Volume 067 Article 12

IDAHO
DEPARTMENT OF FISH AND GAME

Jerry M. Conley, Director

FEDERAL AID IN FISH RESTORATION

Project Performance Report

Project F-71-R-10

Subproject II. Regional Coordination and Assistance
Job No. I-a. Probability-of-Use
Curves for Selected Idaho
Fish Species

By

Tim Cochnauer
Principal Fishery Research Biologist
and

Terry Elms-Cockrum
Fishery Technician

November 1986

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PREFACE

One major concern regarding the use of established probability-of-use information has been the lack of breakdown for various length groups. Generally the data are presented for different life history phases. This document provides probability-of-use information for hydraulic parameters of depth, velocity and substrate for selected fish species in Idaho and is a start for establishing length group information. We recognize that for some species or length groups the numbers of observations are marginal, but it is our intent that the data presented herein will be used as a base on which to build. These curves will be updated as data become available. The information is also intended to provide a standard set of probability-of-use curves for use with instream flow studies on Idaho streams.

The basis of these curves was data collected on 21 Idaho streams during 1977-78. Data collection and curve development were conducted in accordance with guidelines provided by Bovee and Cochnauer (1977).

In some instances, no data were available for some length groups and for that reason the curves presented for those length groups are taken from Bovee (1978).

A data listing for use with instream flow computer programs is provided in Appendix A.

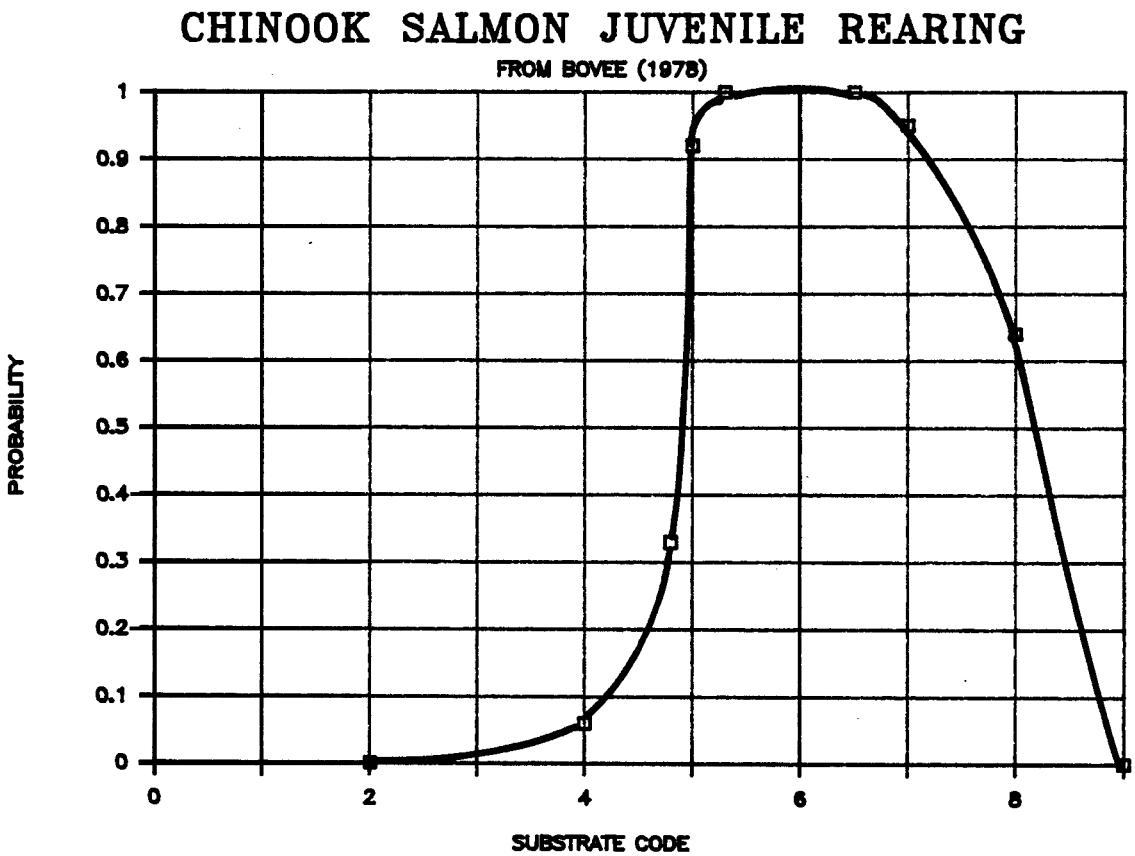
Any comments or questions regarding these curves should be directed to:

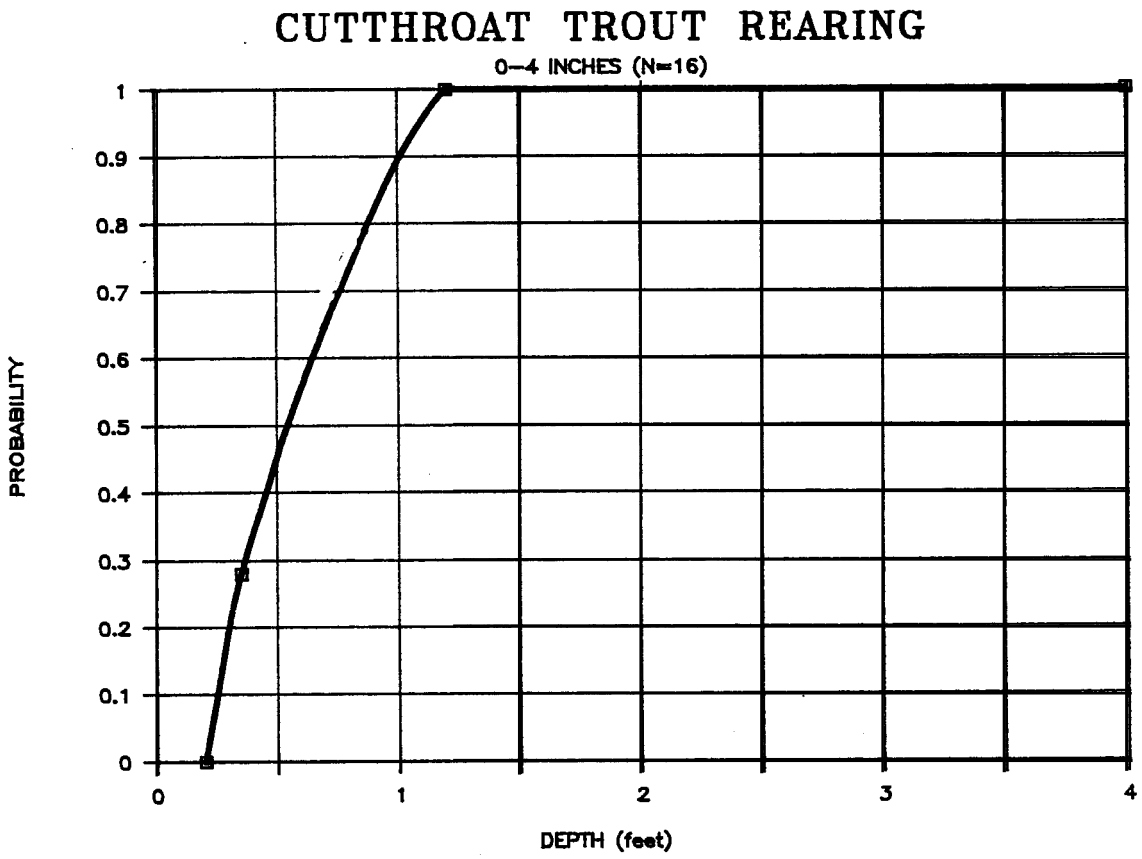
Bureau of Fisheries
Idaho Department of Fish and Game
600 South Walnut
P.O. Box 25
Boise, ID 83707

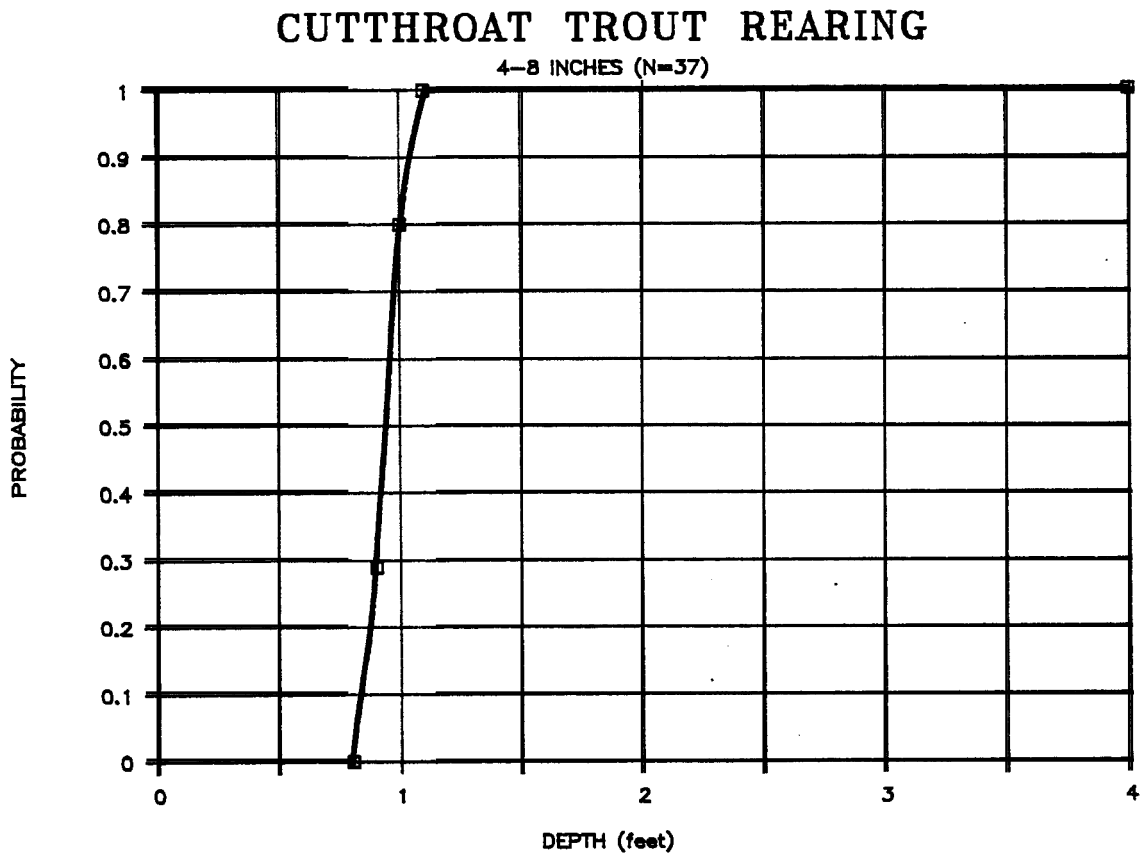
R9R2TCCE

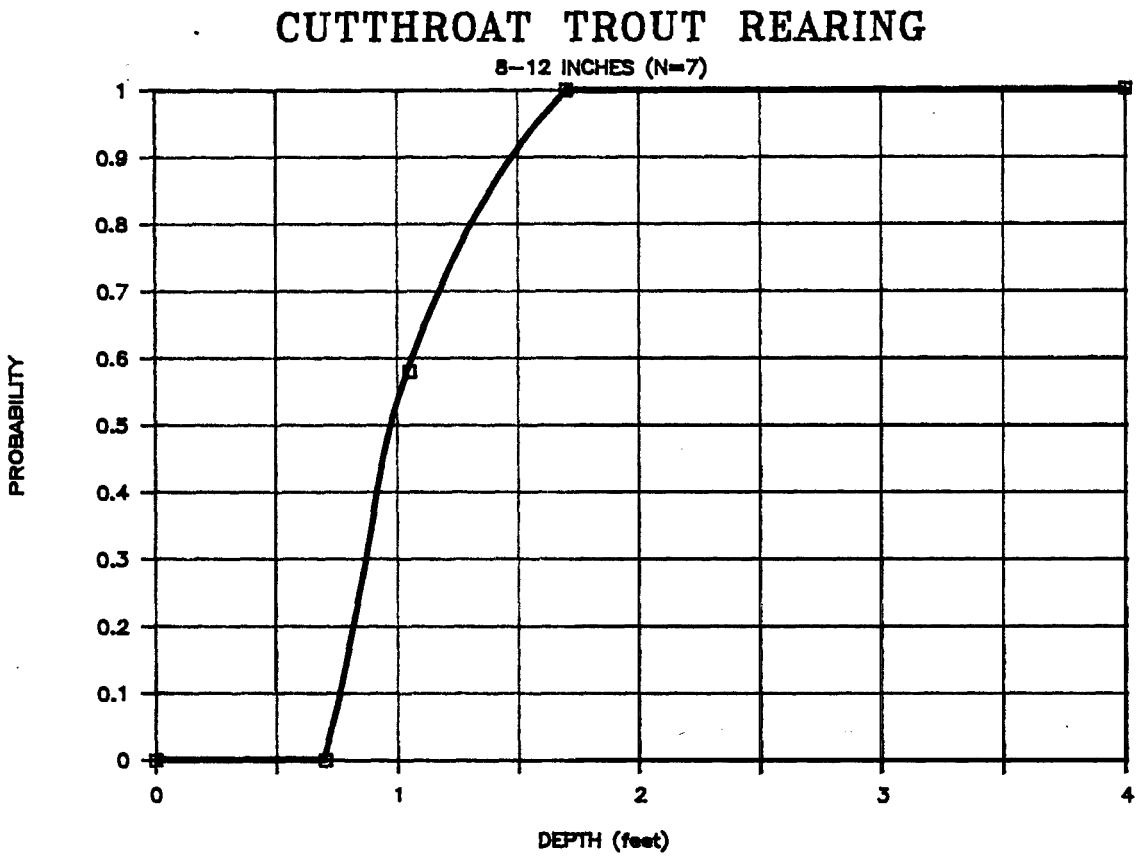
The following list of substrate codes will be useful in the reading and interpretation of the probability curves for substrate.

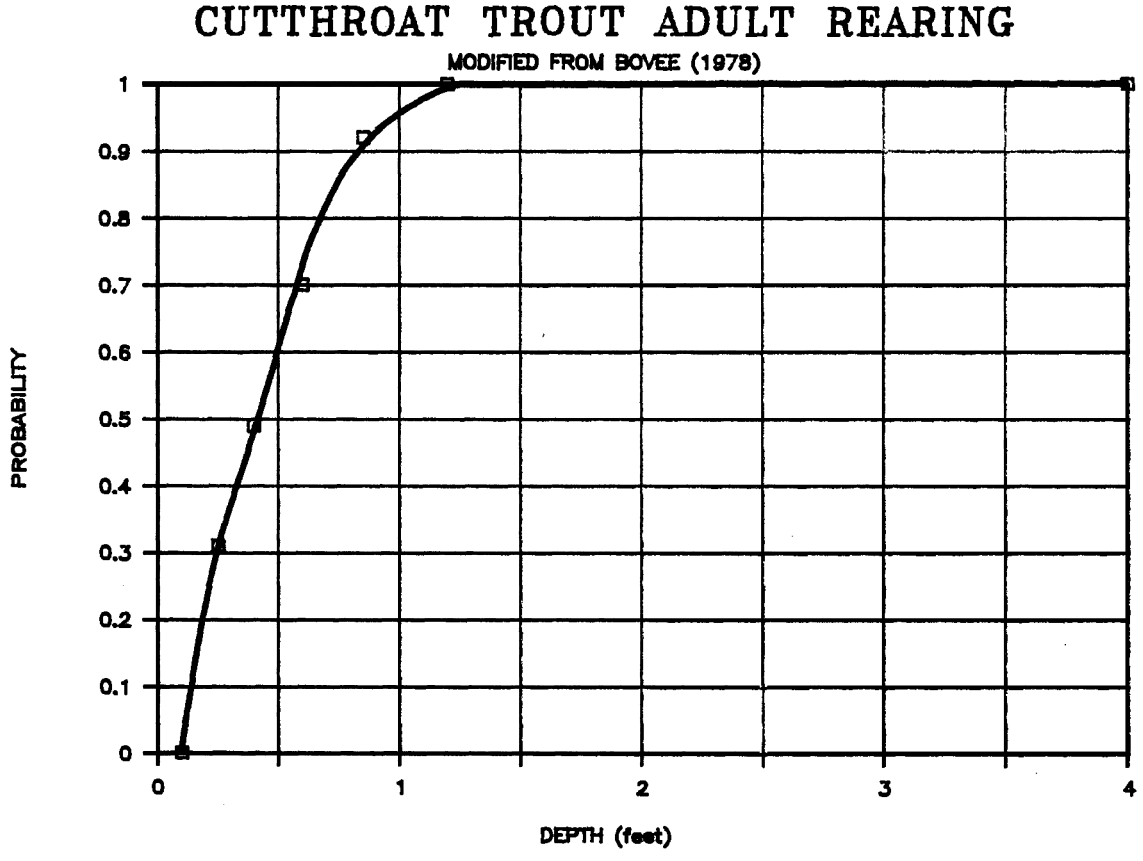
Substrate	Code number
Plant detritus/ organic material	1
Mud/soft clay	2
Silt	3
Sand	4.
Gravel	5
Cobble/rubble	6
Boulder	7
Bedrock	8

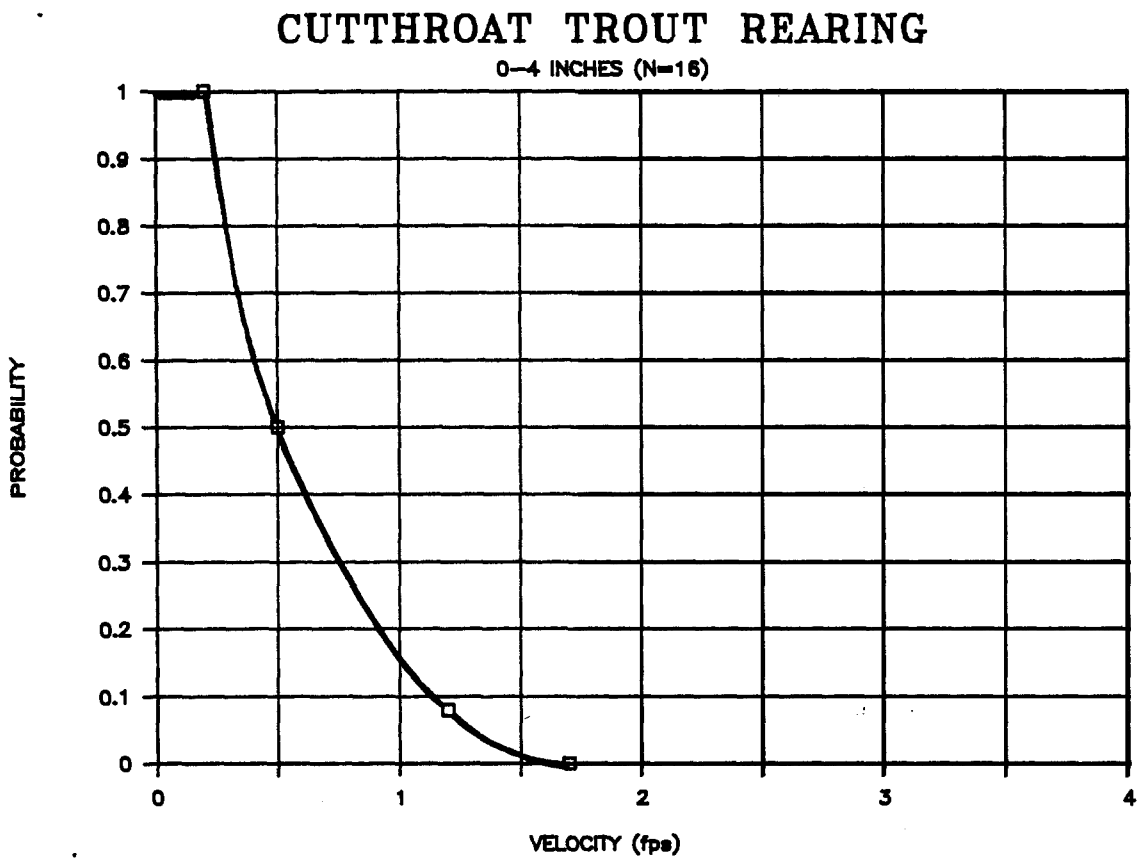

CHINOOK SALMON JUVENILE REARING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE

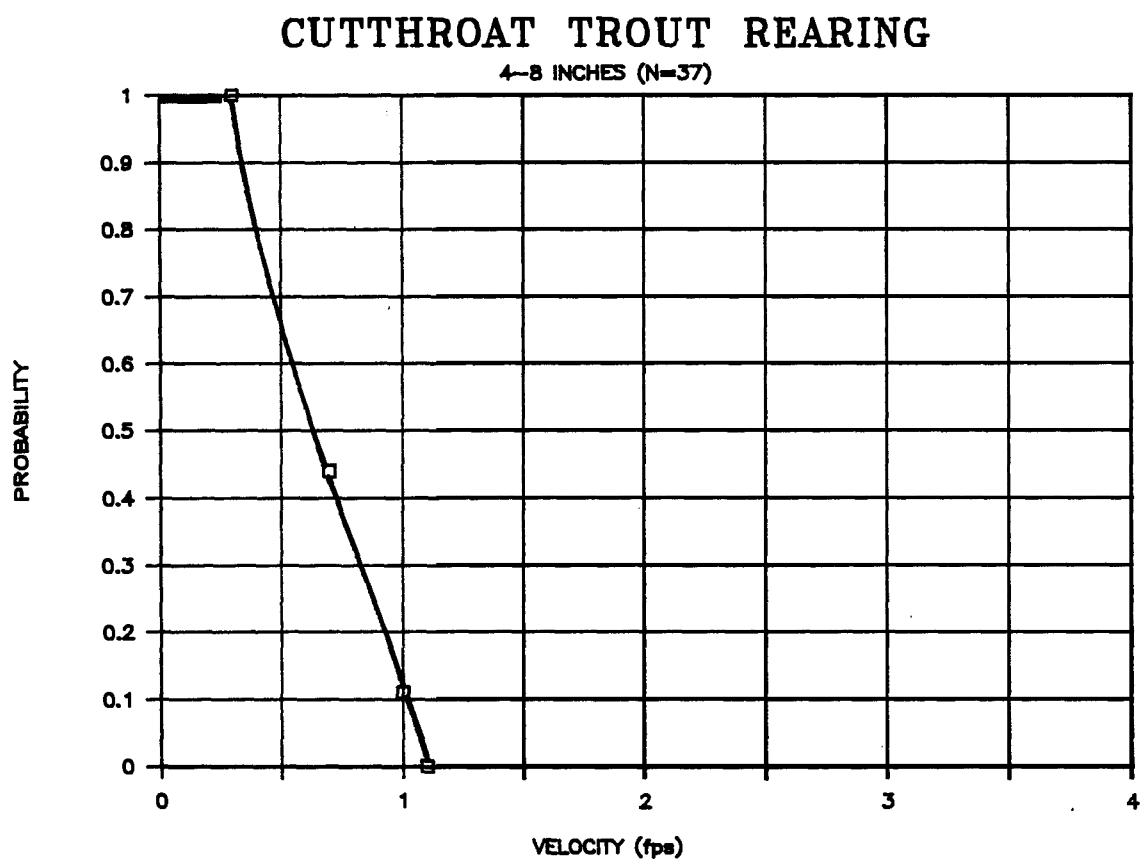

CUTTHROAT TROUT REARING
0–4 INCHES (N=16)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

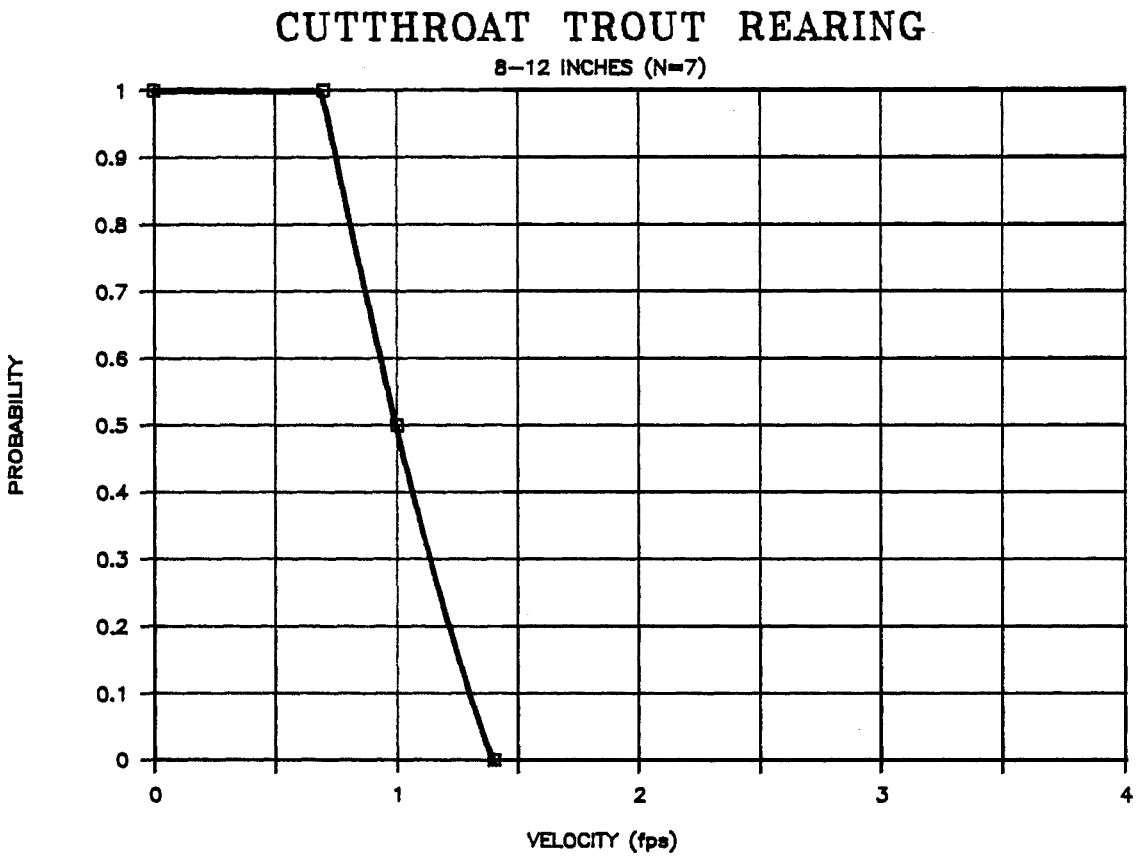

CUTTHROAT TROUT REARING
4–8 INCHES (N=37)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

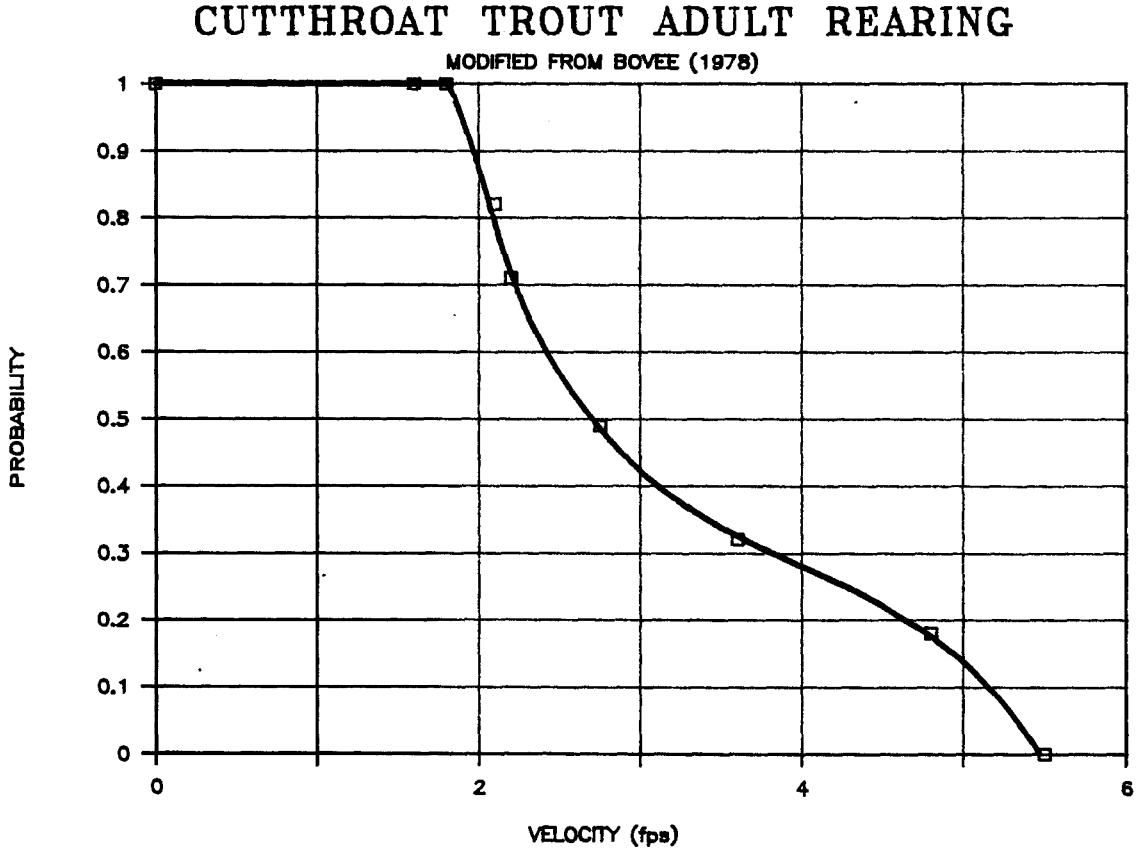

CUTTHROAT TROUT REARING
8-12 INCHES (N=7)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)


CUTTHROAT TROUT ADULT REARING
MODIFIED FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)


CUTTHROAT TROUT REARING
0–4 INCHES (N=16)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)


CUTTHROAT TROUT REARING
4–8 INCHES (N=37)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)


CUTTHROAT TROUT REARING
8–12 INCHES (N=7)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)


