Grand Canyon Rainbow Trout 2012 Monitoring Results

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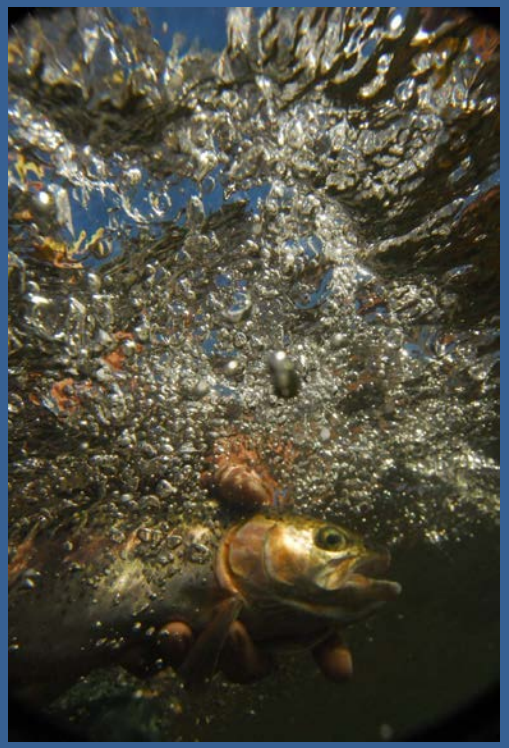
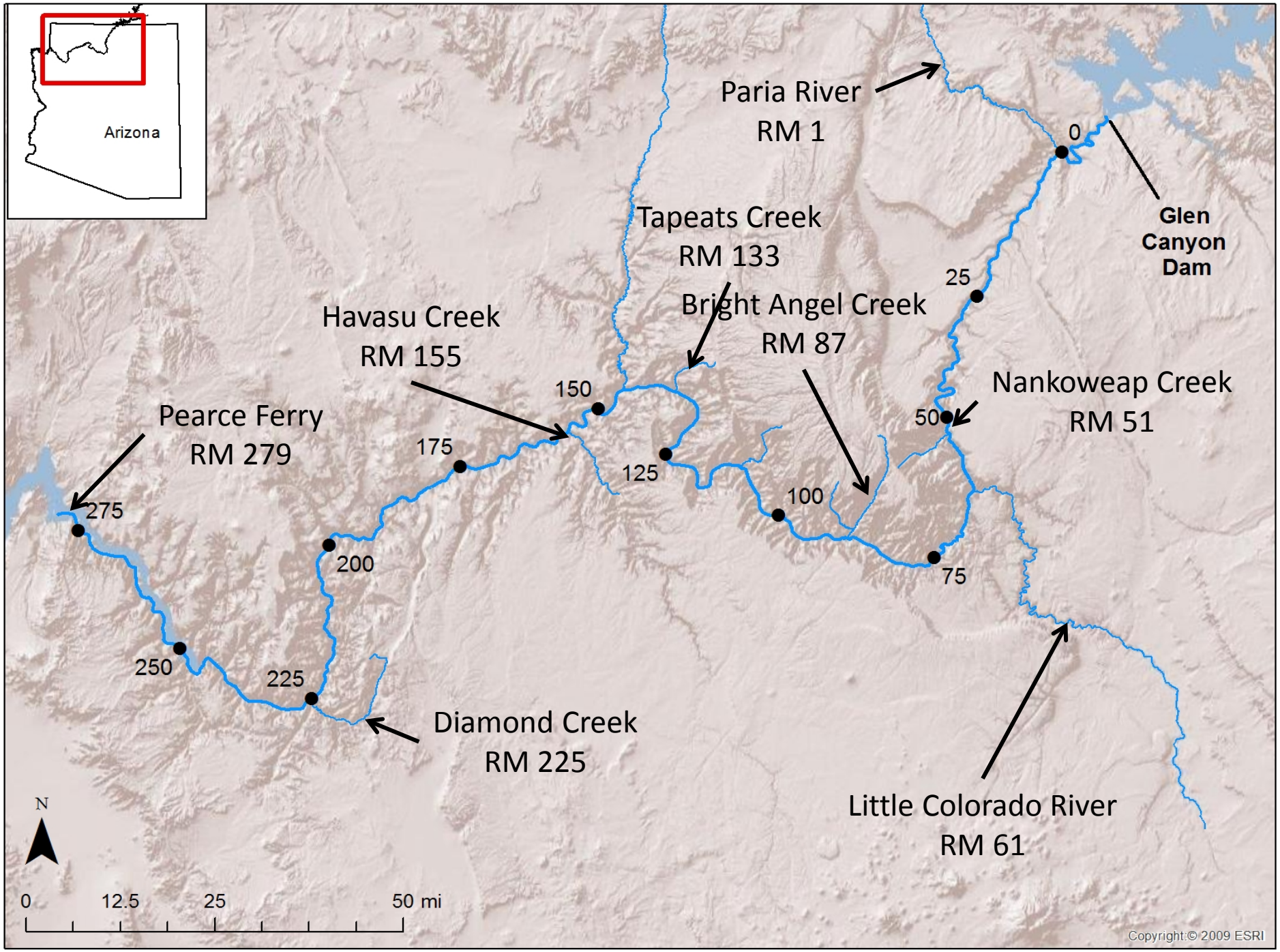
Research Branch

AGFD Rainbow Trout Monitoring

- Lees Ferry: 1991-2012
  - Seasonal sampling
    - Electrofishing
    - Angler Creel
    - Whirling Disease
- Marble/Grand Canyon: 2000-2012
  - Yearly sampling
    - Electrofishing




