North Coast Coho Stock Assessment 2005

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- Coho Assessment Framework
- Escapement Estimates
- Inseason abundance indicator

Coho Assessment Framework

- Coho are managed by stock groupings (if known) or by management areas.
- Intermixing of stocks dictates North Coast stock assessment account for Areas 1- 8.
- In-season abundance indicators.
- Estimate stream specific habitat capacity measures.
- Estimate escapement.
- Estimate exploitation rates and marine survival for each stock grouping.

Coho Abundance Estimates

- Indicator stocks
- Escapement estimates
- CPUE

Indicator stocks provide estimates for:

- adult escapement
- freshwater survival and production
- marine survival and exploitation rates

(too early for 2005 numbers)

Area 2E:	Deena
Area 4:	Toboggan, Babine, Slamgeesh
Area 6:	West Arm Creek

Escapement Estimates

Adult fences: Tlell

Sustut

Upper Bulkley

Mark-recapture: Nass fishwheel

Visual estimates: Areas 1, 2, 5- 8.

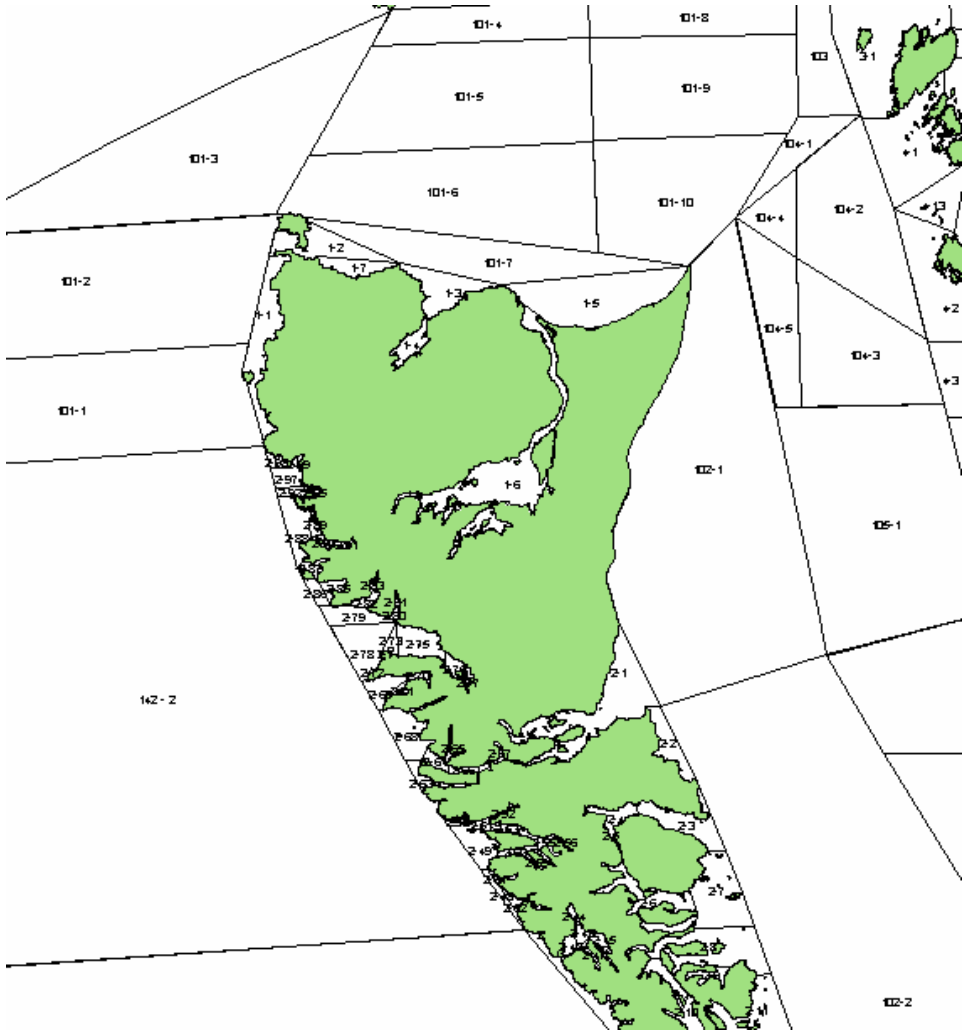
CPUE: Alaskan fisheries

Langara Sport fishery

Coho Stock Status 2005

(presented north to south and coastal to inland)

Areas 1 and 2


101-4
101-8
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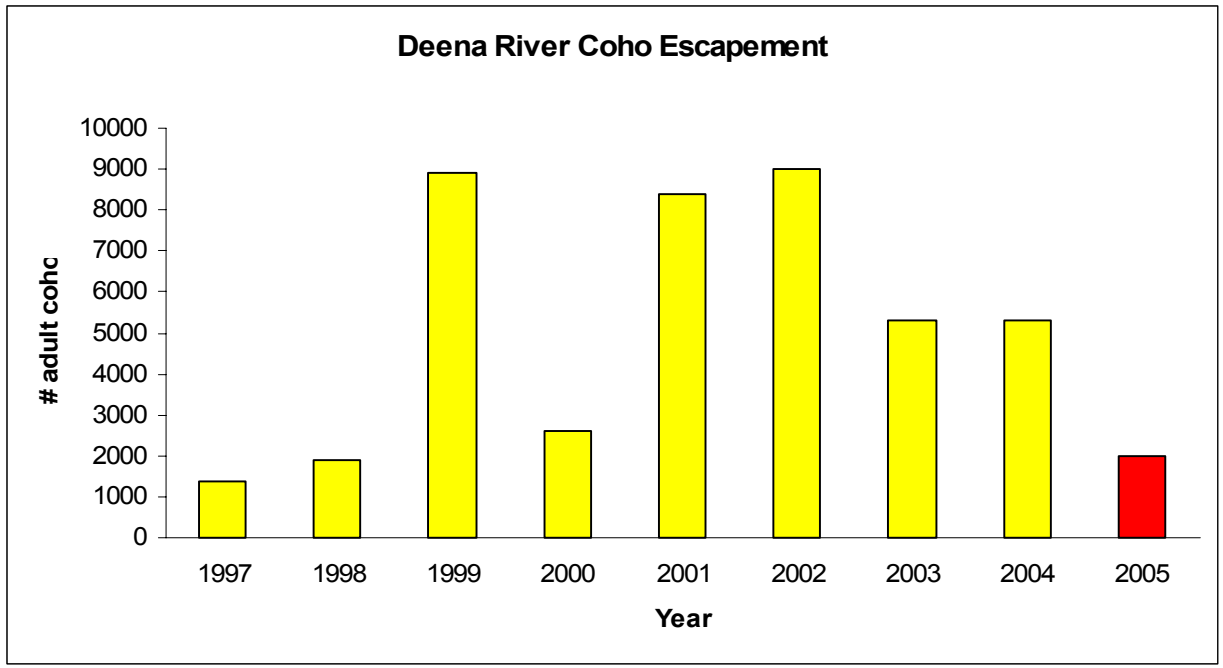
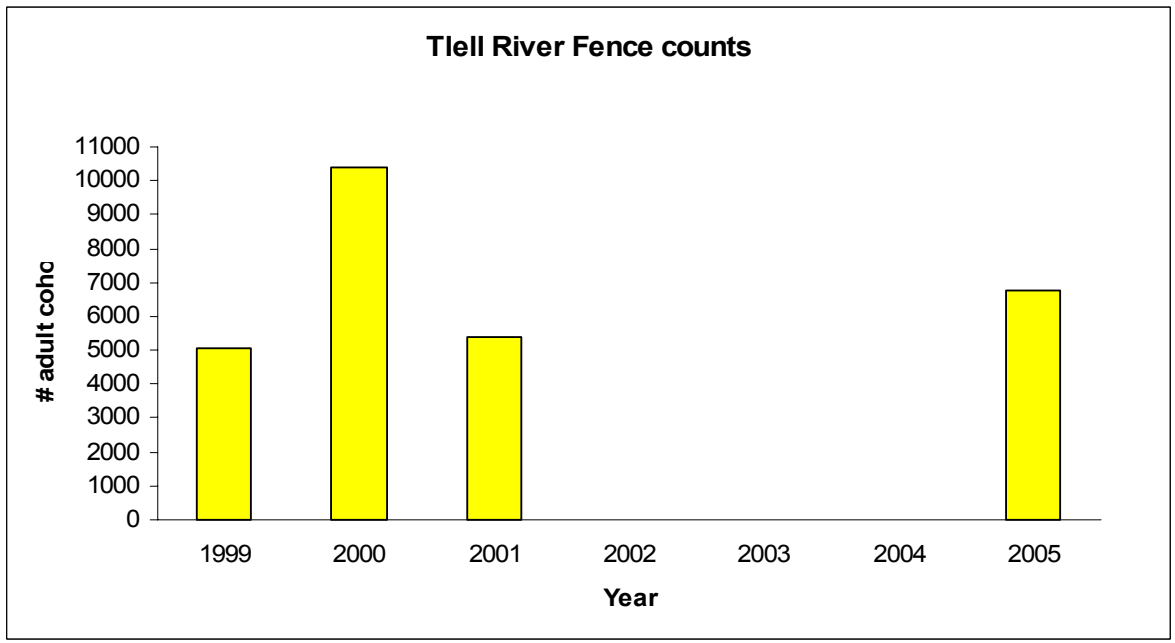
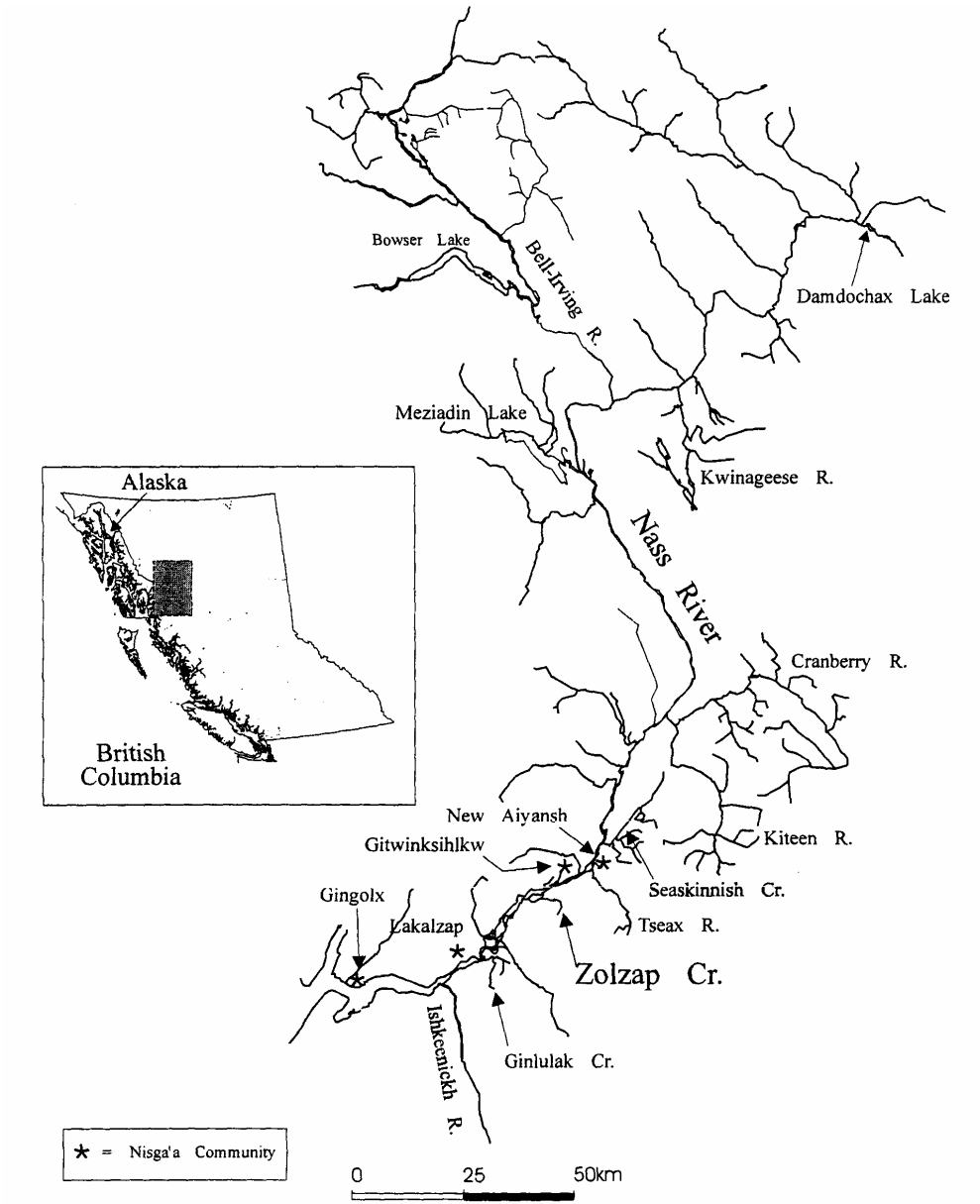
101-2
101-1
102-1
105-1
102-2