CUTTHROAT TROUT ADULT REARING
MODIFIED FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
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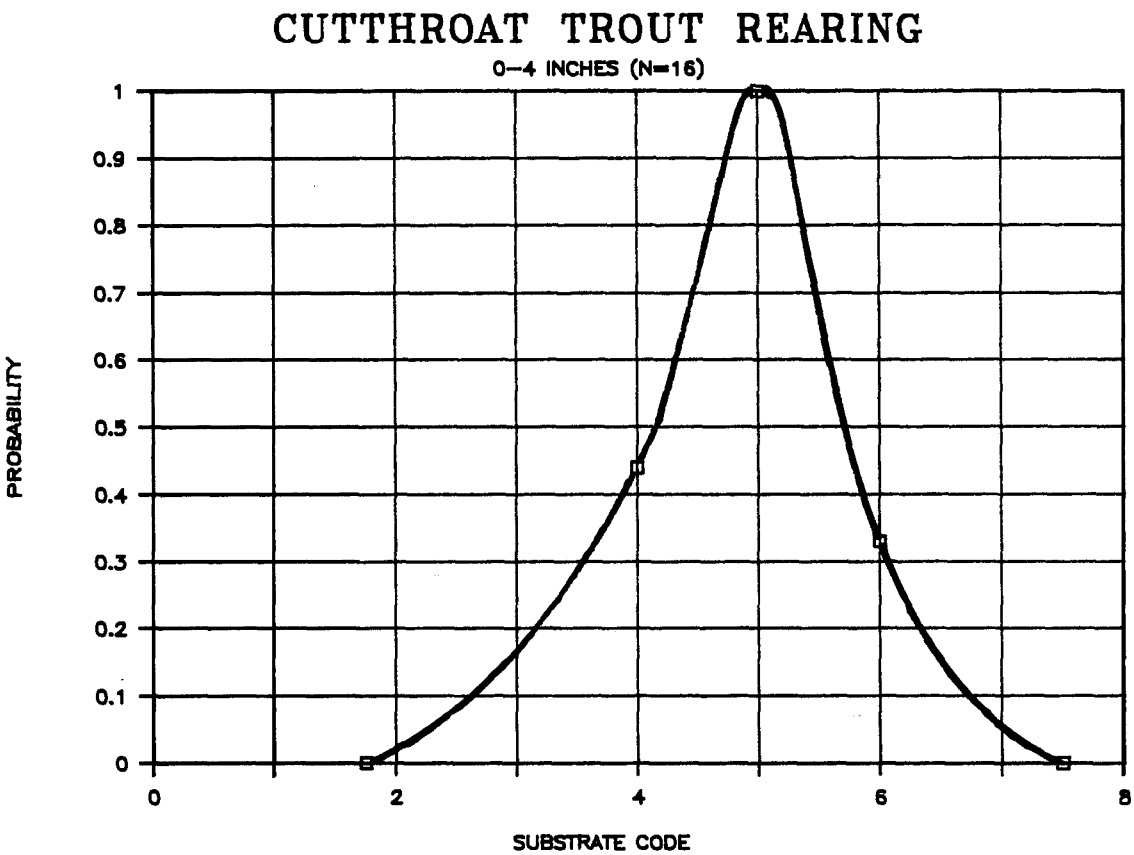
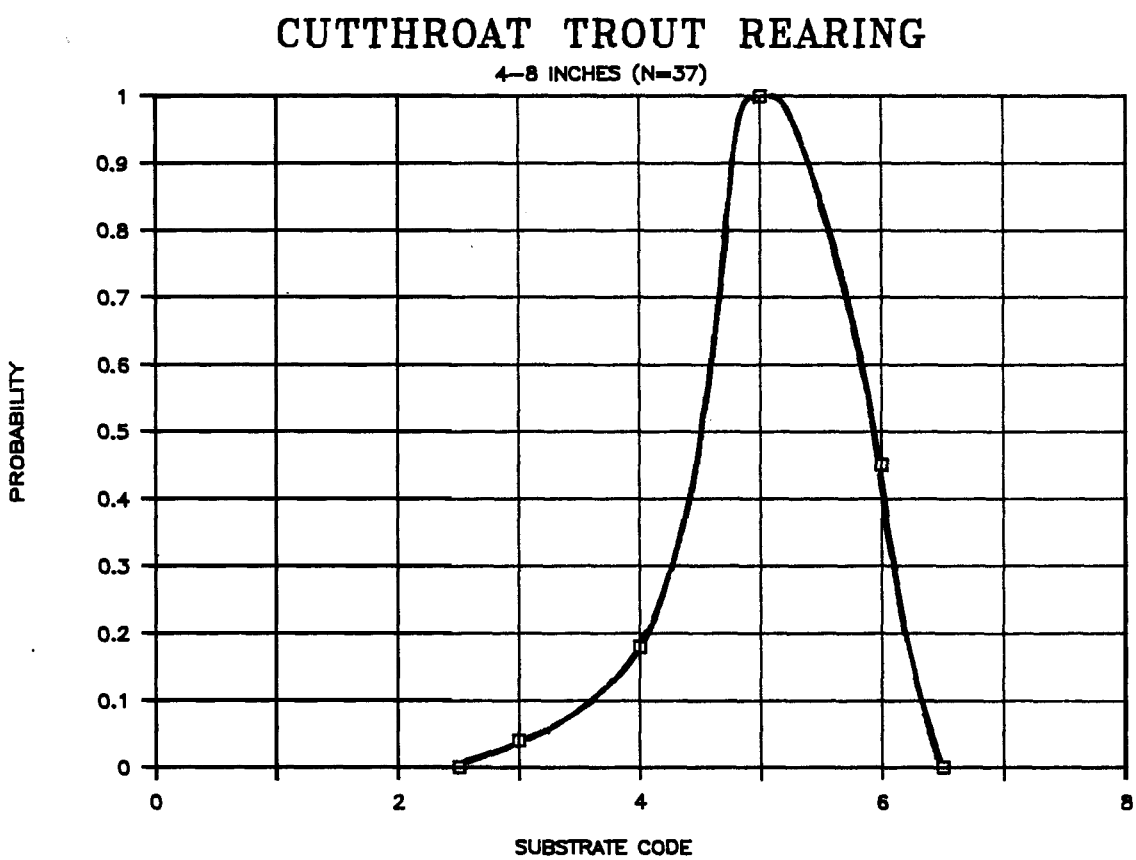
0.4
0.3
0.2
0.1
0
0
2
4
6
VELOCITY (fps)


CUTTHROAT TROUT REARING
0–4 INCHES (N=16)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE


CUTTHROAT TROUT REARING
4–8 INCHES (N=37)
PROBABILITY
1
0.9
0.8
0.7
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0.4
0.3
0.2
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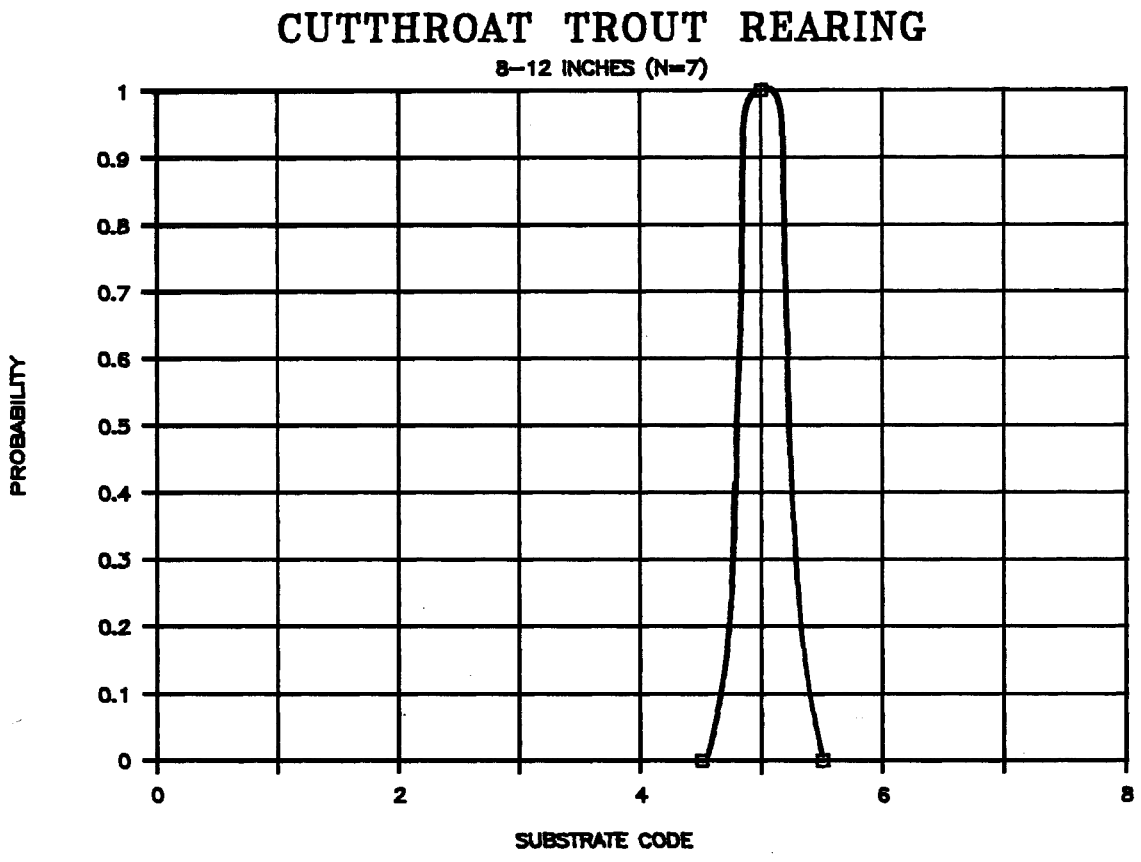
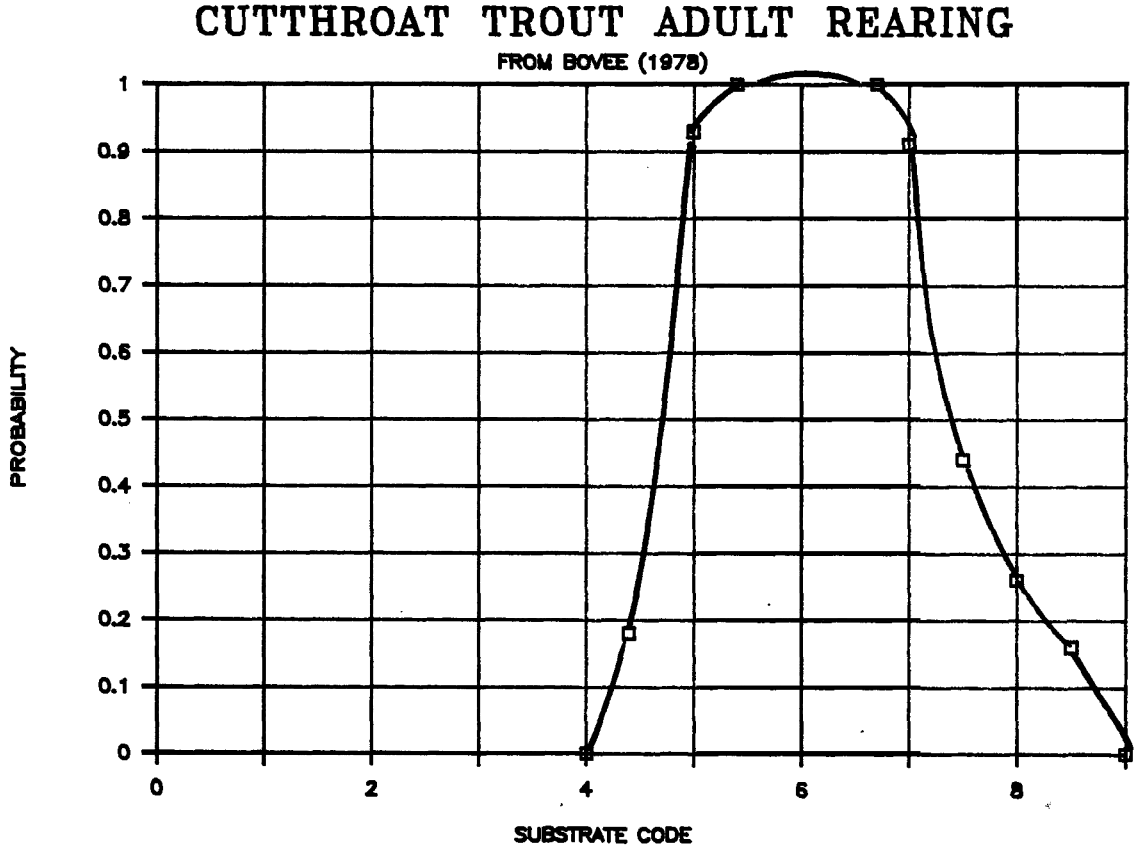
0
2
4
6
8
SUBSTRATE CODE


CUTTHROAT TROUT REARING
8–12 INCHES (N=7)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE


CUTTHROAT TROUT ADULT REARING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
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0.3
0.2
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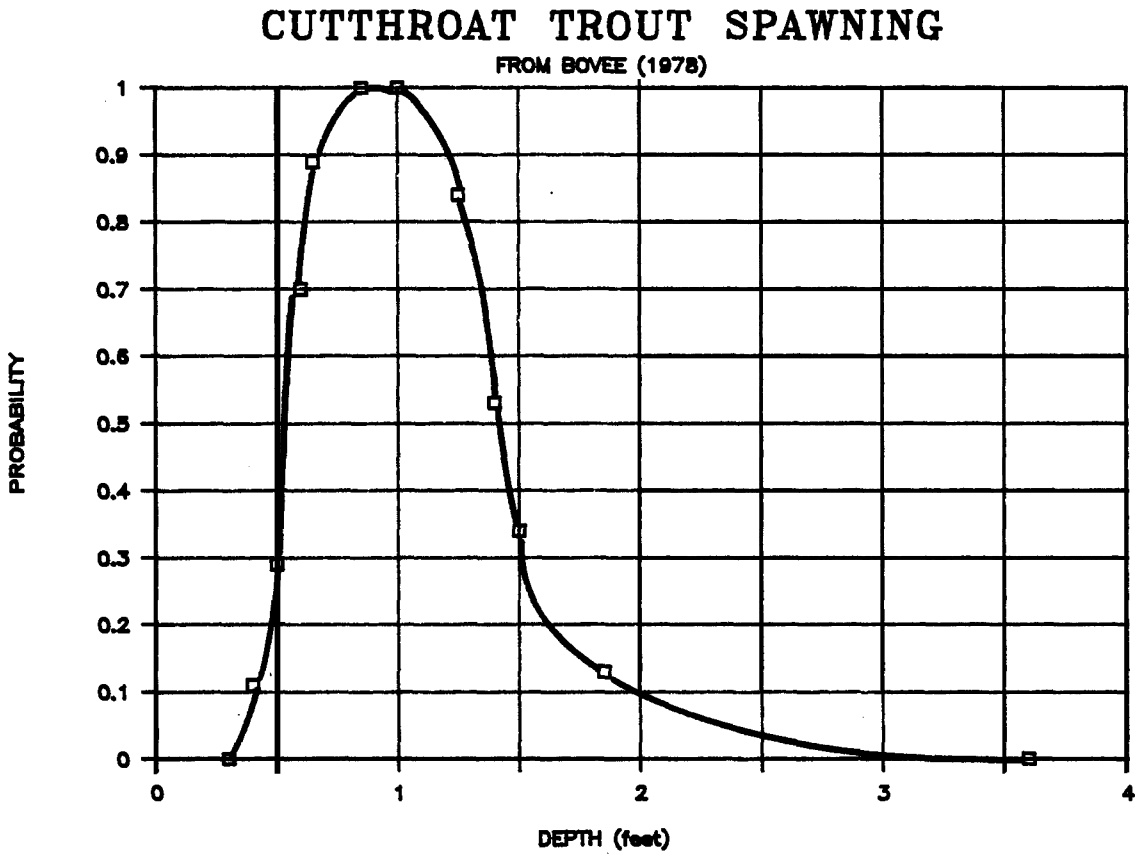
0
0
2
4
6
8
SUBSTRATE CODE


CUTTHROAT TROUT SPAWNING
FROM BOVEE (1978)
PROBABILITY
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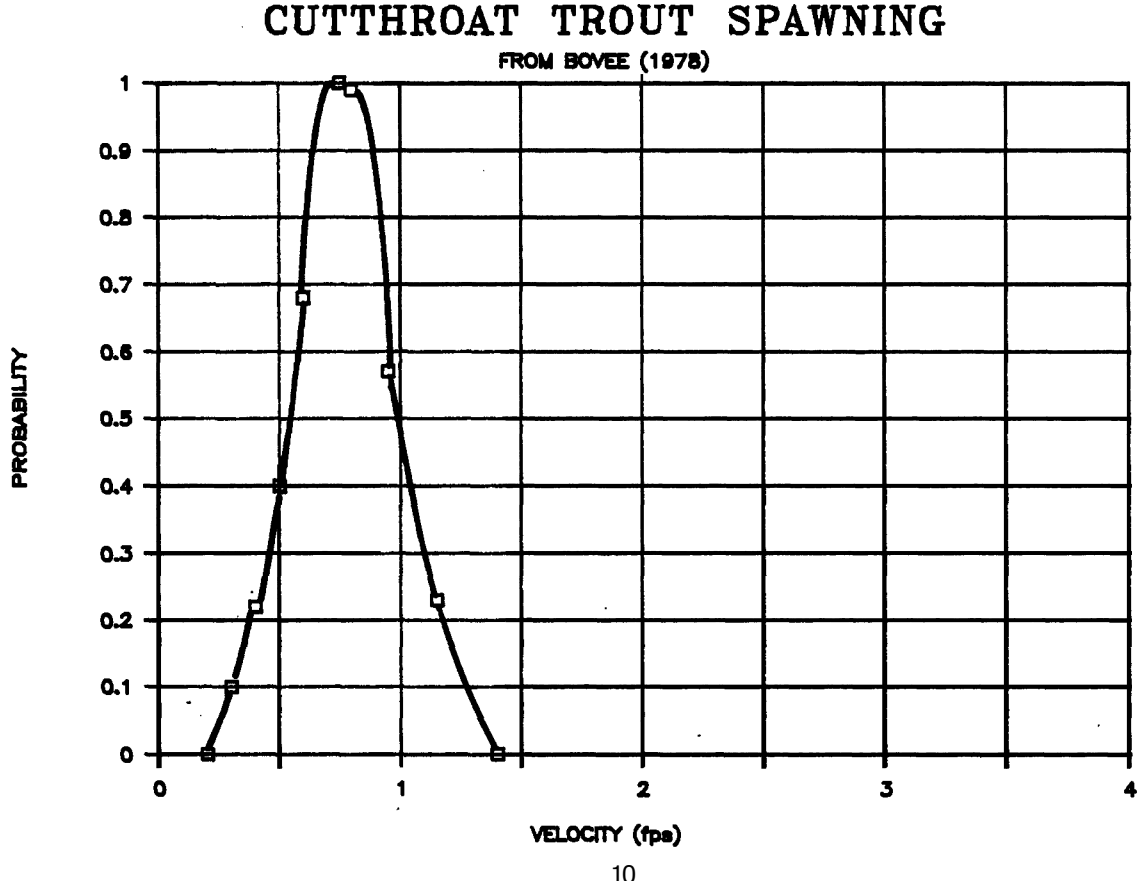
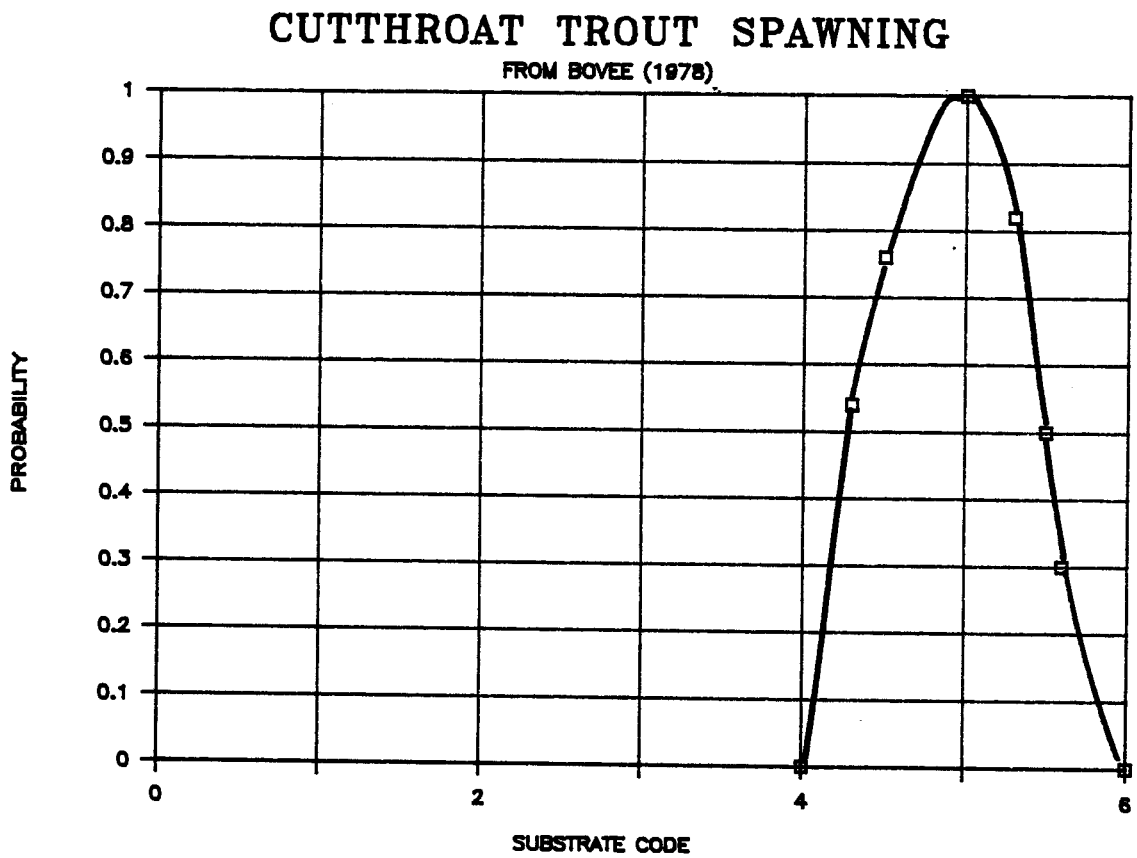
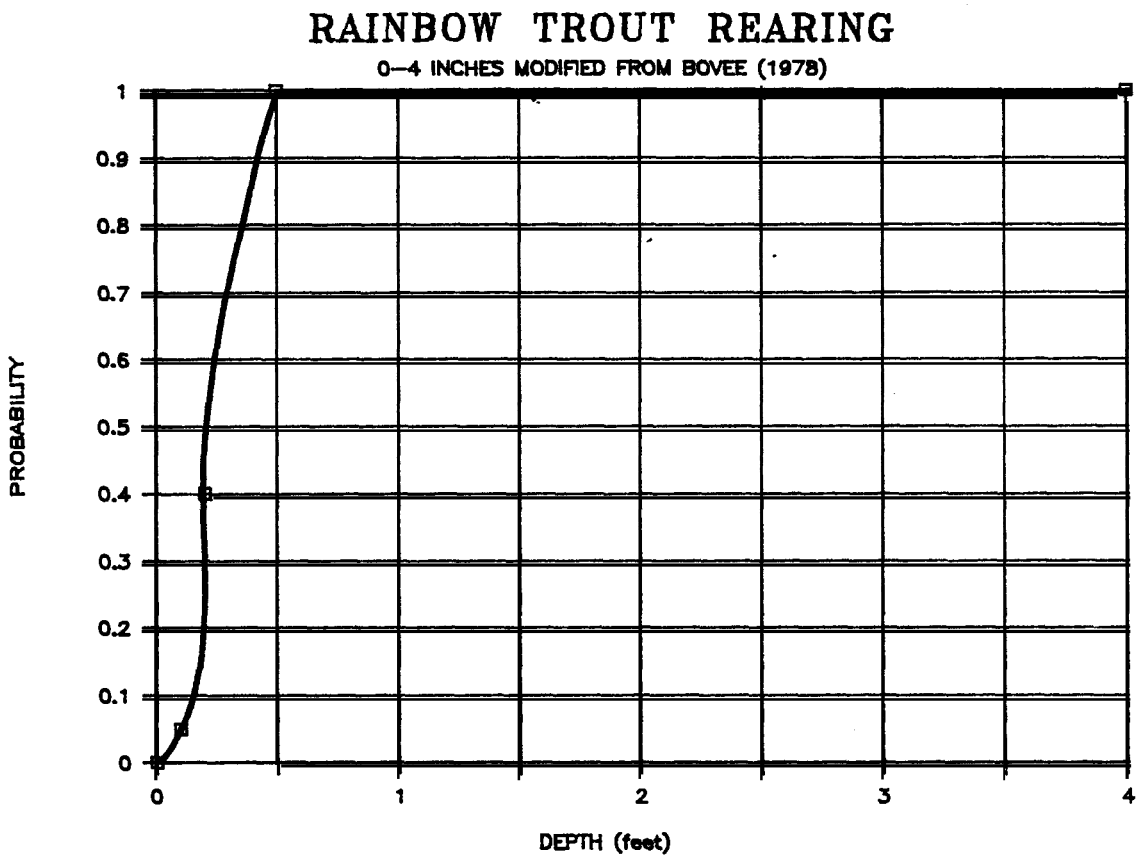
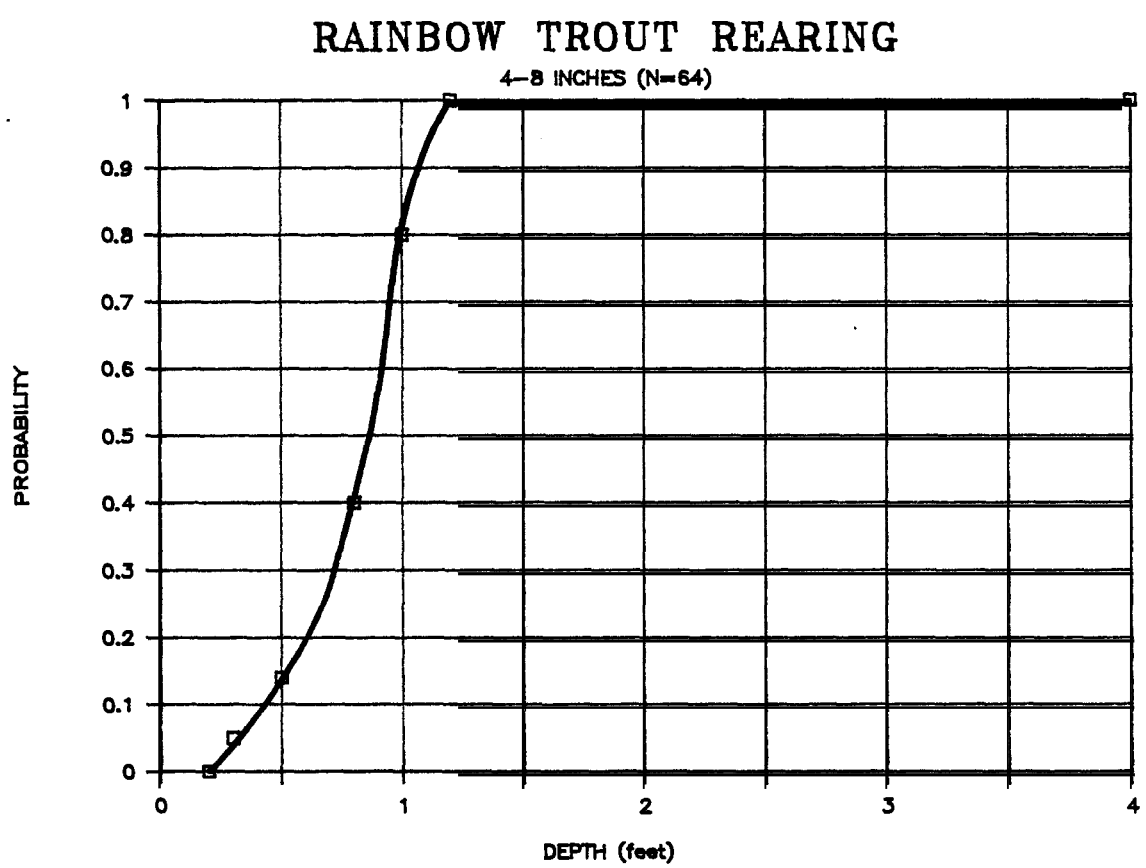
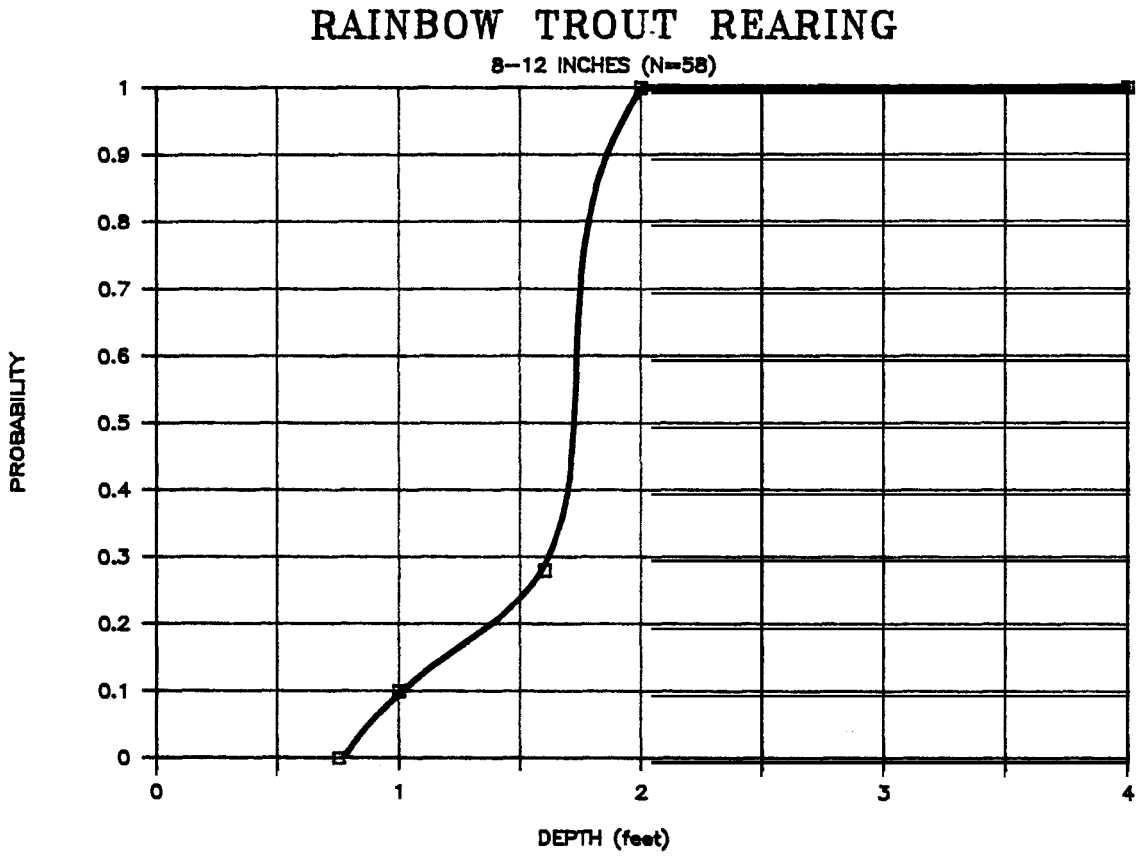
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

