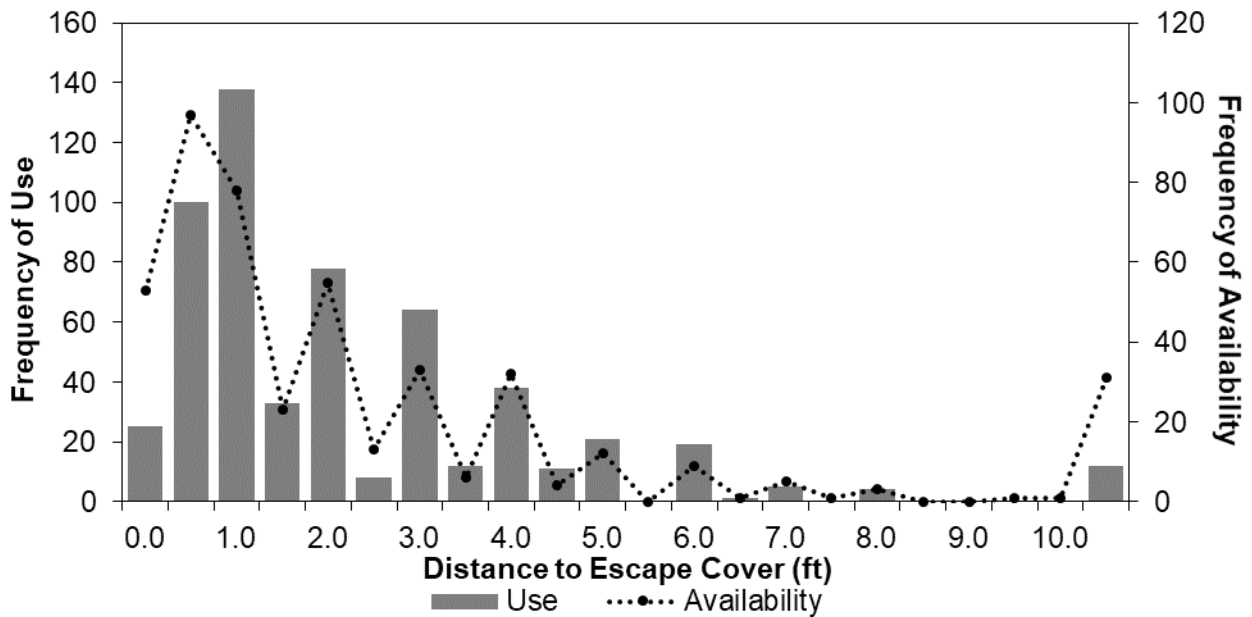


Figure H-10. Frequency distribution of distance to escape cover for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