Arizona
Paria River
RM 1
0
Glen
Canyon
Dam
Tapeats Creek
RM 133
25
Bright Angel Creek
RM 87
Havasu Creek
RM 155
150
Nankoweap Creek
RM 51
50
Pearce Ferry
RM 279
175
125
100
275
200
75
250
225
Diamond Creek
RM 225
Little Colorado River
RM 61
N
0
12.5
25
50 mi
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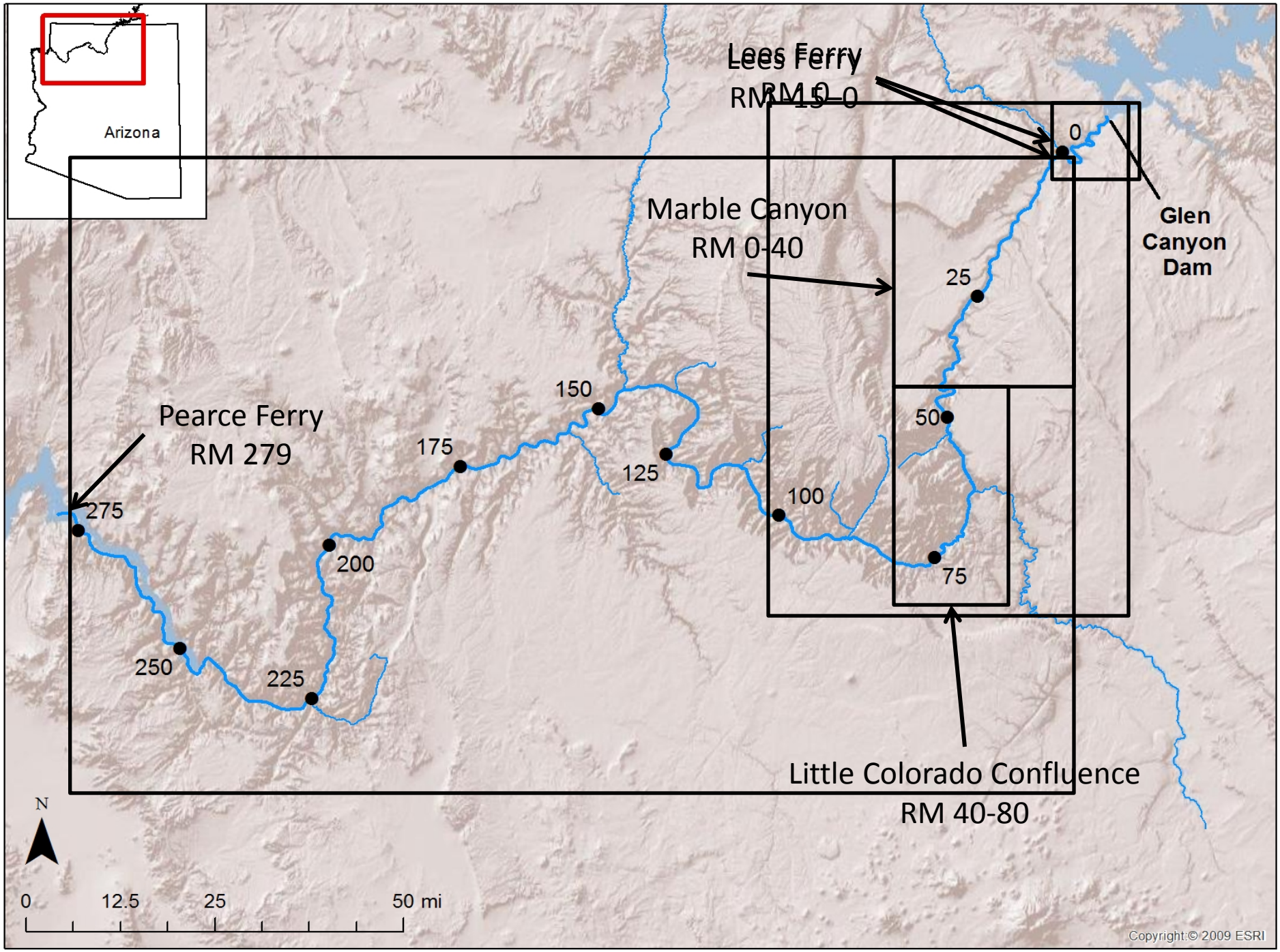
Arizona
Lees Ferry
RM 15-0
Lees Ferry
RM 0
0
Glen
Canyon
Dam
Marble Canyon
RM 0-40
25
50
75
100
125
150
175
200
225
250
275
Pearce Ferry
RM 279
Little Colorado Confluence
RM 40-80
N
0
12.5
25
50 mi