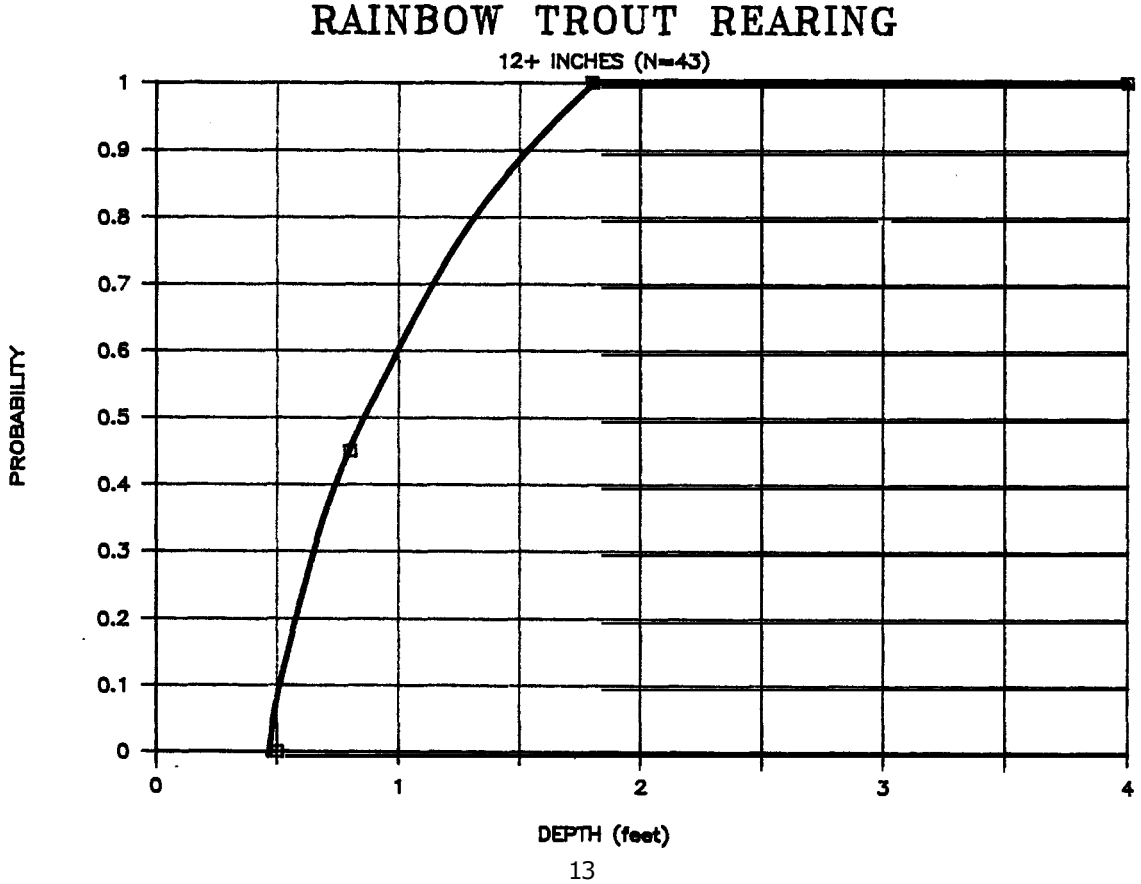

CUTTHROAT TROUT SPAWNING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)

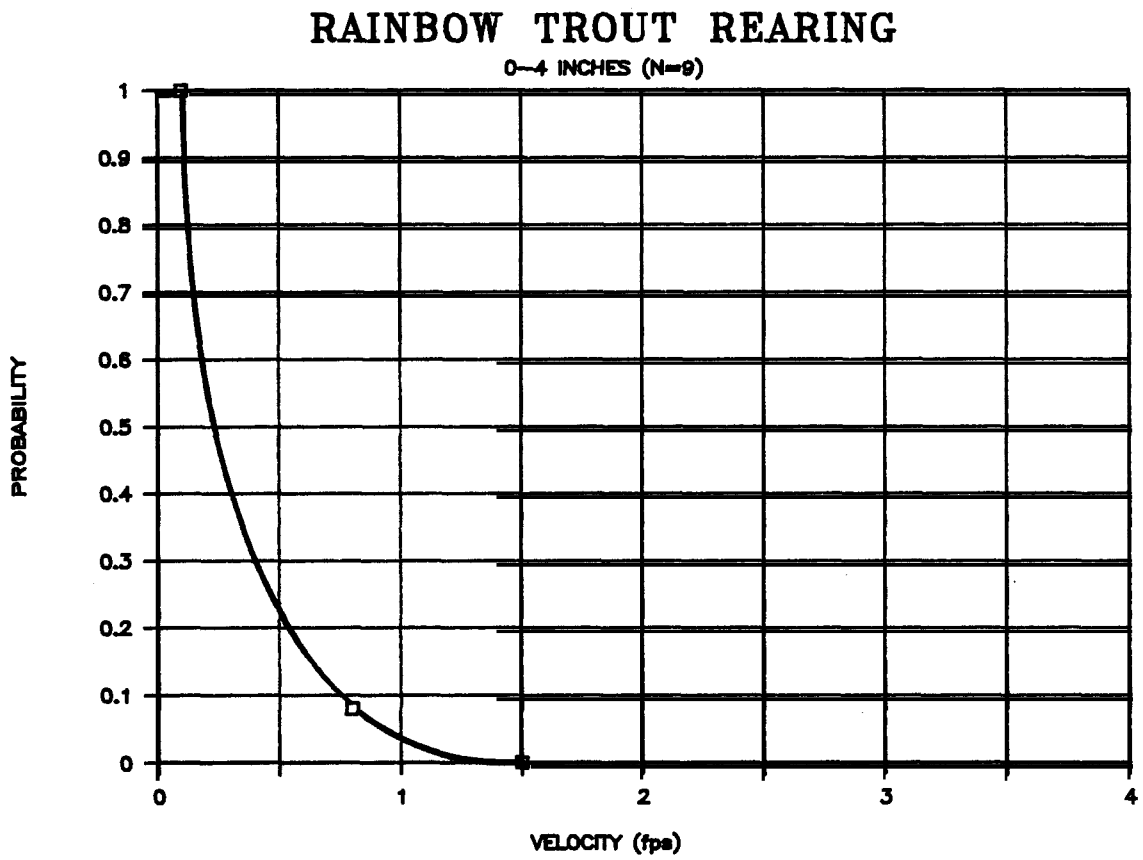

CUTTHROAT TROUT SPAWNING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
SUBSTRATE CODE


RAINBOW TROUT REARING
0–4 INCHES MODIFIED FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)


RAINBOW TROUT REARING
4–8 INCHES (N=64)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)


RAINBOW TROUT REARING
8–12 INCHES (N=58)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)


RAINBOW TROUT REARING
12+ INCHES (N=43)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)


RAINBOW TROUT REARING
0–4 INCHES (N=9)
PROBABILITY
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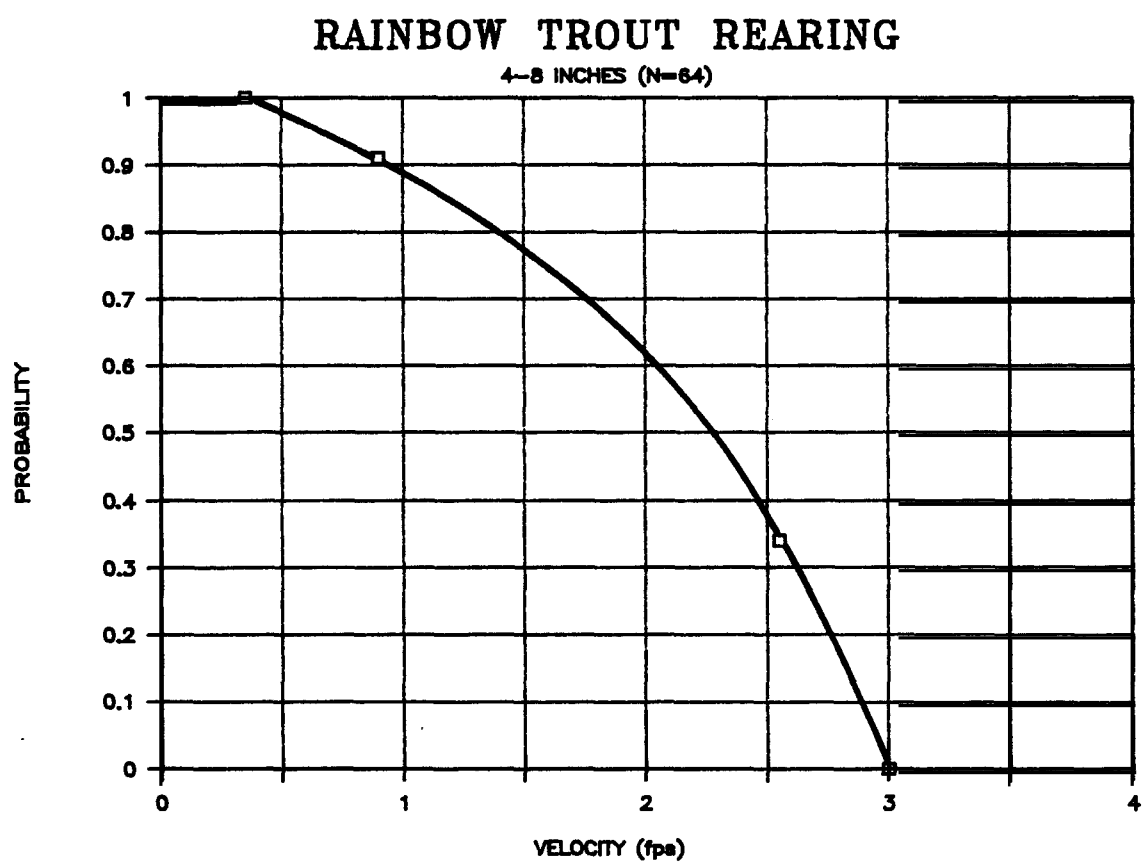
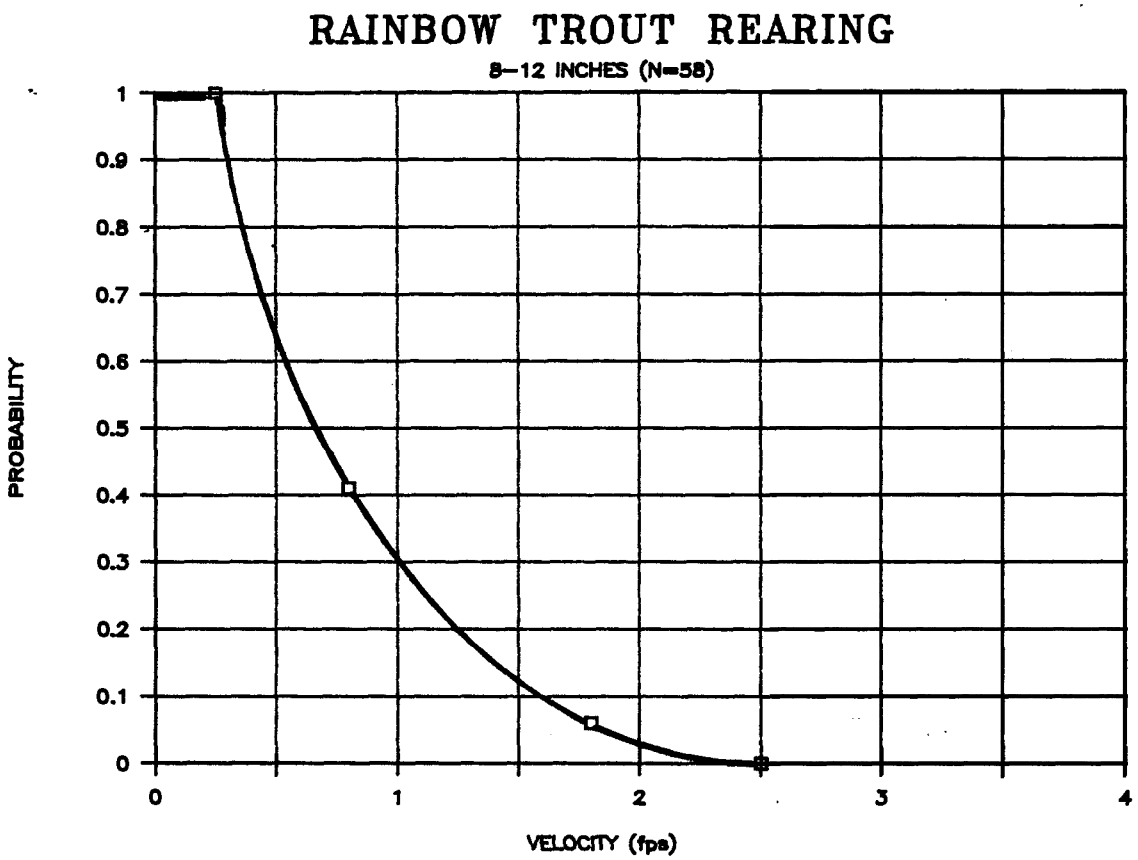
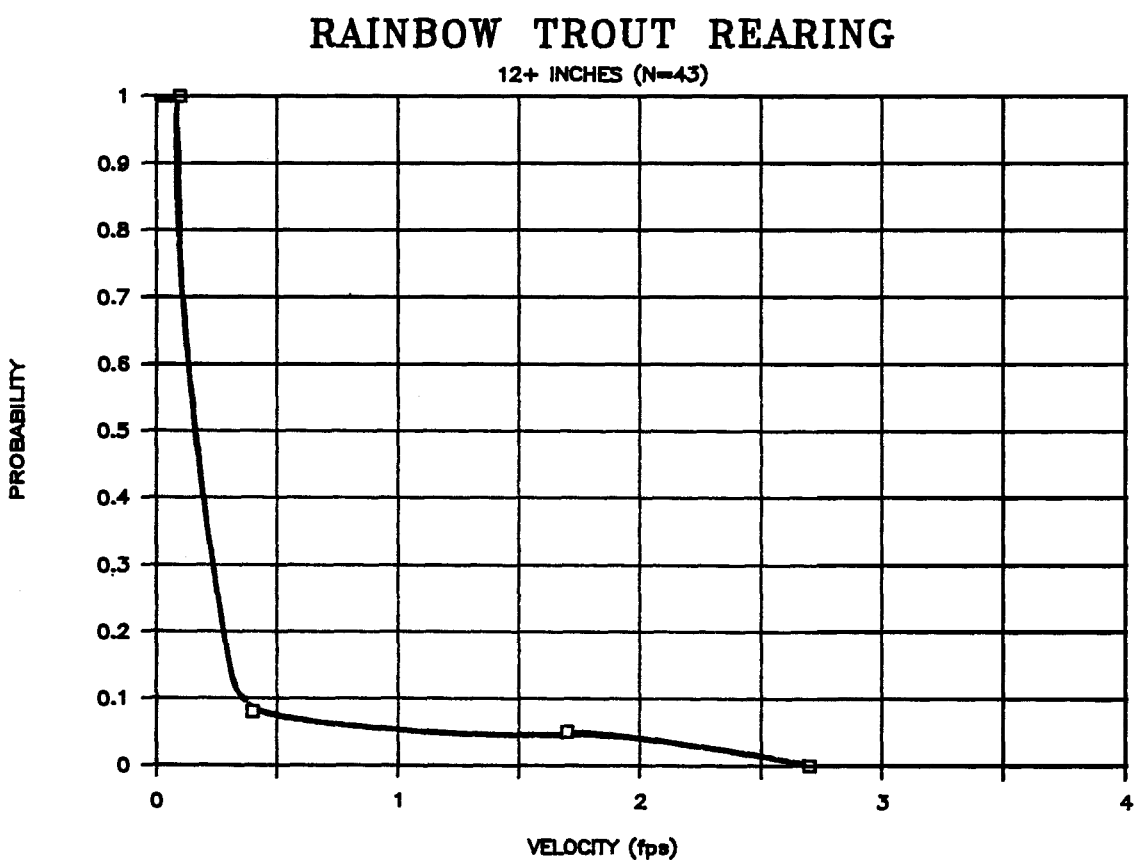
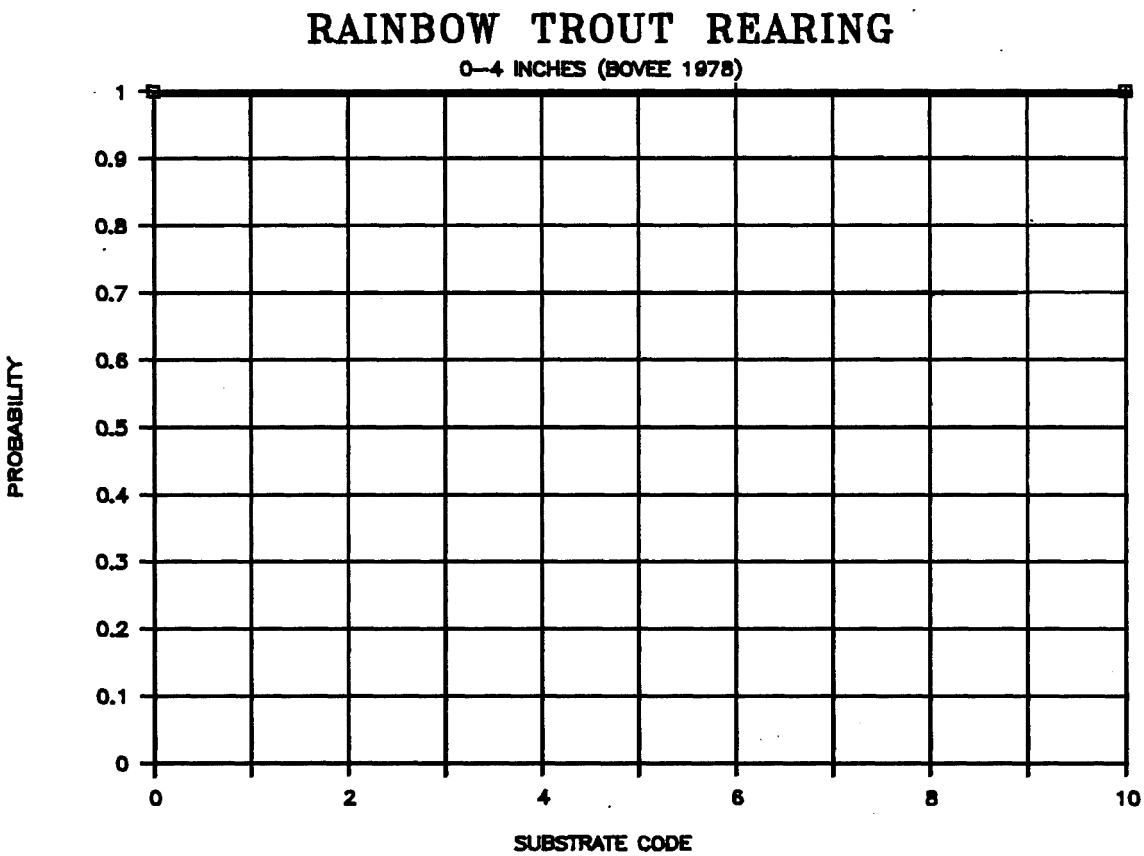
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)


RAINBOW TROUT REARING
4–8 INCHES (N=64)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)


RAINBOW TROUT REARING
8–12 INCHES (N=58)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)


RAINBOW TROUT REARING
12+ INCHES (N=43)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)


RAINBOW TROUT REARING
0–4 INCHES (BOVEE 1978)
PROBABILITY
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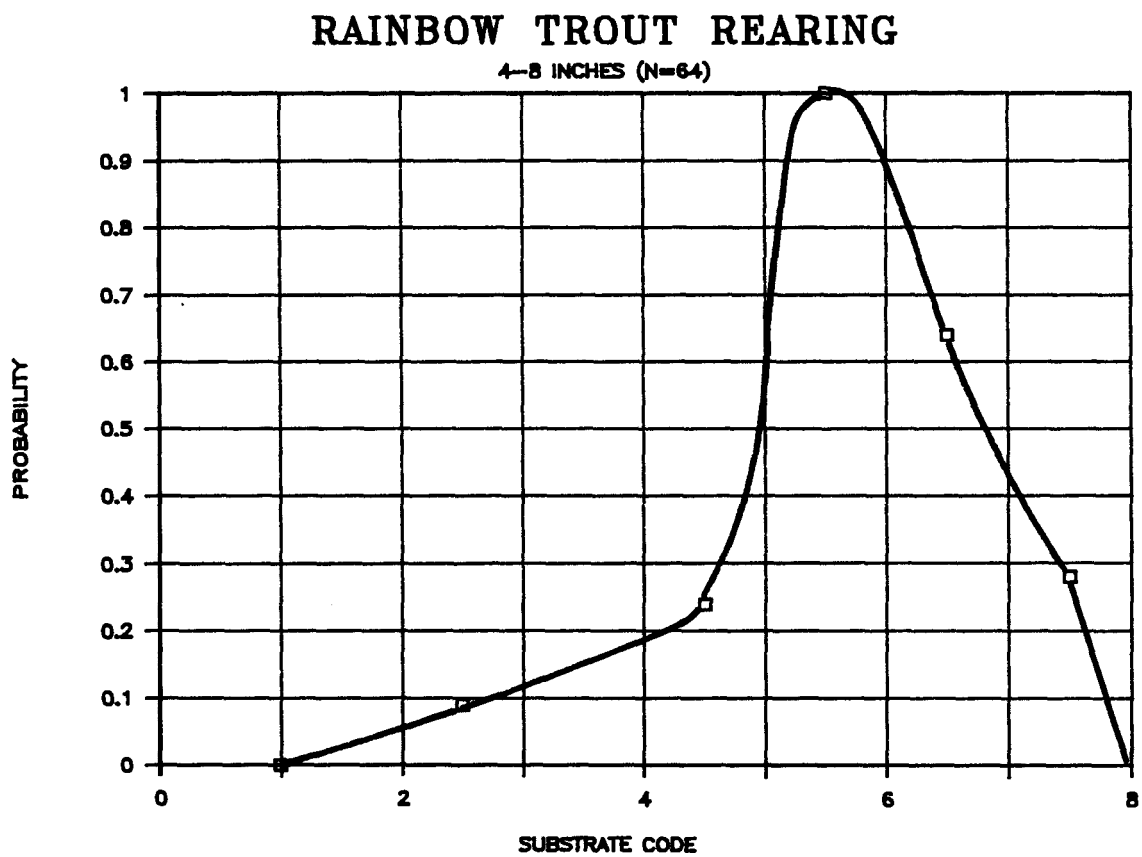
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
10
SUBSTRATE CODE