Deena River Coho Escapement
adult cohc
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
Year

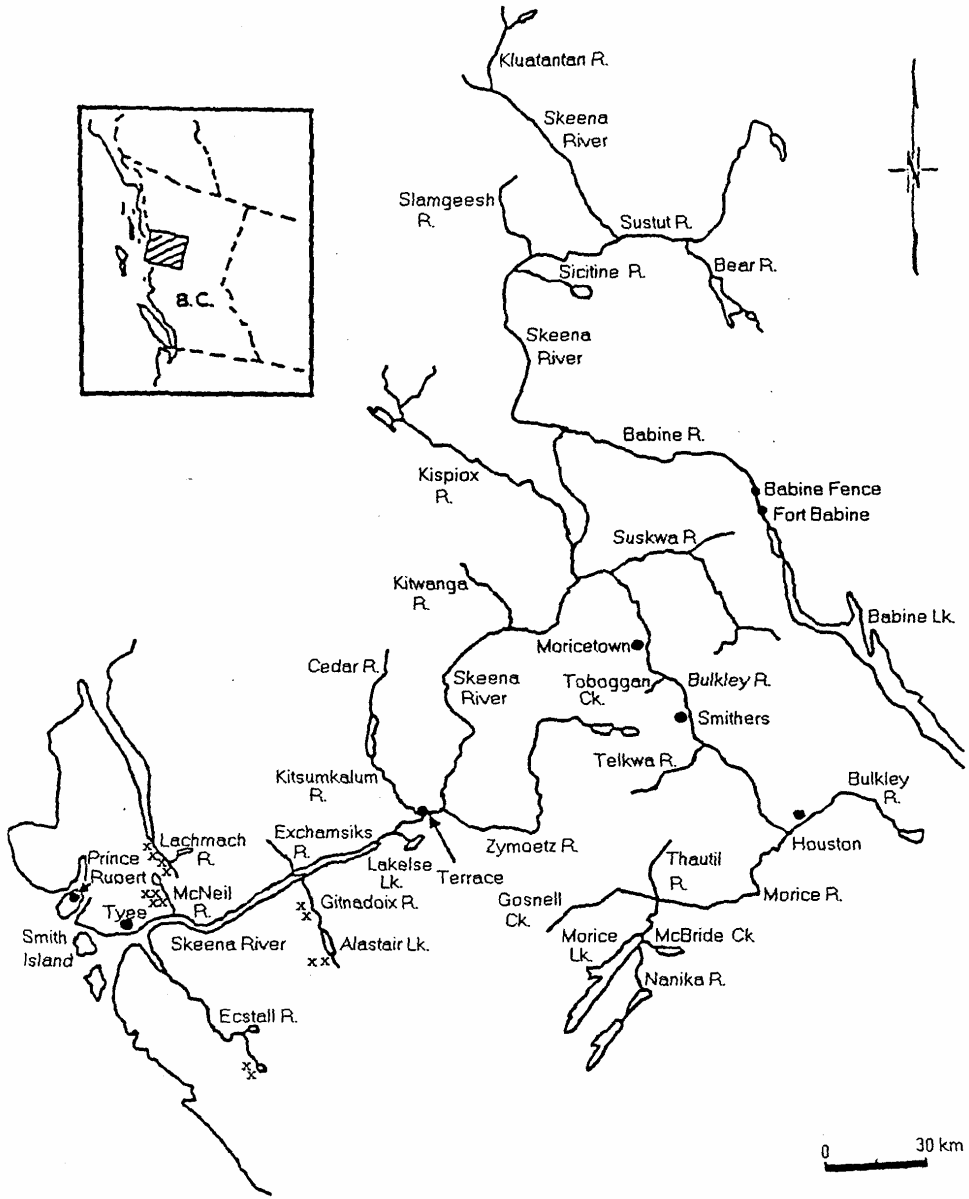

Tlell River Fence counts
adult cohc
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1999
2000
2001
2002
2003
2004
2005
Year

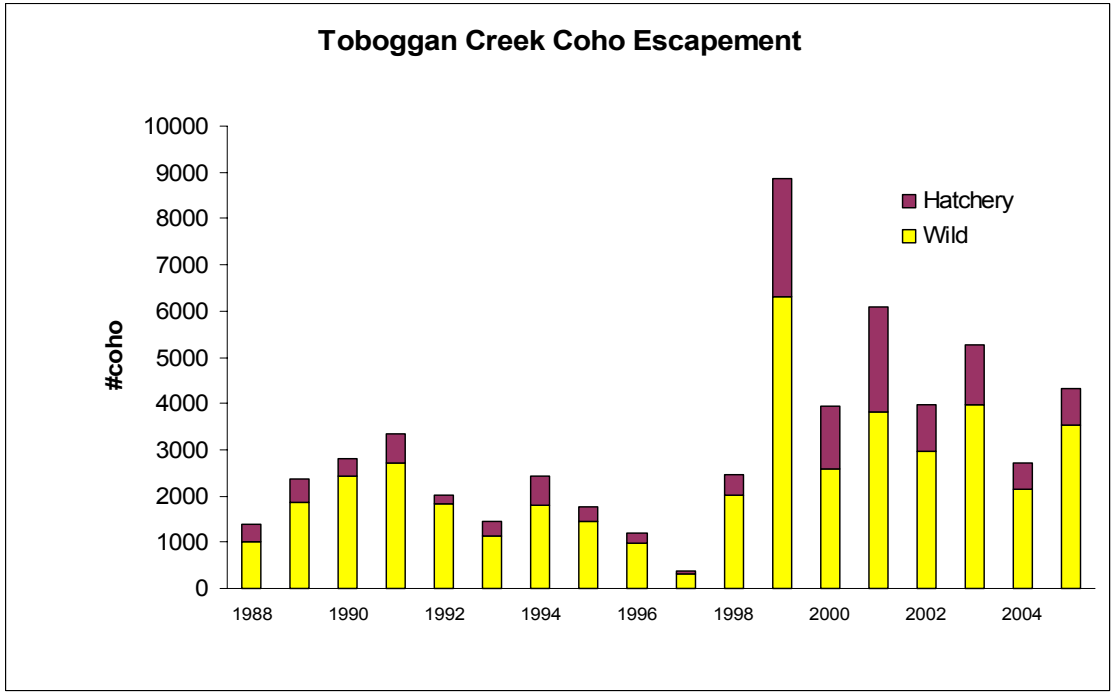
Area 3

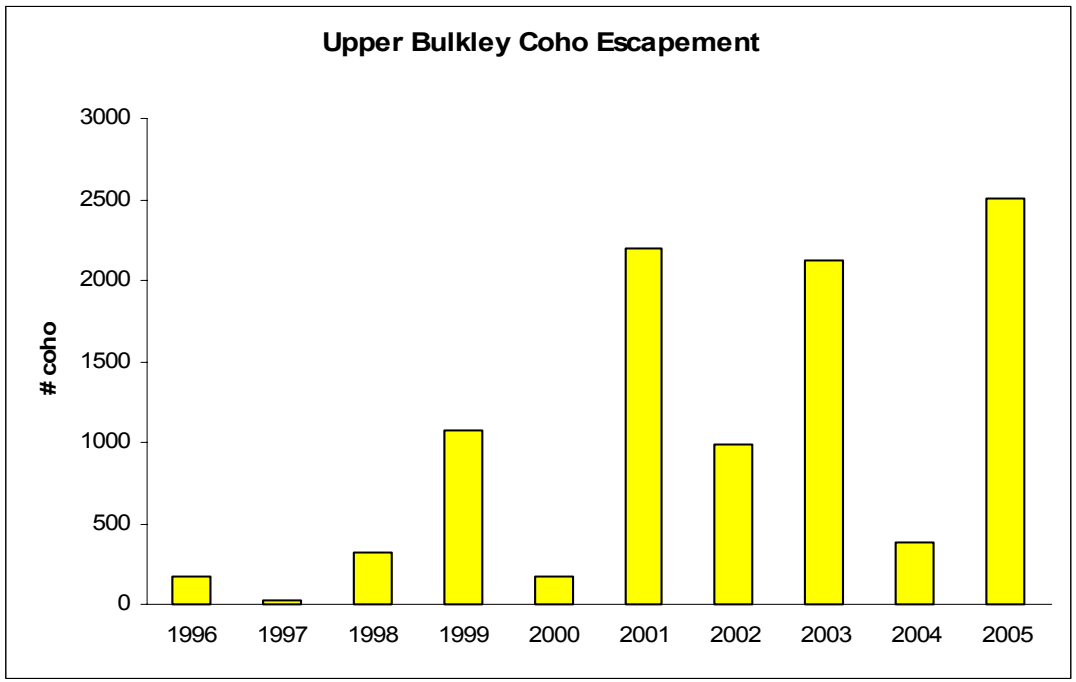

Bowser Lake
Bell-Irving R.
Damdochax Lake
Meziadin Lake
Kwinageese R.
Nass River
Alaska
British Columbia
Cranberry R.
New Aiyansh
Gitwinksihlkw
Kiteen R.
Seaskinnish Cr.
Gingolx
Lakalzap
Tseax R.
Zolzap Cr.
Ishkeenickh R.
Ginlulak Cr.
* = Nisga'a Community
0
25
50km

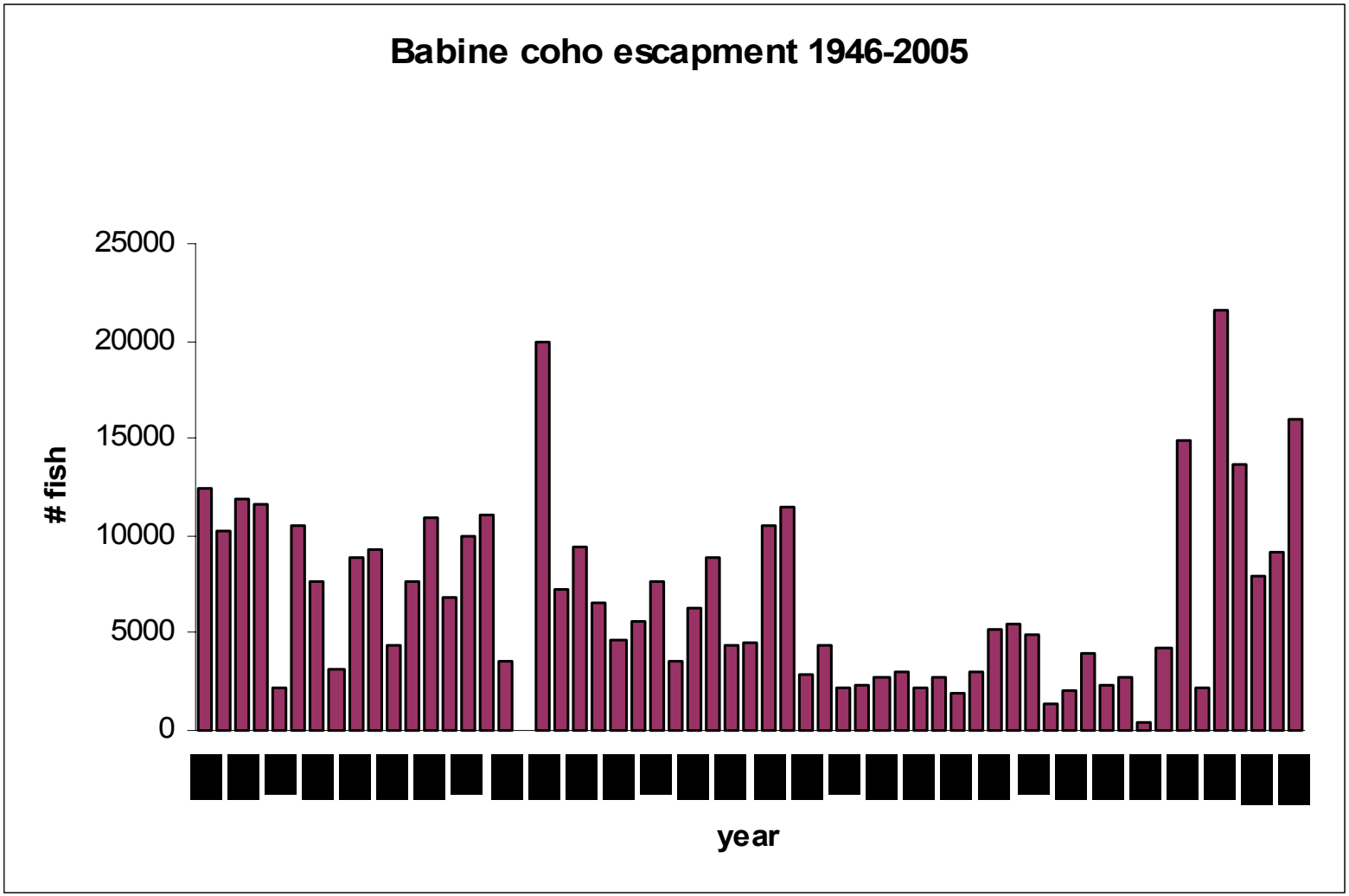
Nass Coho Production Capacity								
Area	**Estimated Production Capacity**	**Enumeration Method**	**% of capacity**					
			2000	2001	2002	2003	2004	**2005**
Coastal	11,000	AUC	80	283	208	398	267	**358**
Lower Nass	43,000	AUC	34	124	125	146	67	**94**
Upper Nass	106,000	Fishwheel M/R	67	75	152	64	43	**82**
Total	**160,000**		**59**	**102**	**149**	**109**	**65**	**105**