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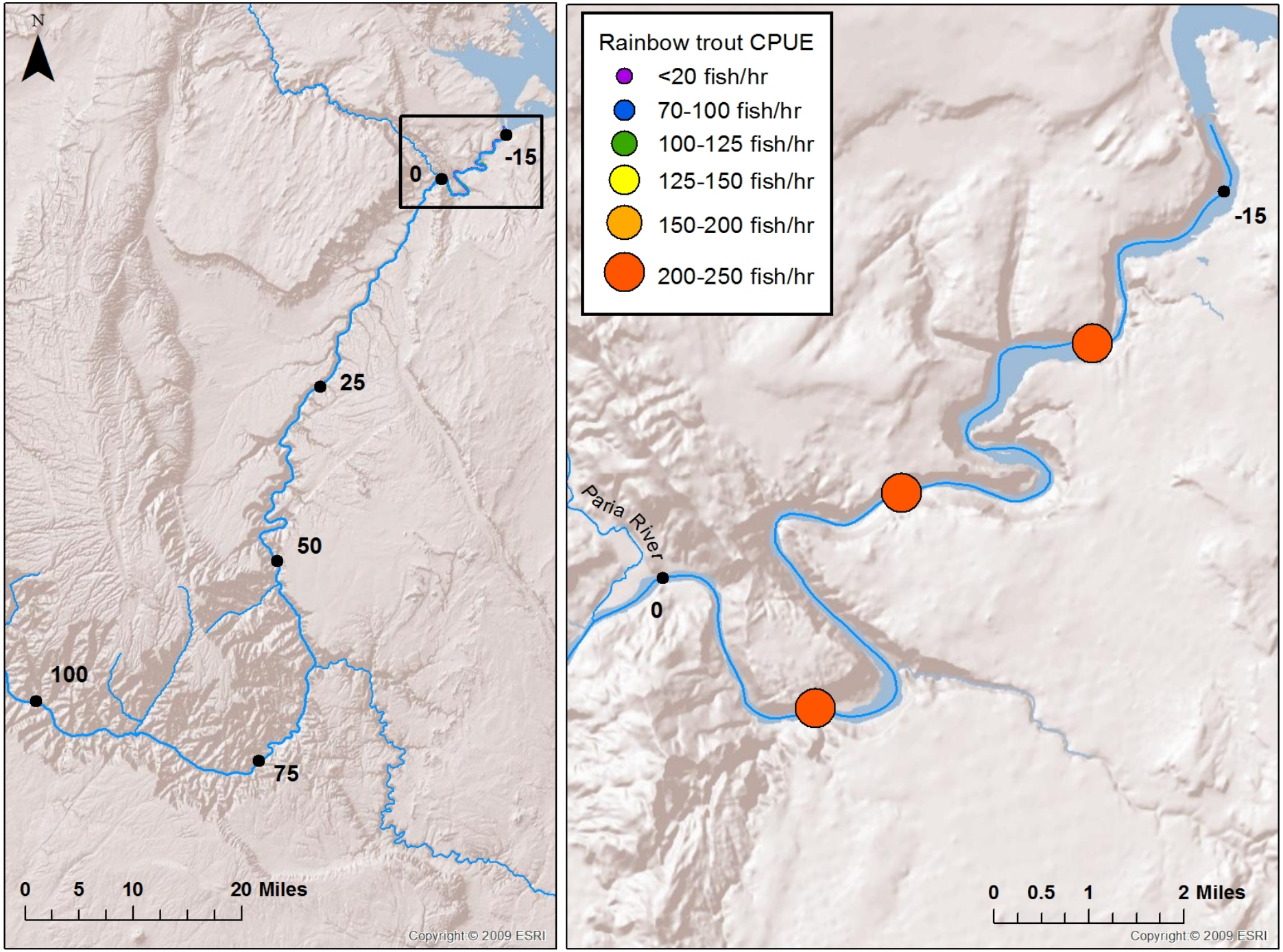
N
-15
0
25
50
100
75
0 5 10 20 Miles
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Rainbow trout CPUE
<20 fish/hr
70-100 fish/hr
100-125 fish/hr
125-150 fish/hr
150-200 fish/hr
200-250 fish/hr
-15
Paria River
0
0 0.5 1 2 Miles
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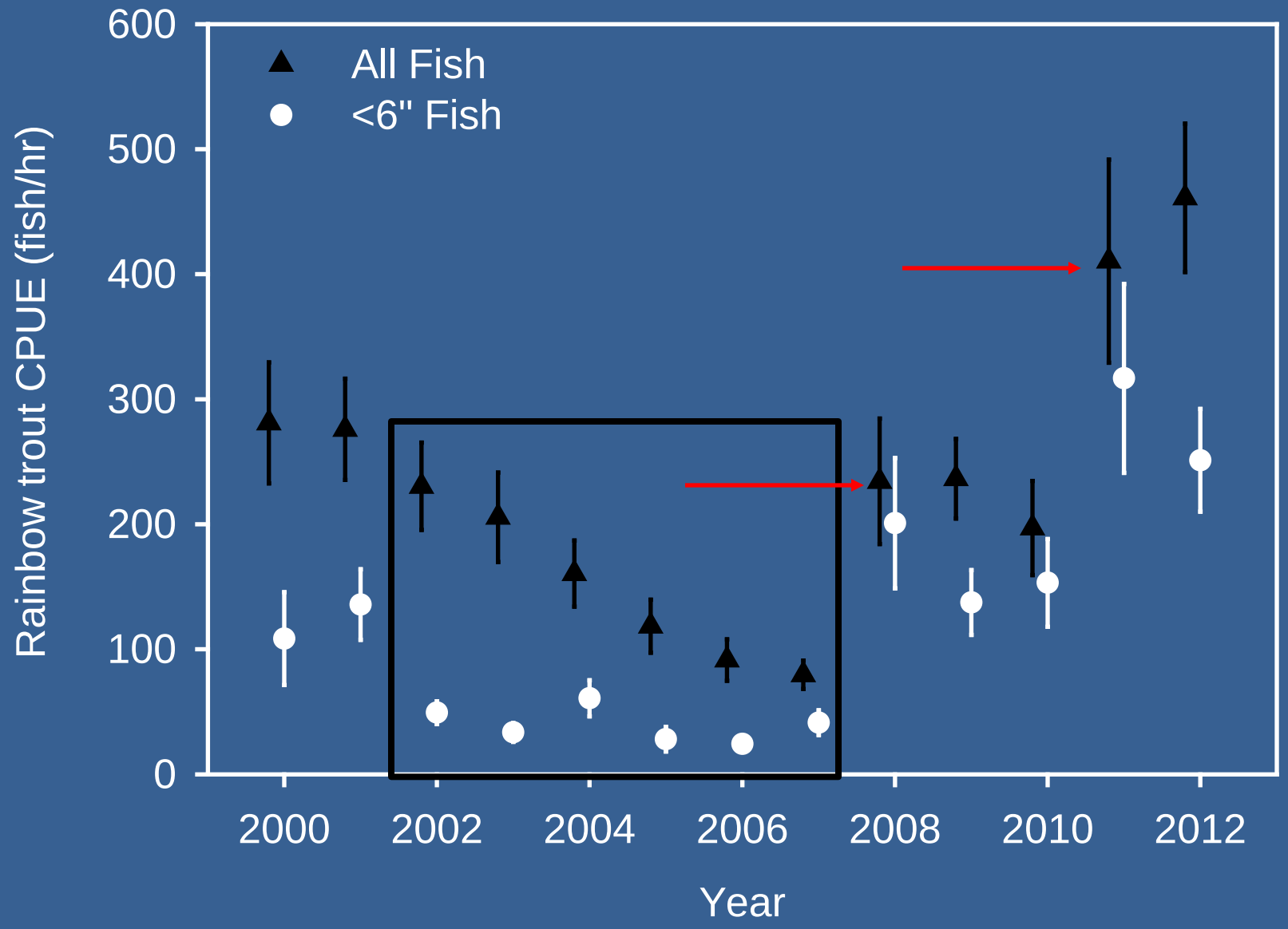
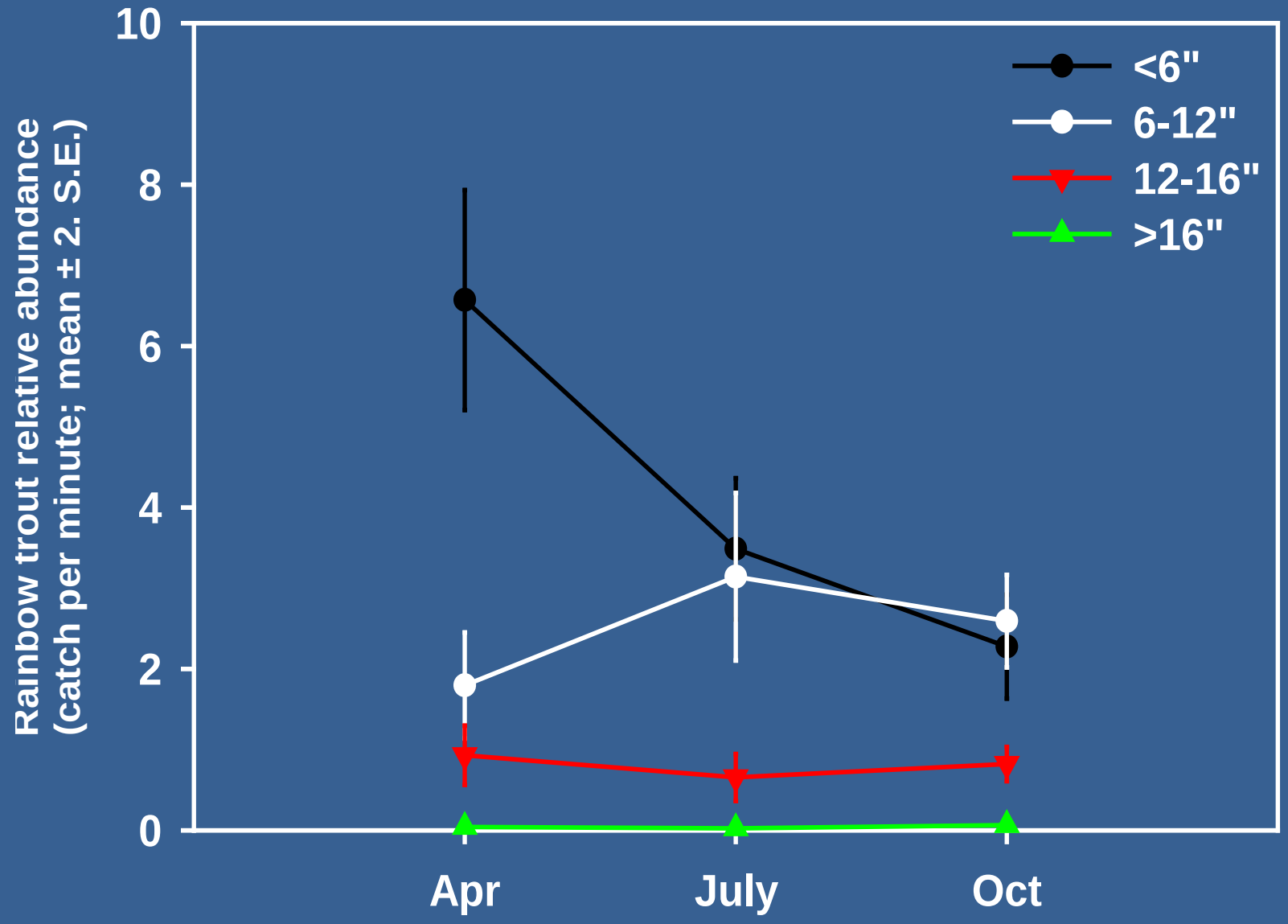
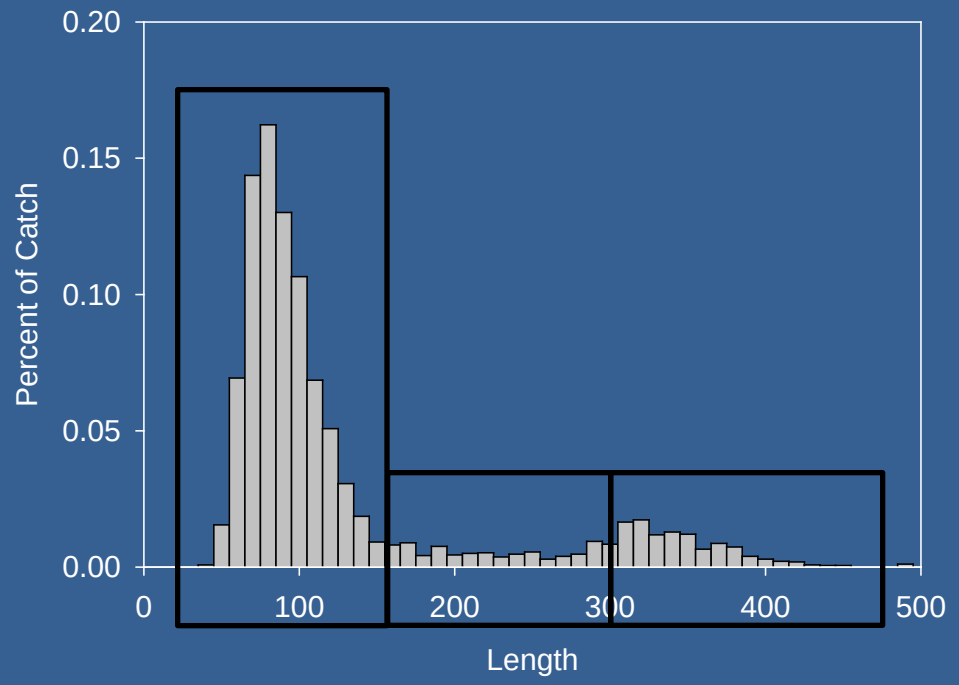
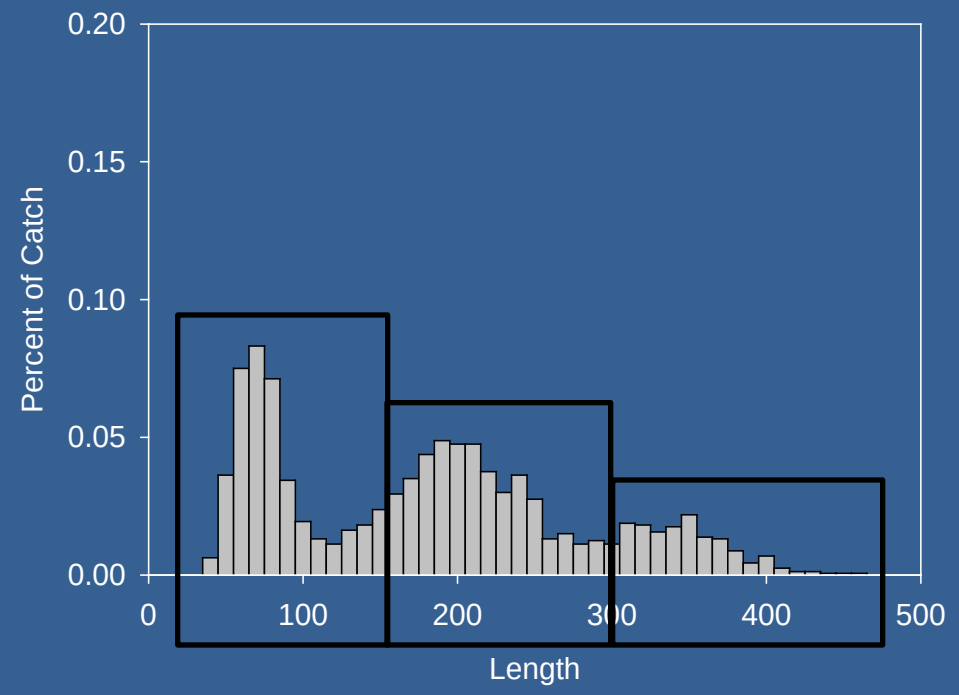