RAINBOW TROUT REARING
4–8 INCHES (N=64)
PROBABILITY
1
0.9
0.8
0.7
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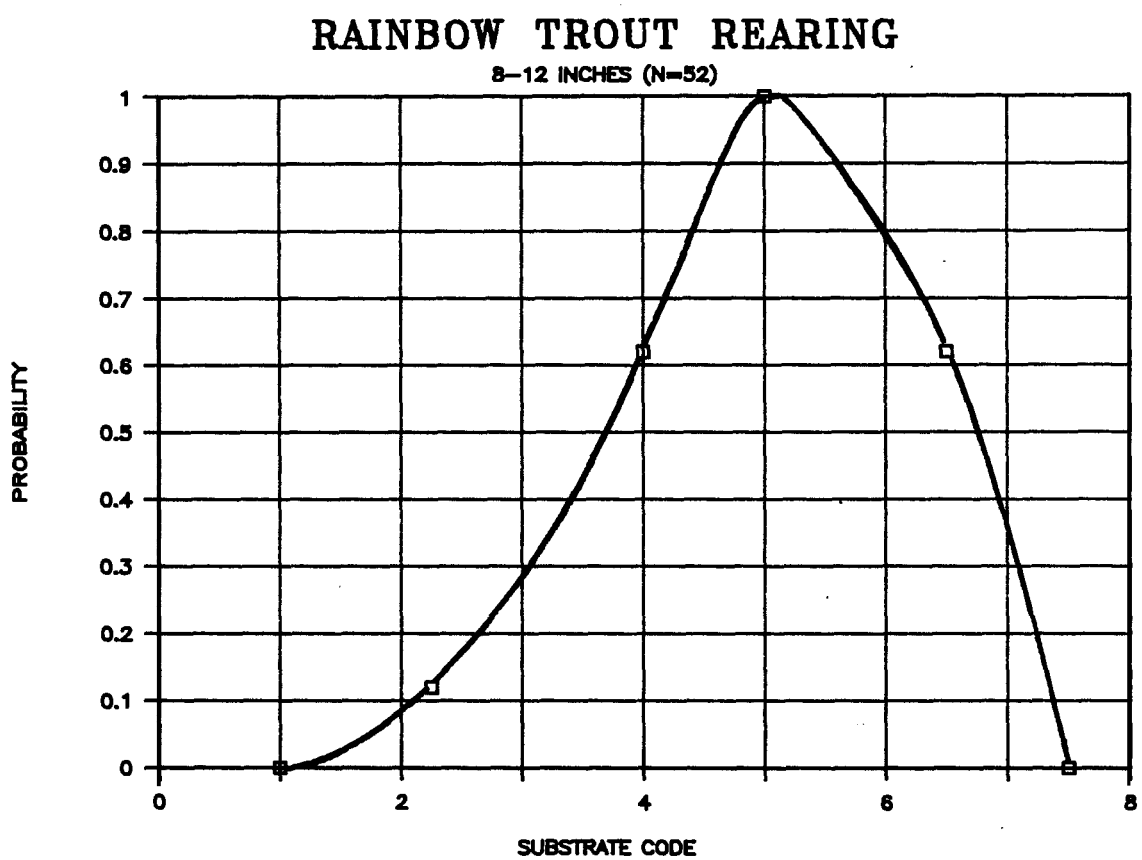
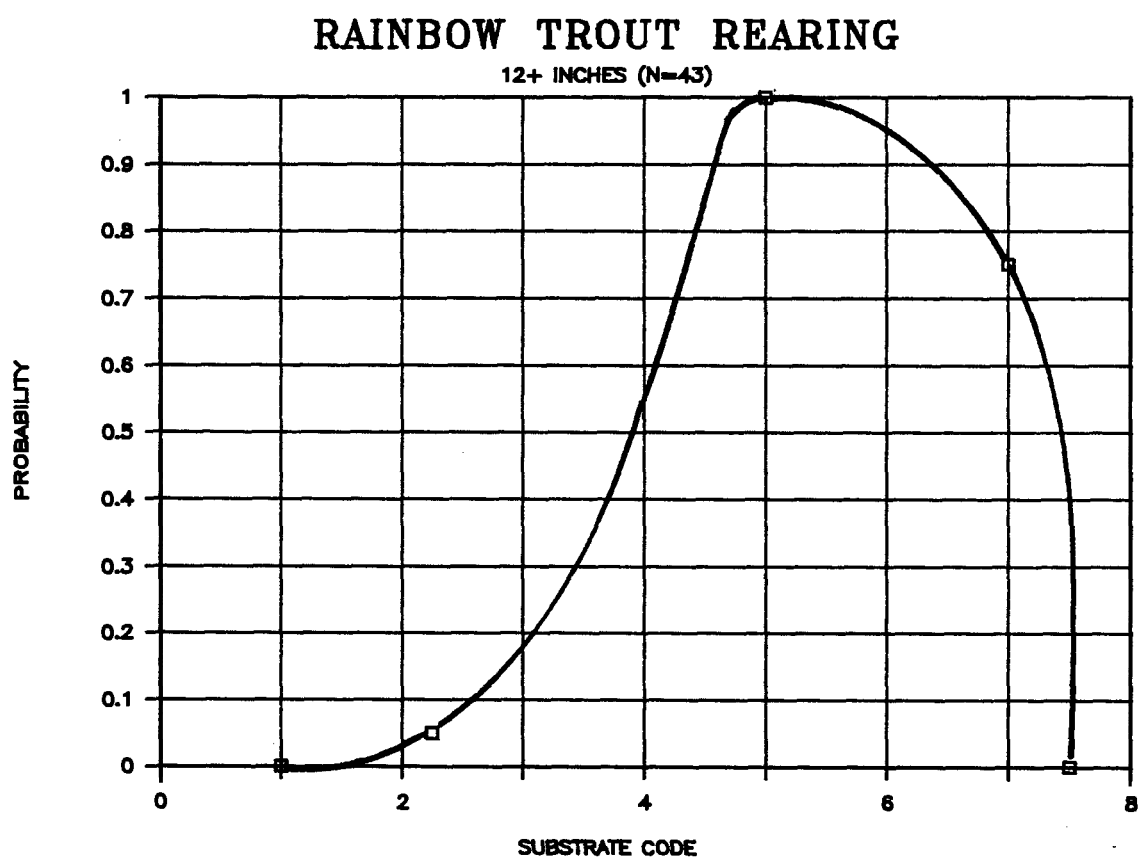
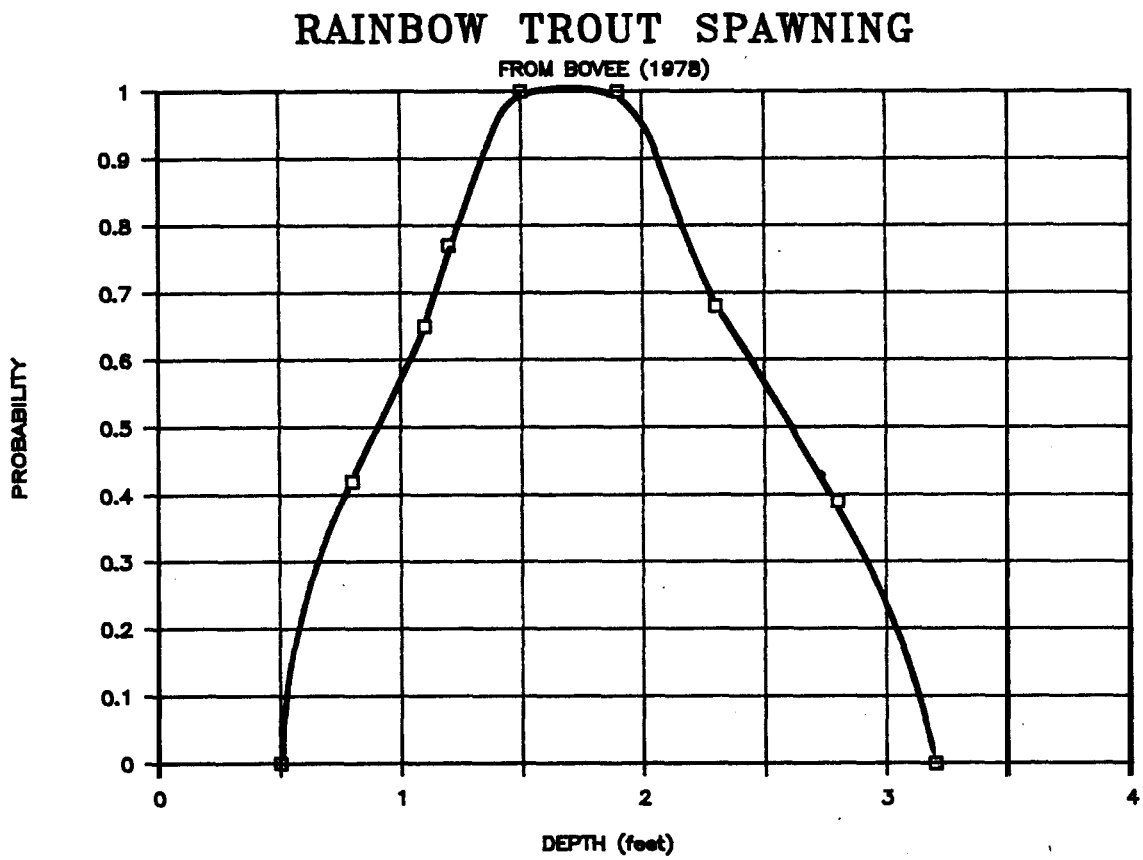
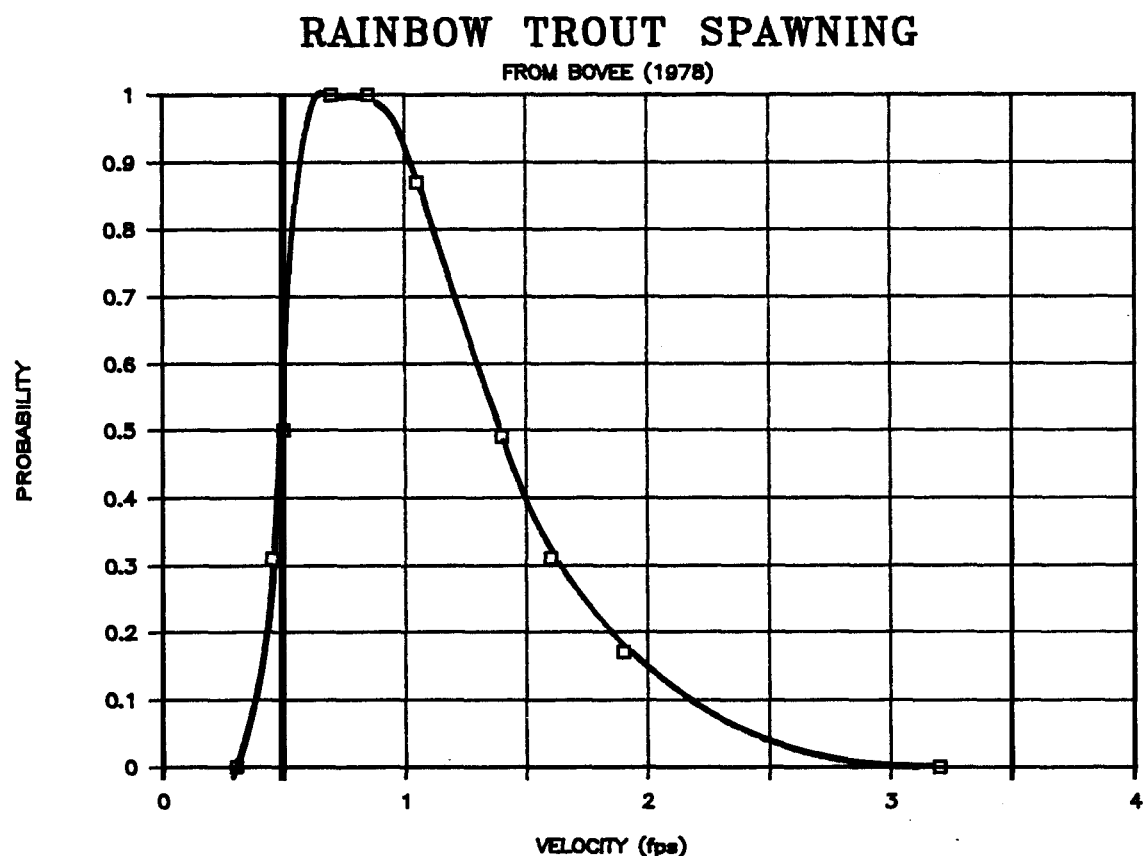
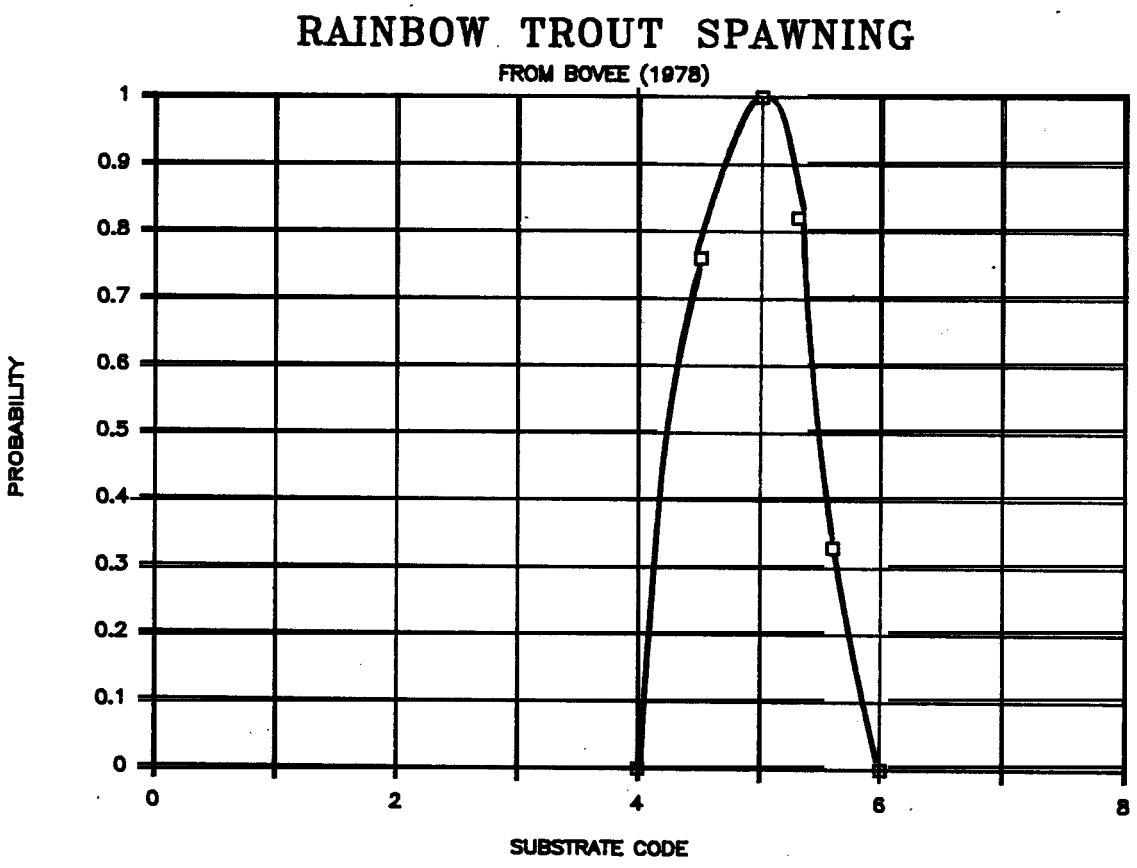
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE

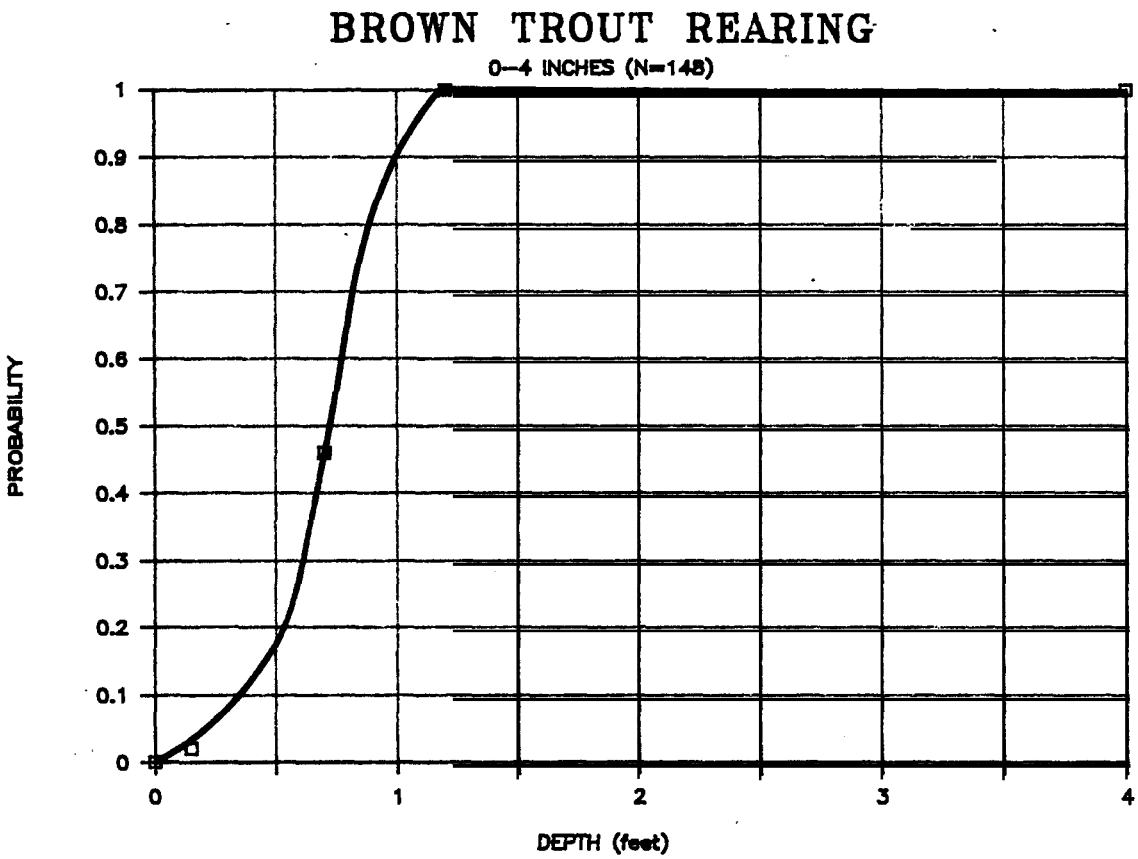

RAINBOW TROUT REARING
8–12 INCHES (N=52)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE

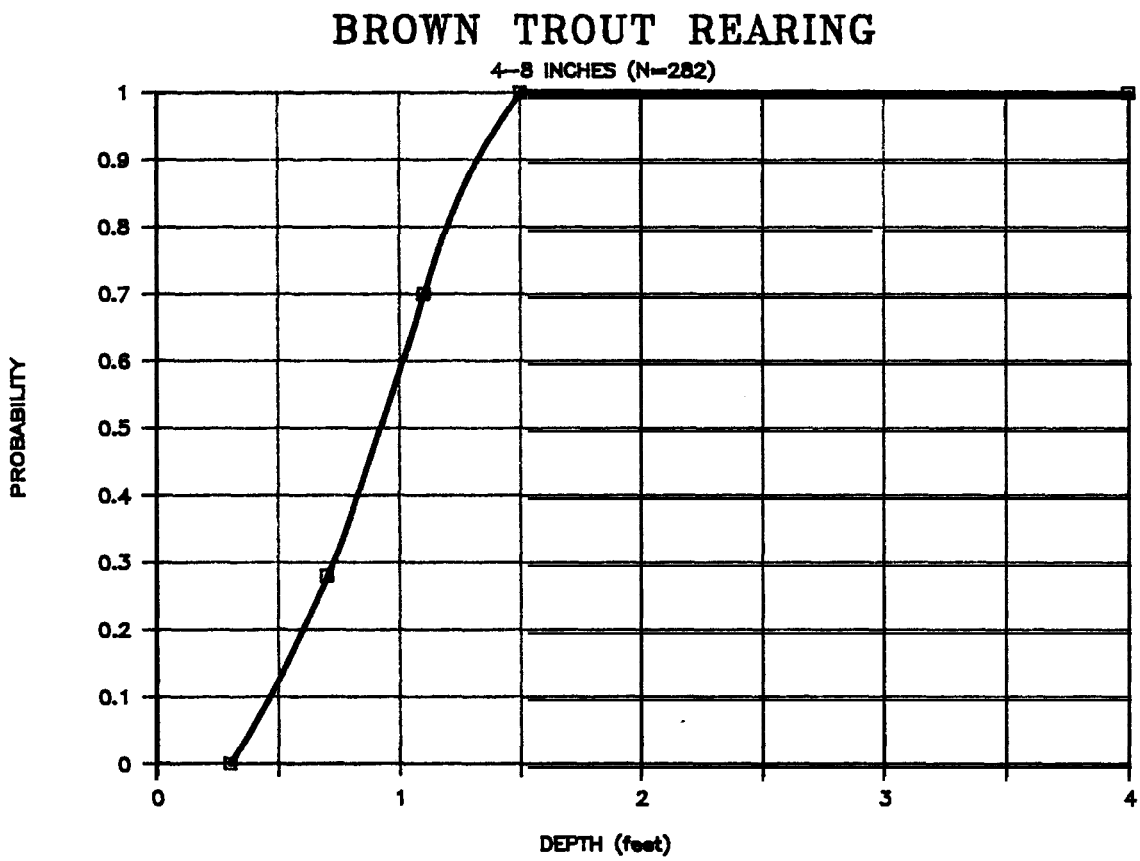

RAINBOW TROUT REARING
12+ INCHES (N=43)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE

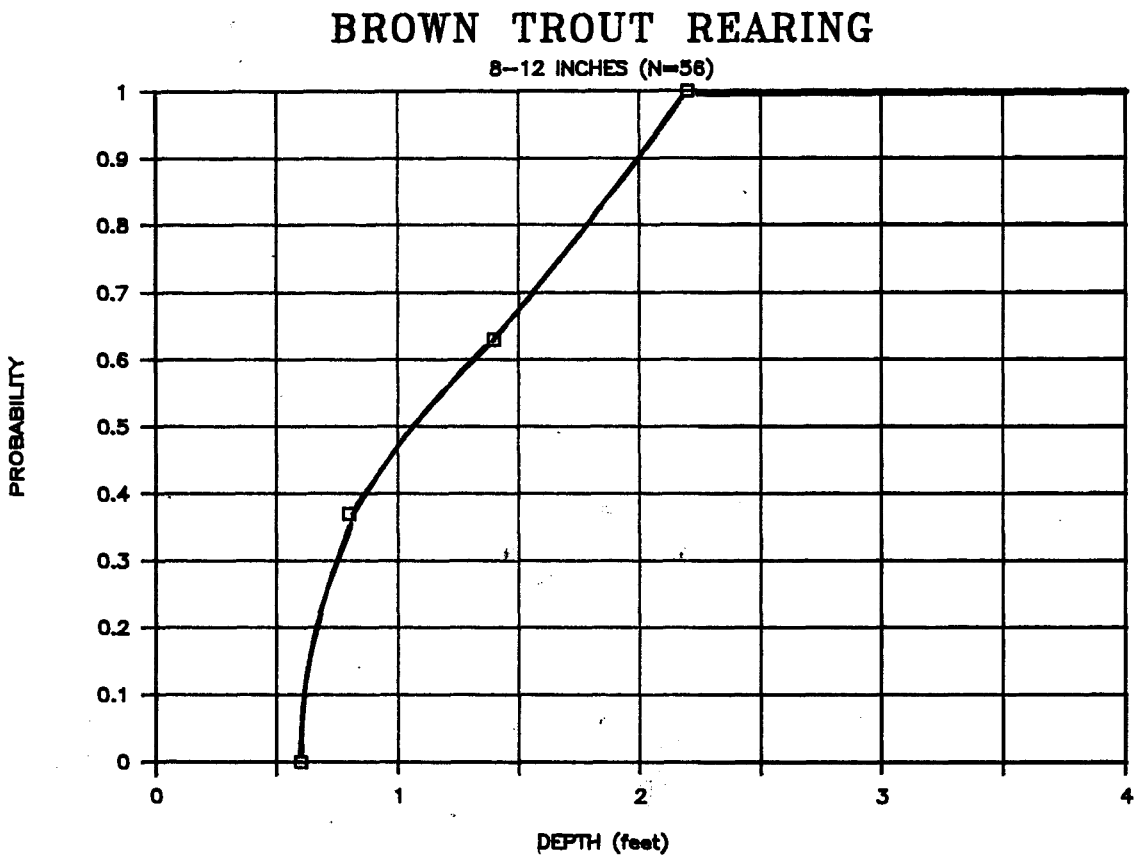

RAINBOW TROUT SPAWNING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

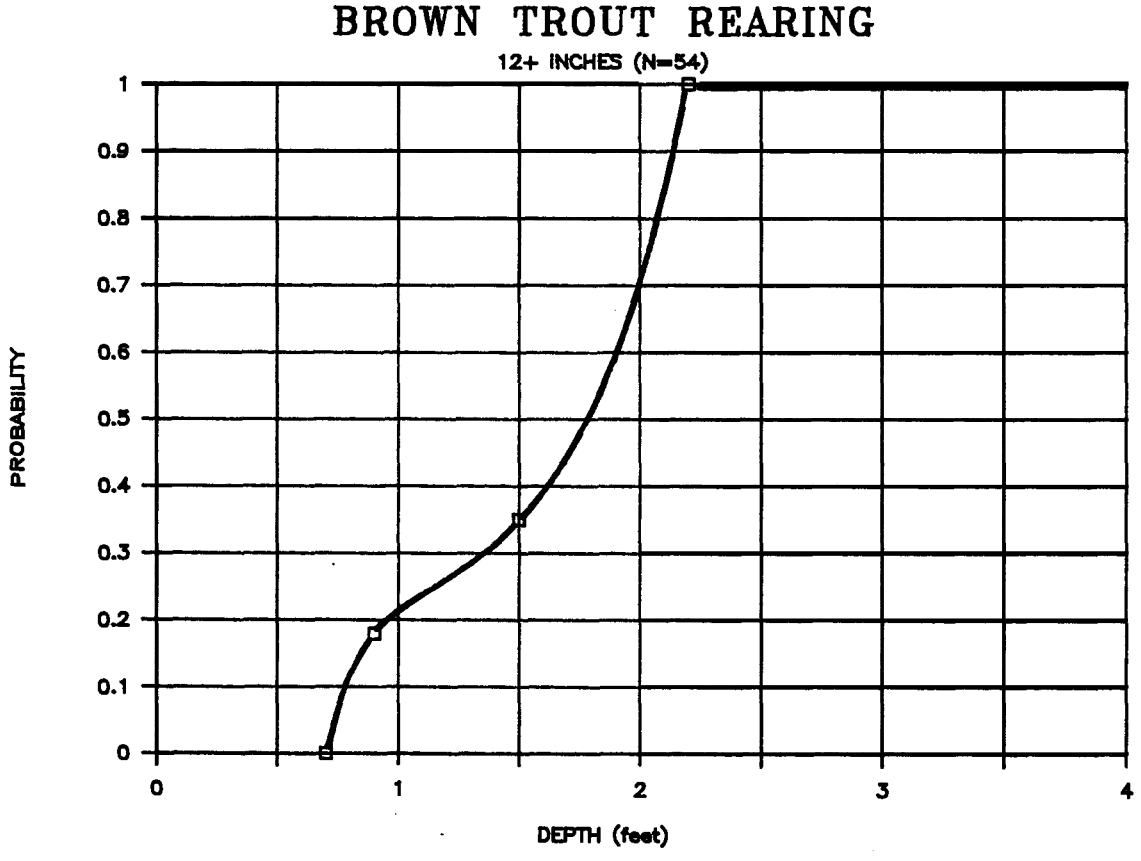

RAINBOW TROUT SPAWNING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)

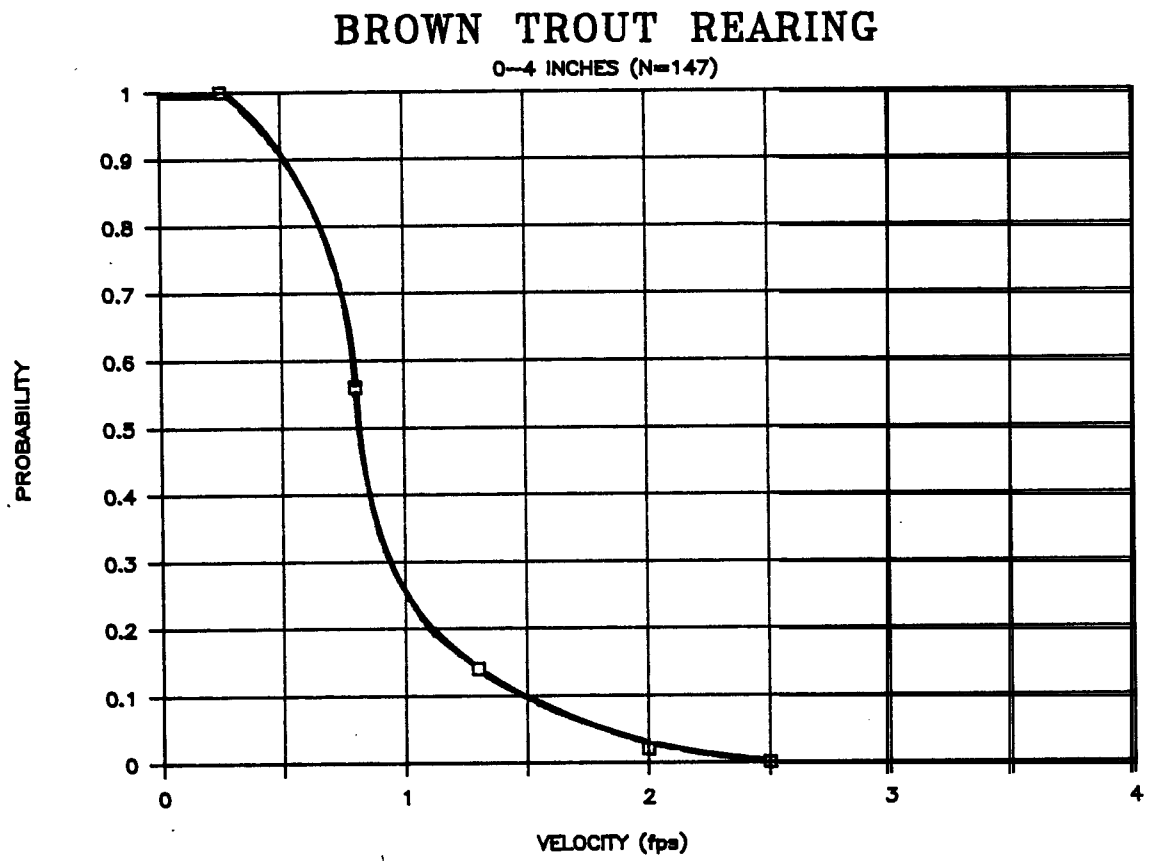

RAINBOW TROUT SPAWNING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE

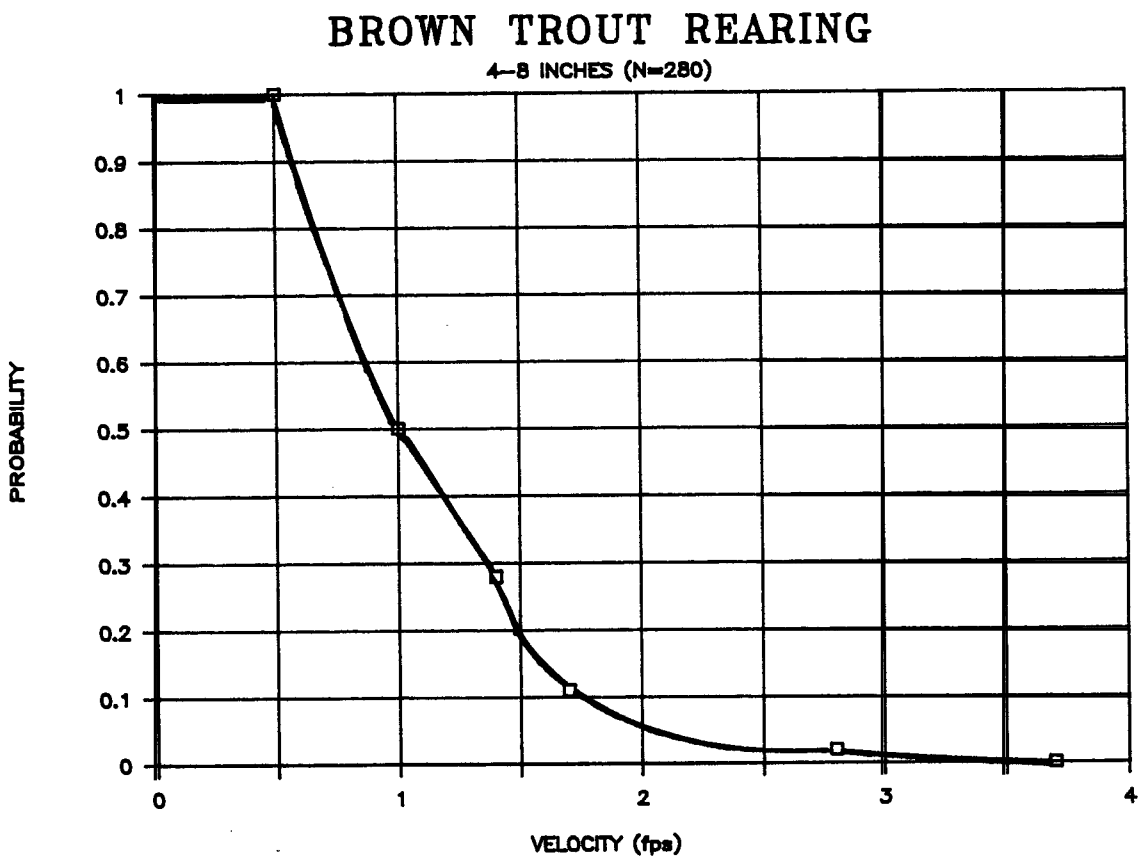

BROWN TROUT REARING
0–4 INCHES (N=148)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

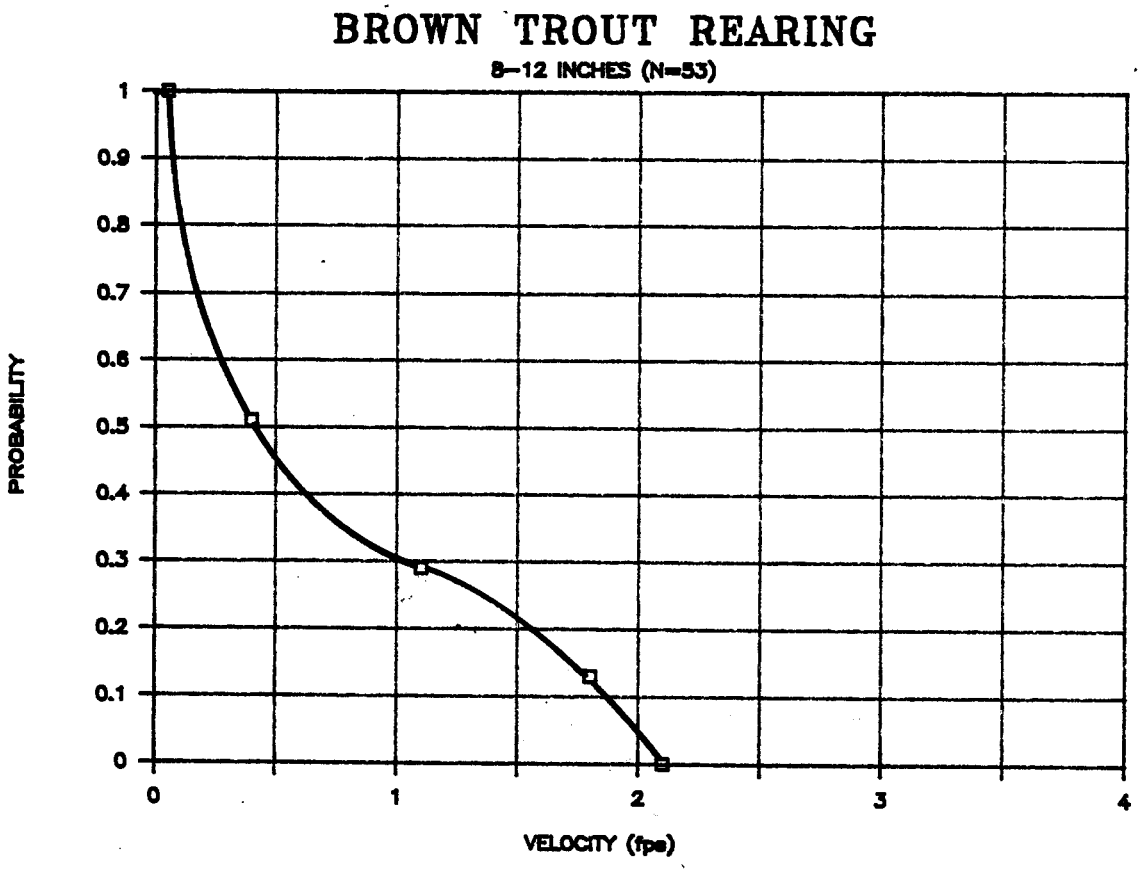

BROWN TROUT REARING
4–8 INCHES (N=282)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