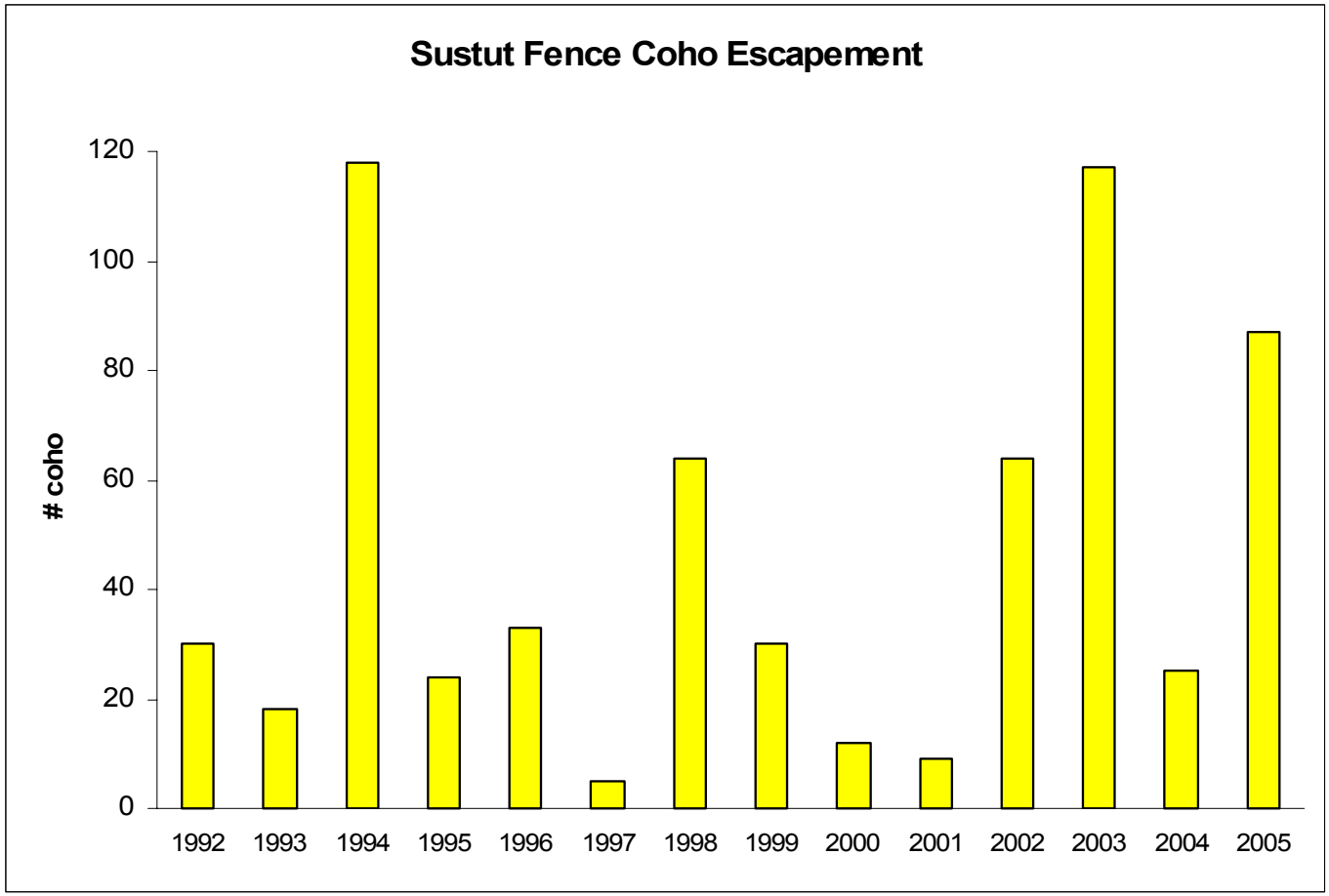
Skeena River Drainage



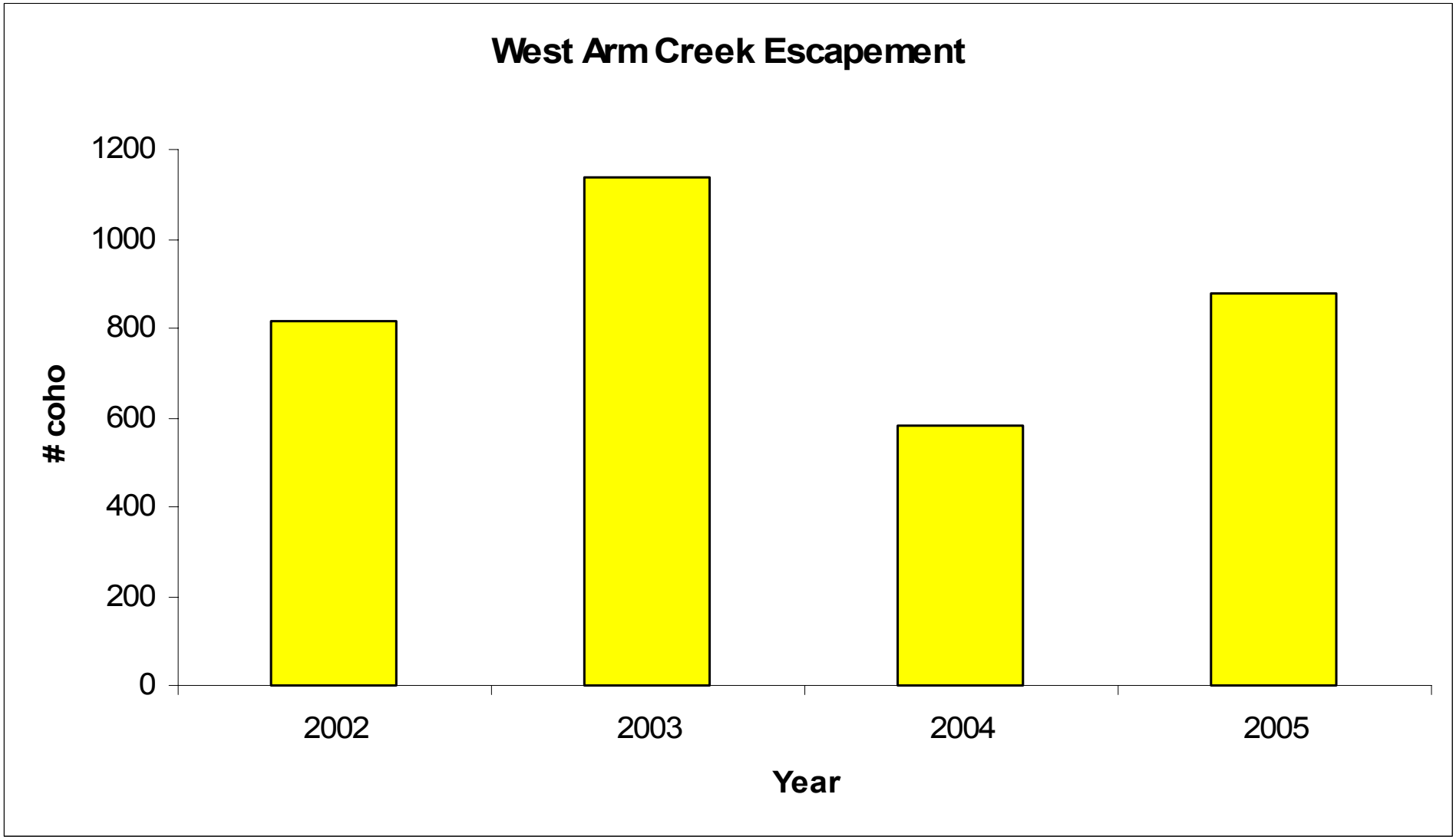

Toboggan Creek Coho Escapement
#coho
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1988
1990
1992
1994
1996
1998
2000
2002
2004
Hatchery
Wild


Upper Bulkley Coho Escapement
coho
3000
2500
2000
1500
1000
500
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005


Babine coho escapment 1946-2005
25000
20000
15000
10000
5000
0
fish
year


Sustut Fence Coho Escapement
coho
120
100
80
60
40
20
0
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005

Area 6

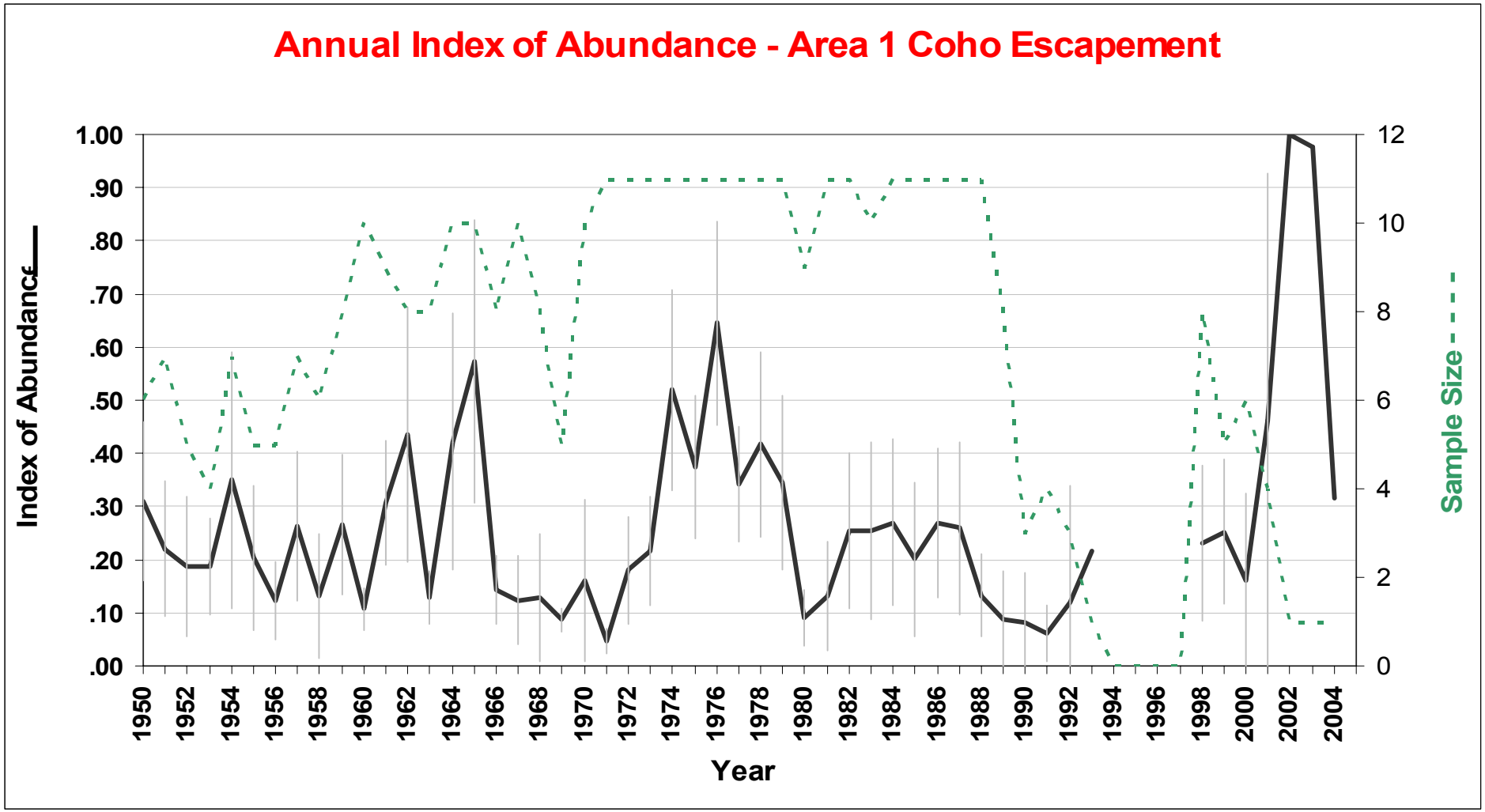

West Arm Creek Escapement
1200
1000
800
600
400
200
0
coho
2002
2003
2004
2005
Year