All Fish
<6" Fish
Rainbow trout CPUE (fish/hr)
600
500
400
300
200
100
0
2000
2002
2004
2006
2008
2010
2012
Year

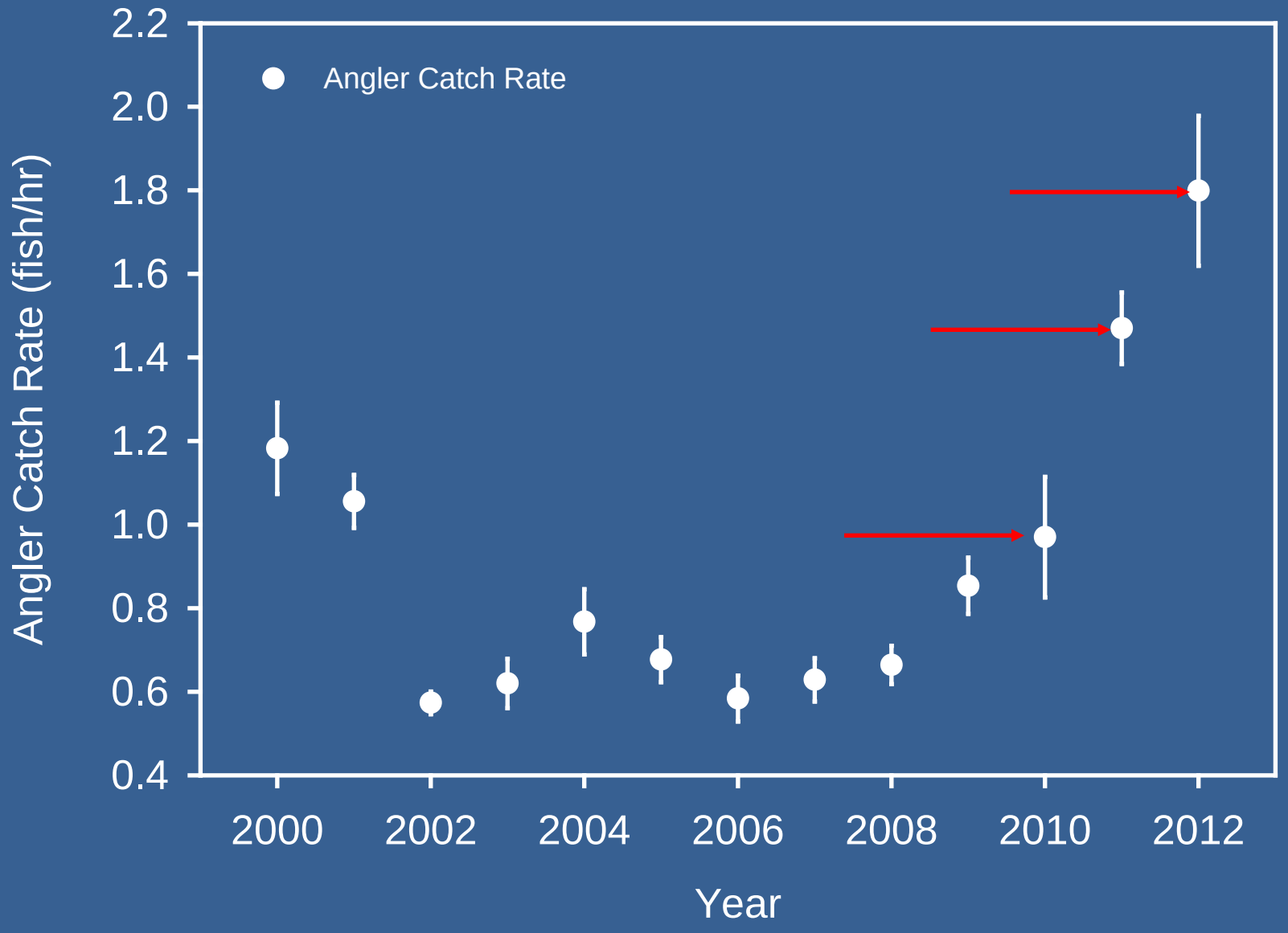

Rainbow trout relative abundance
(catch per minute; mean ± 2. S.E.)
10
8
6
4
2
0
Apr
July
Oct
<6"
6-12"
12-16"
>16"