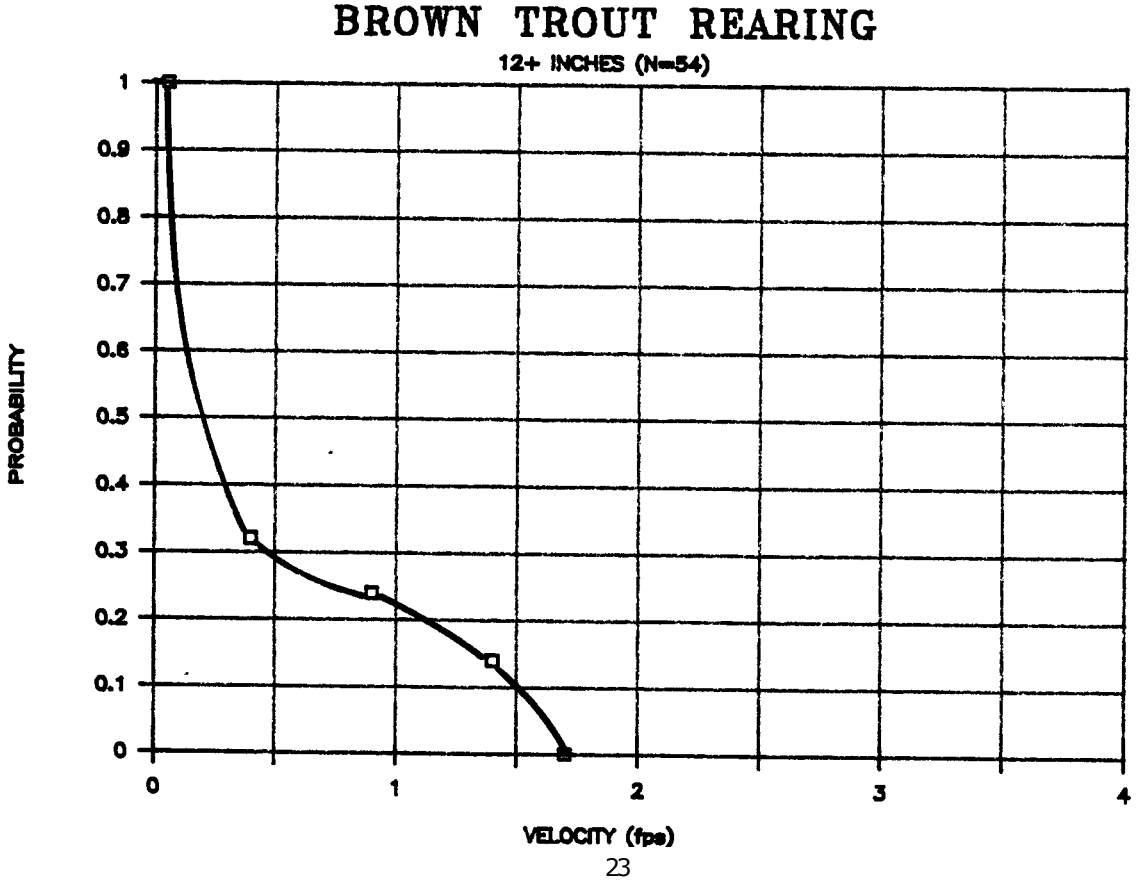

BROWN TROUT REARING
8–12 INCHES (N=56)
PROBABILITY
DEPTH (feet)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0
1
2
3
4

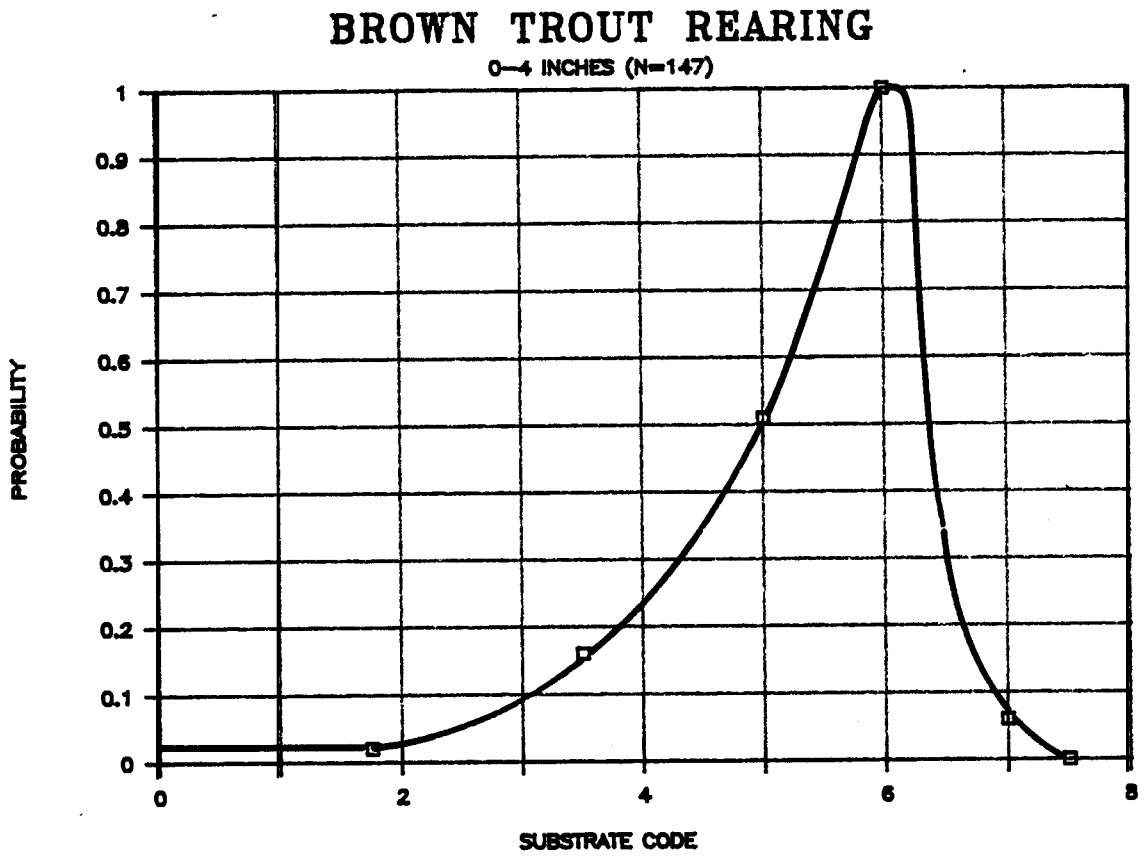

BROWN TROUT REARING
12+ INCHES (N=54)
PROBABILITY
DEPTH (feet)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0
1
2
3
4

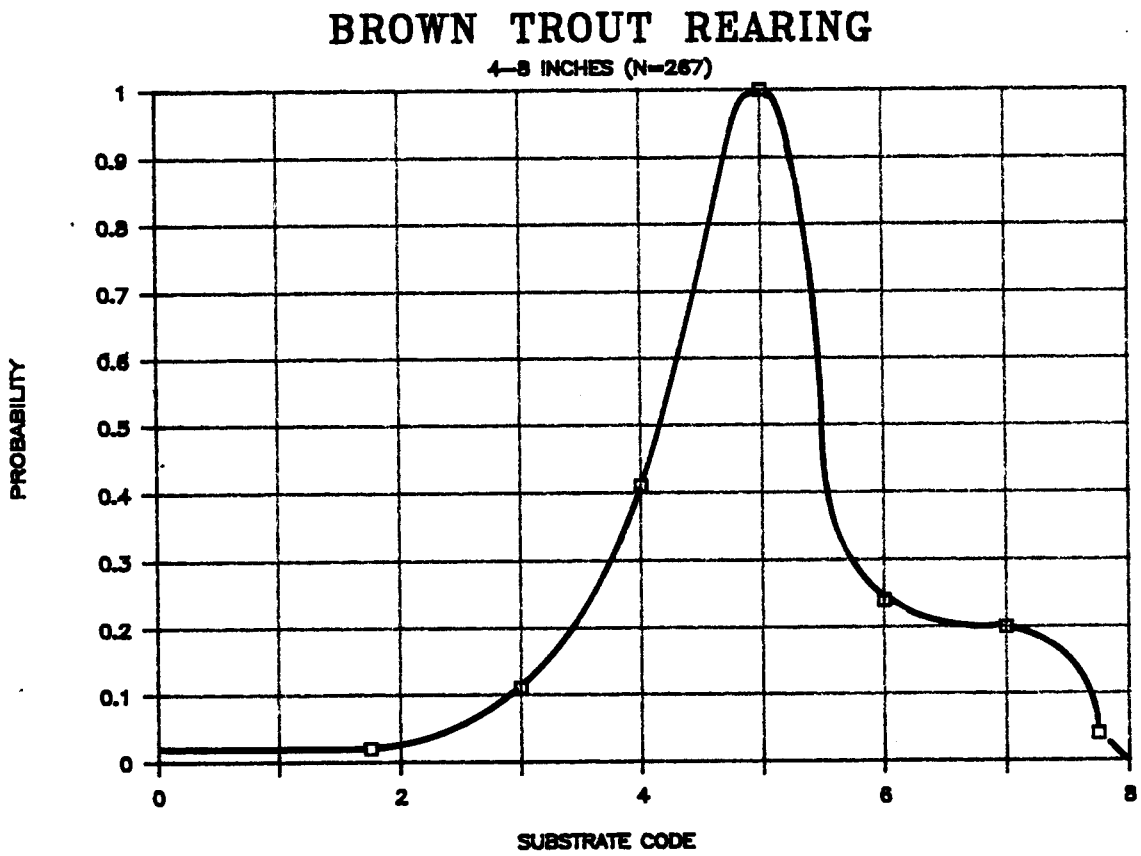

BROWN TROUT REARING
0–4 INCHES (N=147)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)

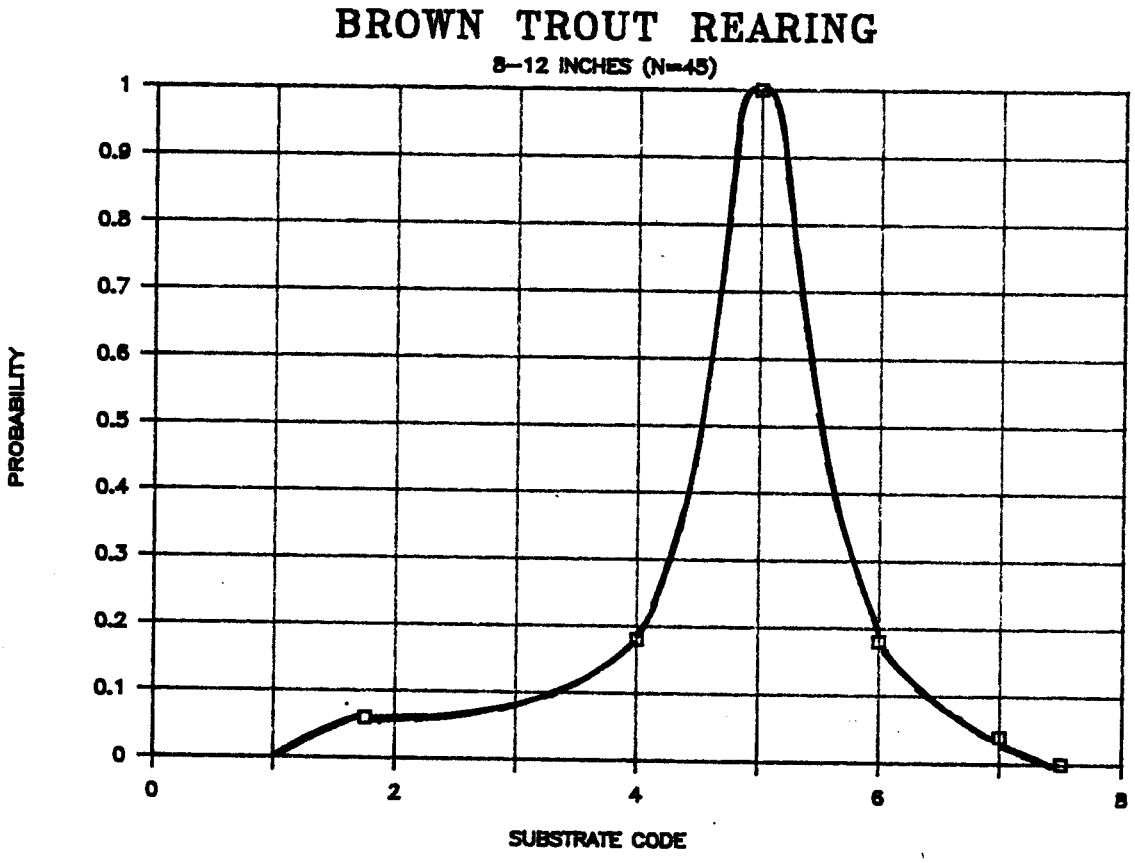

BROWN TROUT REARING
4–8 INCHES (N=280)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)

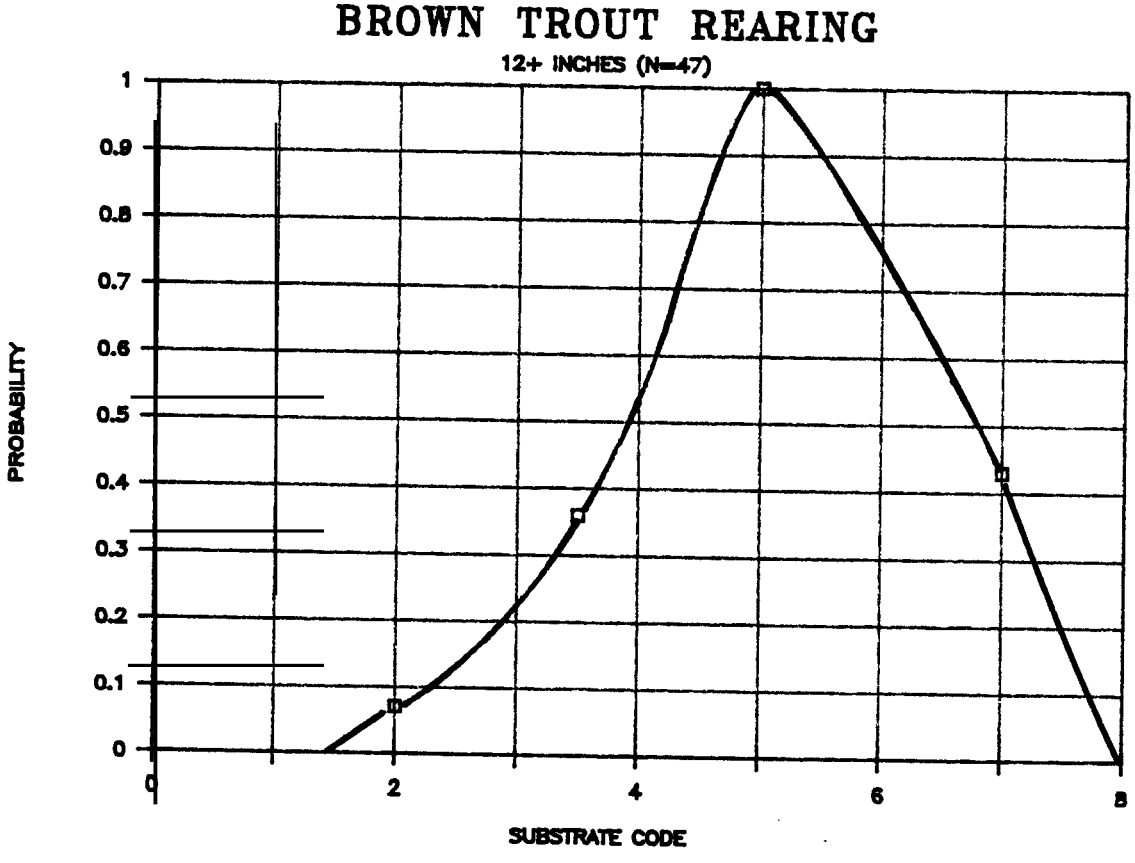

BROWN TROUT REARING
8–12 INCHES (N=53)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)

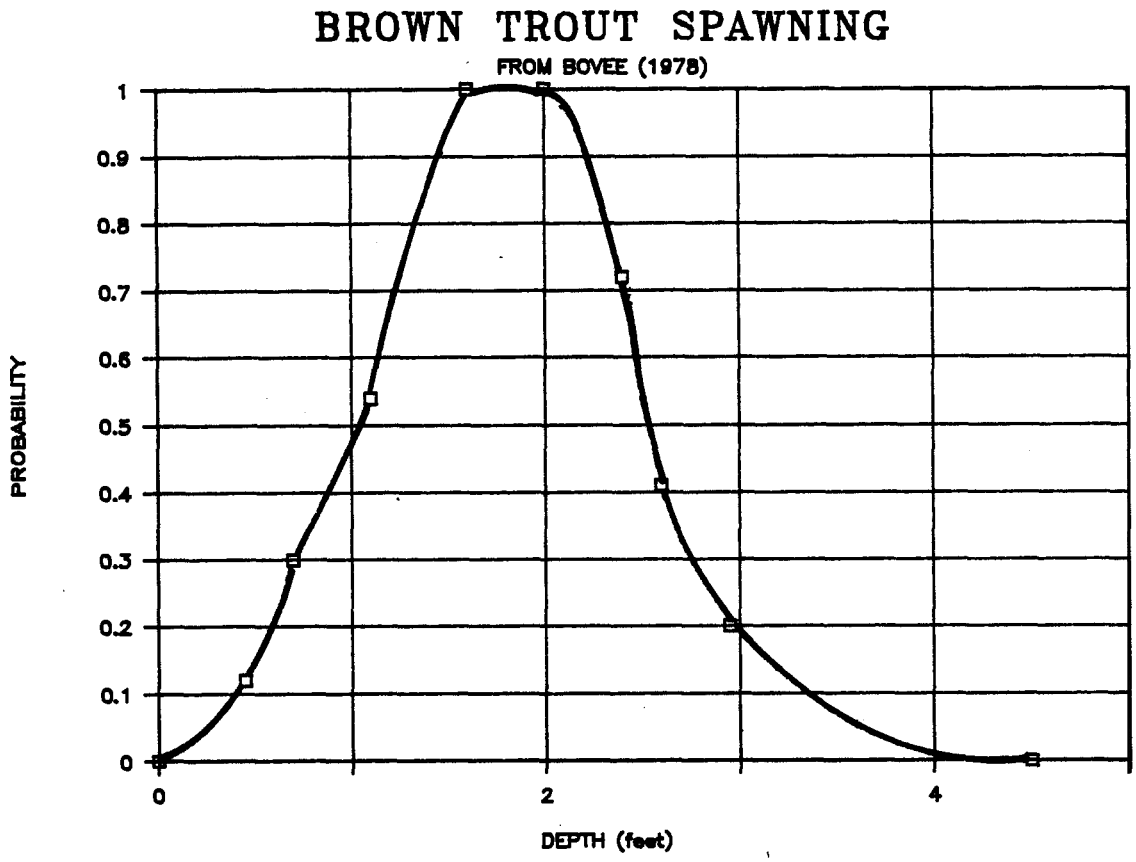

BROWN TROUT REARING
12+ INCHES (N=54)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)

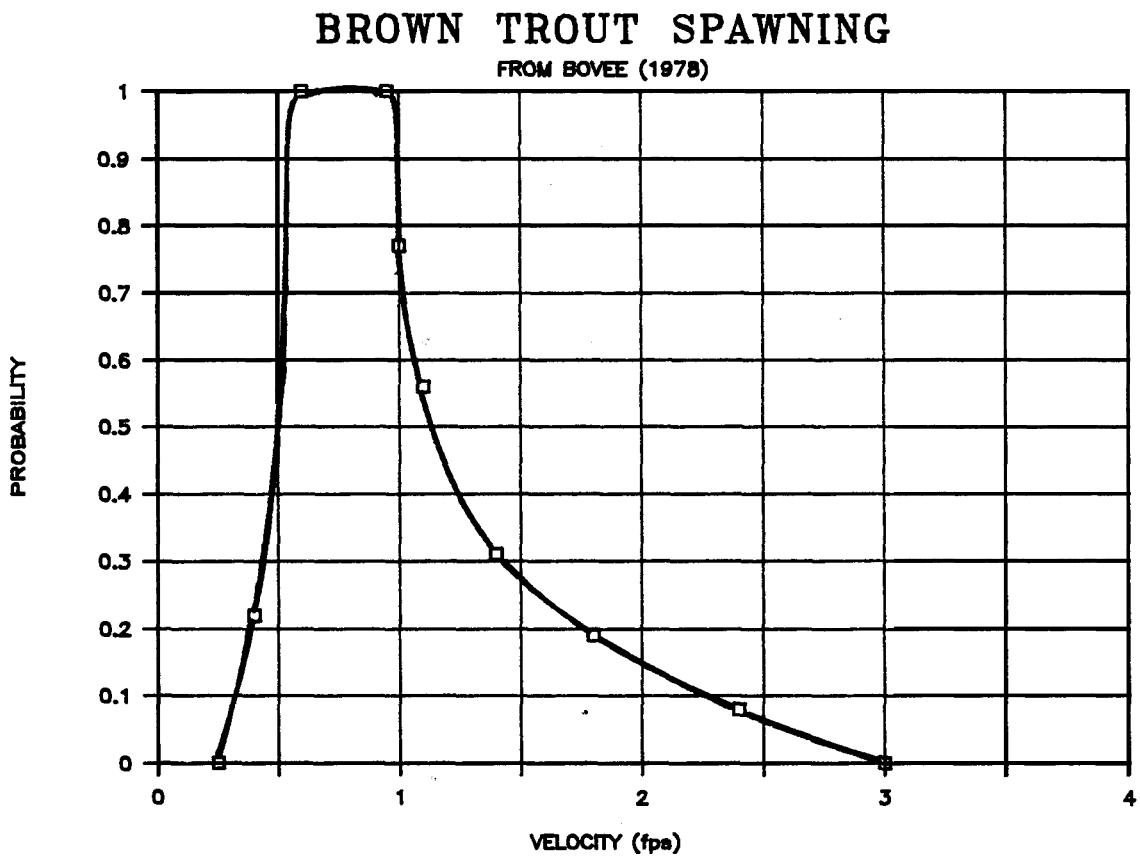

BROWN TROUT REARING
0–4 INCHES (N=147)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE

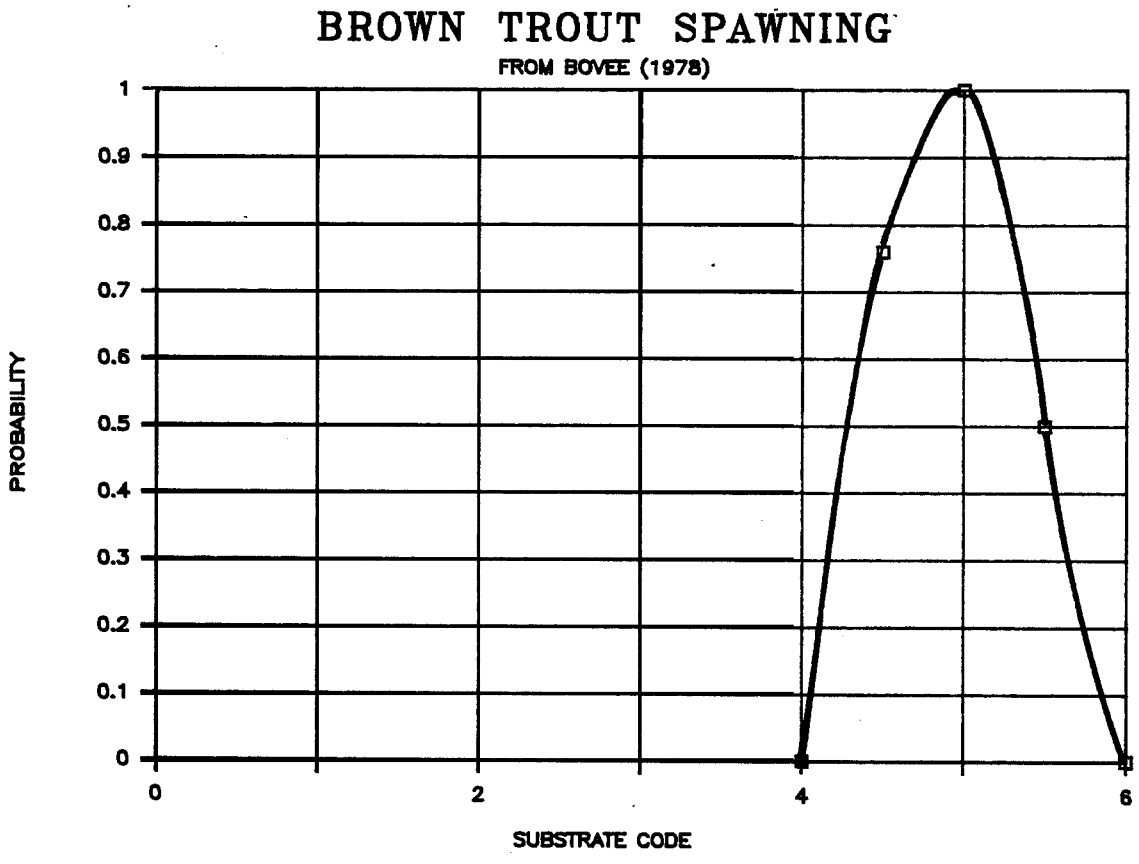

BROWN TROUT REARING
4–8 INCHES (N=267)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE

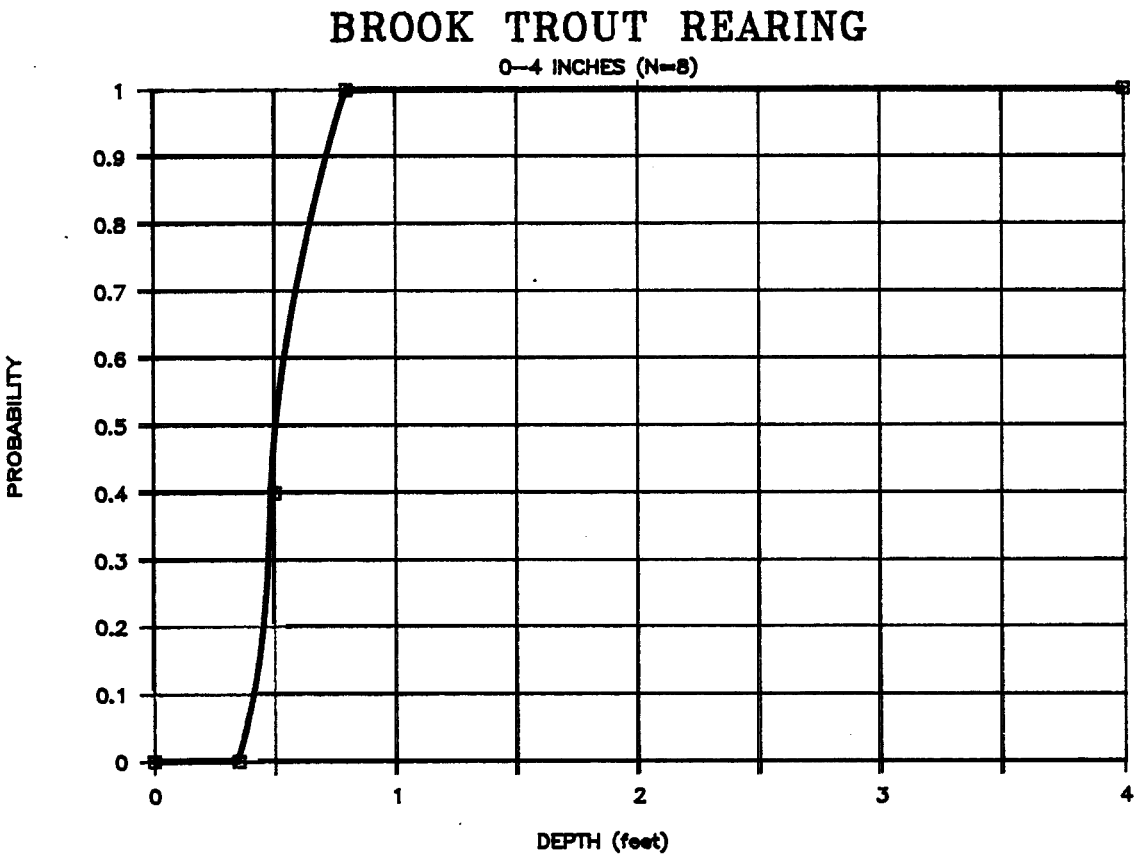

BROWN TROUT REARING
8–12 INCHES (N=45)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE