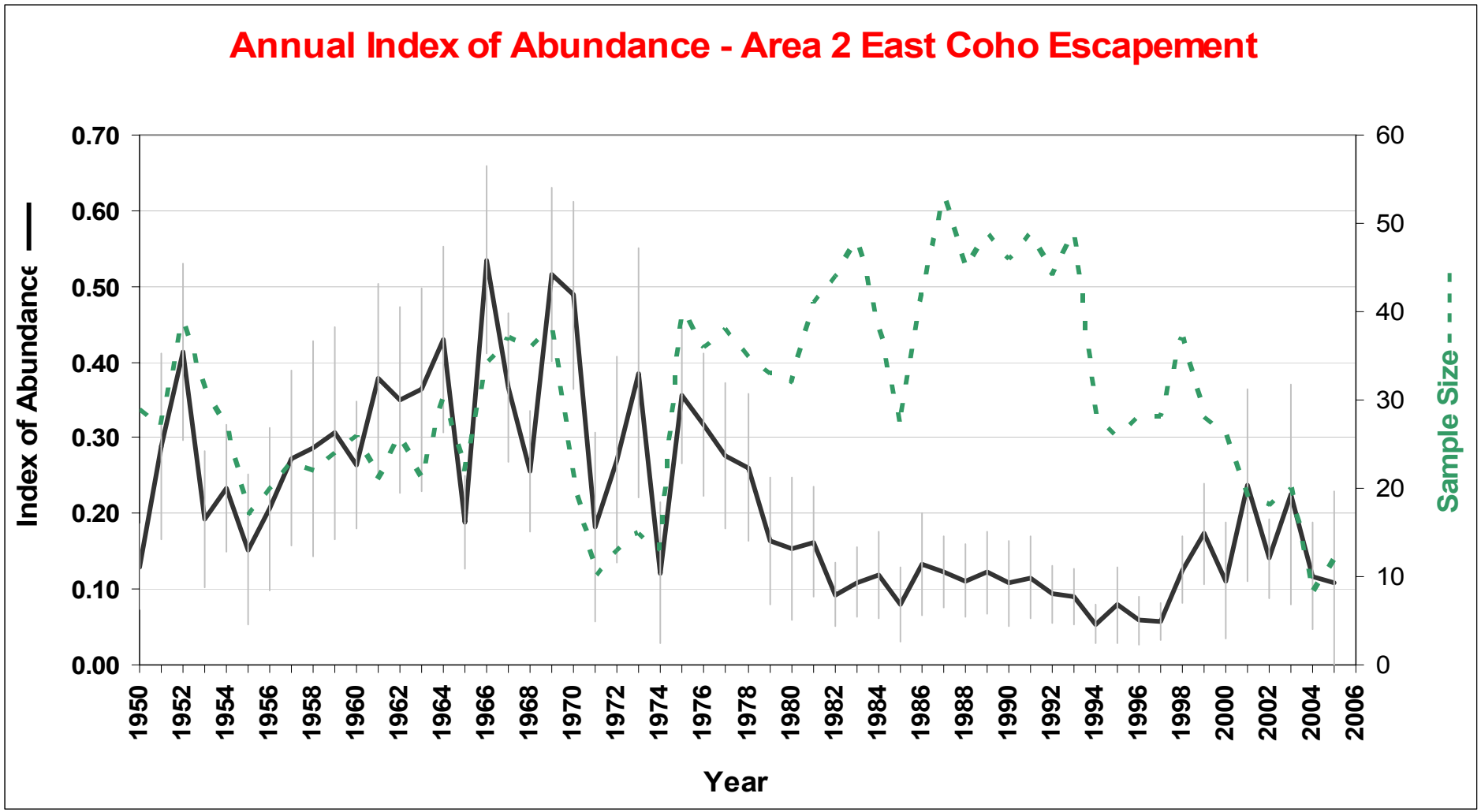
Conclusion: Fence Counts / AUC / Mark-Recapture

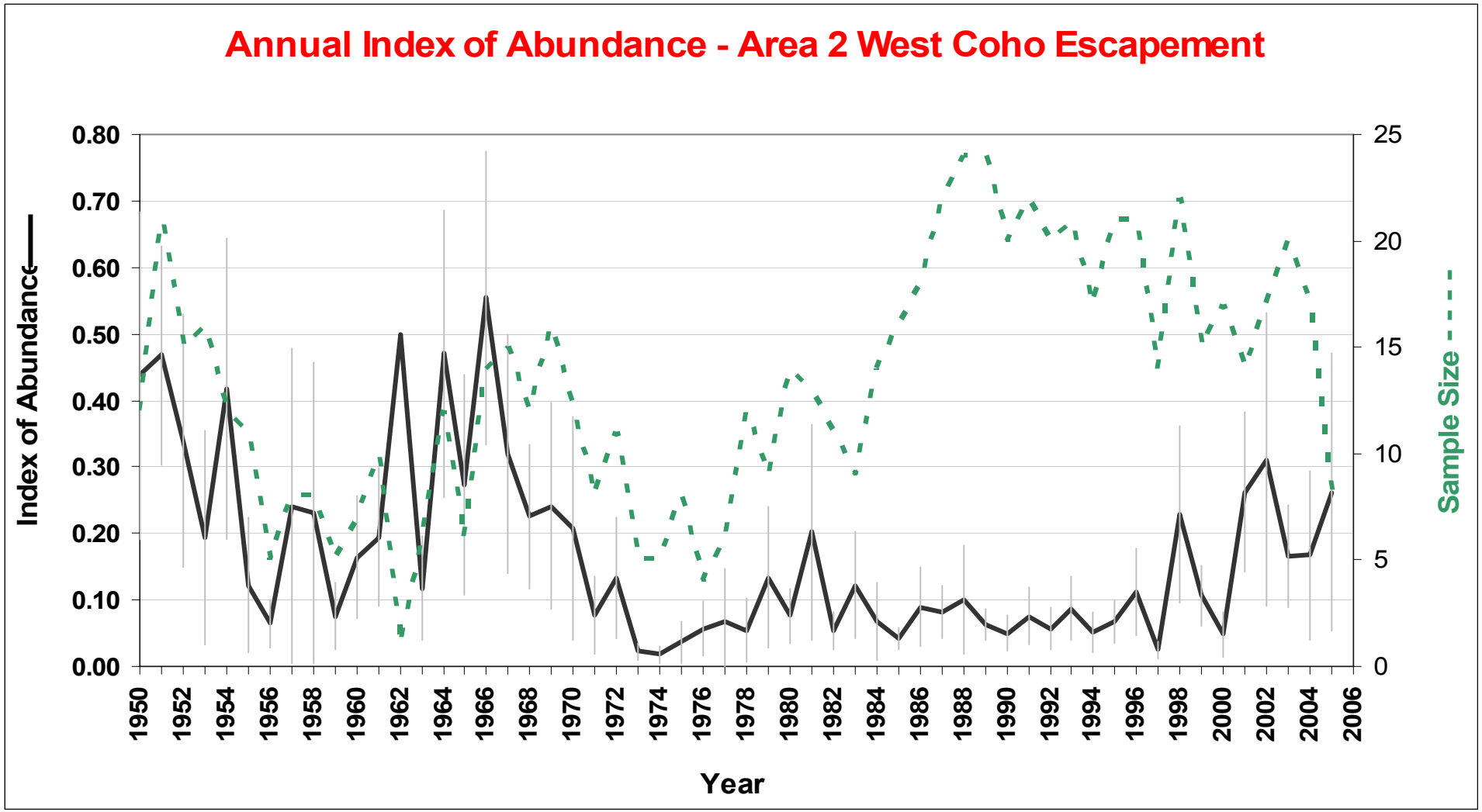
- All systems had increased escapement in 2005 *(except Deena)*.

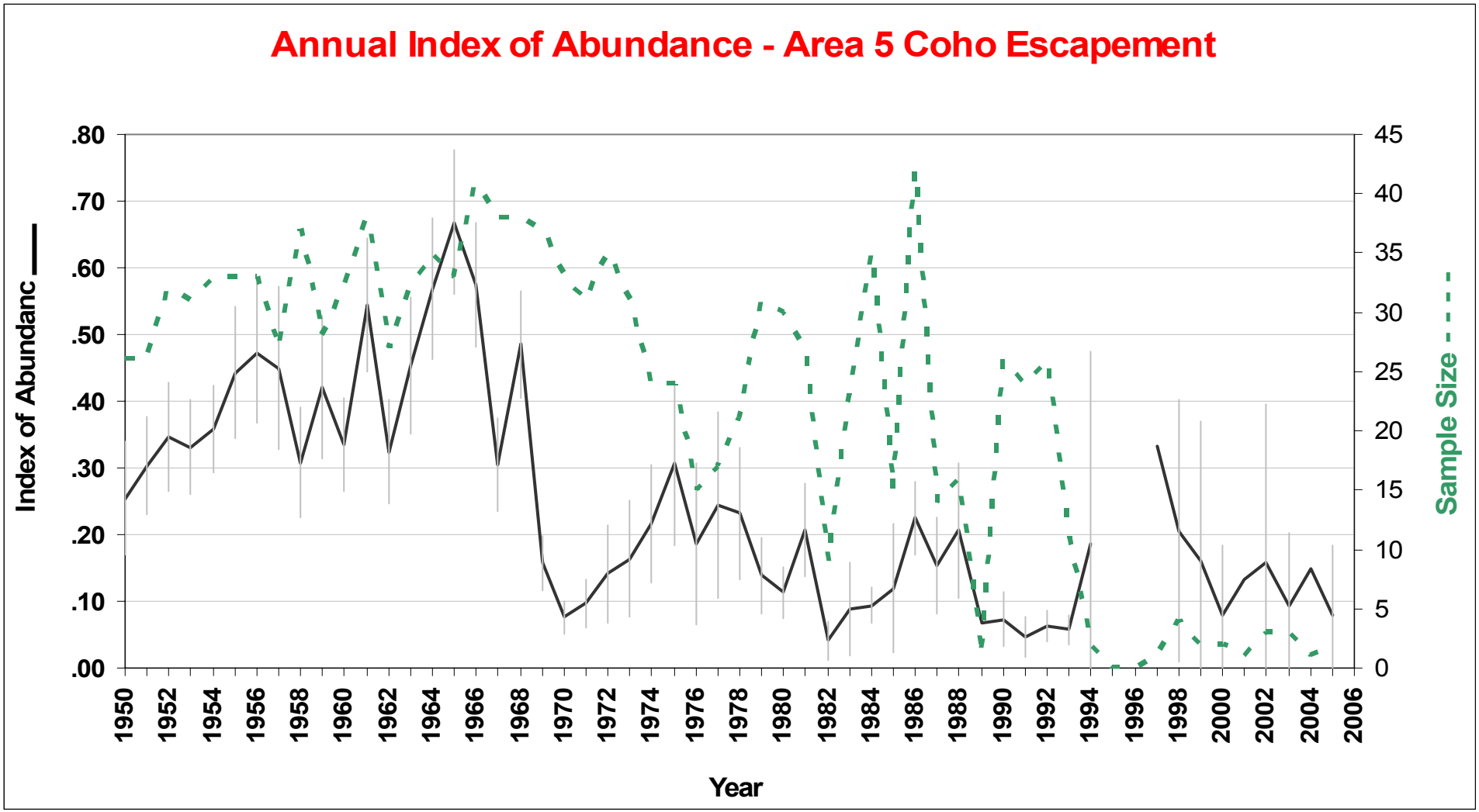
- All of these escapements were higher than their brood year.