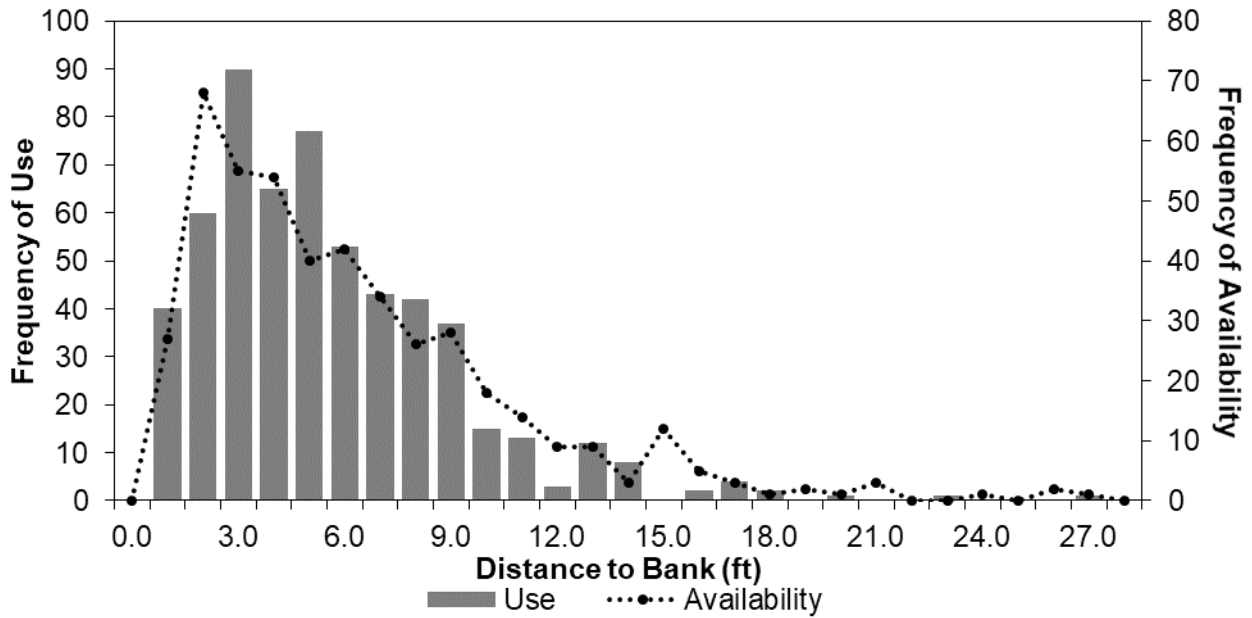


Figure H-11. Frequency distribution of distance to bank for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

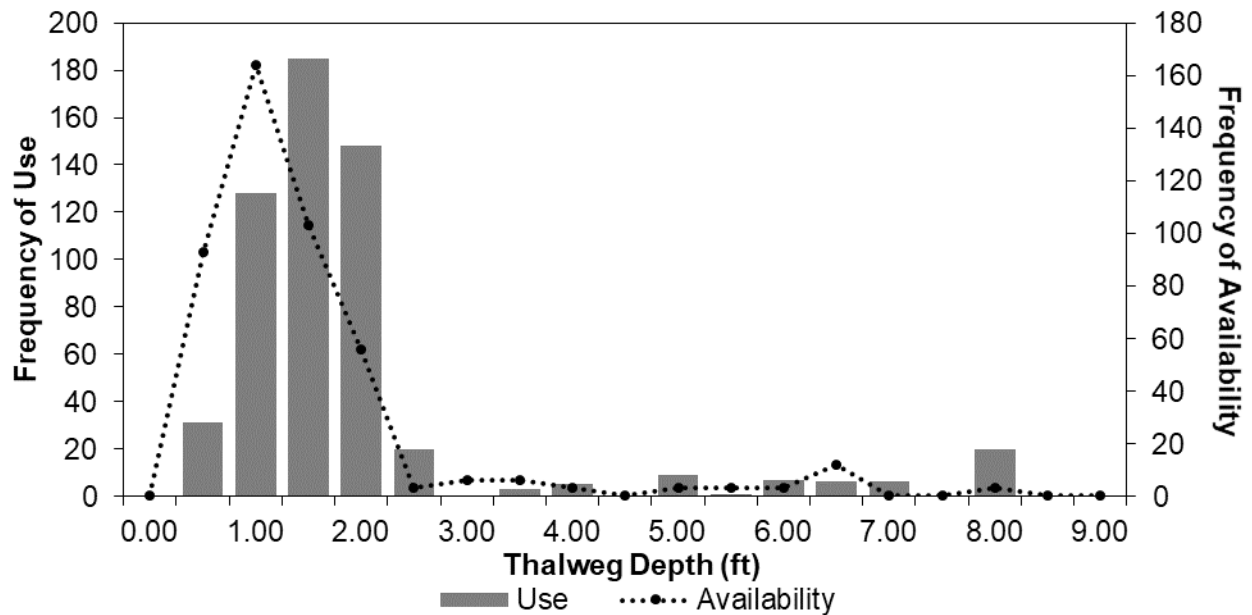


Figure H-12. Frequency distribution of thalweg depth for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