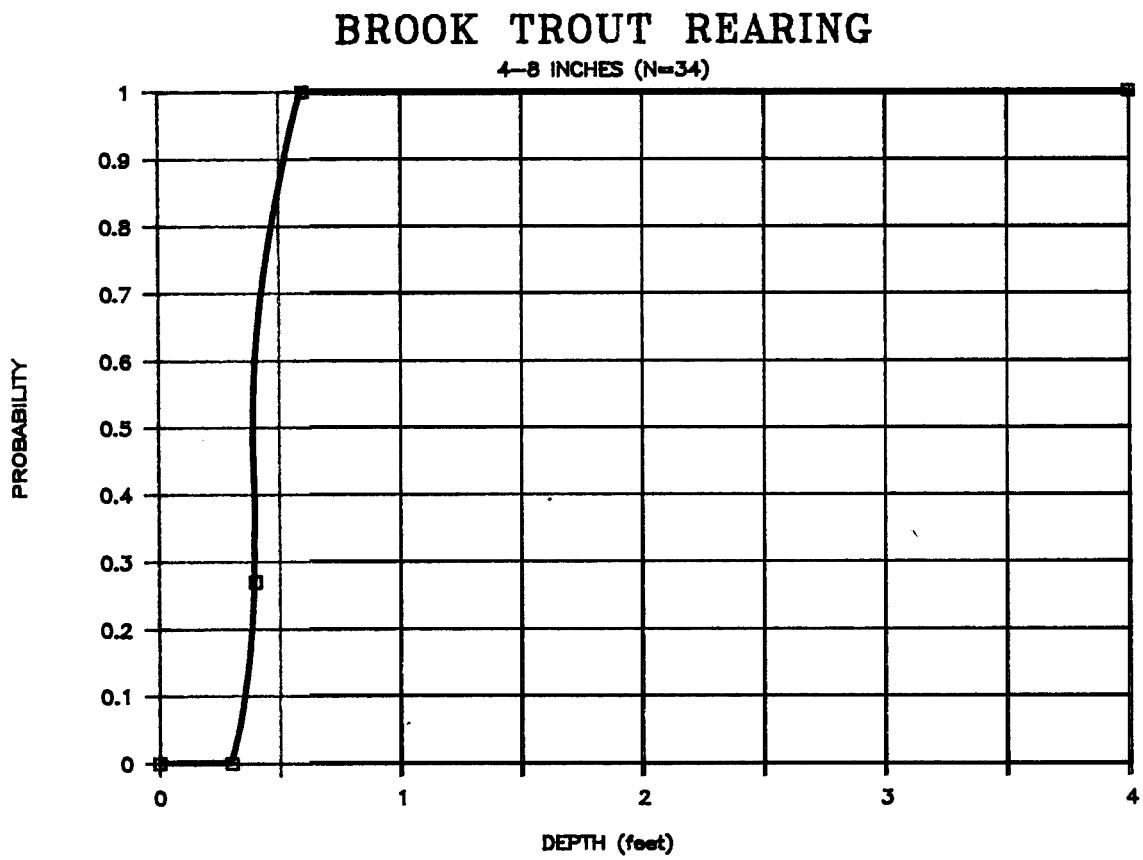

BROWN TROUT REARING
12+ INCHES (N=47)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE

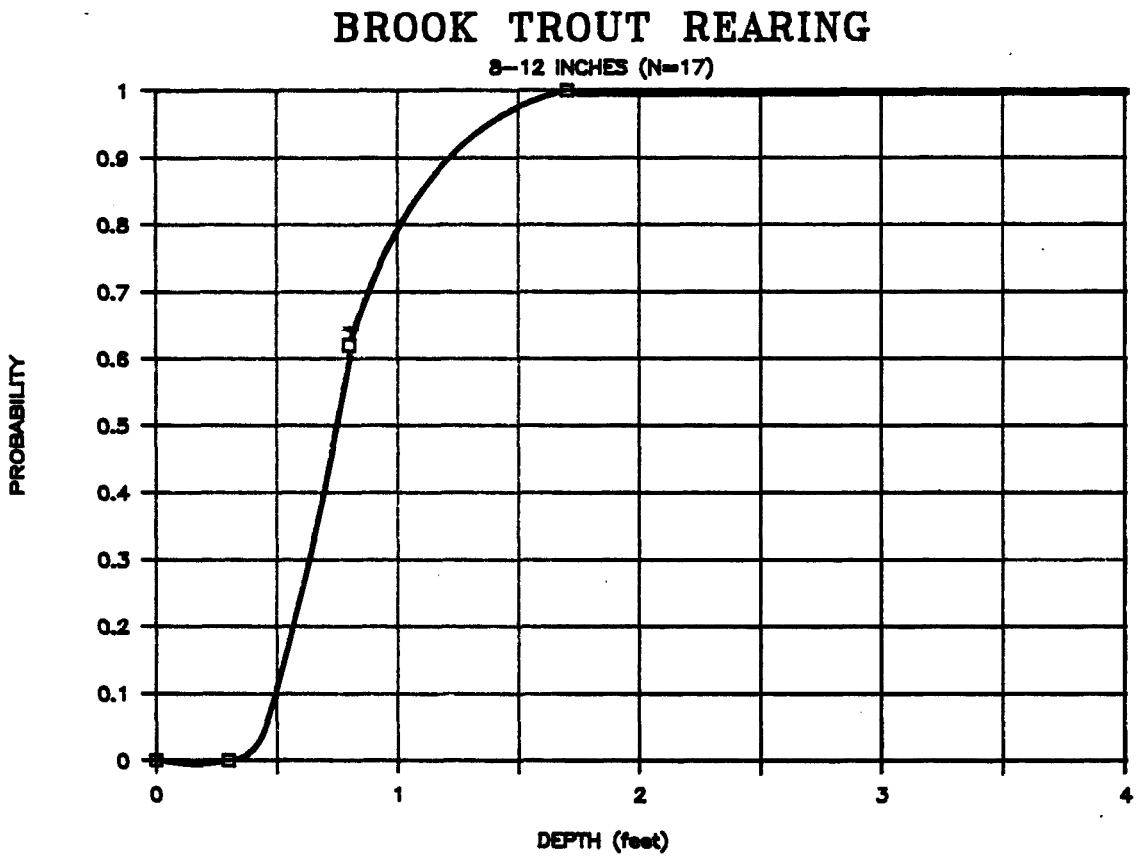

BROWN TROUT SPAWNING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
DEPTH (feet)

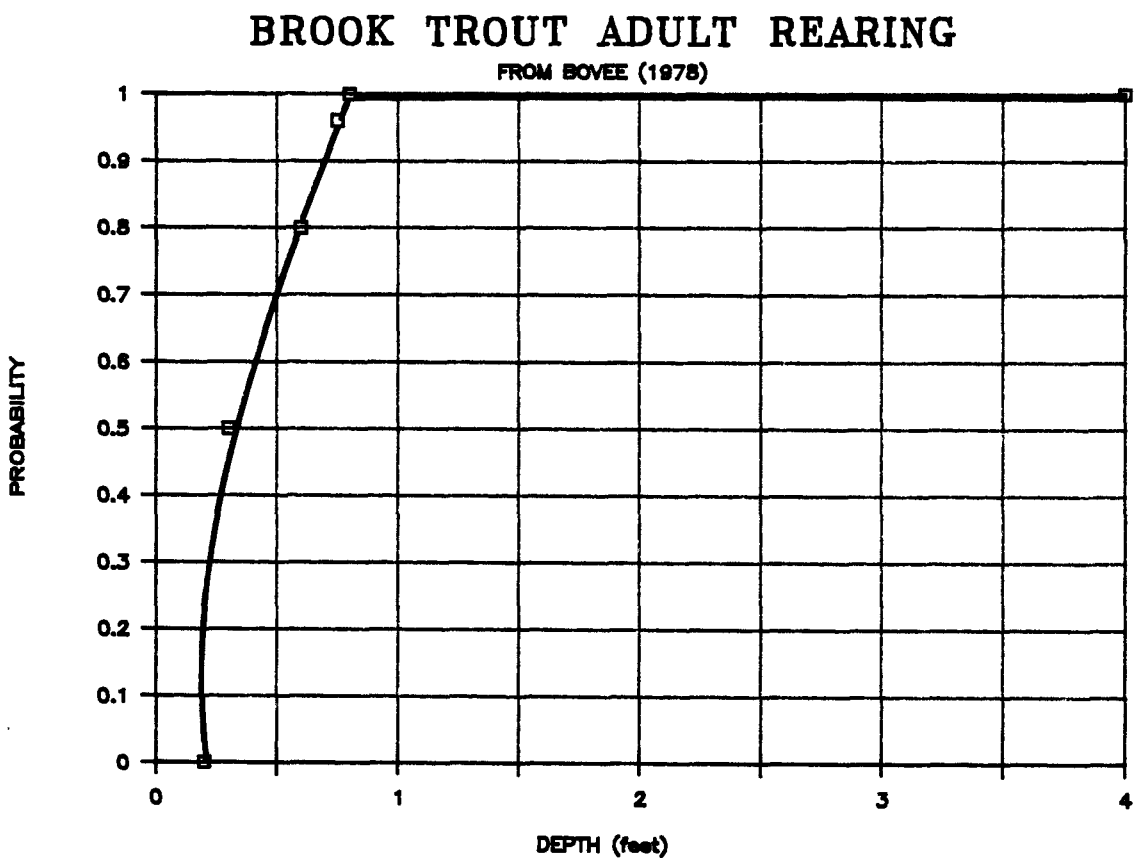

BROWN TROUT SPAWNING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)

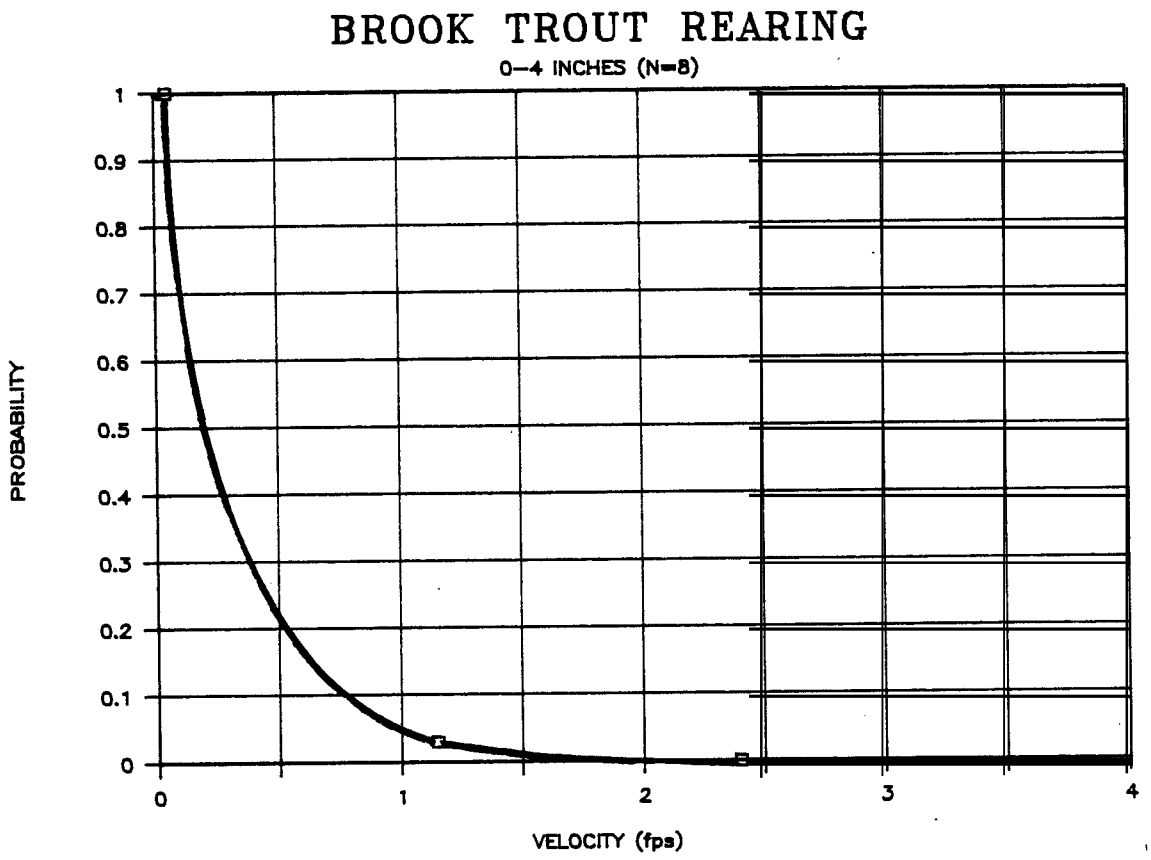

BROWN TROUT SPAWNING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
SUBSTRATE CODE

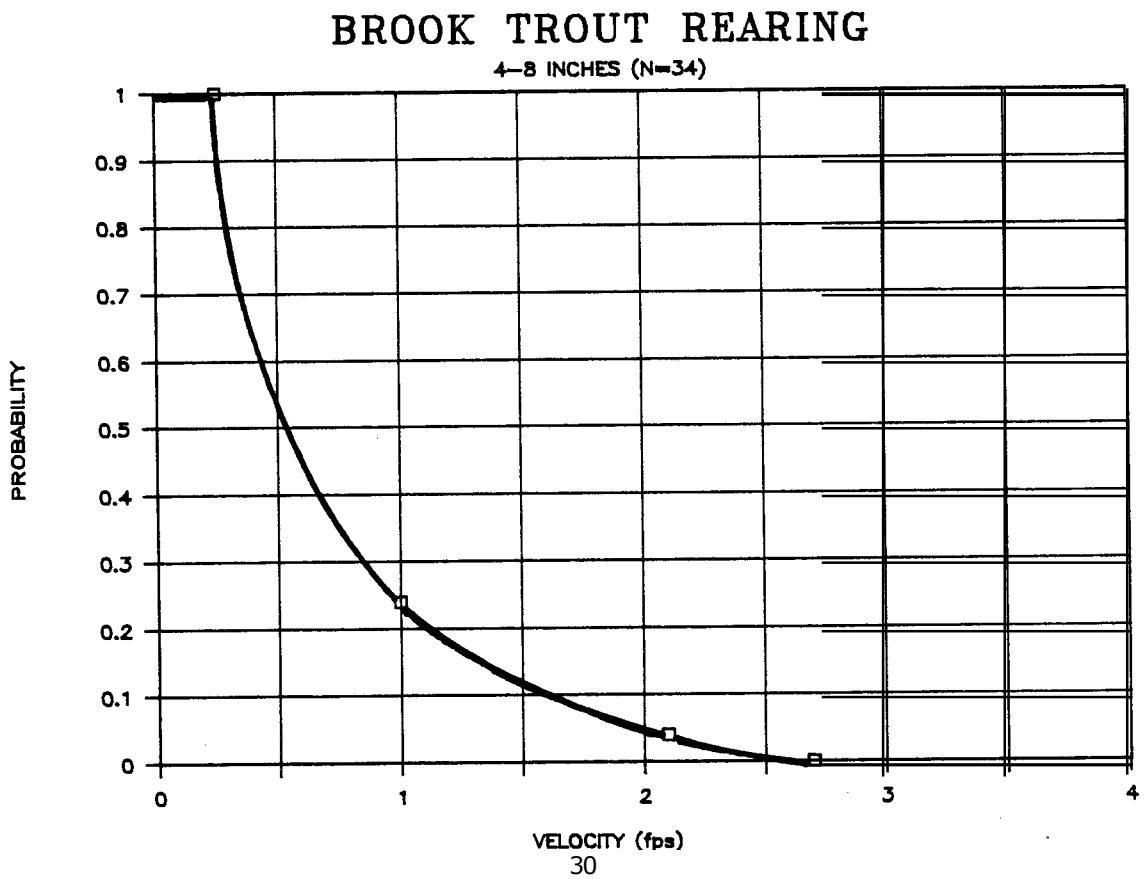

BROOK TROUT REARING
0–4 INCHES (N=8)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

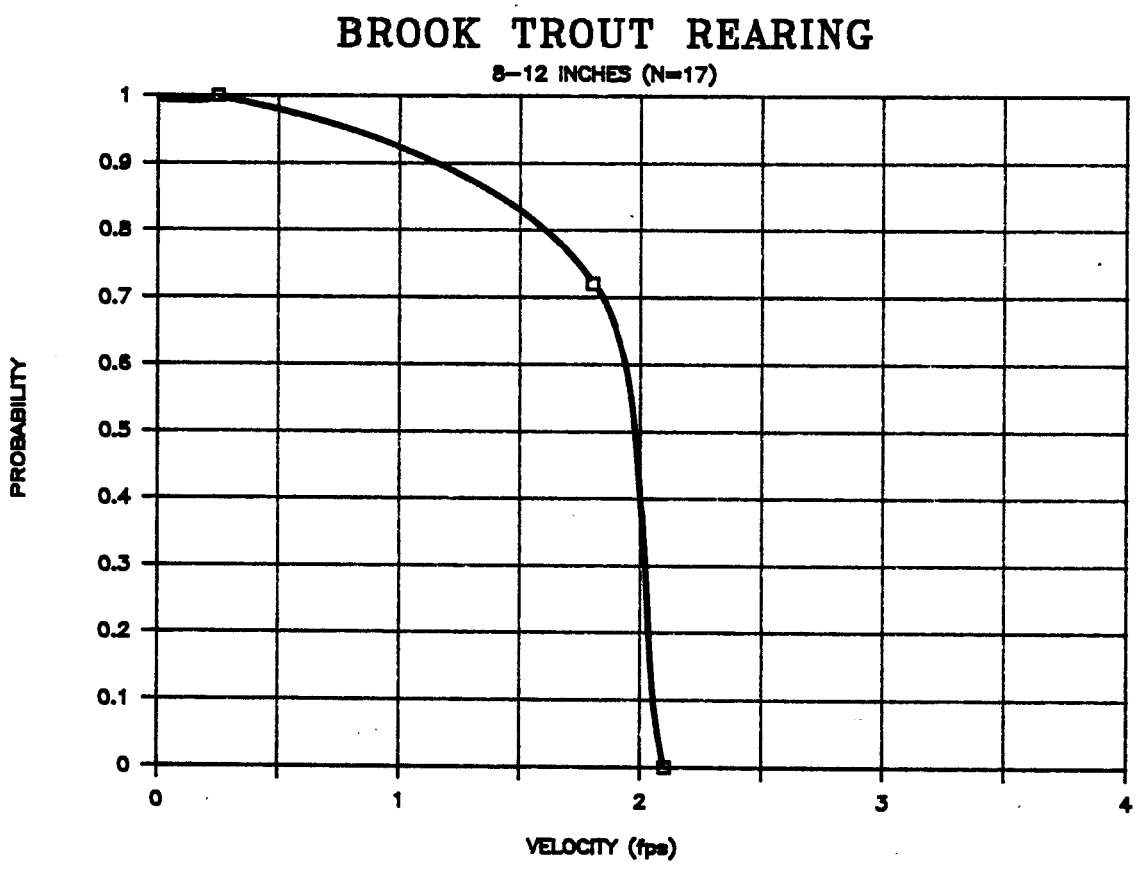

BROOK TROUT REARING
4–8 INCHES (N=34)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

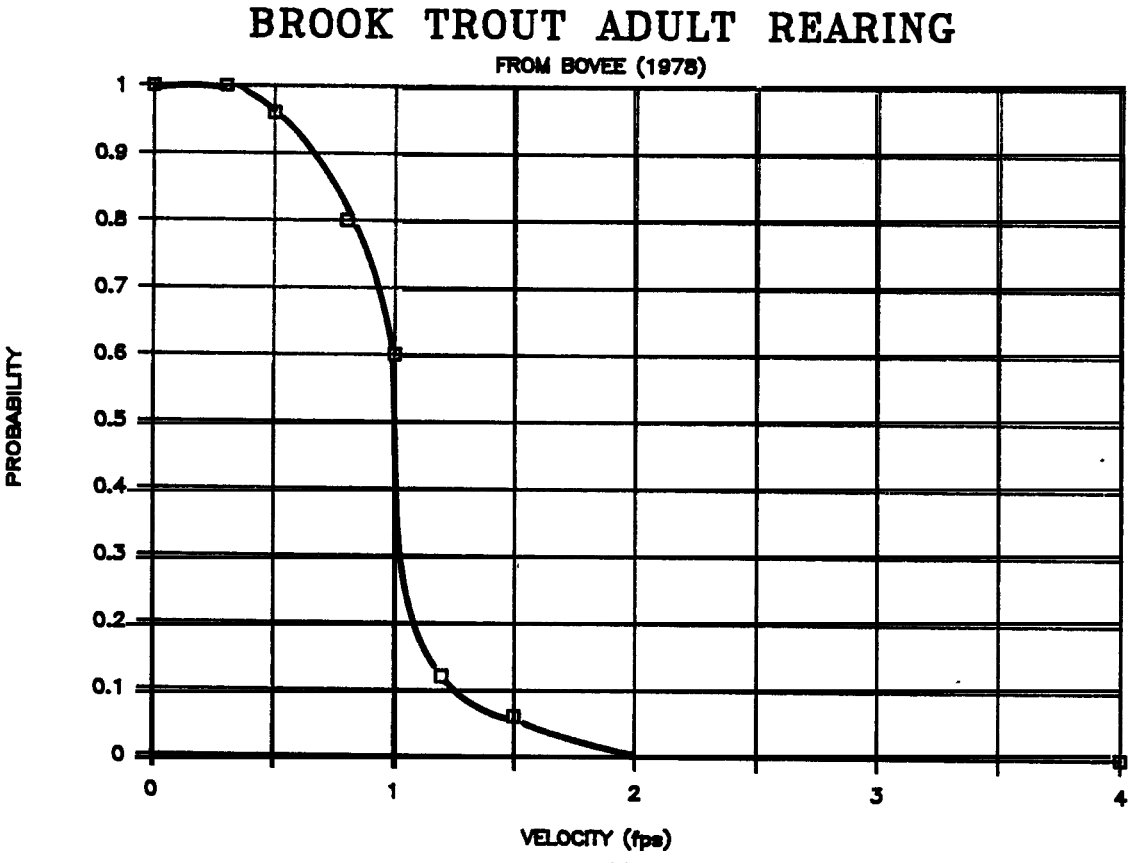

BROOK TROUT REARING
8–12 INCHES (N=17)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

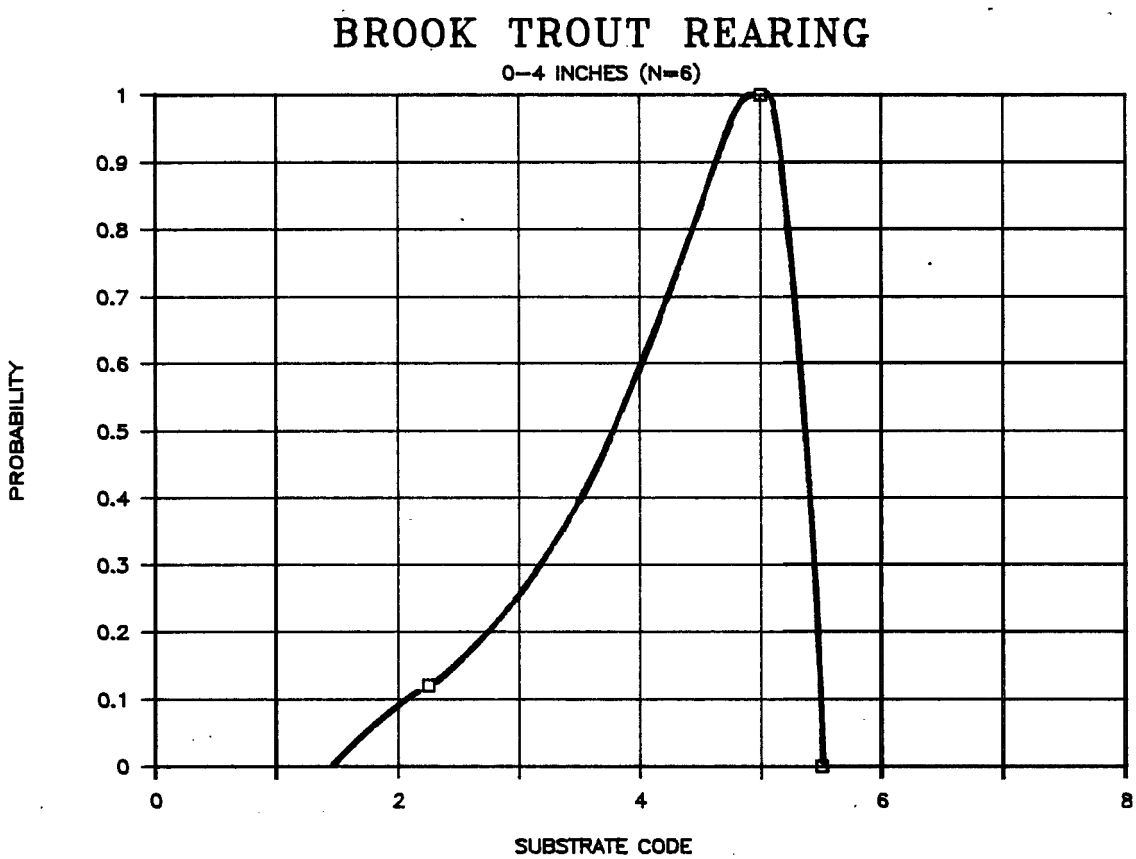

BROOK TROUT ADULT REARING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

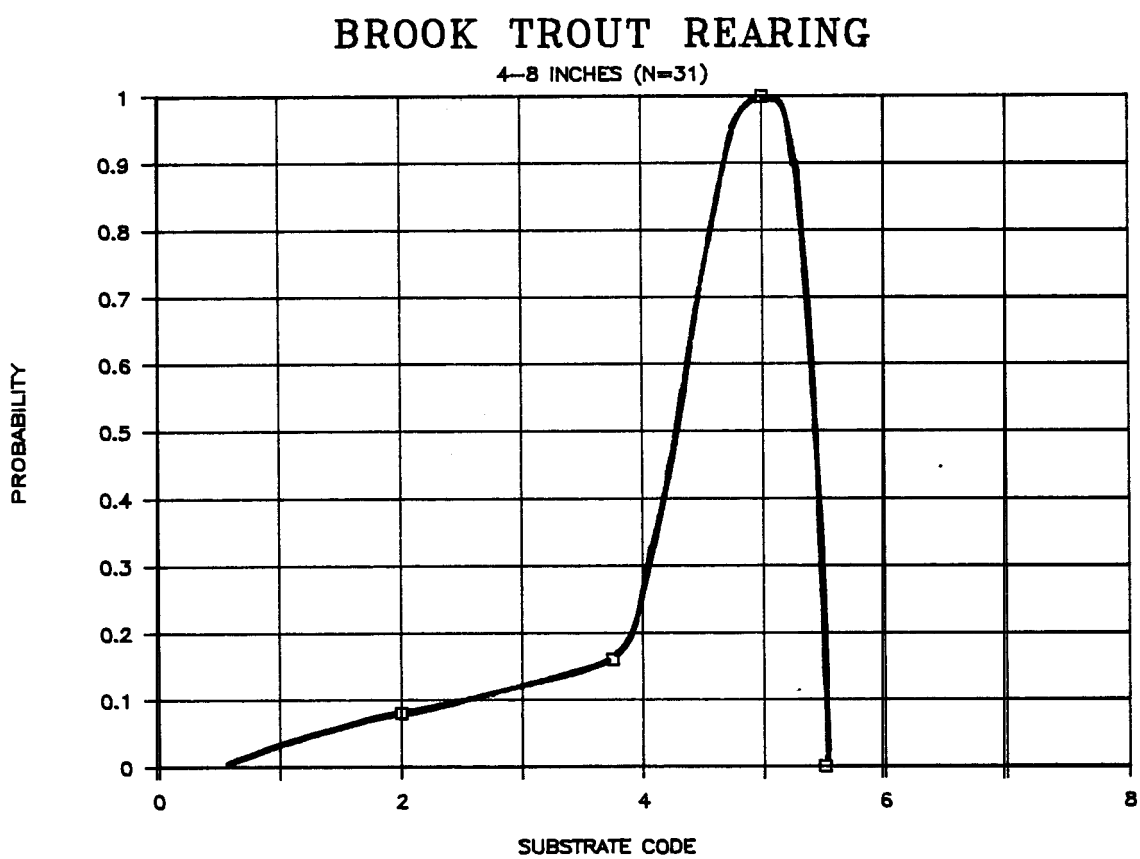

BROOK TROUT REARING
0–4 INCHES (N=8)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)

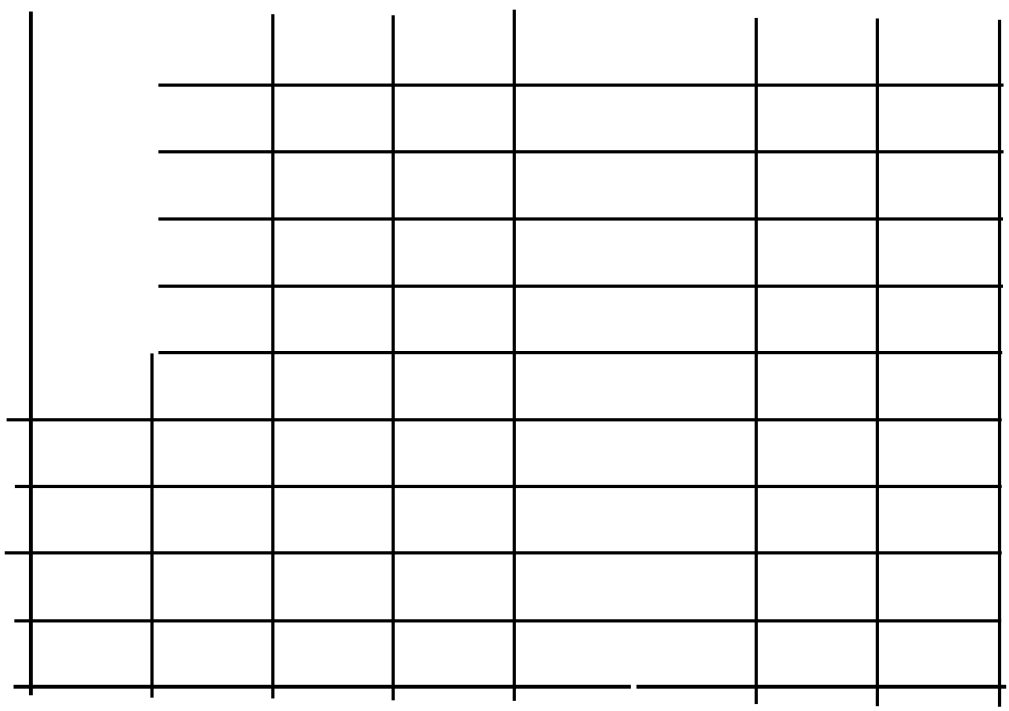

BROOK TROUT REARING
4–8 INCHES (N=34)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)