Visual Surveys


Annual Index of Abundance - Area 1 Coho Escapement
Index of Abundance
Sample Size
Year
1.00
.90
.80
.70
.60
.50
.40
.30
.20
.10
.00
12
10
8
6
4
2
0
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004


Annual Index of Abundance - Area 2 East Coho Escapement
Index of Abundance
Sample Size
Year
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
60
50
40
30
20
10
0
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006


Annual Index of Abundance - Area 2 West Coho Escapement
Index of Abundance
Sample Size
Year
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
25
20
15
10
5
0
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006


Annual Index of Abundance - Area 5 Coho Escapement
Index of Abundanc
Sample Size
Year
.80
.70
.60
.50
.40
.30
.20
.10
.00
45
40
35
30
25
20
15
10
5
0
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
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1988
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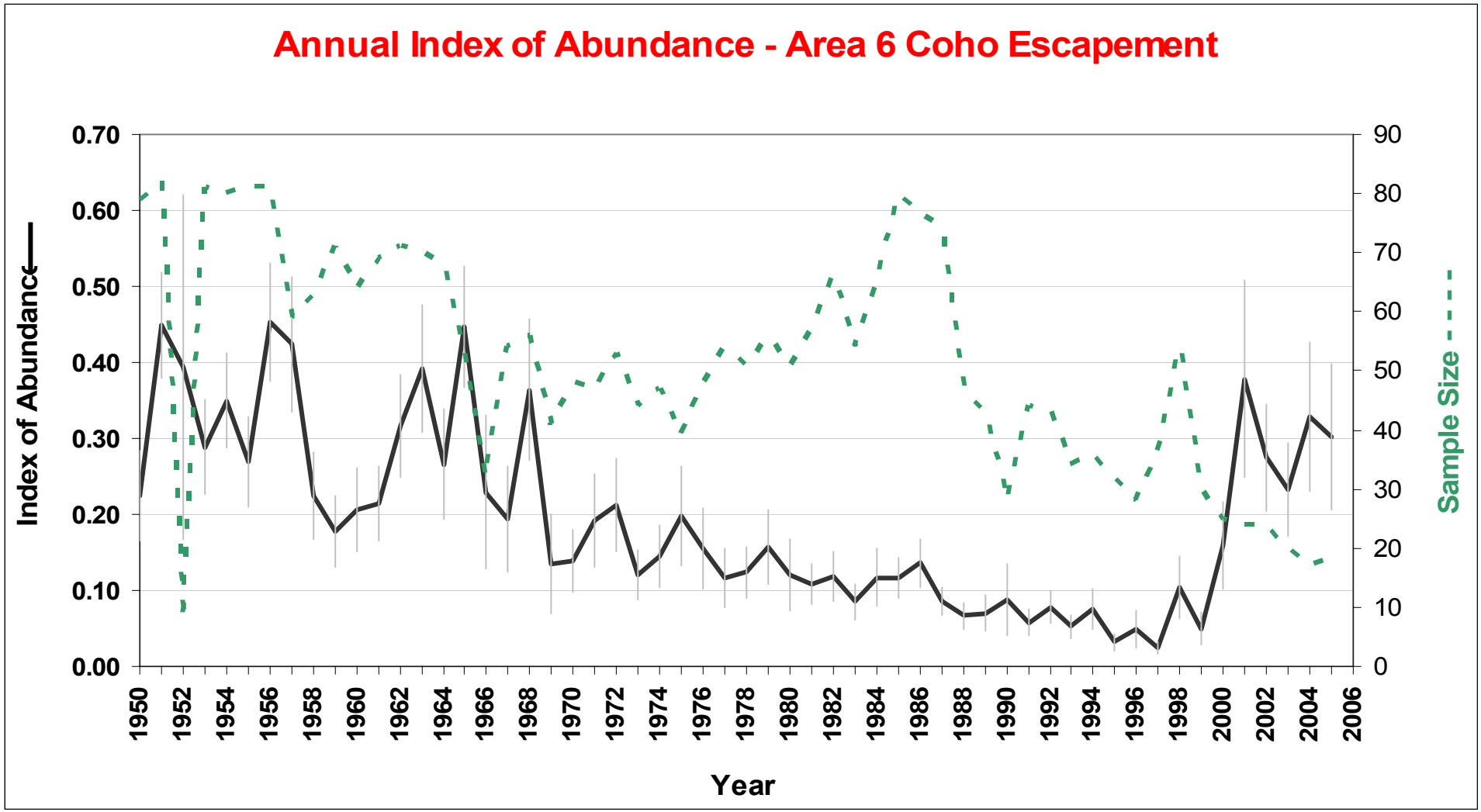
1994
1996
1998
2000
2002
2004
2006


Annual Index of Abundance - Area 6 Coho Escapement
Index of Abundance
Sample Size
Year
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
90
80
70
60
50
40
30
20
10
0
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
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1986
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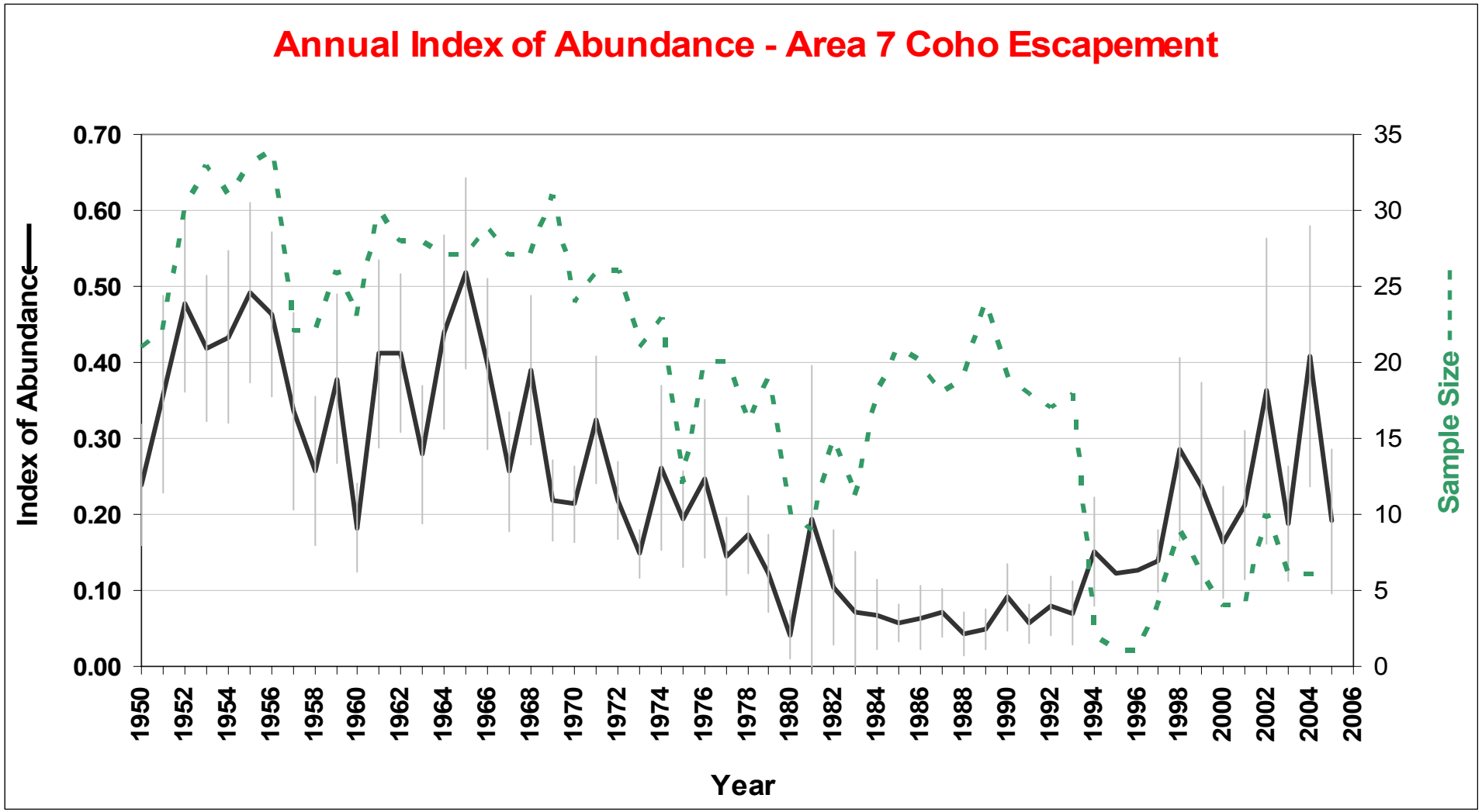
1996
1998
2000
2002
2004
2006


Annual Index of Abundance - Area 7 Coho Escapement
Index of Abundance
Sample Size
Year
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
35
30
25
20
15
10
5
0
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
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1986
1988
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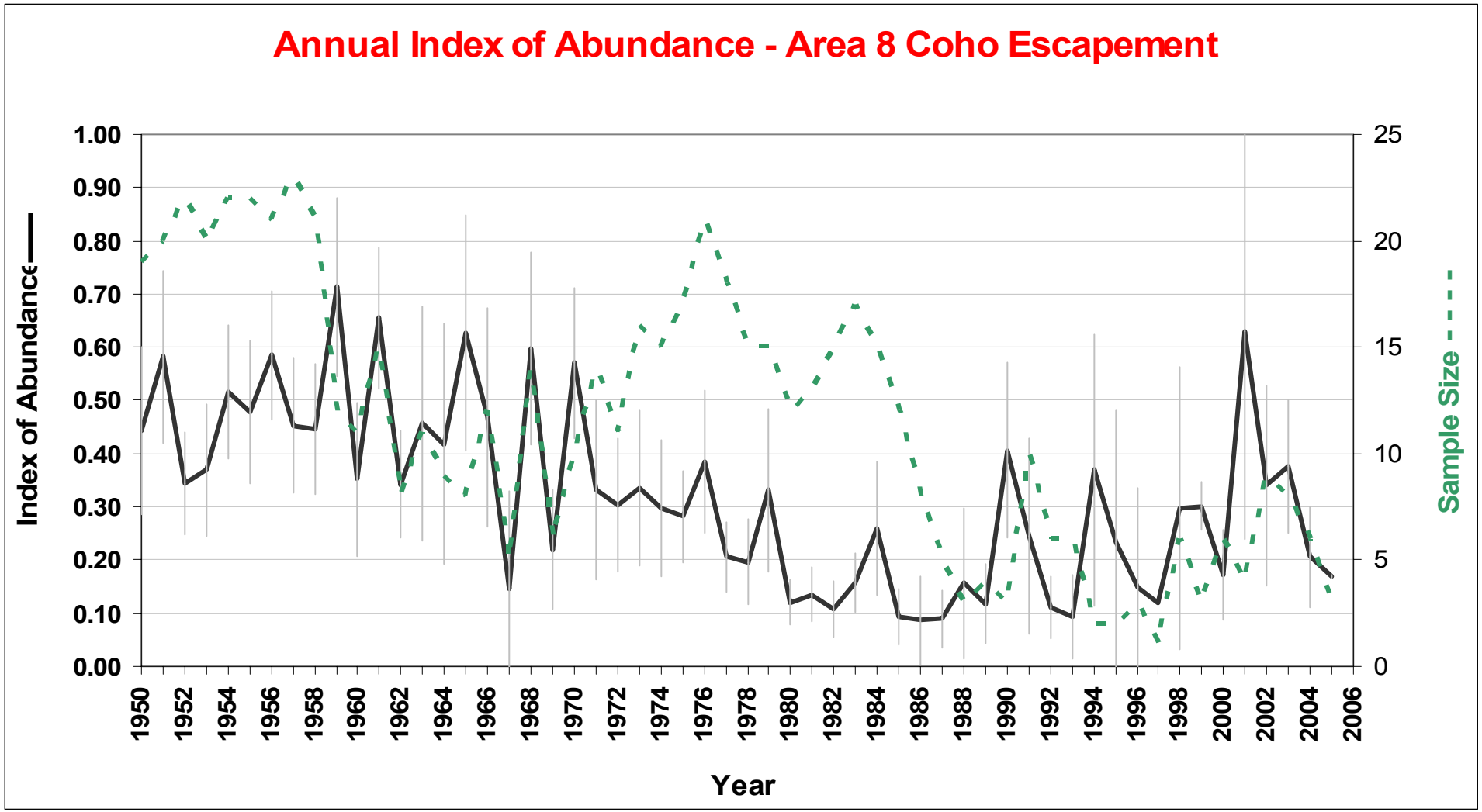
1992
1994
1996
1998
2000
2002
2004
2006