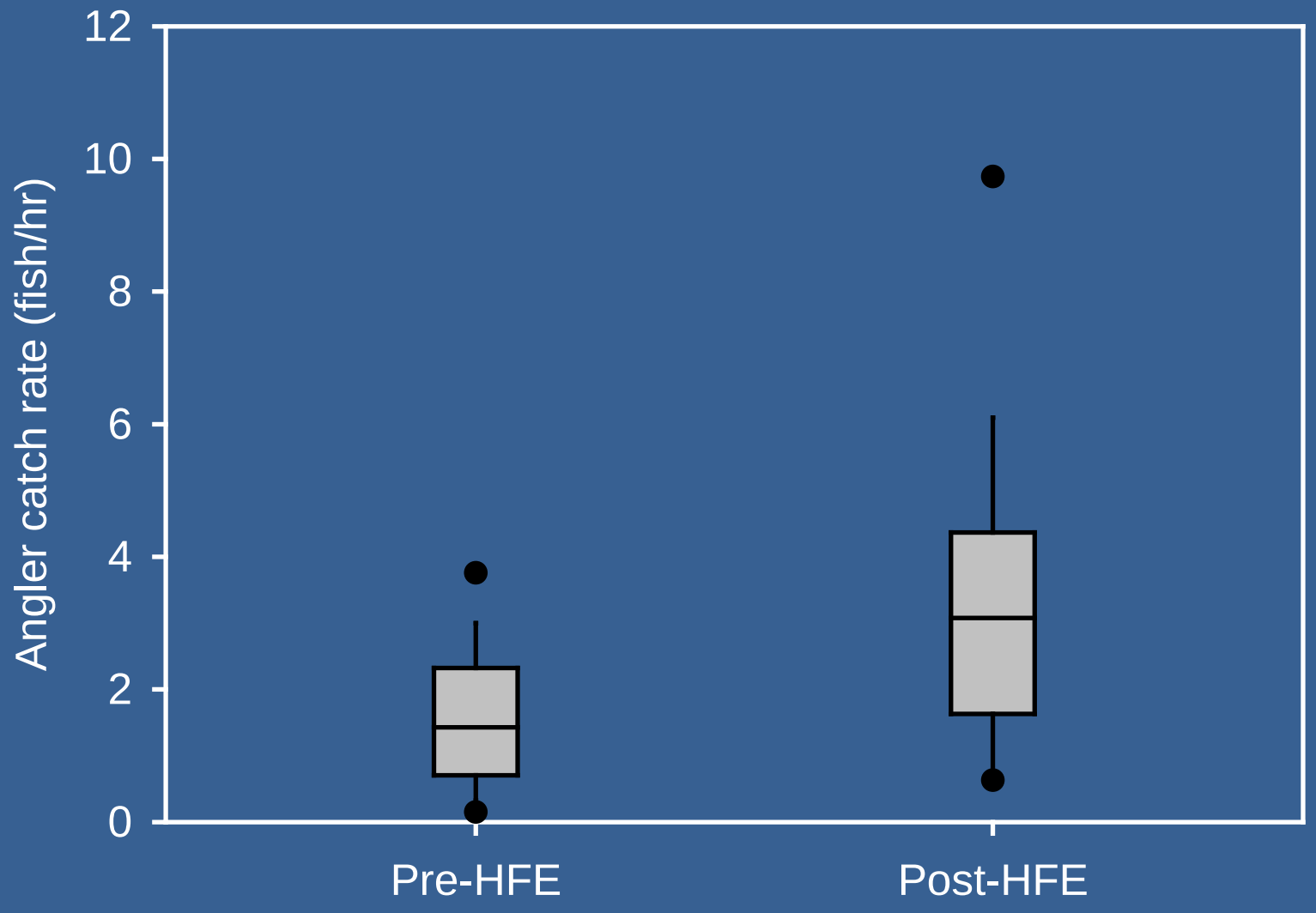


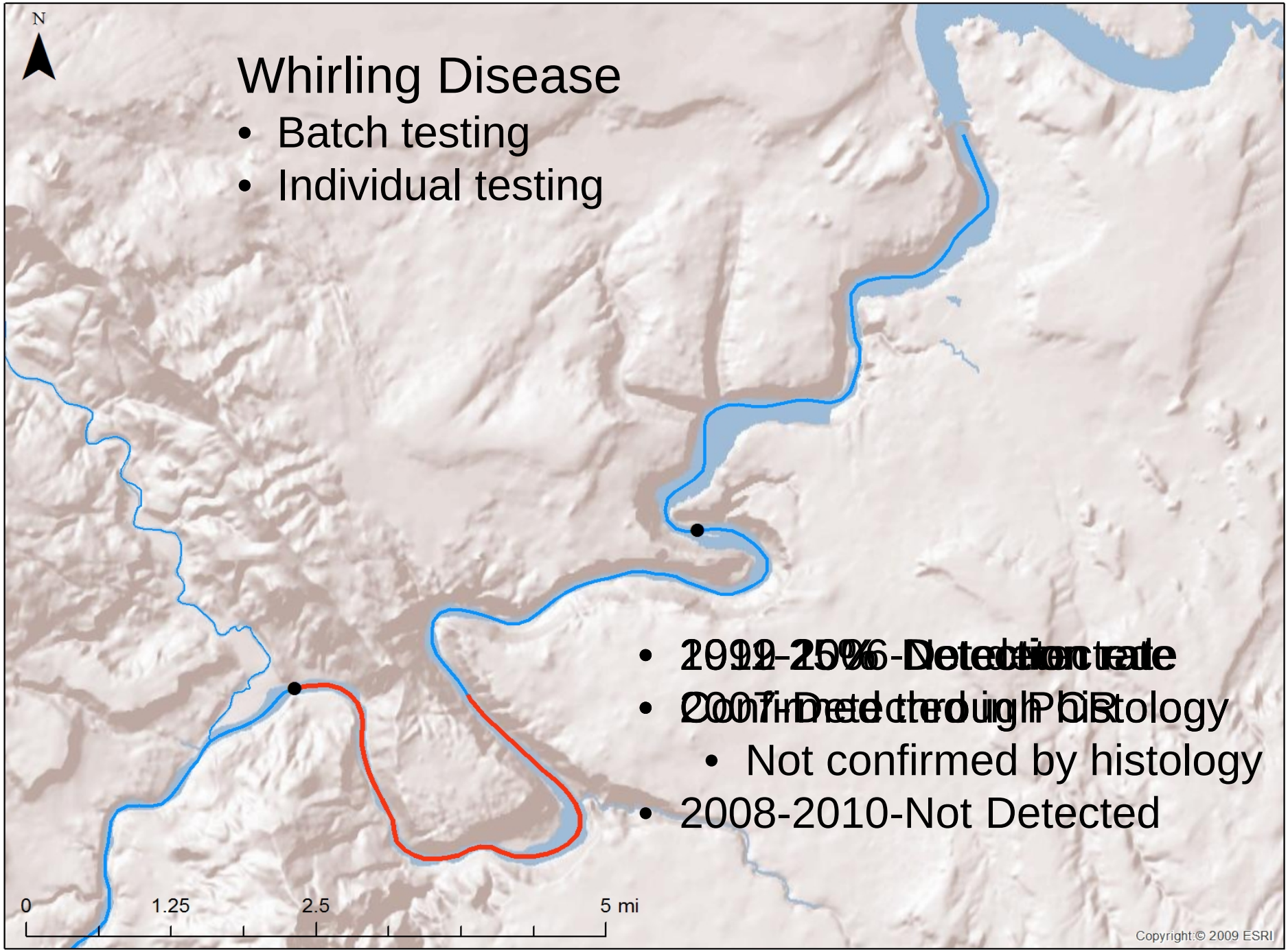
- 2011
  - 133 ± 2.8 mm
  - 80% <150 mm
  - 8% 150-300 mm
  - 12% >300 mm



- 2012
  - 185 ± 4.3 mm
  - 40% <150 mm
  - 45% 150-300 mm
  - 15% >300 mm


Angler Catch Rate
Angler Catch Rate (fish/hr)
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
2000
2002
2004
2006
2008
2010
2012
Year