BROOK TROUT REARING
8–12 INCHES (N=17)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)

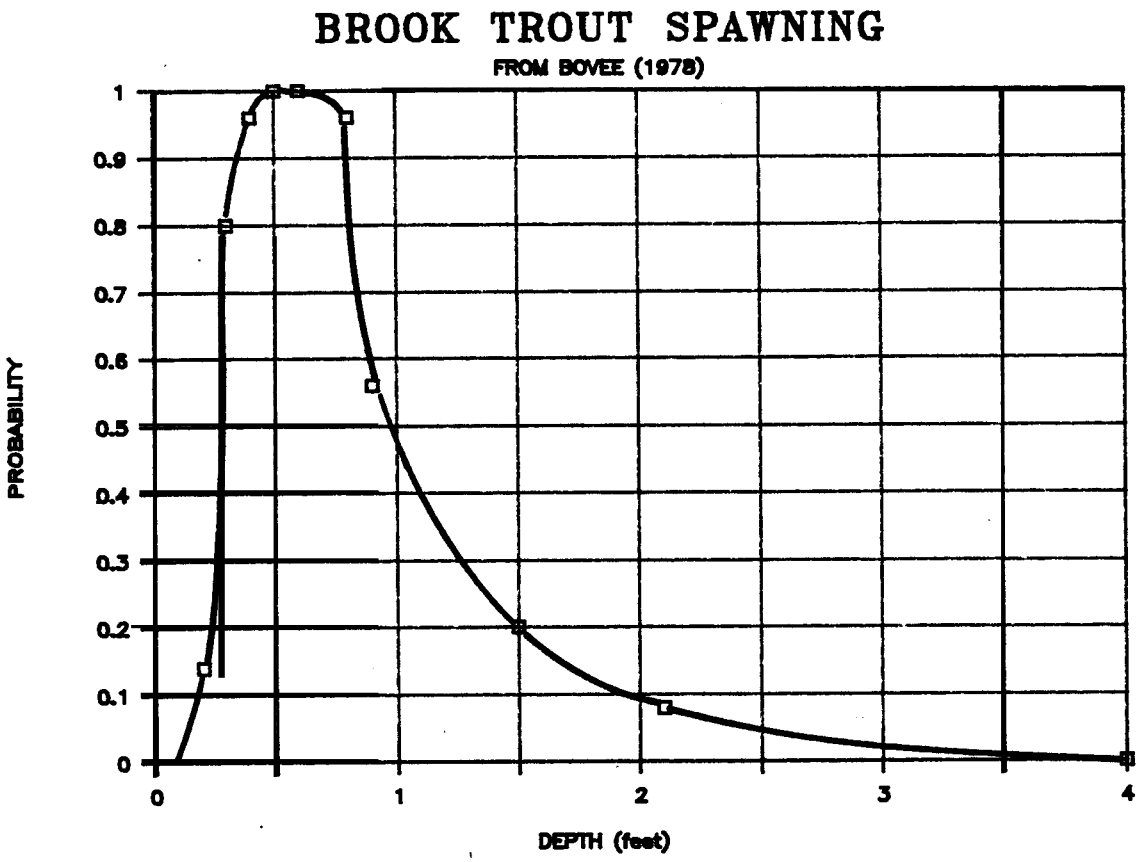

BROOK TROUT ADULT REARING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)

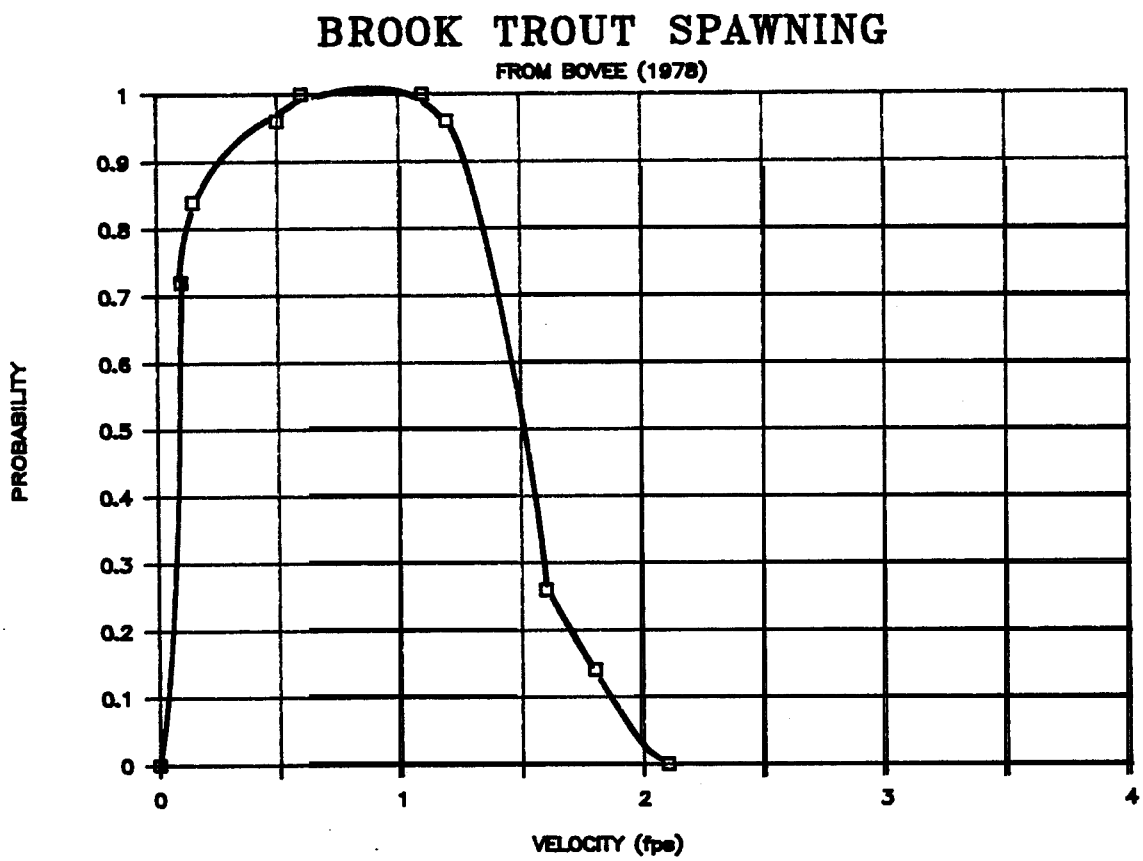

BROOK TROUT REARING
0–4 INCHES (N=6)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE

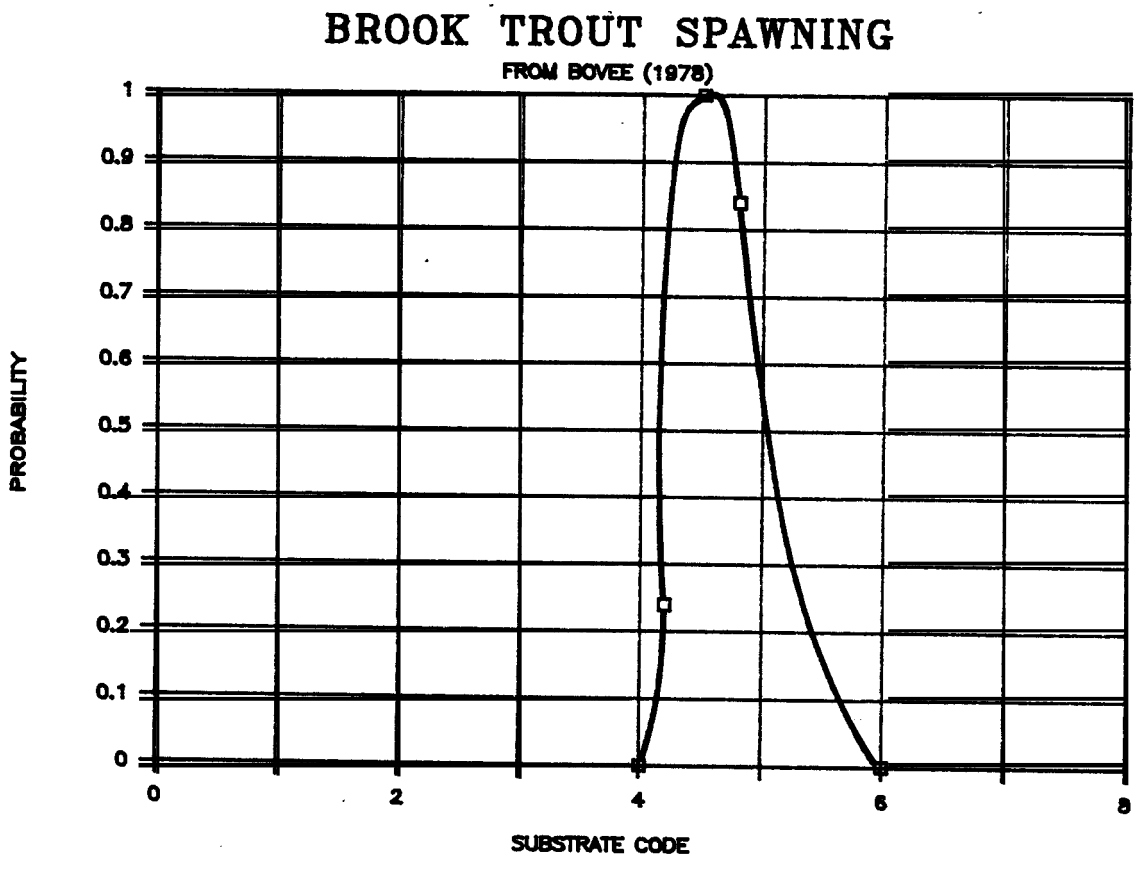

BROOK TROUT REARING
4–8 INCHES (N=31)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE

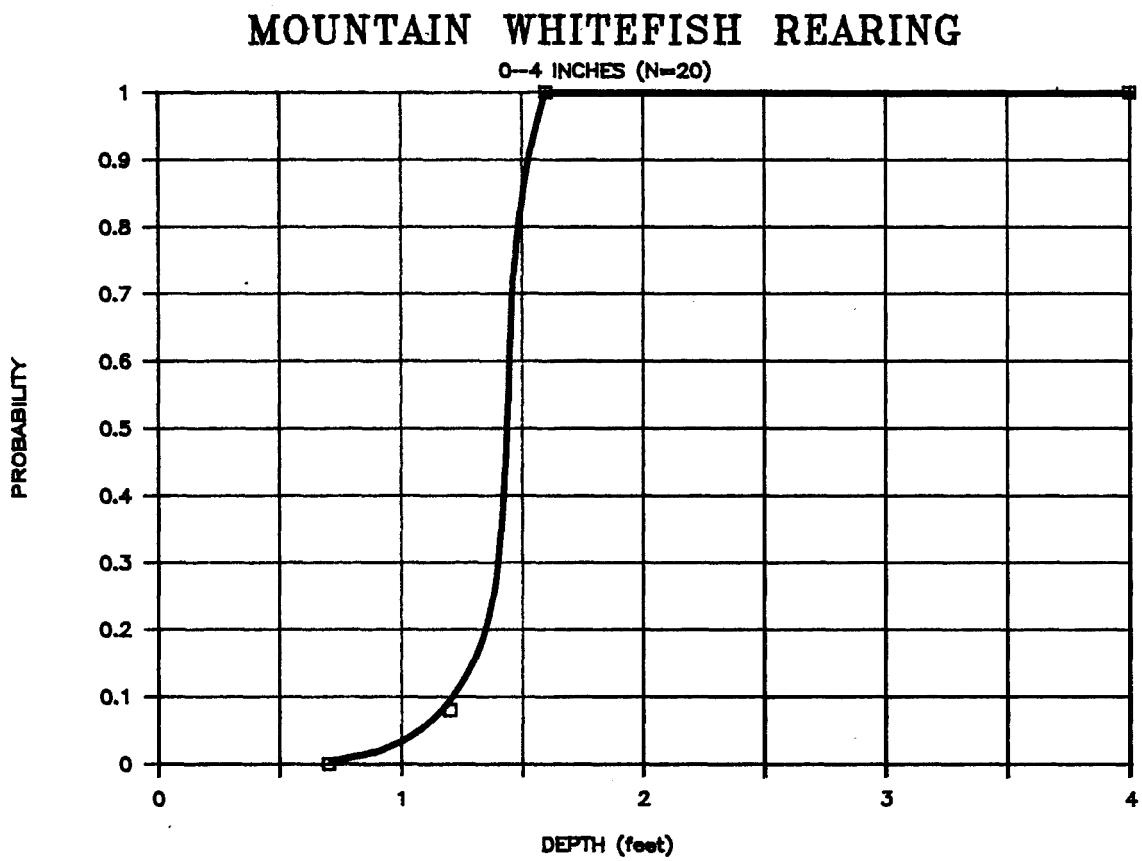


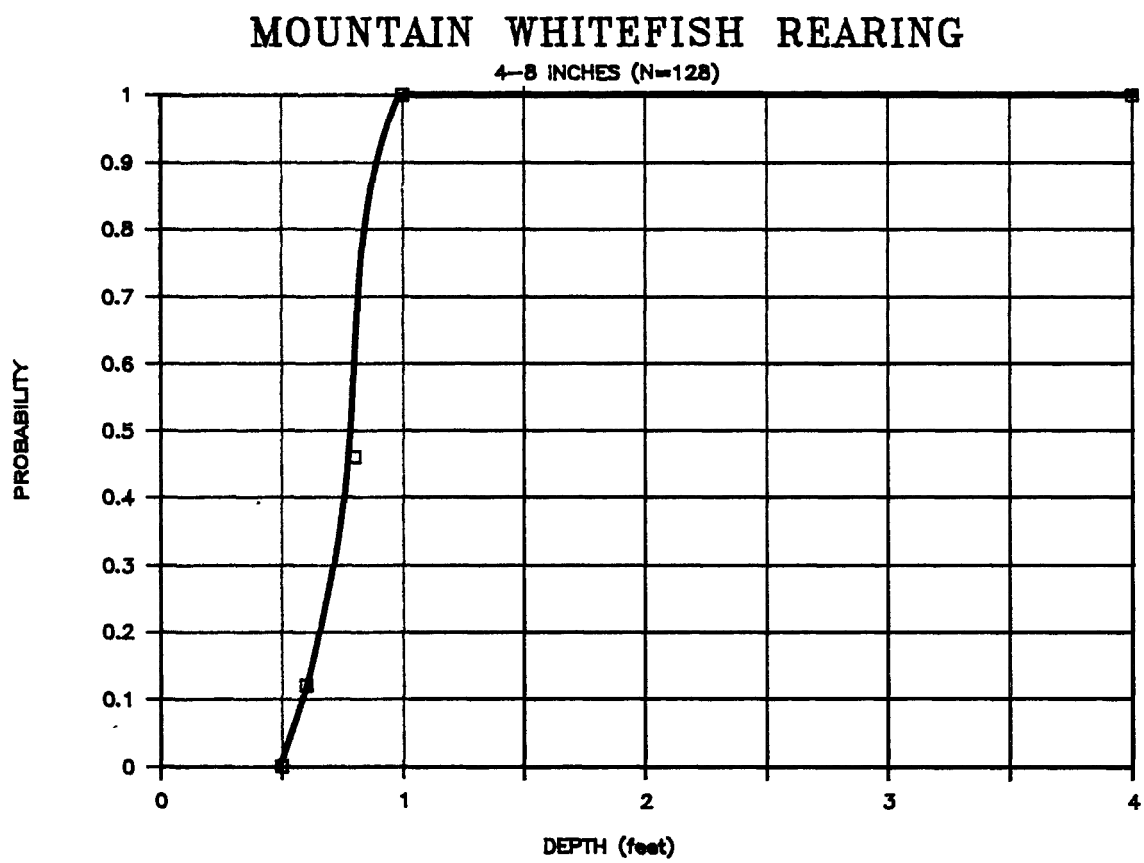
BROOK TROUT REARING

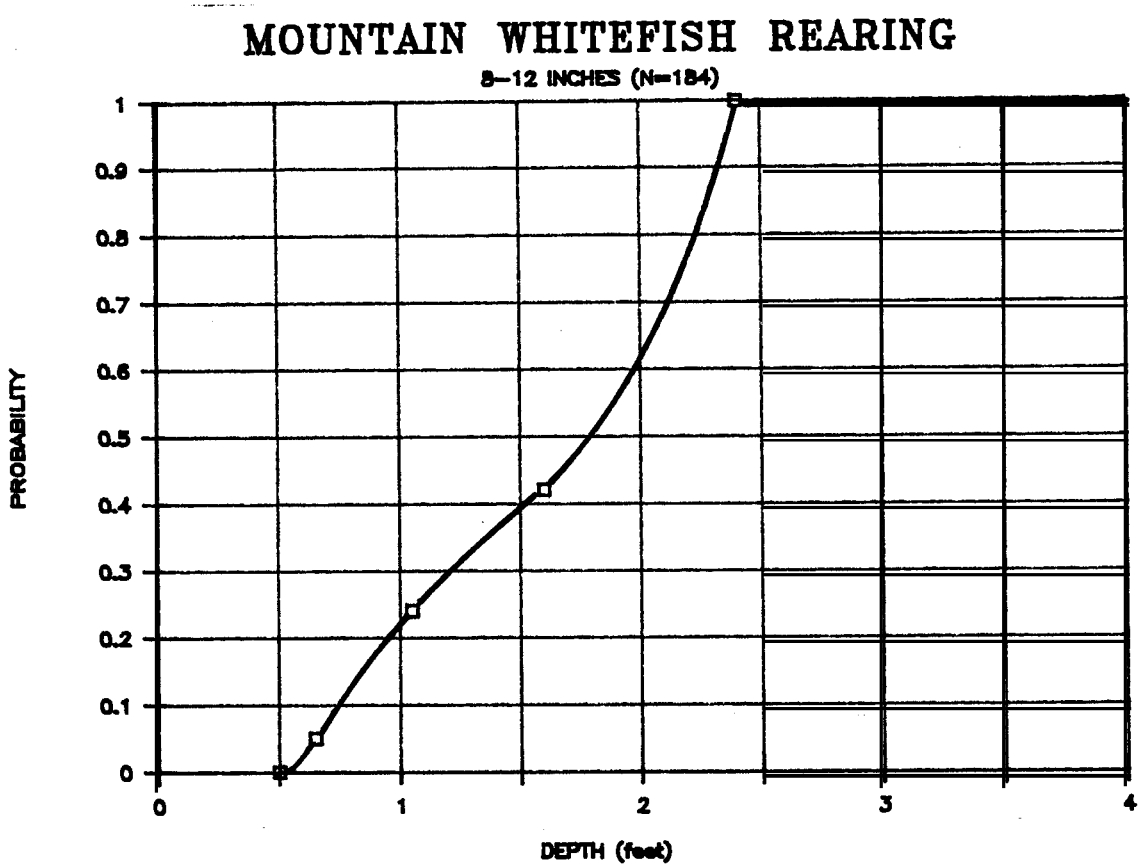

BROOK TROUT SPAWNING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

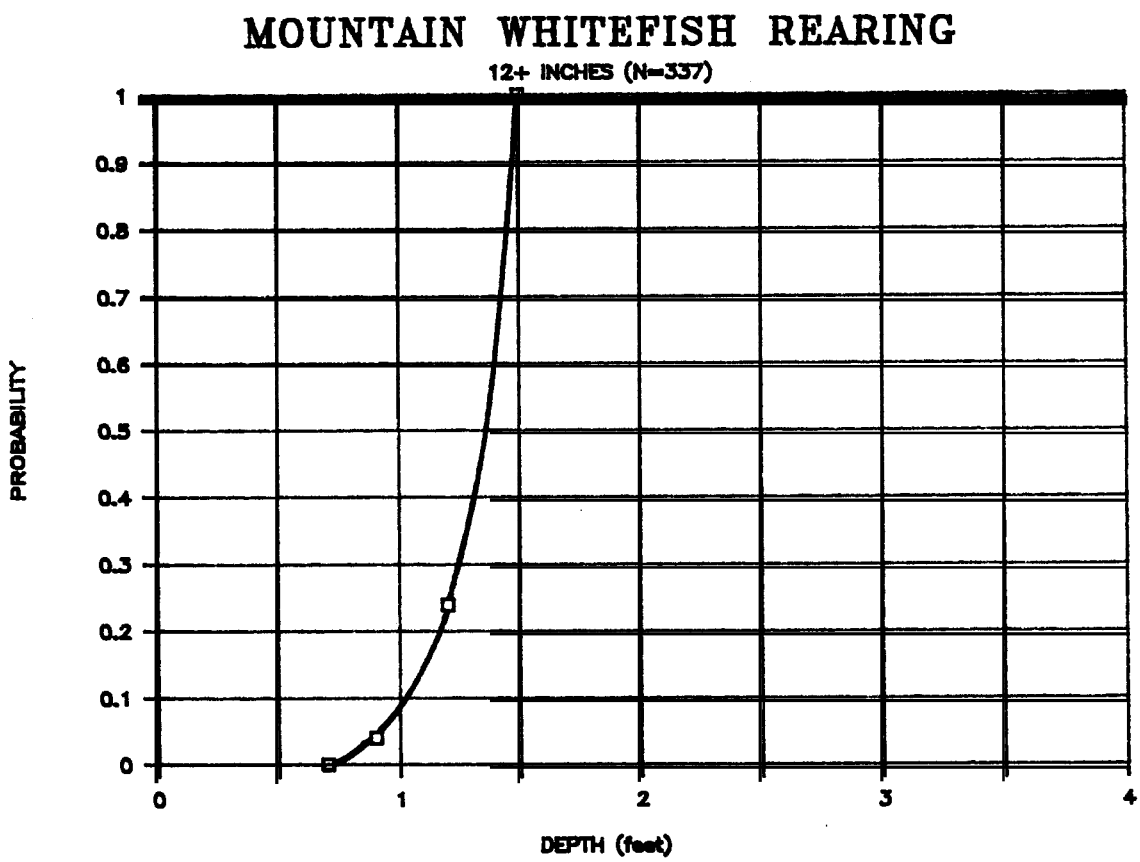

BROOK TROUT SPAWNING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)

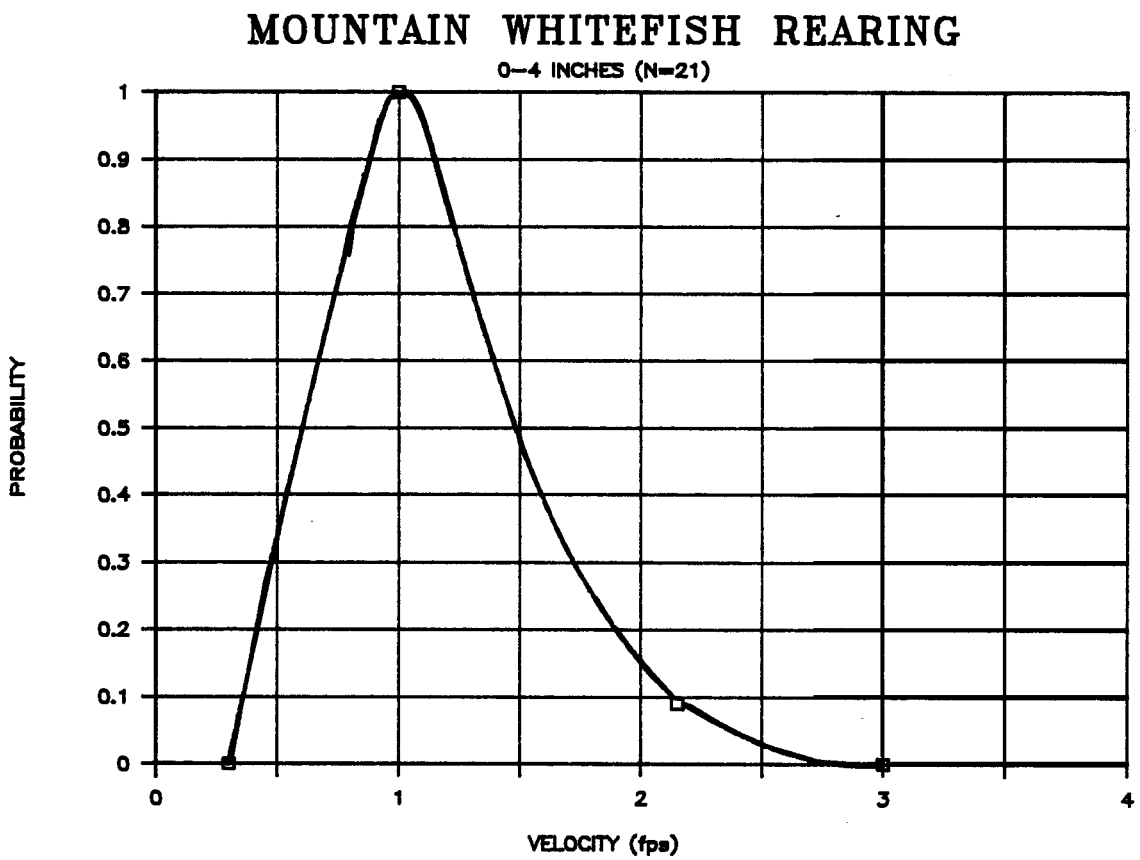

BROOK TROUT SPAWNING
FROM BOVEE (1978)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE

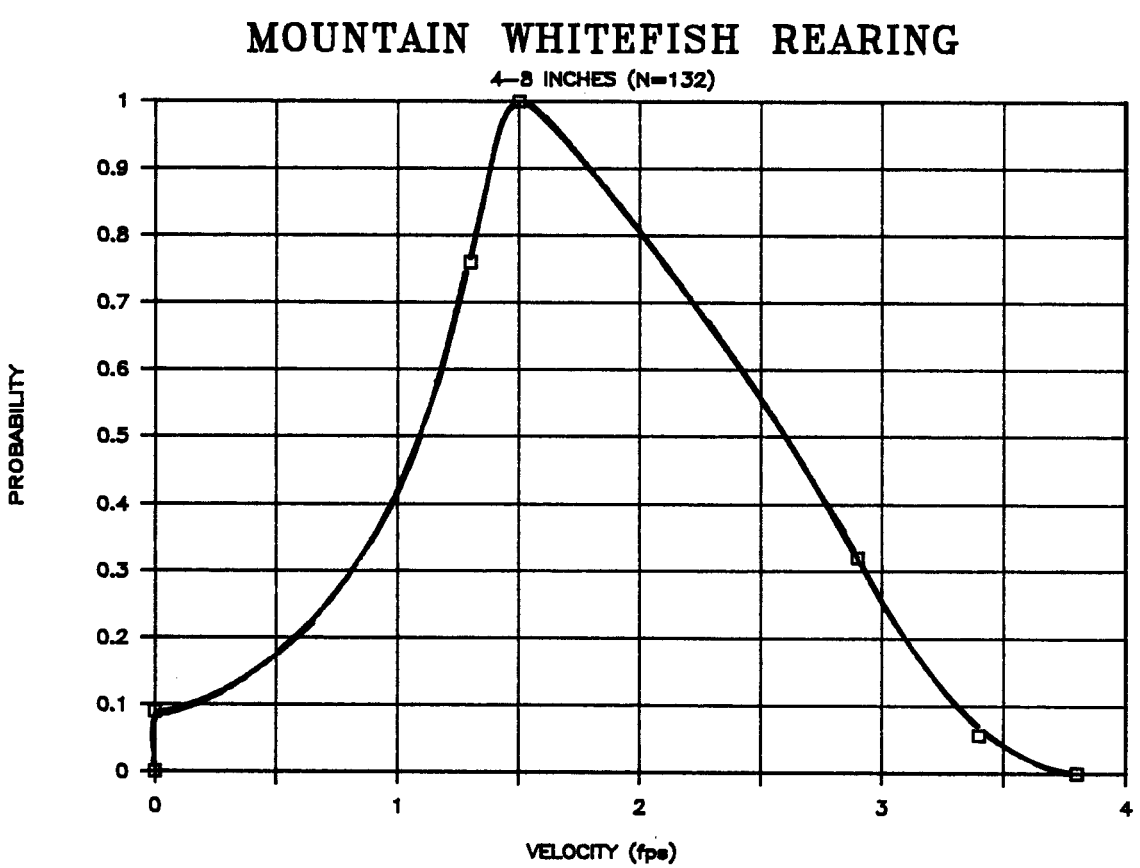

MOUNTAIN WHITEFISH REARING
0--4 INCHES (N=20)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

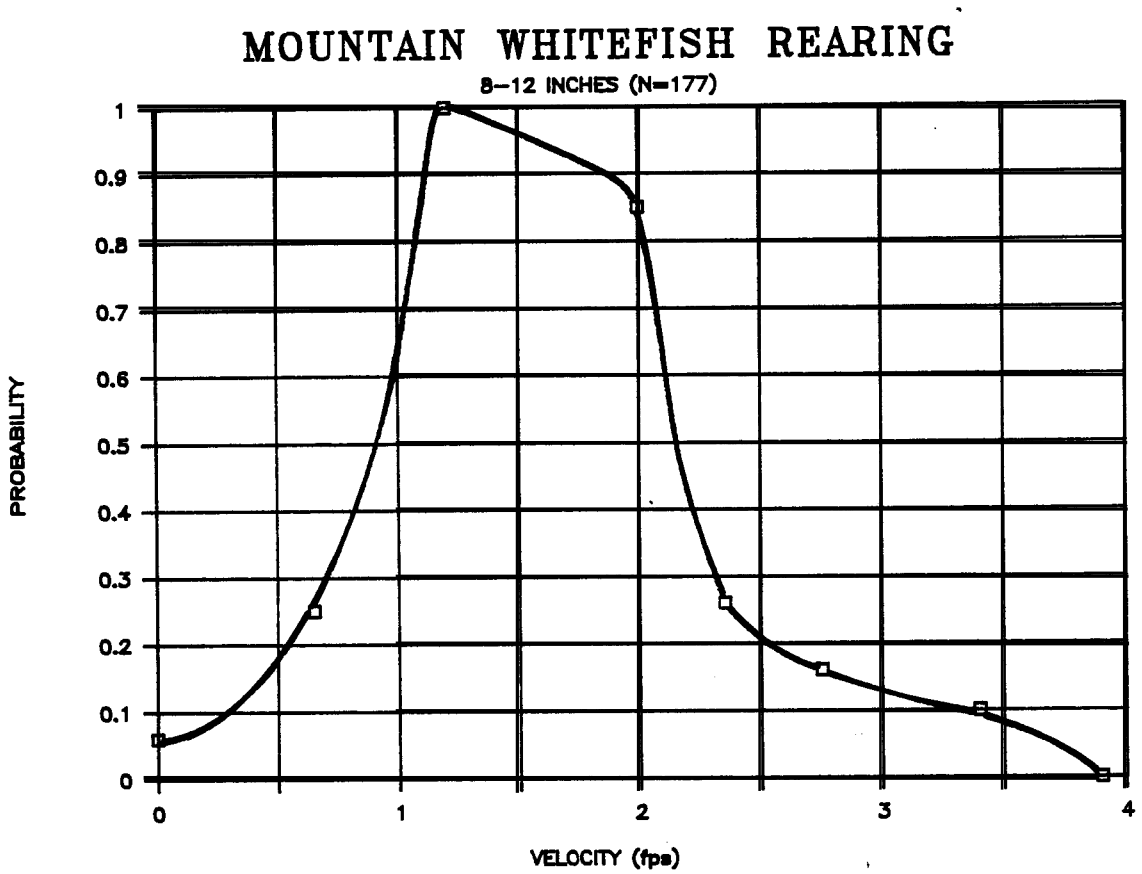

MOUNTAIN WHITEFISH REARING
4--8 INCHES (N=128)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