Annual Index of Abundance - Area 8 Coho Escapement
Index of Abundance
Sample Size
Year
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
25
20
15
10
5
0
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006

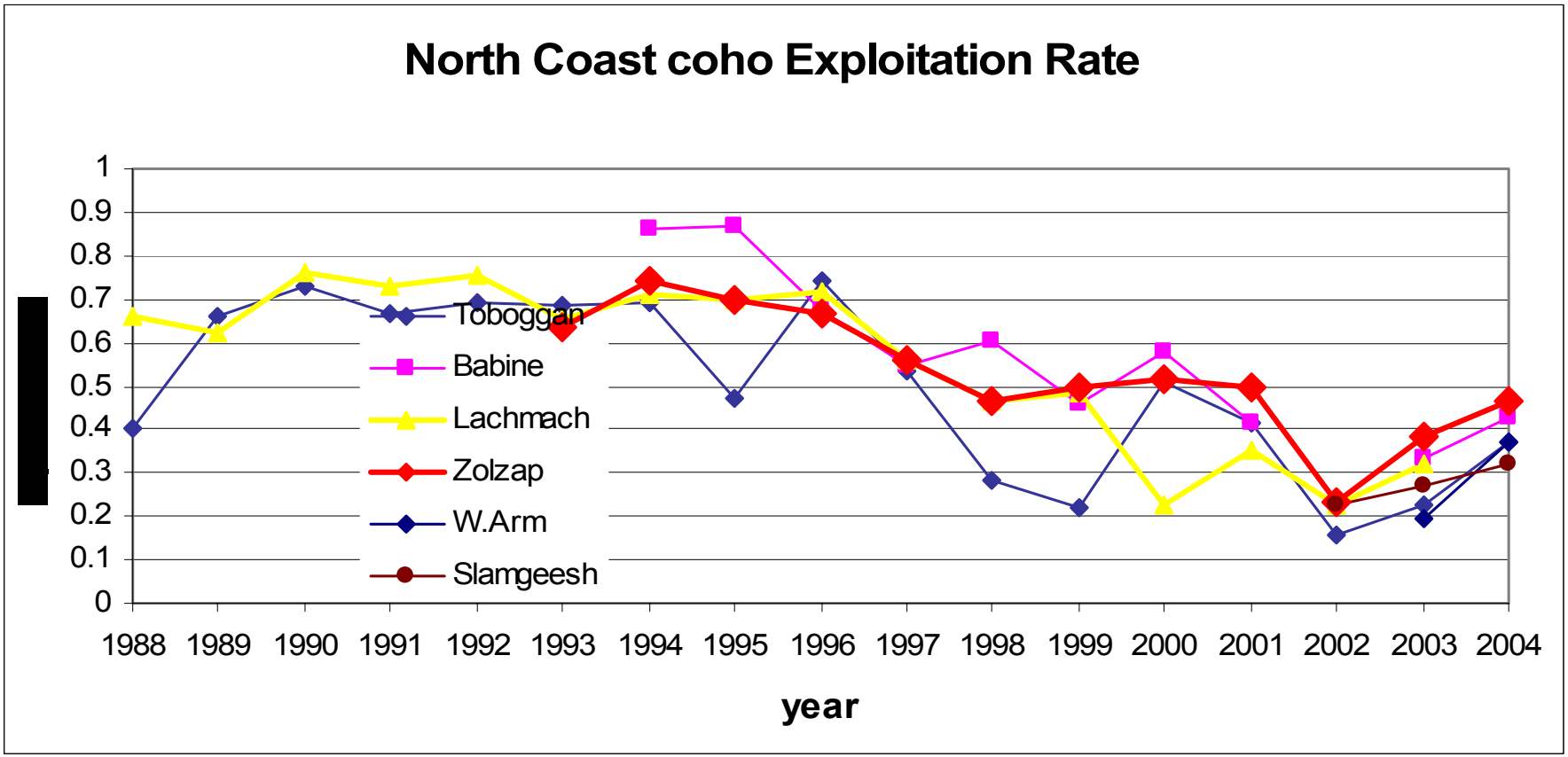
Visual Estimates

- Considering the quality of data, there is no indication of dramatic changes in escapement.

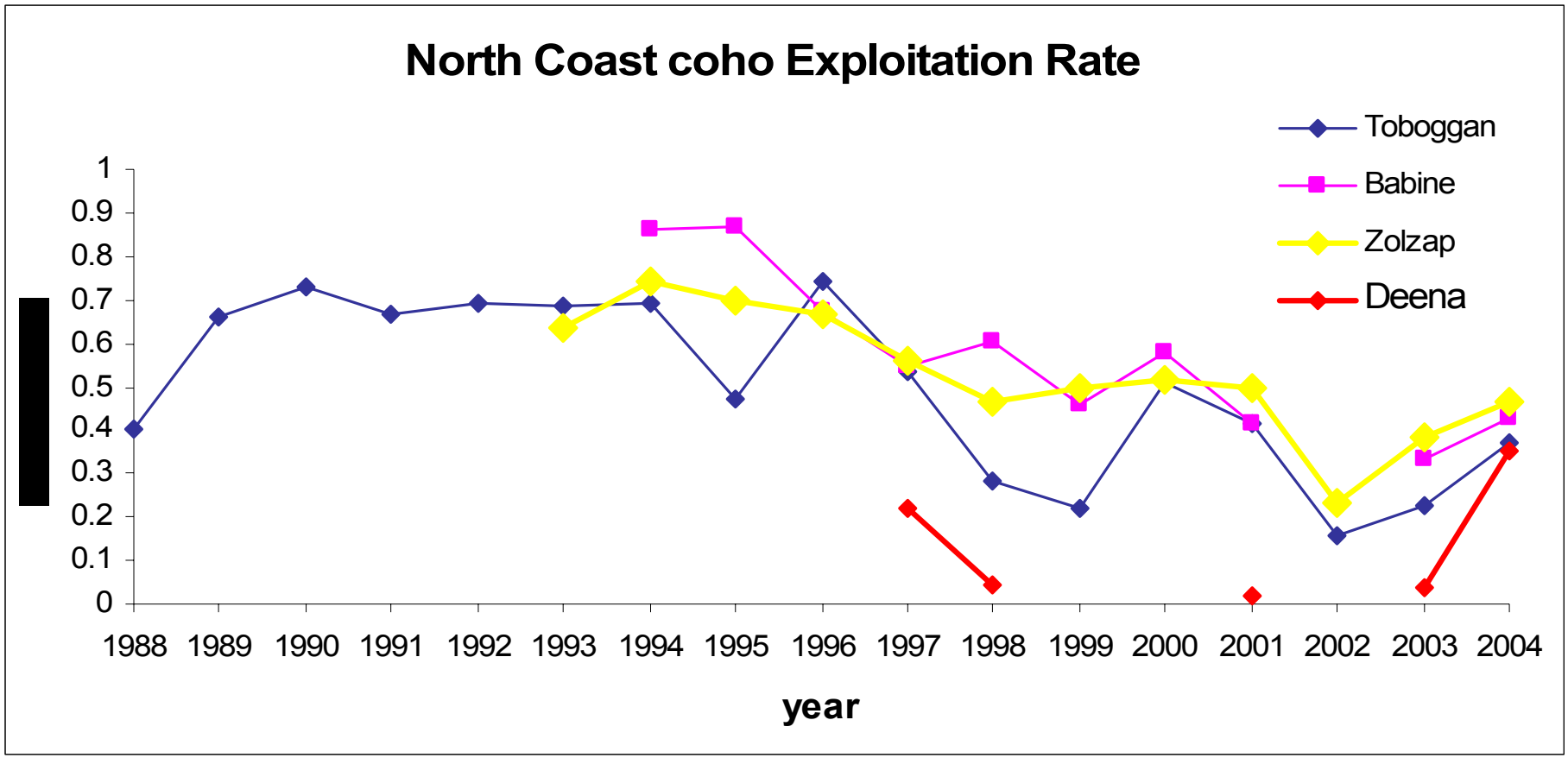
Survival and Exploitation

- Do not have data for 2005
- Will present data from 2004
- Include data from QCI