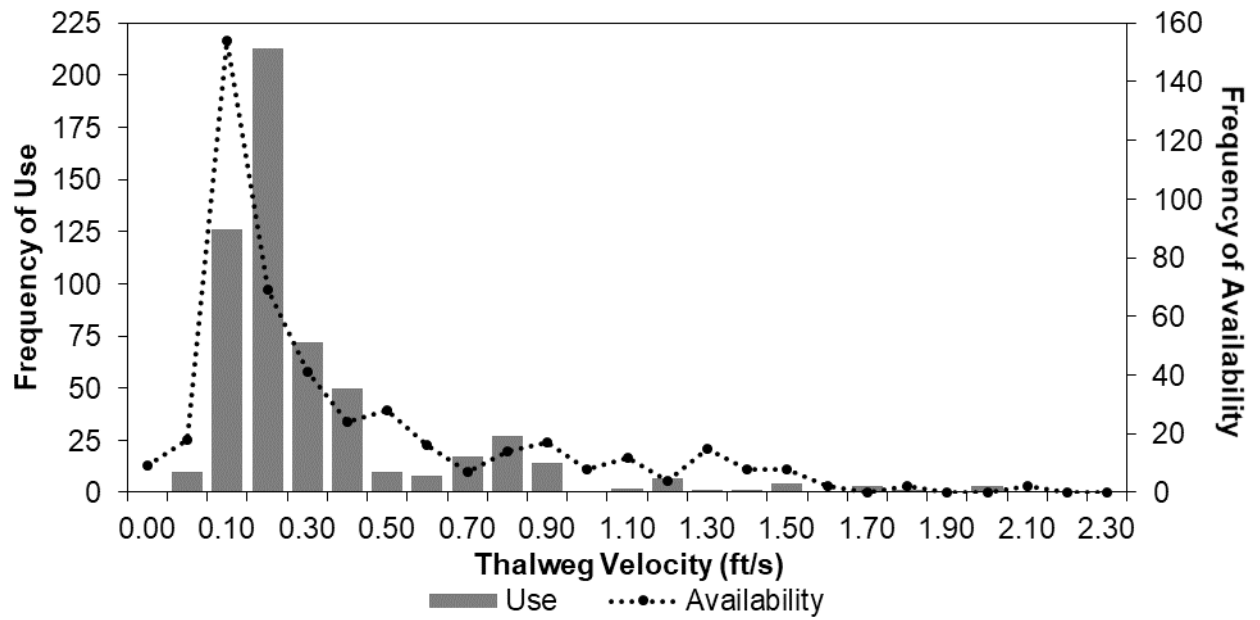


Figure H-13. Frequency distribution of thalweg velocity for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

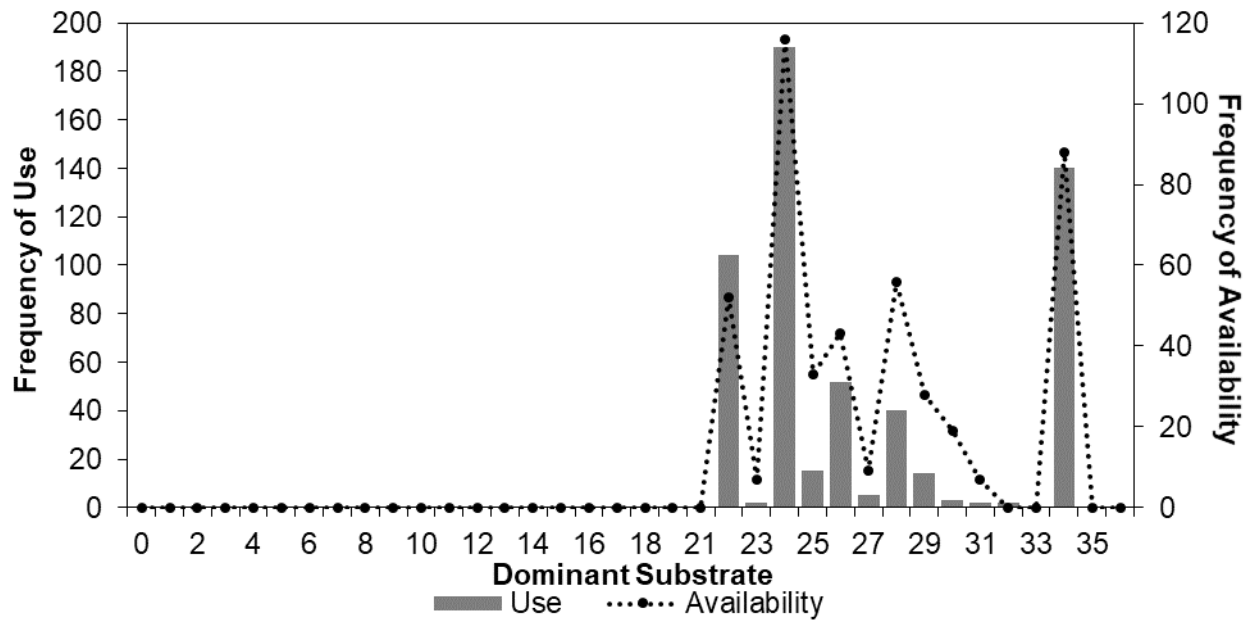


Figure H-14. Frequency distribution of dominant substrate for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