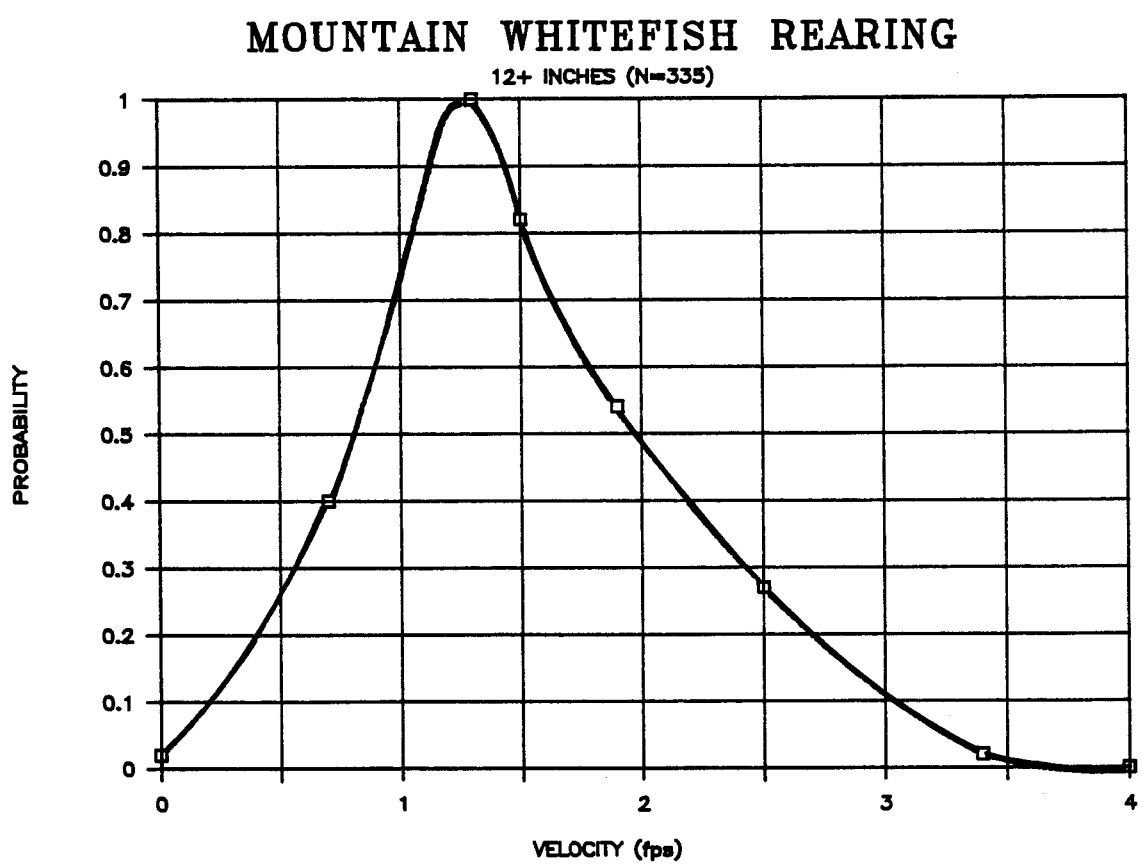

MOUNTAIN WHITEFISH REARING
8–12 INCHES (N=184)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

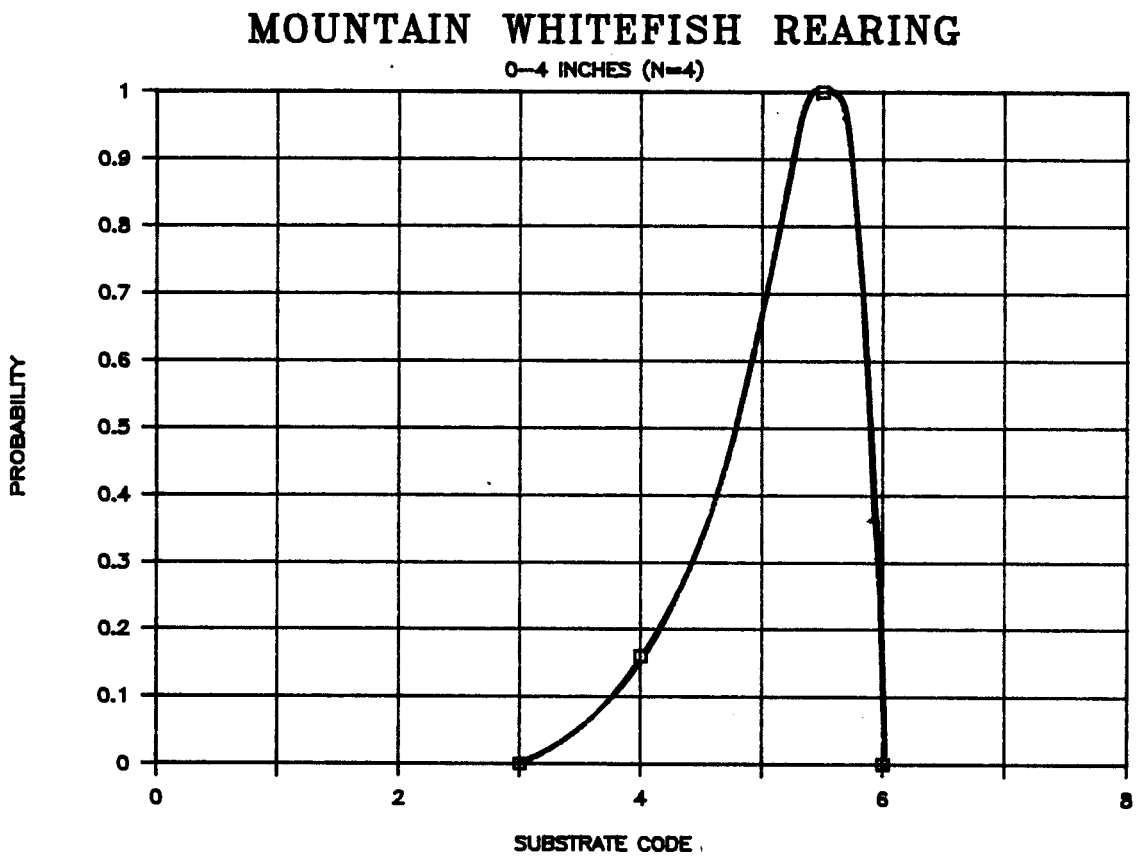

MOUNTAIN WHITEFISH REARING
12+ INCHES (N=337)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
DEPTH (feet)

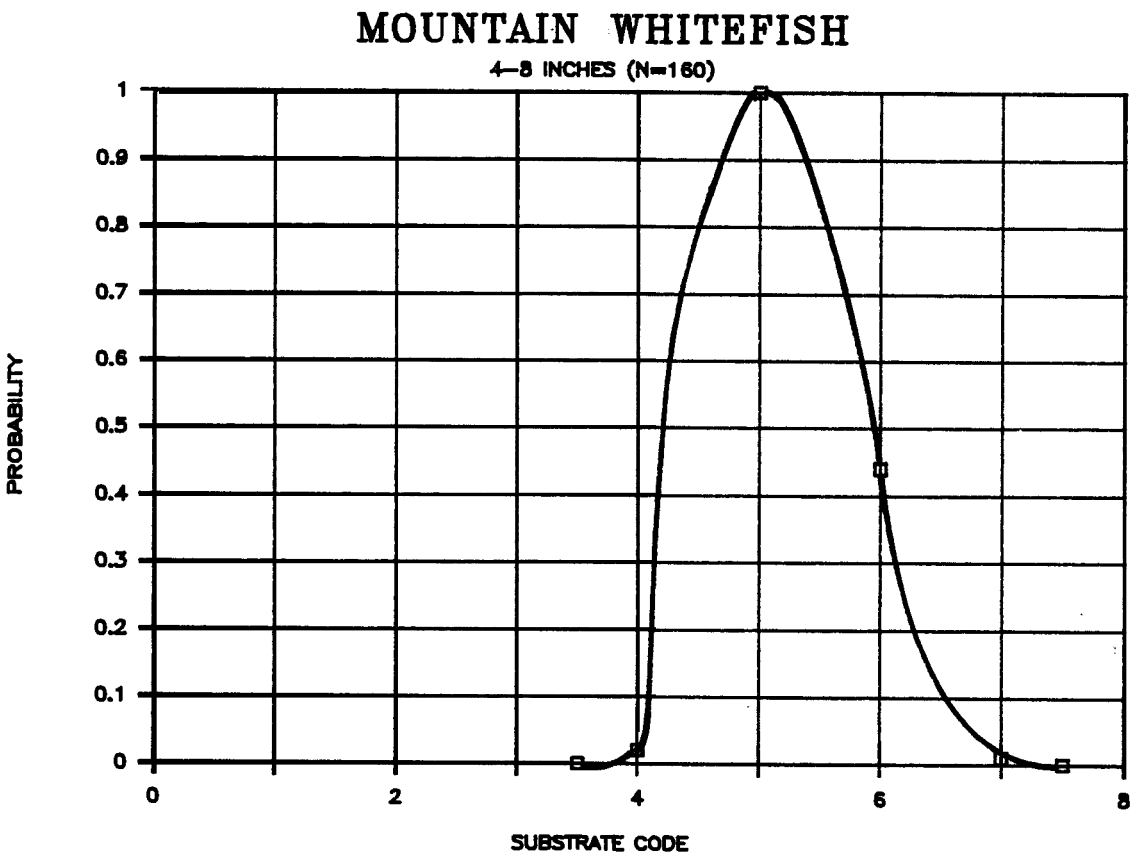

MOUNTAIN WHITEFISH REARING
0–4 INCHES (N=21)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)

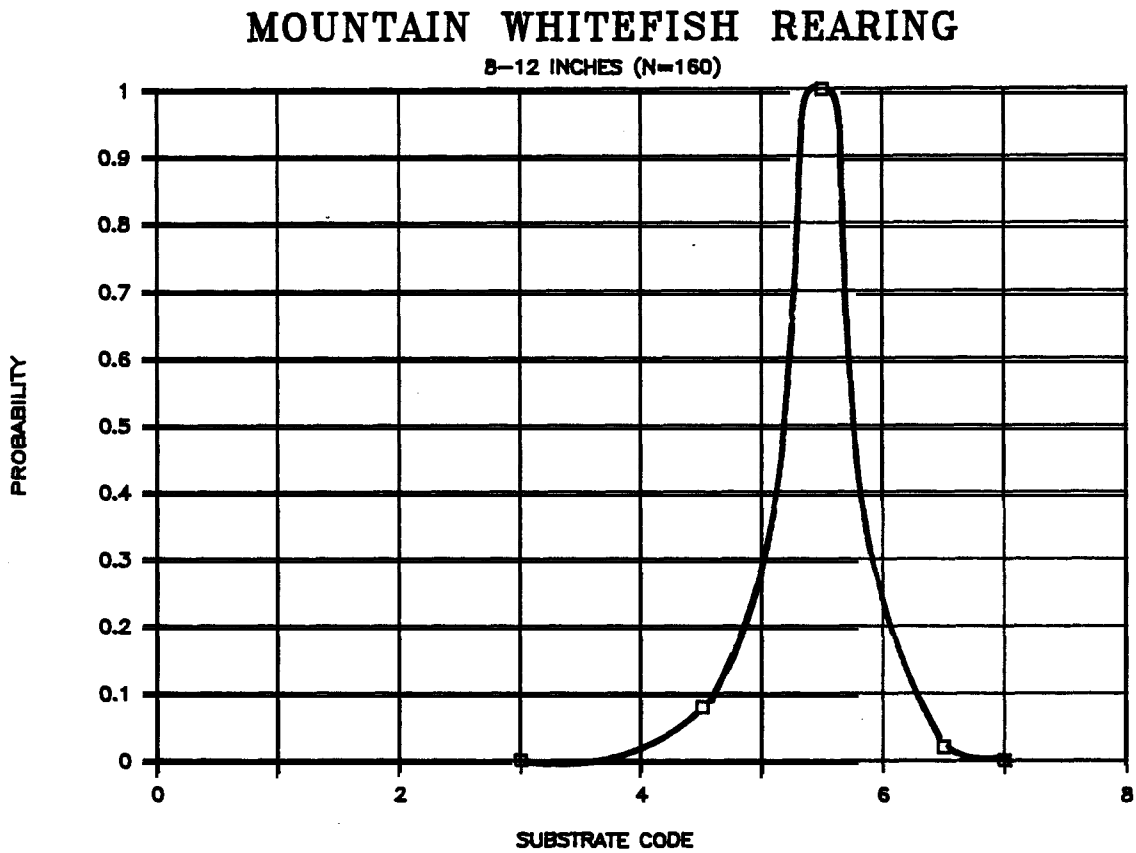

MOUNTAIN WHITEFISH REARING
4–8 INCHES (N=132)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)

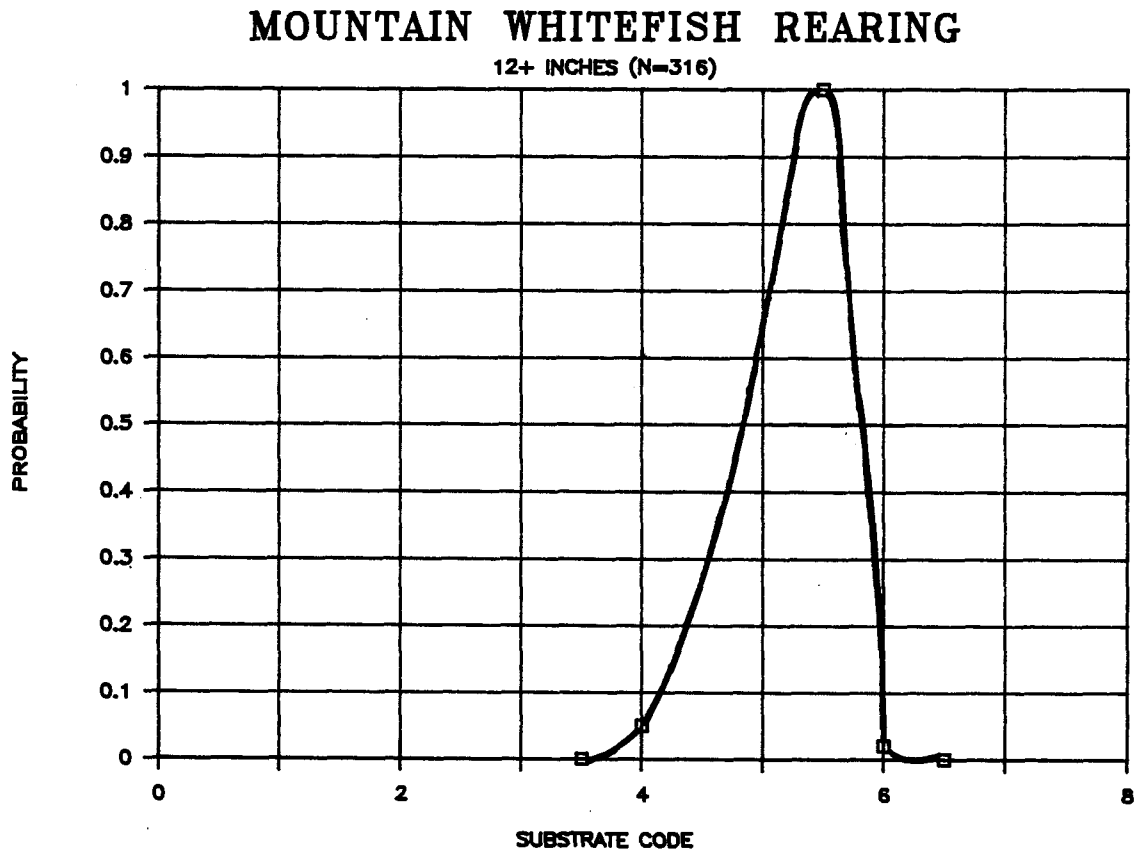

MOUNTAIN WHITEFISH REARING
8–12 INCHES (N=177)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)


MOUNTAIN WHITEFISH REARING
12+ INCHES (N=335)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
VELOCITY (fps)


MOUNTAIN WHITEFISH REARING
0–4 INCHES (N=4)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE


MOUNTAIN WHITEFISH
4–8 INCHES (N=160)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE


MOUNTAIN WHITEFISH REARING
8–12 INCHES (N=160)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE


MOUNTAIN WHITEFISH REARING
12+ INCHES (N=316)
PROBABILITY
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
SUBSTRATE CODE

LITERATURE CITED

Bovee, K.D. 1977. Probability-of-use criteria for the Family Salmonidae. Instream flow information paper No. 4. Cooperative Instream Flow Service Group. Fort Collins, CO.

Bovee, K.D. and T. Cochnauer. 1978. Development and evaluation of weighted criteria, probability-of-use curves for instream flow assessments. Instream flow Information Paper No. 3. Cooperative Instream Flow Service Group, Fort Collins, CO.

APPENDIX

IDFG PROB-OF-USE CHINOOK JUVENILE DATA

```
U      1   9  7   9  0 CHINOOK SALMON                          JUV REAR    020487
V      1    .00  1.00    .60    1.0    .75    .90  1.30    .42  1.50    .30   1.85    .15
V      1   3.10   .00
D      1    .00   .00    .50    .15    .70    .25   .90    .40  1.20    .70   1.70   1.00
D      1   5.00  1.00
S      1   2.00   .00   4.00    .08    4.8    .33  5.00    .92  5.25    1.0   6.50   1.00
S      1   7.00   .95   8.00    .65    9.0    .00
```

```
IDFG PROD-OF-USE CUTTHROAT TROUT DATA
H      2   5  4  7   0 CUTTHROAT TROUT                        0-4 REAR      020487
V      2    .00  1.00   .20  1.00   .50   .50  1.20   .08  1.70   .00
D      2    .20   .00   .35   .28  1.20  1.00  4.00  1.00
S      2   1.80   .00  3.00   .18  4.00   .44  5.00  1.00  6.00   .32 7.00   .05
S      2   7.50   .00
H      3   5  5  6  0 CUTTHROAT TROUT
V      3    .00  1.00   .30  1.00   .70   .44  1.00   .11  1.10   .00
D      3    .80   .00   .90   .29  1.00   .80  1.10  1.00  4.00  1.00
S      3   2.30   .00  3.00   .04  4.00   .19  5.00  1.00  6.00   .45 6.50   .00
H      4   4  5  3  0 CUTTHROAT TROUT                          8-12 REAR   020487
V      4    .00  1.00   .70  1.00  1.00   .50  1.40   .00
D      4    .00   .00   .70   .00  1.05   .58  1.70  1.00  4.00  1.00
S      4   4.50   .00  5.00  1.00  5.50   .00
H      5   9  8 10  0 CUTTHROAT                                124 REAR    020487
V      5    .00  1.00  1.60  1.00  1.80  1.00  2.10   .82  2.20  .71   2.75   .49
V      5   3.60   .32  4.80   .18  5.50   .00
D      5    .10   .00   .25   .31   .40   .49   .60   .70   .85  .92   1.20  1.00
D      5   1.70  1.00  4.00  1.00
S      5   4.00   .00  4.50   .18  5.00   .92  5.40  1.00  6.80  1.00 7.00   .90
S      5   7.50   .44  8.00   .25  8.50   .15  9.00   .00
H      6 10 12  8  0 CUTTHROAT                                SPAWNING    020487
V      6    .20   .00   .30   .10   .40   .22   .50   .40   .60   .63   .75  1.00
V      6    .80   .98   .90   .58  1.20   .23  1.40   .00
D      6    .30   .00   .40   .10   .50   .30   .60   .70   .70   .90   .80  1.00
D      6   1.00  1.00  1.30   .84  1.40   .52  1.50   .35  1.80  .13"   3.6   .00
S      6   4.00   .00  4.20   .54  4.50   %76  5.00  1.00  5.20  .82    5.5   .50
S      6   5.60    .30  6.00    .00
```

```
IDEC  PROB-OF-USE DATA RAINBOW
        7  6   5  2   0                                                  0-4         020487
V       7   .00  1.00   .10   1.00  .50   .22   .80   .08  1.00   _04  1.50   .00
D       7   .00   .00   .10    .05  .20   .40   .50  1.00  4.00  1.00
S       7   .00  1.00 10.00   1.00
Ii      8  7   7  12  0 RAINBOW                                        4-8 REAR   020487
V       8   .00  1.00   .35   1.00  .90   .91  1.50   .78  2.00   .62  2.60   .35
V       8  3.00   .00
U       8   .20   .00   .30    .05  .50   .14   .80   .40  1.00   .80  1.20  1.00
D       8  4.00  1.00
S       8  1.00   .00  2.00    .05 2.50   .09  4.00   .19  4.50   .24  5.00   .60
S       8  5.50  1.00  6.00    .90 6.50   .64  7.00   .43  7.50   .28  9.00   .00
A       9  8   5  7   0 RAINBOW                                      8-12 REAR    020487
V       9   .00  1.00   .25   1.00  .50   .64   .75   .40  1.00   .30  1.50   .12
V       9  1.75   .05  2.00    .02 2.50  0.00
D       9   .75   .00  1.00    .10 1.60   .28  2.00  1.00  4.00  1.00
S       9  1.00   .00  2.20    .18 4.00   .61  5.00  1.00  6.50   .62  7.00   .38
S       9  7.50   .00
II     10  5   4  5   0 RAINBOW                                        12+ REAR   020487
V      10   .00  1.00   .20  1.00. .40   .08  1.75   .05  2.75   .00
D      10   .50   .00   .80    .45 1.80  1.00  4.00  1.00
S      10  1.00   .00  2.20    .05 5.00  1.00  7.00   .75  7.50   .00
Ii     11  10  9  6   0 RAINBOW                                       SPAWNING    020487
V      11   .30   .00   .40    .30  .50   .50   .70  1.00   .90  1.00  1.10   .85
V      11  1.40   .50  1.60    .30 1.80   .18  3.50   .00
D      11   .50   .00   .80    .42 1.20   .65  1.30   .77  1.50  1.00  1.85  1.00
D      11  2.30   .68  2.80    .40 3.30   .00
S      11  4.00   .00  4.50    .75 5.00  1.00  5.25   .83  5.70   .33  6.00   .00
```

```
IDFG  PROB-OF-USE   BROWN TROUT DATA
H      12  6   5  7  0  BROWN  TROUT                                0--4 REAR     020487
V      12    .00  1.00   .25  1.00   .80   .56  1.30   .14  2.00   .02   2.50   .00
D      12    .00   .00   .15   .02   .70   .46  1.20  1.00  4.00  1.00
S      12    .00   .02  1.75   .02  3.50   .16  5.00   .51 6-.00  1.00  7.00   .06
S      12   7.50   .00
II     13  7   5  9  0  BROWN  TROUT                                4-8 REAR     020487
V      13    .00  1.00   .50  1.00  1.00   .50  1.40   .28  1.70   .11   2.80   .02
V      13   3.70   .00
D      13    .30   .00   .70   .28  1.10   .70  1.50  1.00  4.00  1.00
S      13    .00   .02  1.75   .02  3.00   .11  4.00   .41  5.00  1.00  6.00   .24
       13   7.00   .20  7.75   .04  8.00   .00
H      14  6   5  8  0  BROWN  TROUT                                8-12 REAR    020487
V      14    .00  1.00   .05  1.00   .40   .51  1.10   .29  1.80   .13   2.10   .00
D      14    .60   .00   .80   .37  1.40   .63  2.20  1.00  4.00  1.00
S      14   1.00   .00  2.00   .06  3.50   .10  4.00   .19  5.00  1.00  6.00   .18
S      14   7.00   .04  7.50   .00
H      15  6   5  6  0  BROWN  TROUT                                12+ REAR     020487
V      15    .00  1.00   .05  1.00   .40   .32   .90   .24  1.40   .14   1.70   .00
D      15    .70   .00   .90   .18  1.50   .35  2.20  1.00  4.00  1.00
S      15   1.50   .00  2.00   .07  3.50   .36  5.00  1.00  7.00   .43   8.00   .00
H      16  10 10  5  0  BROWN  TROUT                                SPAWNING     020487
V      16    .25   .00   .40   .22   .60  1.00  1.00  1.00  1.10   .77   1.20  .56
V      16   1.40   .32  1.80   .19  2.40   .08  3.00   .00
D      16    .00   .00   .50   .11   .70   .30  1.10   .53  1.80  1.00  2.00  1.00
U      16   2.40   .72  2.60   .40  2.90   .20  4.50   .00
S      16   4.00   .00  4.50   .77  5.00  1.00  5.50   .50  6.00   .00
```

1DFG PROB-OF-USE BROOK TROUT DATA

11	17	5	5	5	0	BROOK	TROUT					0-4 REAR	020487
V	17	.00	1.00	.20	1.00	.50	.20	1.20	.03	2.40	.00		
D	17	.00	.00	.35	.00	.50	.40	.80	1.00	4.00	1.00		
S	17	1.50	.00	2.20	.15	4.00	.60	5.00	1.00	5.50	_00		
11	18	5	4	5	0	BROOK	TROU					4·8 REAR	020487
V	18	.00	1.00	.30	1.00	1.00	.25	2.20	.04	2.50	.00		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				
S	18	.30	.00	2.00	.08	3.80	.16	5.00	1.00	5.50	.00		
A	19	4	4	5	0	BROOK	TROUT					8·12 REAR	020487
V	19	.00	1.00	.25	1.00	1.80	.73	2.20	.00				
D	19	.30	.00	.75	.62	1.70	1.00	4.00	1.00				
S	19	2.10	.00	2.20	.03	5.50	1.00	5.80	.24	6.50	.00		
JI	20	8	6	9	0	BROOK	TROU					AD REAR	020487
V	20	.00	1.00	.30	1.00	.50	.95	.80	.80	1.00	_60	1.20	.12
V	20	1.50	.06	2.00	.00								
D	20	.20	.00	.60	.50	.65	.80	.75	.96	.80	1.00	4.00	1.00
S	20	4.00	.00	4.60	.10	4.80	.20	5.20	.50	5.30	.92	5.50	1.00
5	20	6.10	.93	7.20	.27	8.00	.00						
Ti	21	10	11	5	0	BROOK	TROUT					SPAWNING	020487
V	21	.00	.00	.15	.72	.20	.84	.50	.96	.60	1.00	1.10	1.00
V	21	1.20	.96	1.60	.26	1.80	.14	2.20'	.00				
D	21	.10	.00	.20	.15	.30	.80	.40	.96	.50	1.00	.60	1.00
0	21	.80	.96	.90	.56	1.50	.20	2.20	.09	4.00	.00		
5	21	4.00	.00	4.20	.24	4.50	1.00	4.80	.83	6.00	.00		

IDFG-PROD-OF-USE MOUNTAIN WHIITEFISH DATA

```
II    22  6  4  4  0 MOUNTAIN WHITEFISH                          0-4 REAR    020437
V     22   .30   .00   .50     .35 1.00  1.00  1.50   .49  2.20  .10      3.00
D     22   .70   .00  1.20     .08 1.60  1.00  4.00  1.00
S     22  3.00   .00  4.00     .15 5.50  1.00  6.00   .00
                                WHITEFISH
V     23   .00   .10   .50     .18 1.00   .40  1.30   .76  1.50  1.00     2.90
V     23  3.30   .06  3.60     .00
D     23   .50   .00   .60     .12 .80    .46  1.00  1.00  4.00  1.00
S     23  3.50   .00  4.00     .02 5.00  1.00  6.00   .44  7.00  .01      7.50
II    24 10  6  6  0 MOUNTAIN WIIITEFISII                        8••12 REAR  020487
V     24   .00   .06   .50     .18 .70    .25  1.00   .65  1.20  1.00     2.00
V     24  2.30   .26  2.70     .15 3.40   .10  3.80   .00
D     24   .50   .00   .60     .05 1.10   .24  1.60   .41  2.40  1.00  4.00  1.00
S     24  3.00   .00  4.00     .02 4.50   .08  5.50  1.00  6.50  .02      7.00
H     25 8   5  5  0 MOUNTAIN WHITEFISH                         12+• REAR   020487
V     25   .00   .01   .70     .40 1.30  1.00  1.50   .82  1.90  .54      2.50
V     25  3.40   .01  4.00     .00
D     25   .70   .00   .90     .04 1.20   .24  1.50  1.00  4.00  1.00
S     25  3.50   .00  4.00     .05 5.50  1.00  6.00   .02  6.50  .00
```

Submitted by:

Tim Cochnauer
Principal Fishery Research Biologist

Terry Elms-Cockrum
Fishery Technician

Approved by:

IDAHO DEPARTMENT OF FISH AND GAME

Jerry M. Conley, Director

David L. Hanson, Chief
Bureau of Fisheries

Virgil K. Moore
Resident Fishery Manager