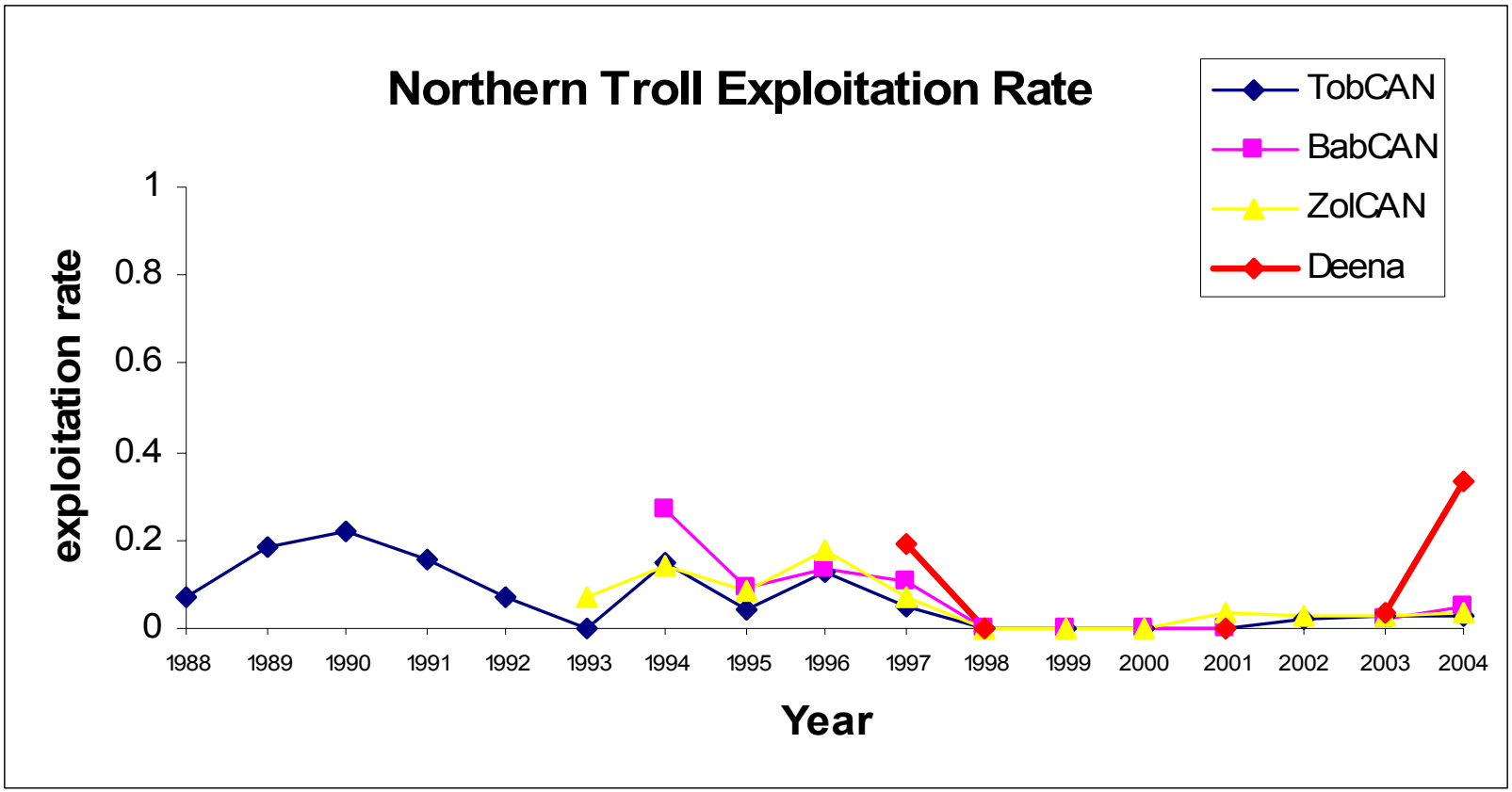
Coho Exploitation Rate to 2004



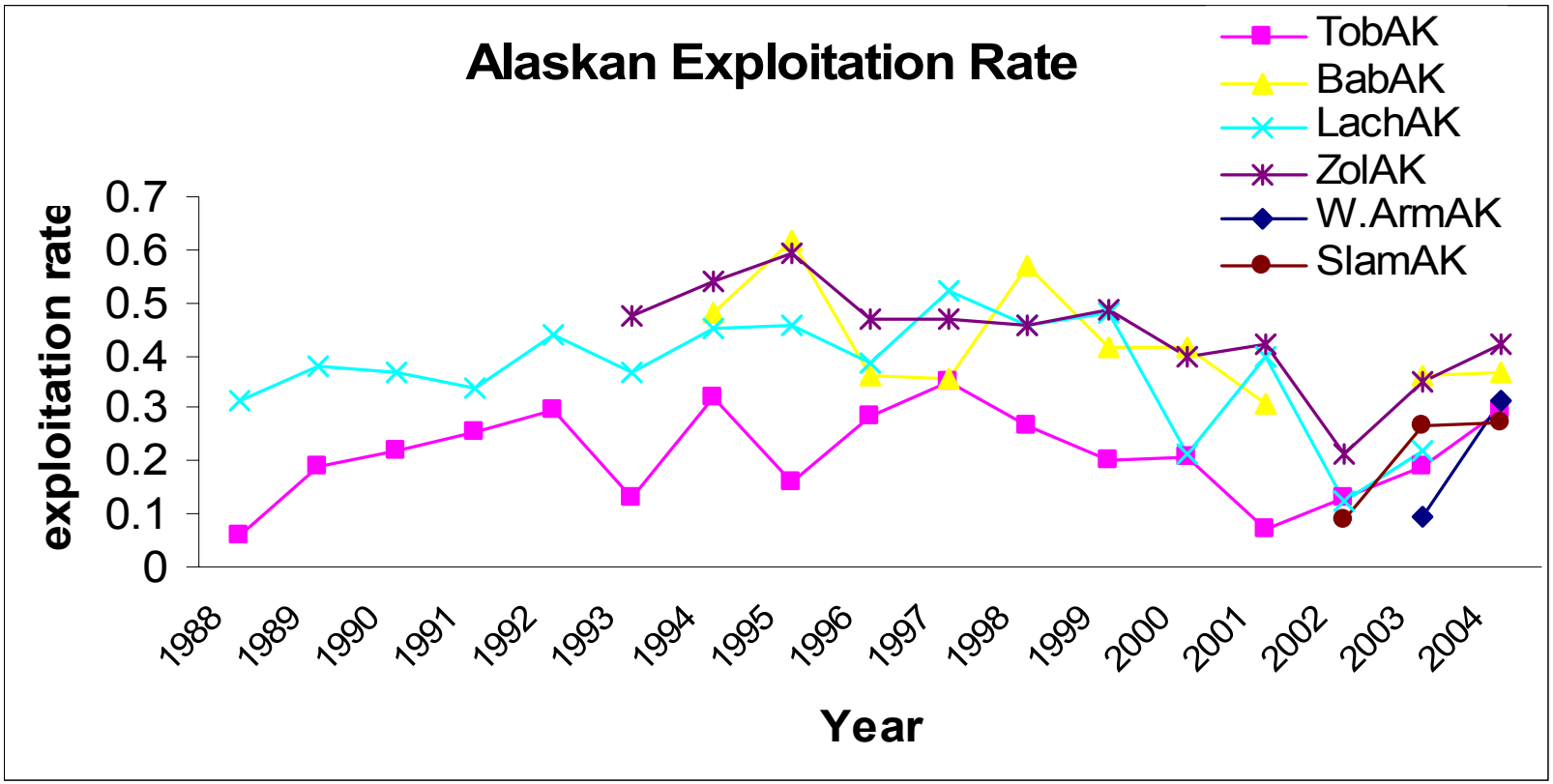
Deena Total Exploitation to 2004



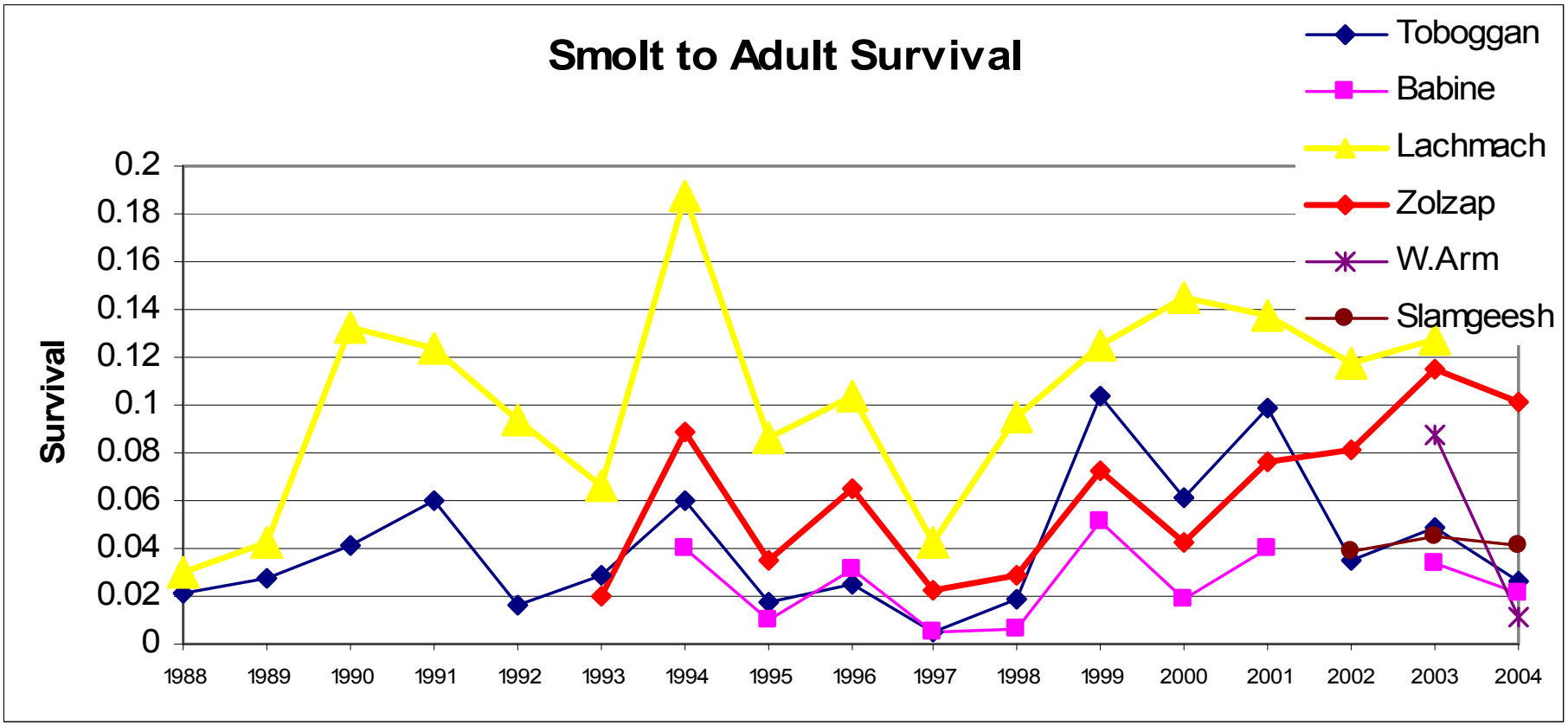
Deena Northern Troll Exploitation Rate to 2004