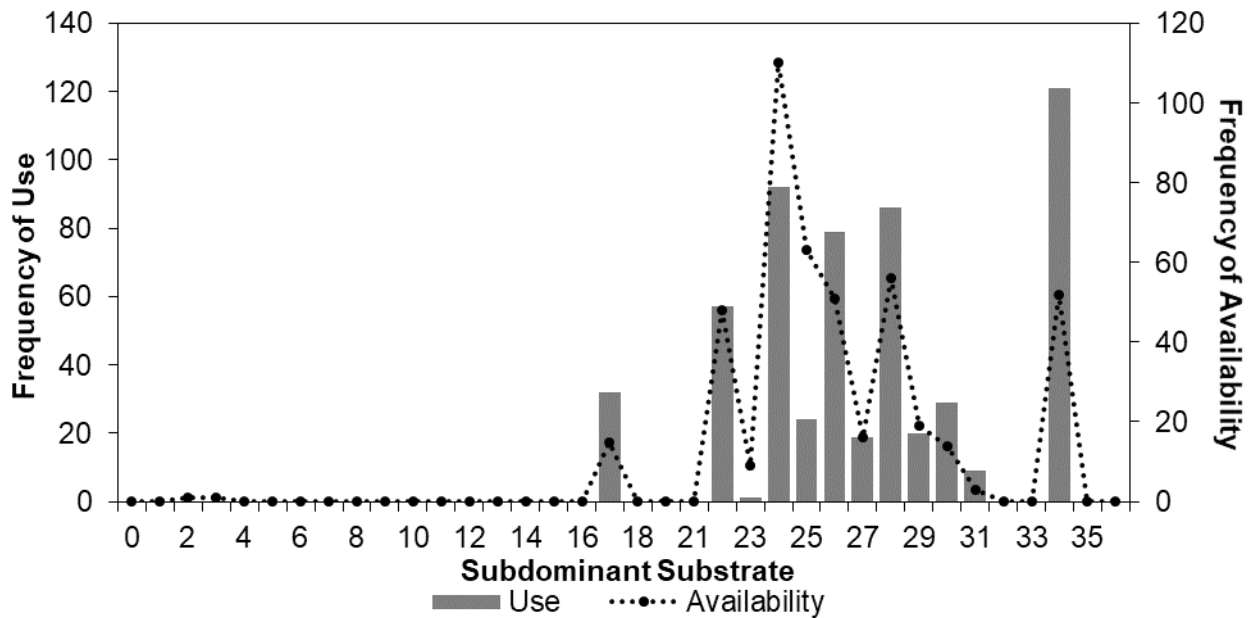


Figure H-15. Frequency distribution of subdominant substrate for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