Angler catch rate (fish/hr)
12
10
8
6
4
2
0
Pre-HFE
Post-HFE


N
Whirling Disease
• Batch testing
• Individual testing
• 2011-2006-Detection rate
• 2007-Detected through PCR
• Not confirmed by histology
• 2008-2010-Not Detected
0
1.25
2.5
5 mi
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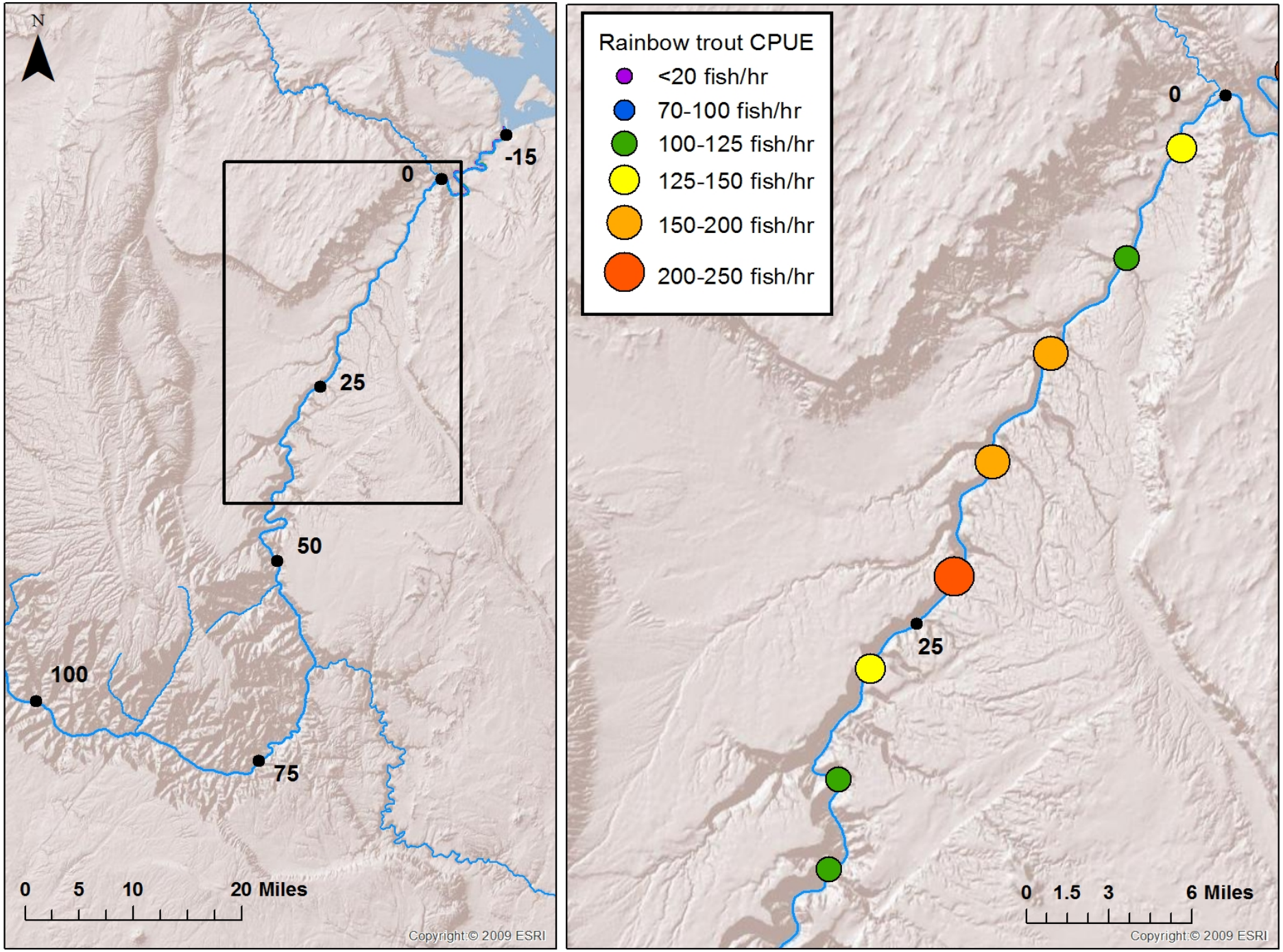
N
-15
0
25
50
100
75
0 5 10 20 Miles
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Rainbow trout CPUE
<20 fish/hr
70-100 fish/hr
100-125 fish/hr
125-150 fish/hr
150-200 fish/hr
200-250 fish/hr
0
25
0 1.5 3 6 Miles
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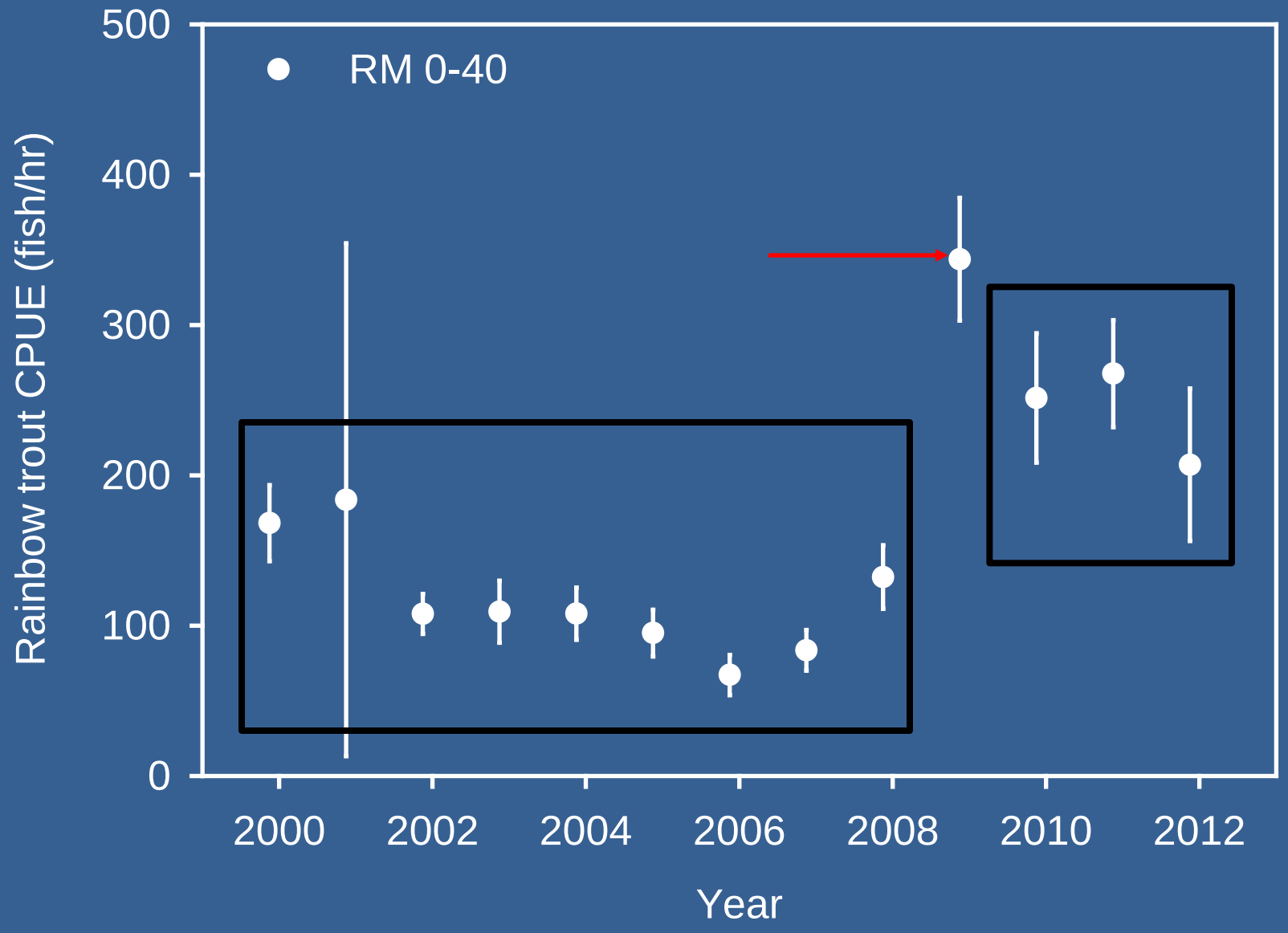
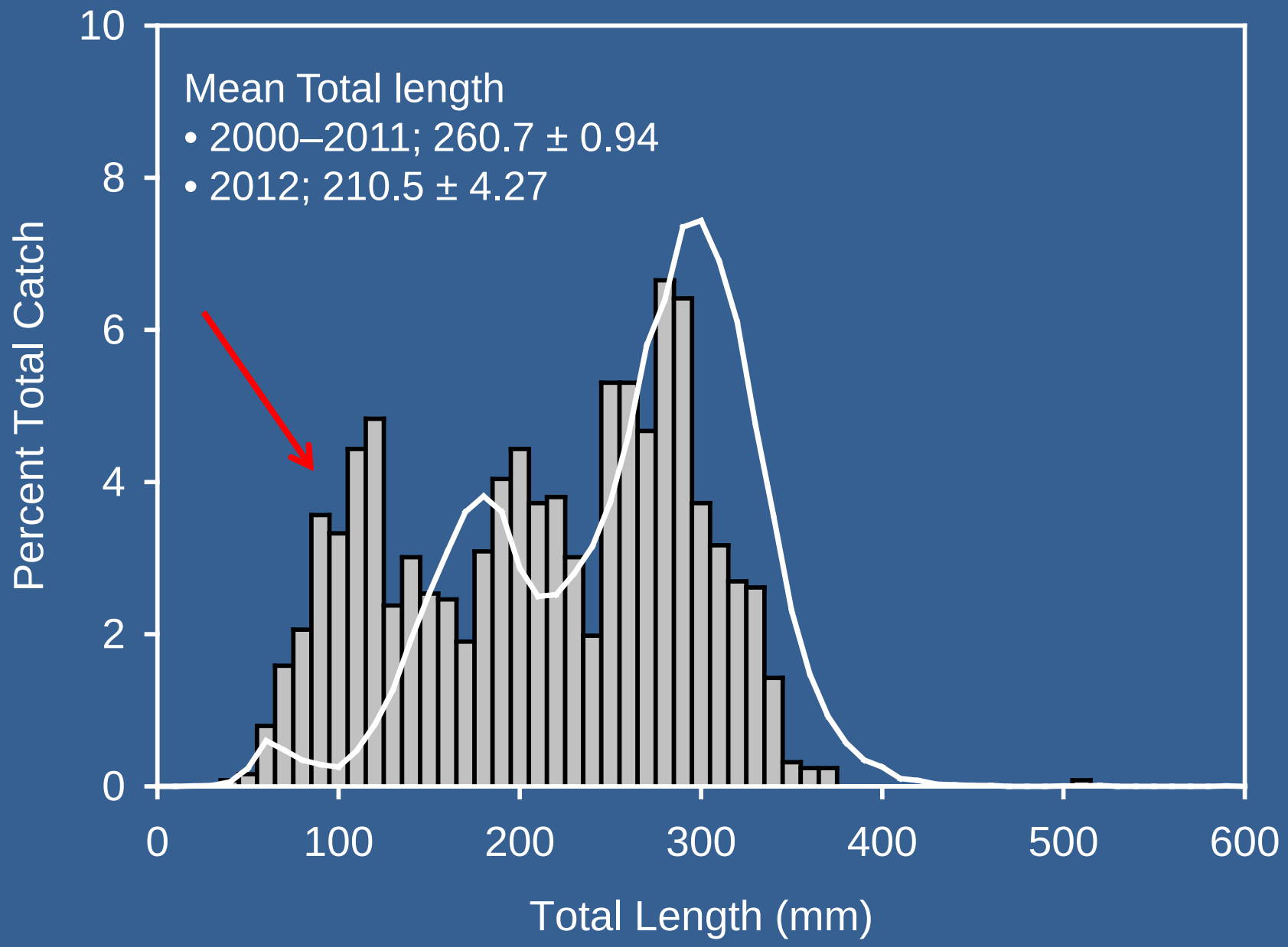
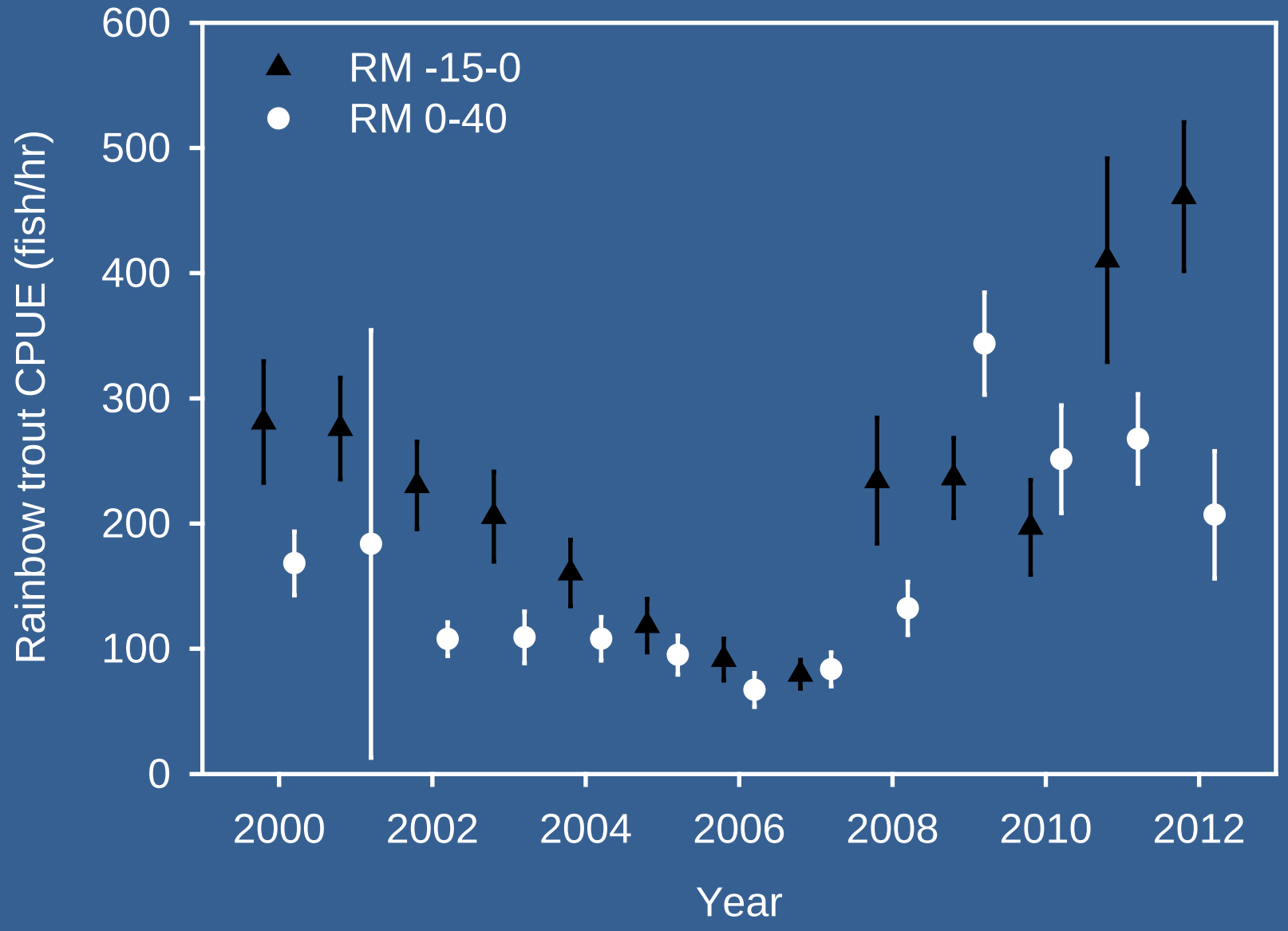
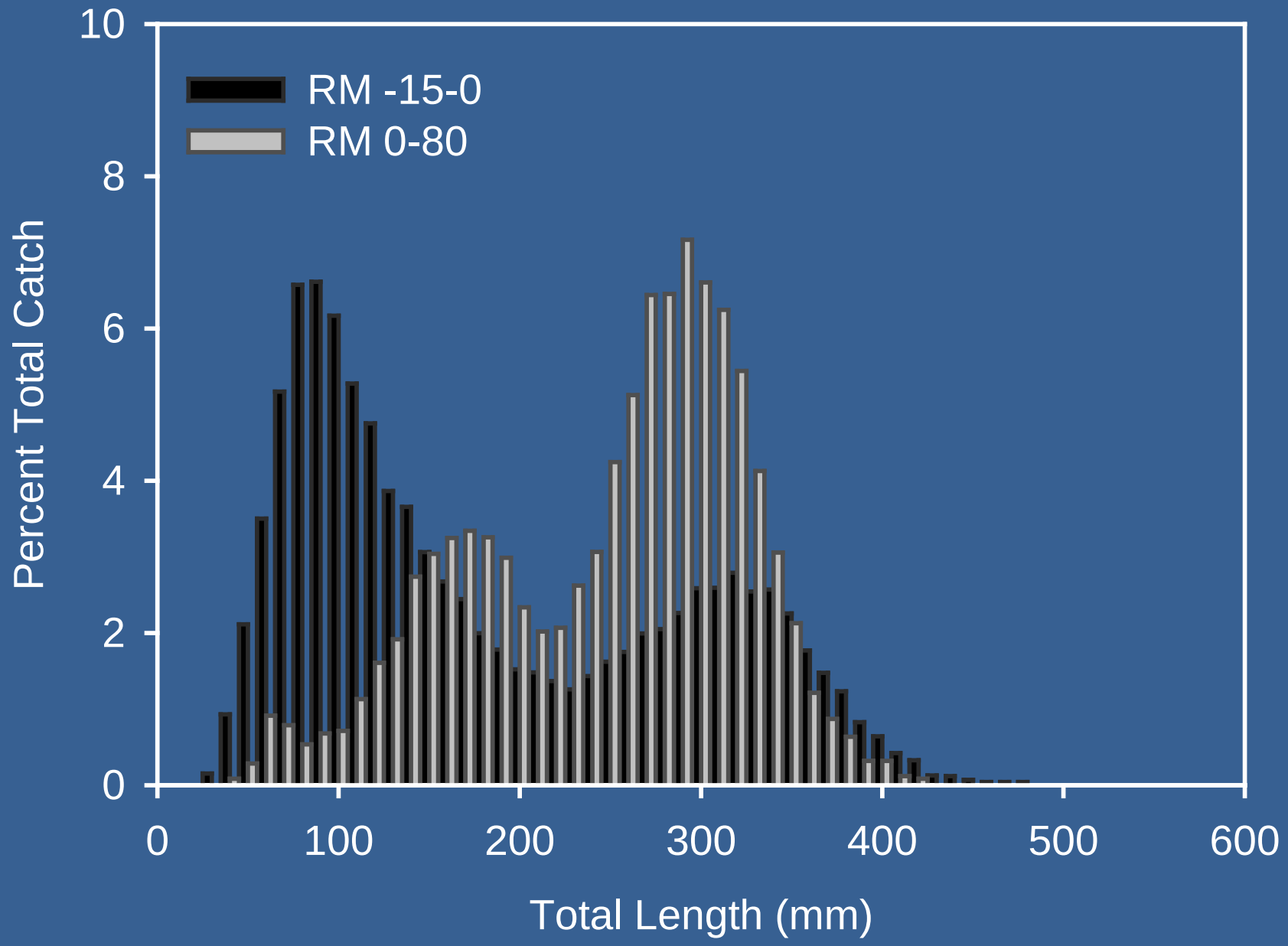
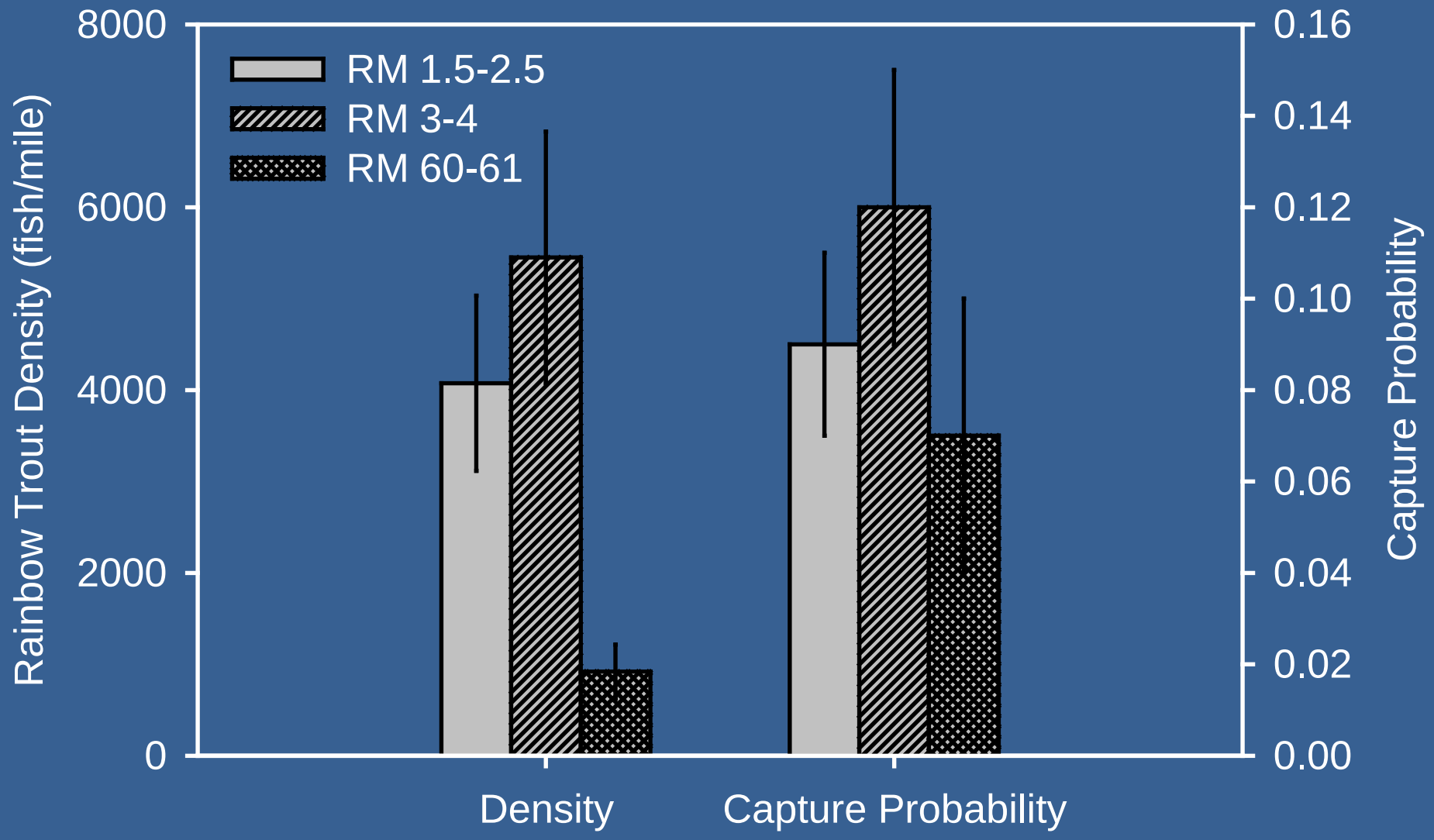
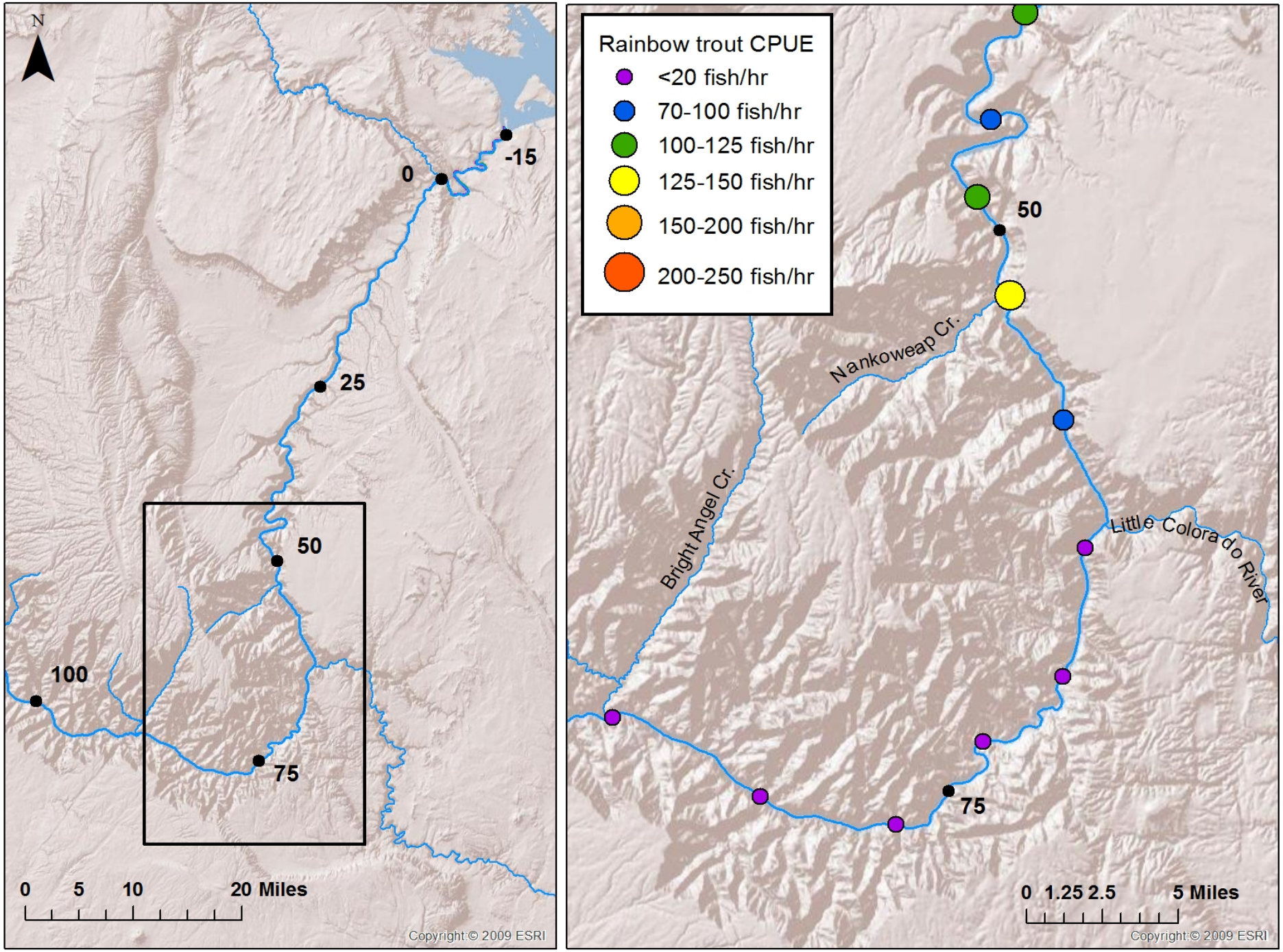