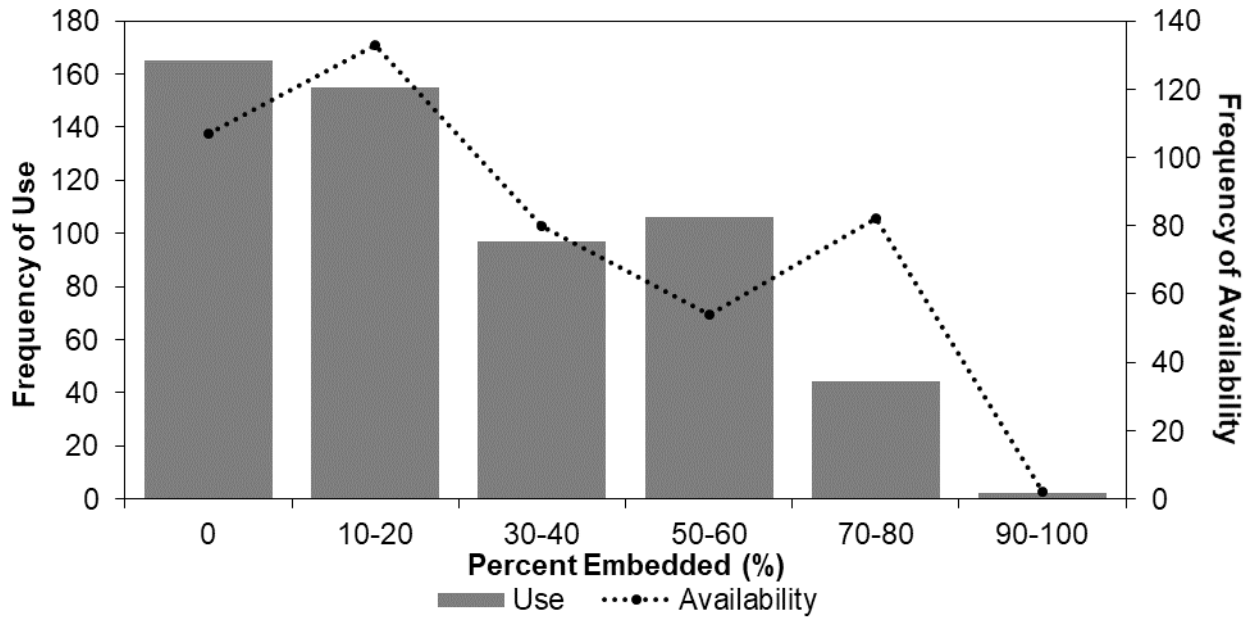


Figure H-16. Frequency distribution of substrate percent embeddedness for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

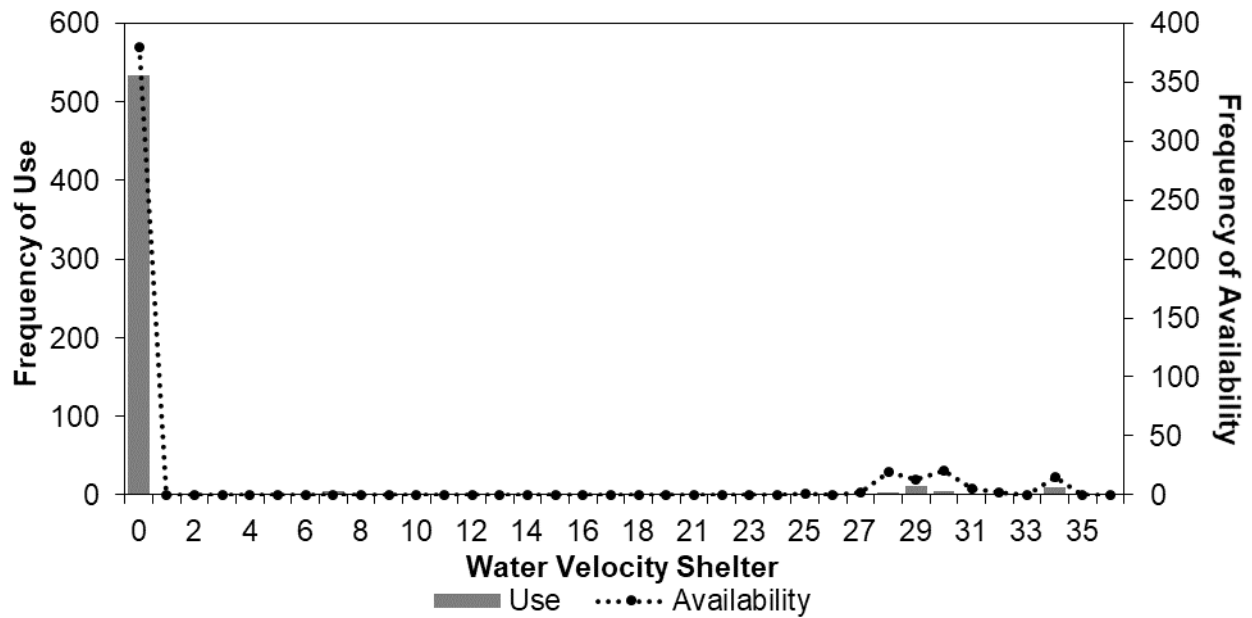


Figure H-17. Frequency distribution of water velocity shelter for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

#### Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

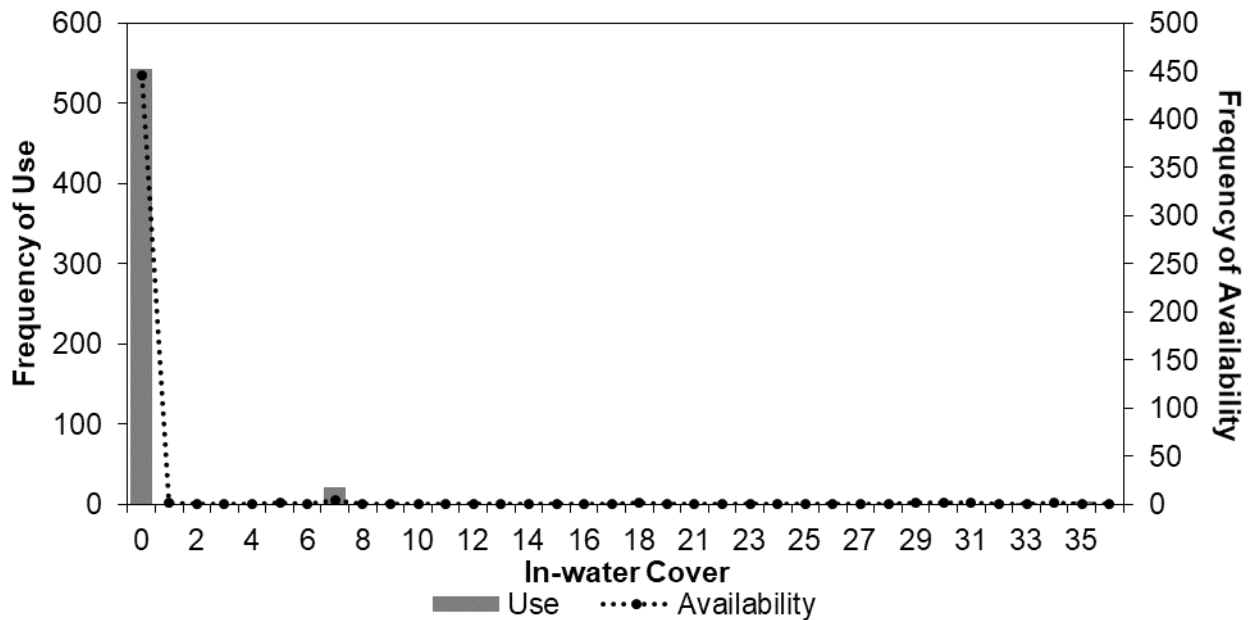


Figure H-18. Frequency distribution of in-water cover for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank



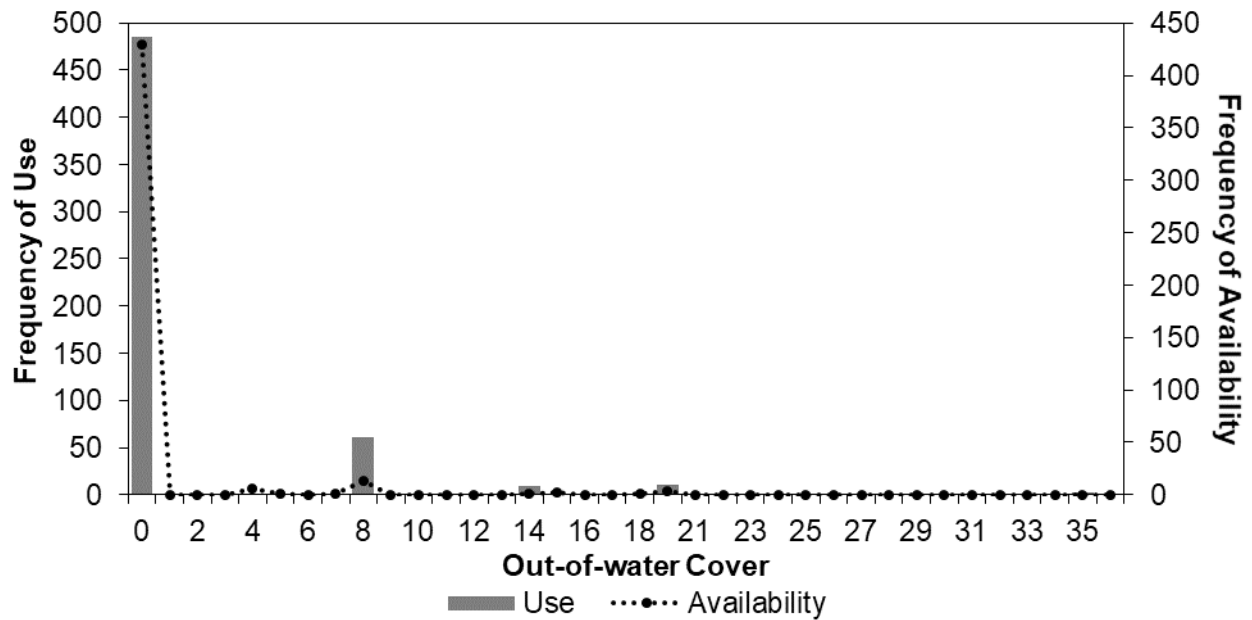


Figure H-19. Frequency distribution of out-of-water cover for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank

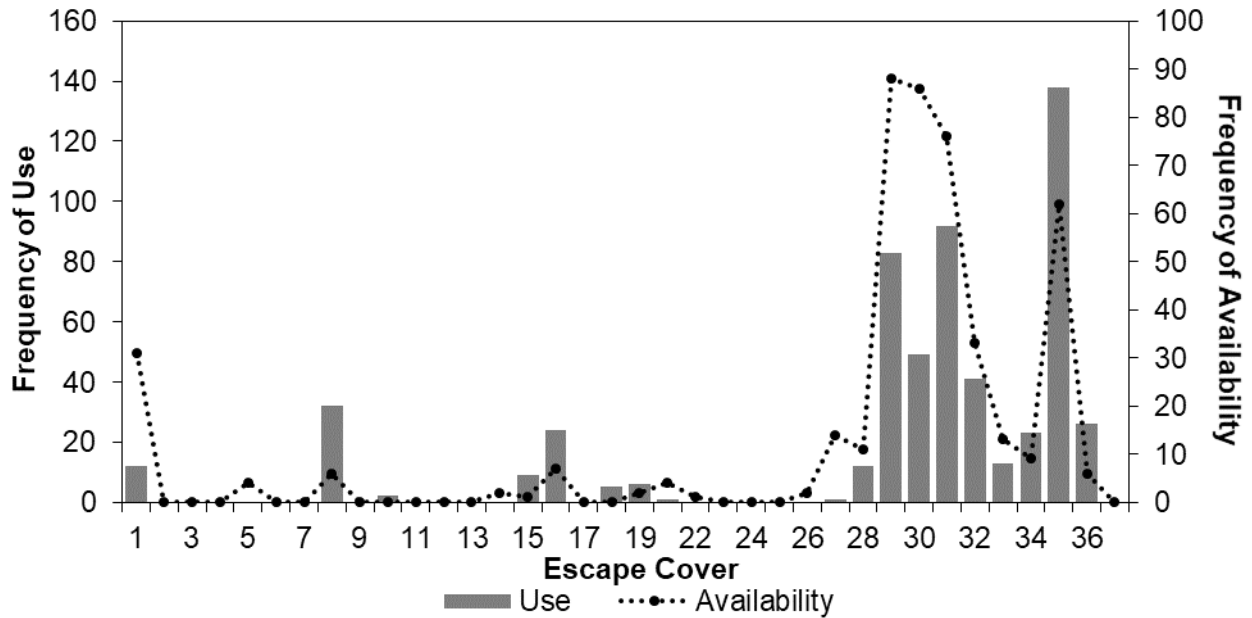


Figure H-20. Frequency distribution of escape cover for  $\geq 6$  cm Coho Salmon habitat use versus habitat availability.

Cover and Substrate Codes.

Code	Vegetation Type
0	None
1	Filamentous algae
2	Non-emergent rooted aquatic vegetation
3	Emergent rooted aquatic vegetation
4	Grass
5	Sedges/rushes
6	Vines/poison oak
7	Branches/small vegetation <4 in, IW
8	Branches/small vegetation <4 in, OW
9	Branches >4 in, IW
10	Branches >4 in, OW
11	Tree trunks <4 in, dbh IW
12	Tree trunks <4 in, dbh OW
13	Tree trunks >4 in, dbh IW
14	Tree trunks >4 in, dbh OW
15	Roots and root-wads
16	Shrubs <4 in
17	Duff, leaf litter, organic debris
18	Small woody debris <4 in, dead
19	Large woody debris >4 in, dead

Code	Substrate Type
0	None
21	Clay
22	Sand or silt/sand (<0.1 in)
23	Coarse sand/DG (0.1-0.2 in)
24	Small gravel (0.2-1 in)
25	Medium gravel (1-2 in)
26	Large gravel (2-3 in)
27	Gravel/cobble (3-4 in)
28	Small cobble (4-6 in)
29	Medium cobble (6-9 in)
30	Large cobble (9-12 in)
31	Small boulder (12-24 in)
32	Medium boulder (24-48 in)
33	Large boulder (>48 in)
34	Bedrock
35	Undercut bank
36	Rip-rap bank