RM 0-40
Rainbow trout CPUE (fish/hr)
500
400
300
200
100
0
2000
2002
2004
2006
2008
2010
2012
Year


Mean Total length
• 2000–2011; 260.7 ± 0.94
• 2012; 210.5 ± 4.27
Percent Total Catch
0
2
4
6
8
10
0
100
200
300
400
500
600
Total Length (mm)


RM -15-0
RM 0-40
Rainbow trout CPUE (fish/hr)
600
500
400
300
200
100
0
2000
2002
2004
2006
2008
2010
2012
Year


RM -15-0
RM 0-80
Percent Total Catch
0
2
4
6
8
10
0
100
200
300
400
500
600
Total Length (mm)


RM 1.5-2.5
RM 3-4
RM 60-61
Rainbow Trout Density (fish/mile)
8000
6000
4000
2000
0
Capture Probability
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Density
Capture Probability


N
-15
0
25
50
100
75
0 5 10 20 Miles
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Rainbow trout CPUE
<20 fish/hr
70-100 fish/hr
100-125 fish/hr
125-150 fish/hr
150-200 fish/hr
200-250 fish/hr
50
Nankoweap Cr.
Bright Angel Cr.
Little Colorado River
75
0 1.25 2.5 5 Miles
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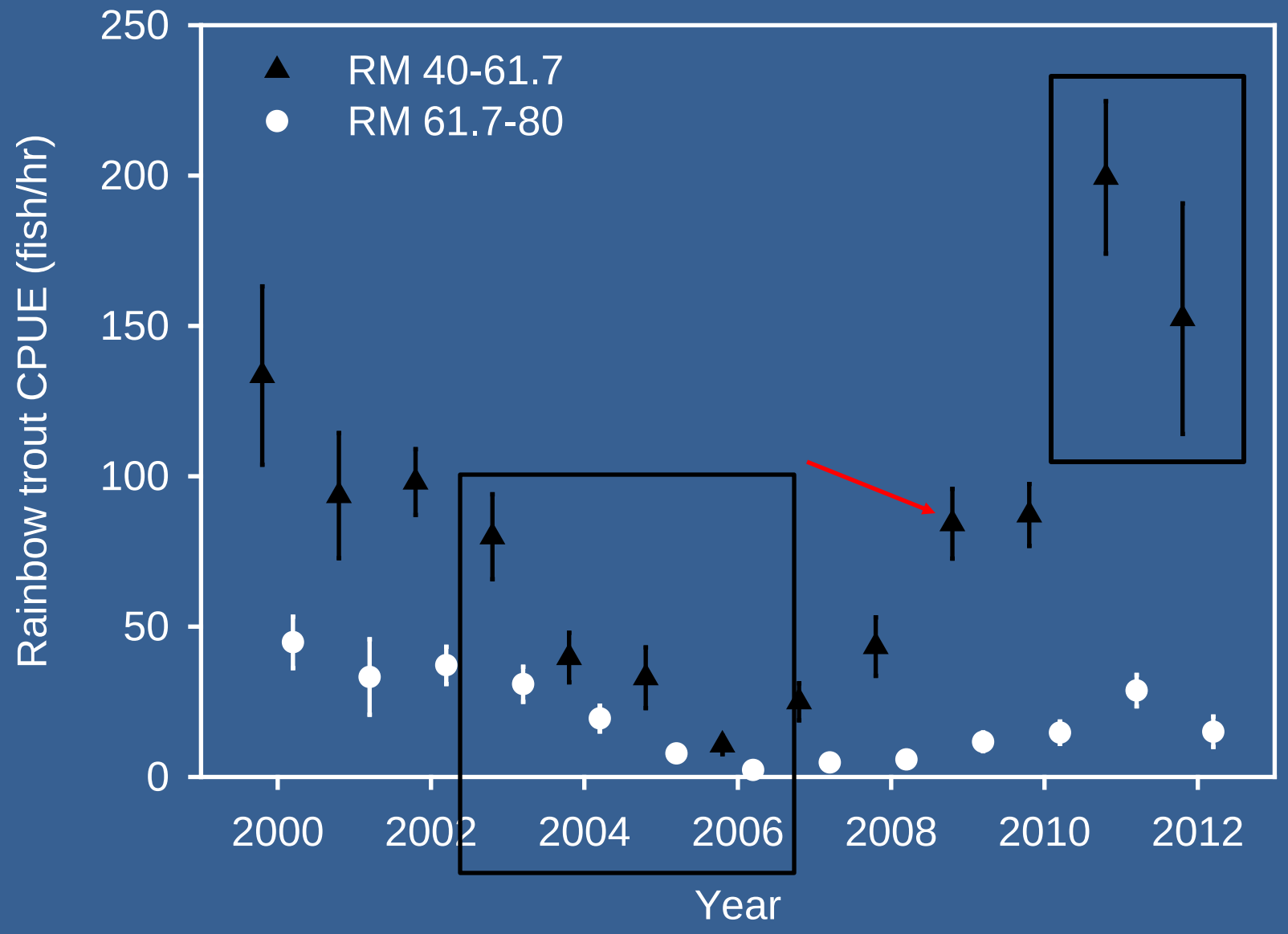
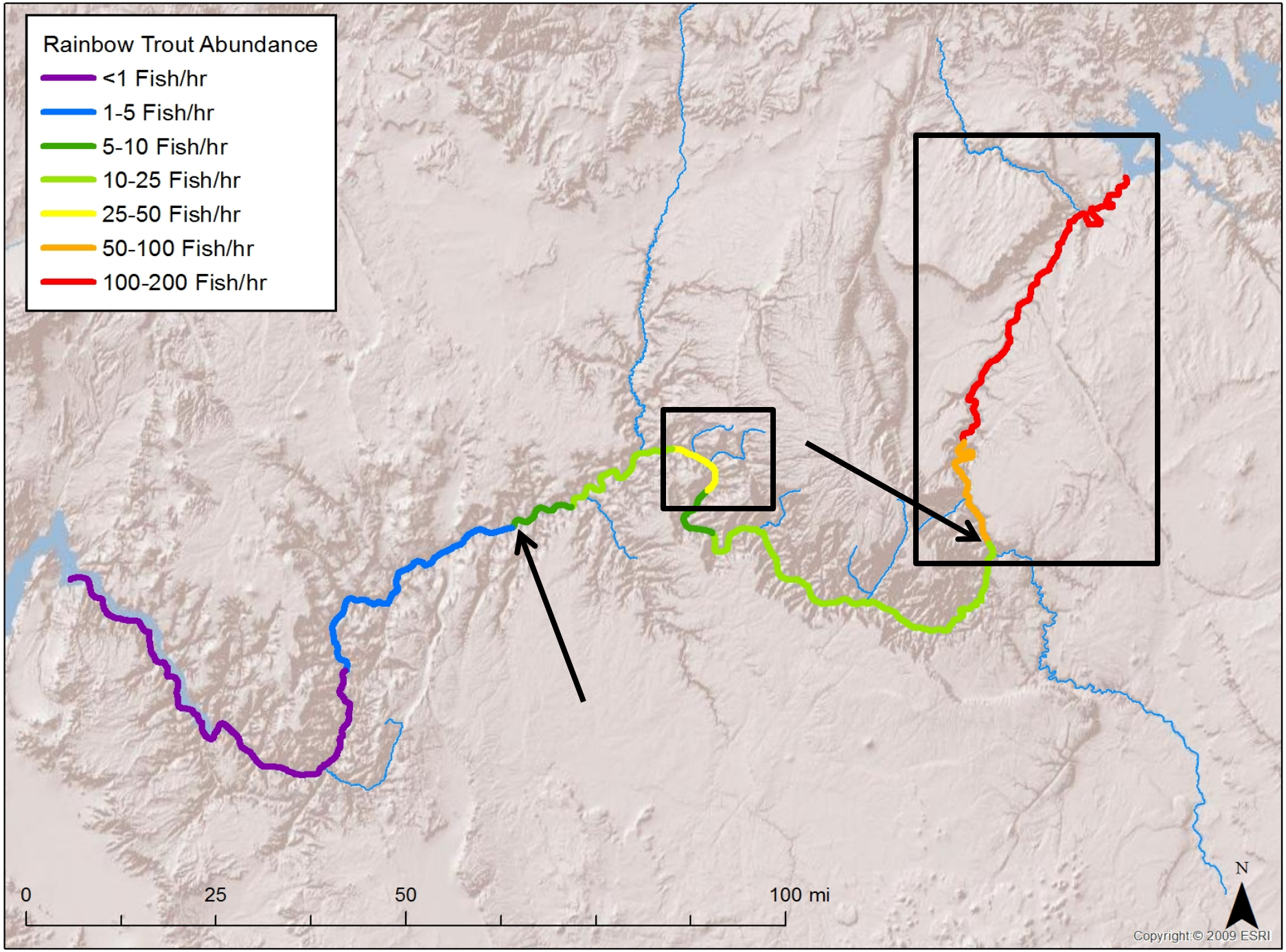

RM 40-61.7
RM 61.7-80
Rainbow trout CPUE (fish/hr)
250
200
150
100
50
0
2000
2002
2004
2006
2008
2010
2012
Year


Rainbow Trout Abundance
<1 Fish/hr
1-5 Fish/hr
5-10 Fish/hr
10-25 Fish/hr
25-50 Fish/hr
50-100 Fish/hr
100-200 Fish/hr
0
25
50
100 mi
N
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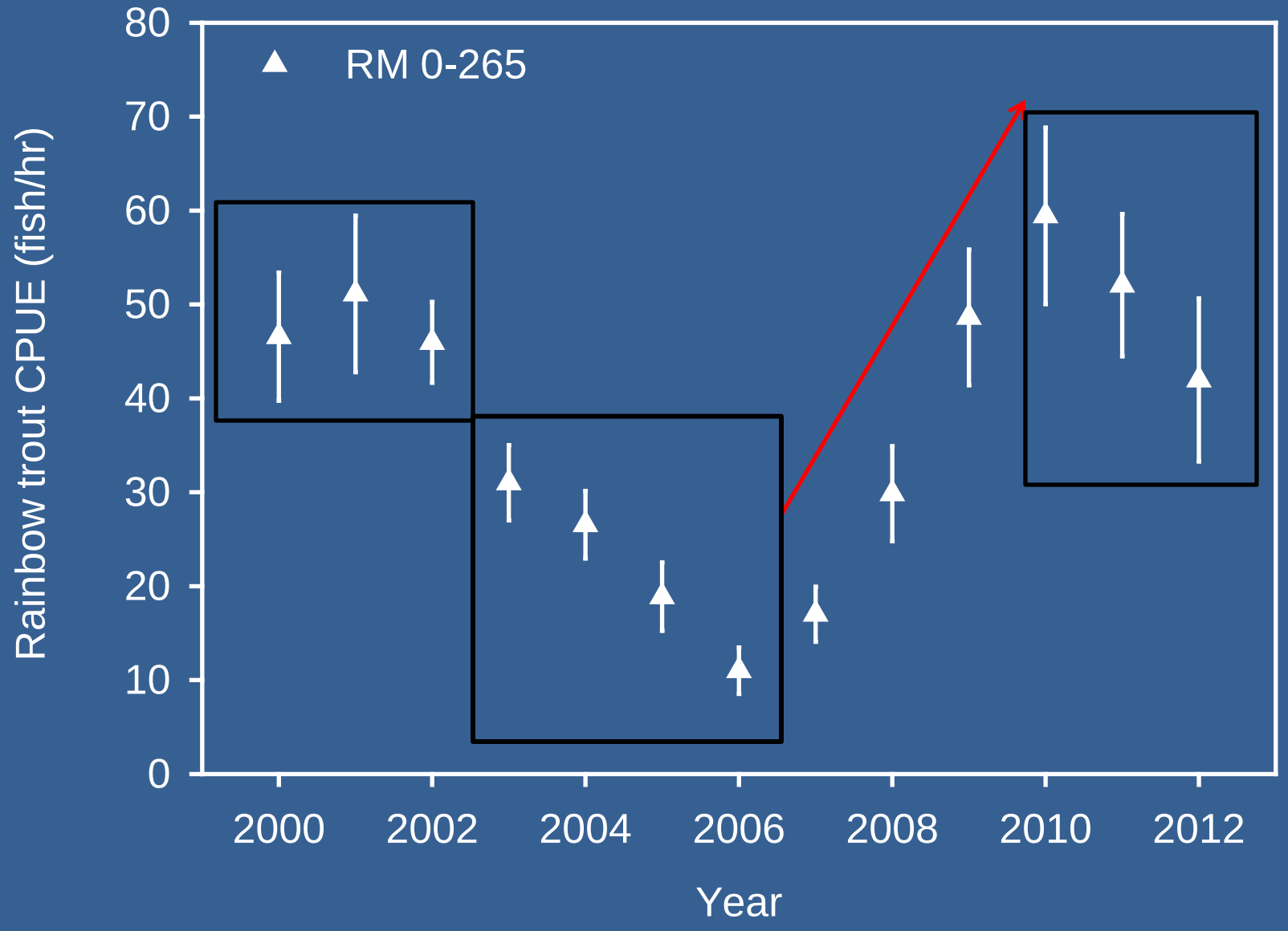
RM 0-265
Rainbow trout CPUE (fish/hr)
0
10
20
30
40
50
60
70
80
2000
2002
2004
2006
2008
2010
2012
Year

2012 Summary

- Lees Ferry
  - 2008 High flow event
  - 2011 Equalization flows
- Marble Canyon
  - Larger size
  - Similar abundance to Lees Ferry
- Grand Canyon
  - Decreased abundance downstream of LCR
  - Tributary influence

Questions?