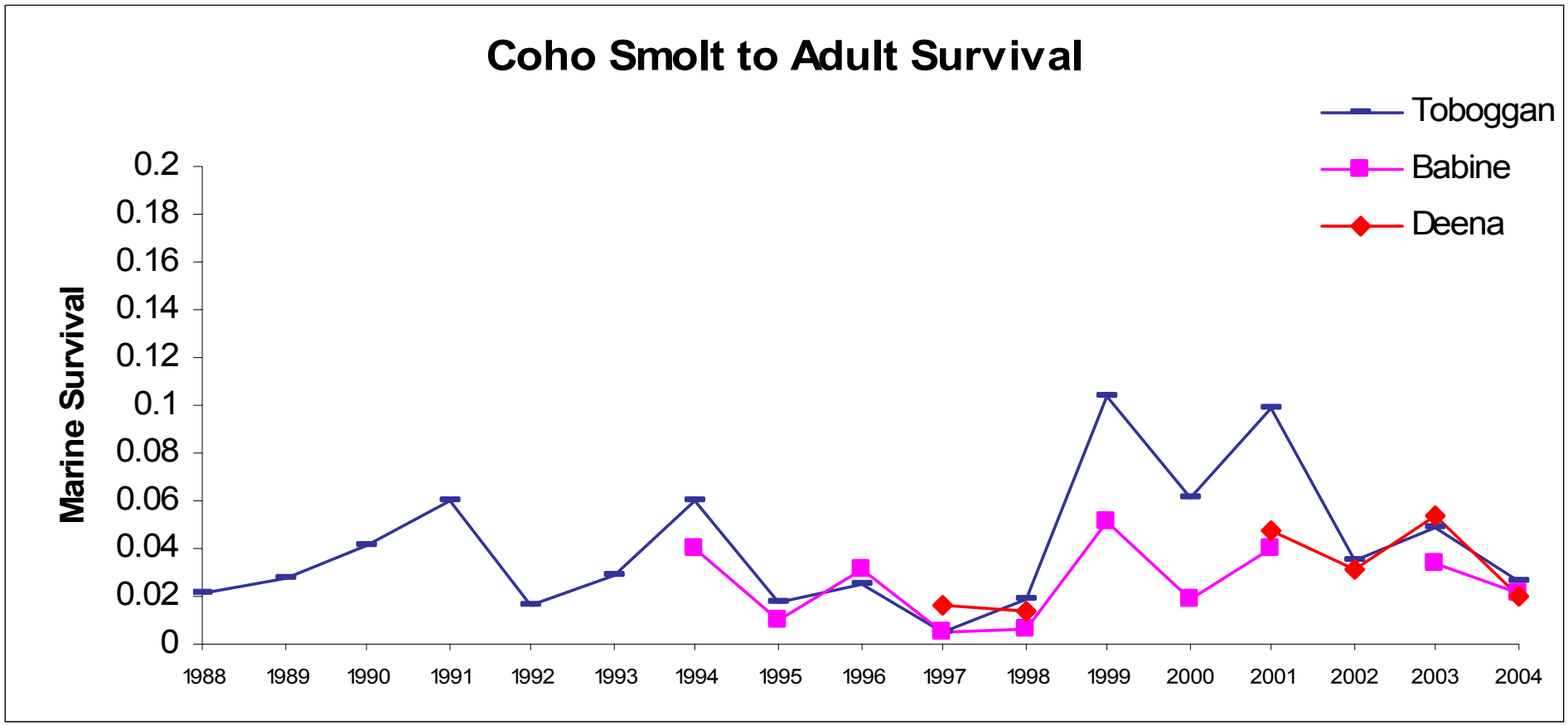
Alaskan Exploitation Rate to 2004



Marine Survival to 2004



Deena Marine Survival



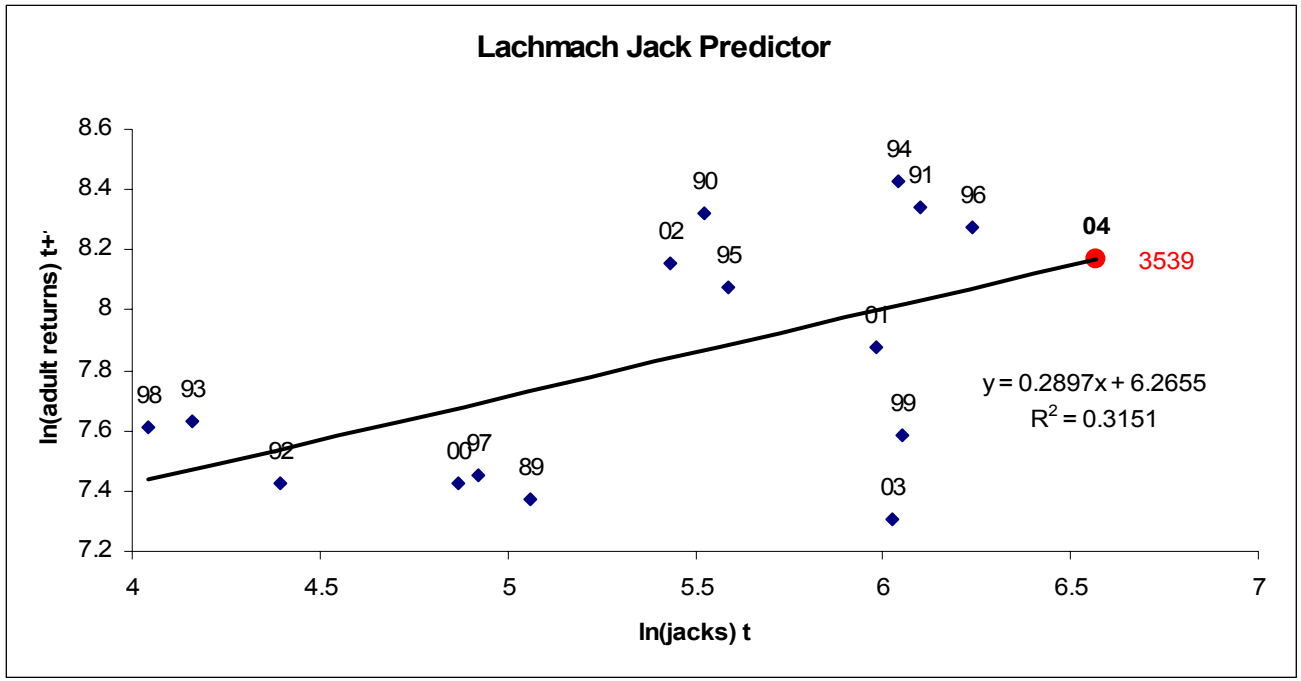
Problem:

Our estimates of marine survival occur after harvest and escapement.

If marine survival is poor, we can overexploit the weak stocks.

We need to forecast

Lachmach Preseason Forecast



Poor predictive ability; low R^2

Sibling forecast did not predict poor adult returns in 1997

Pre-season forecasting for coho doesn't work

Inseason predictor

- Alaskan troll CPUE

  predictive relationship between CPUE
  and marine survival of Canadian North Coast
  indicator stocks

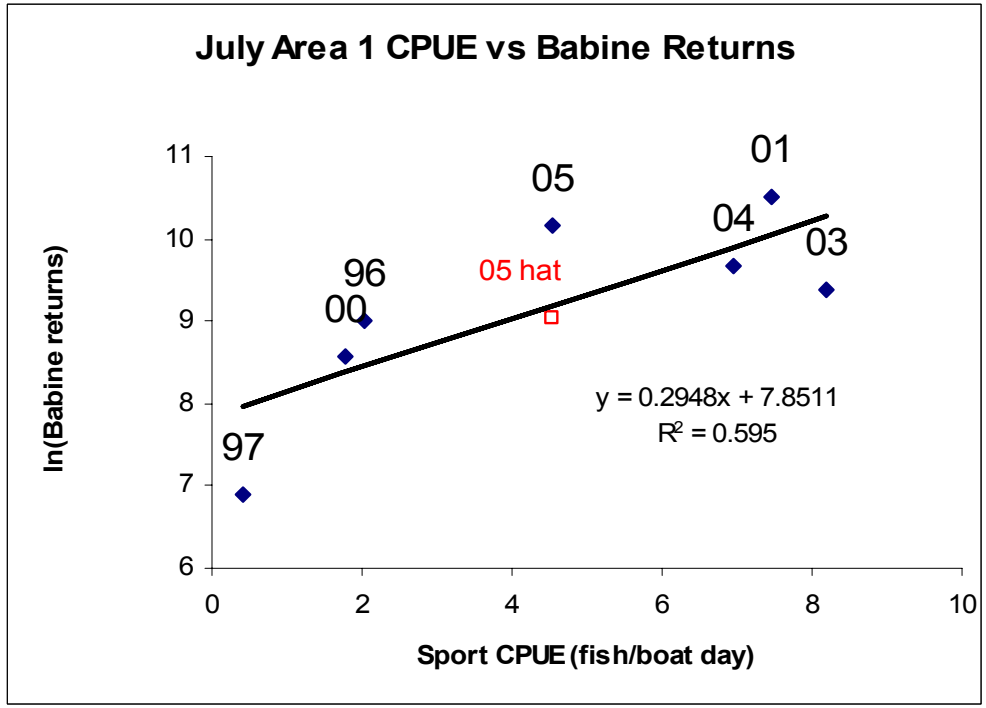
- Haida Fisheries Program Creel Survey

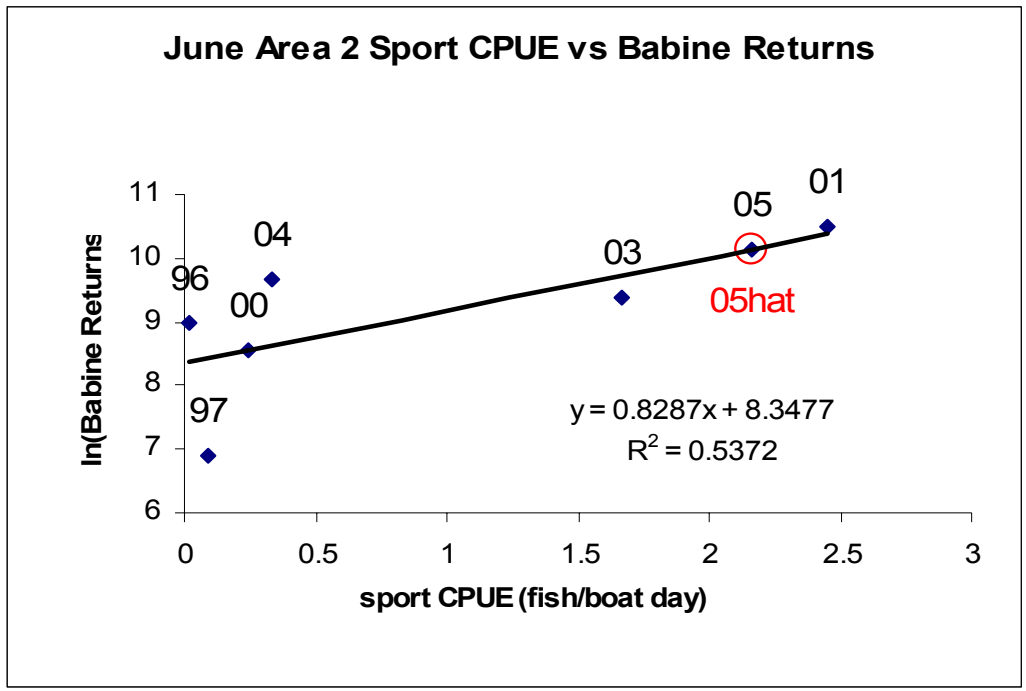
Inseason abundance

- Coho troll fishery begins in Early August
- Requires fast turnaround from data collection to data analysis.

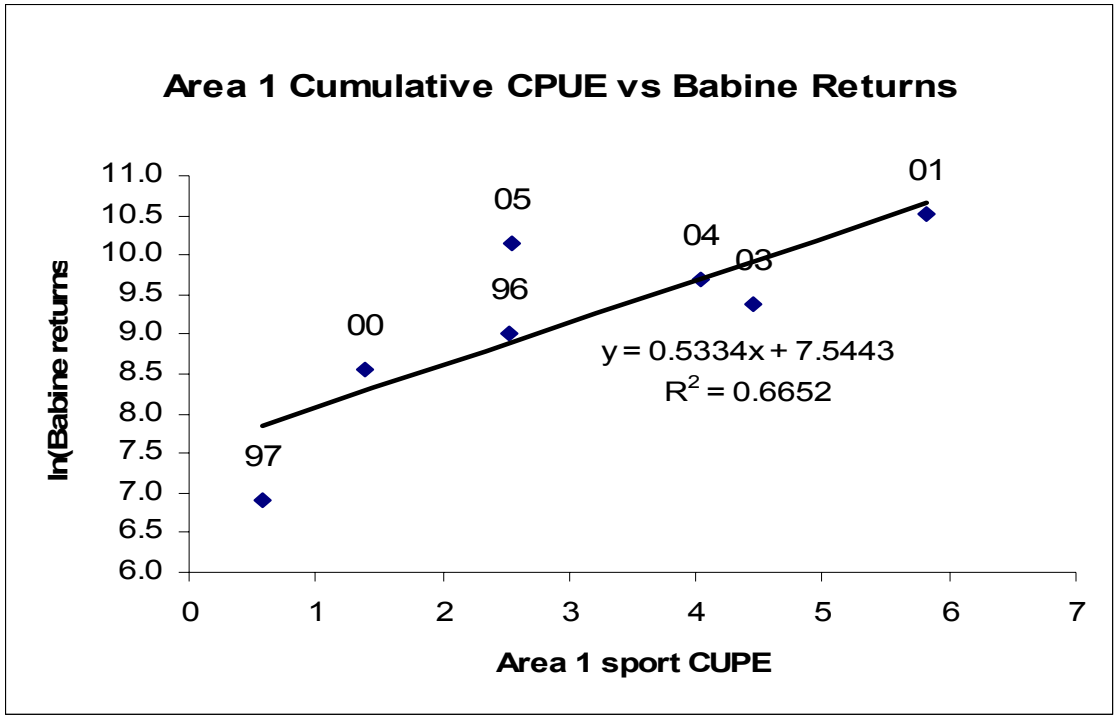
Data from July Area 1 and June Area 2 provide good predictive power.

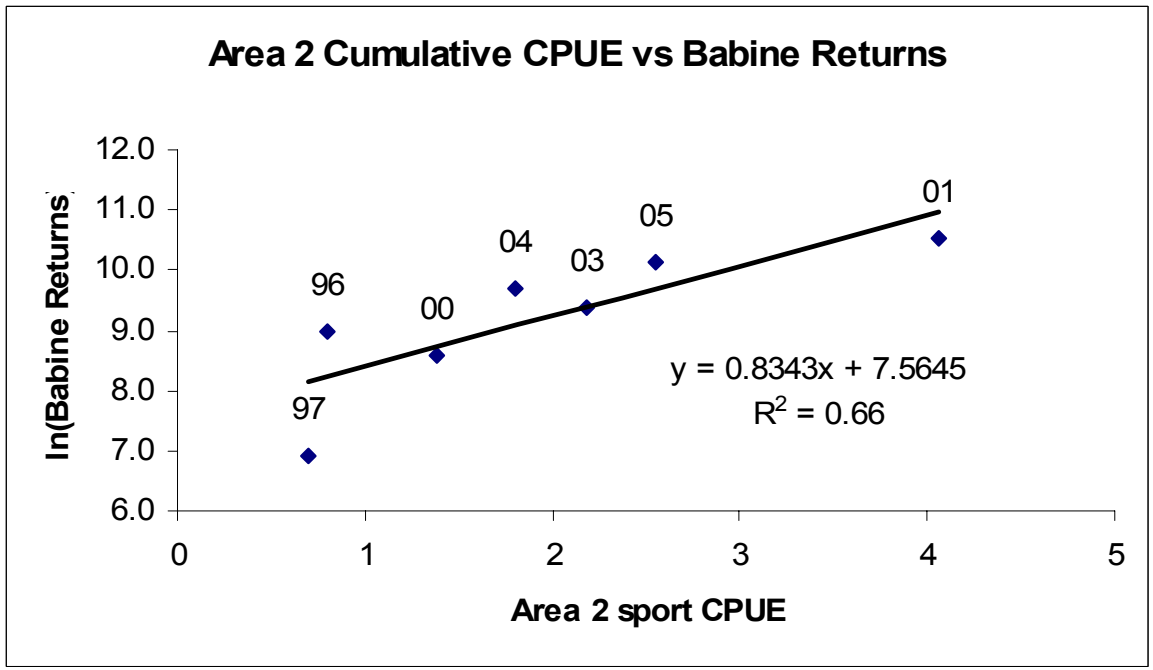
Both have meaningful X axes



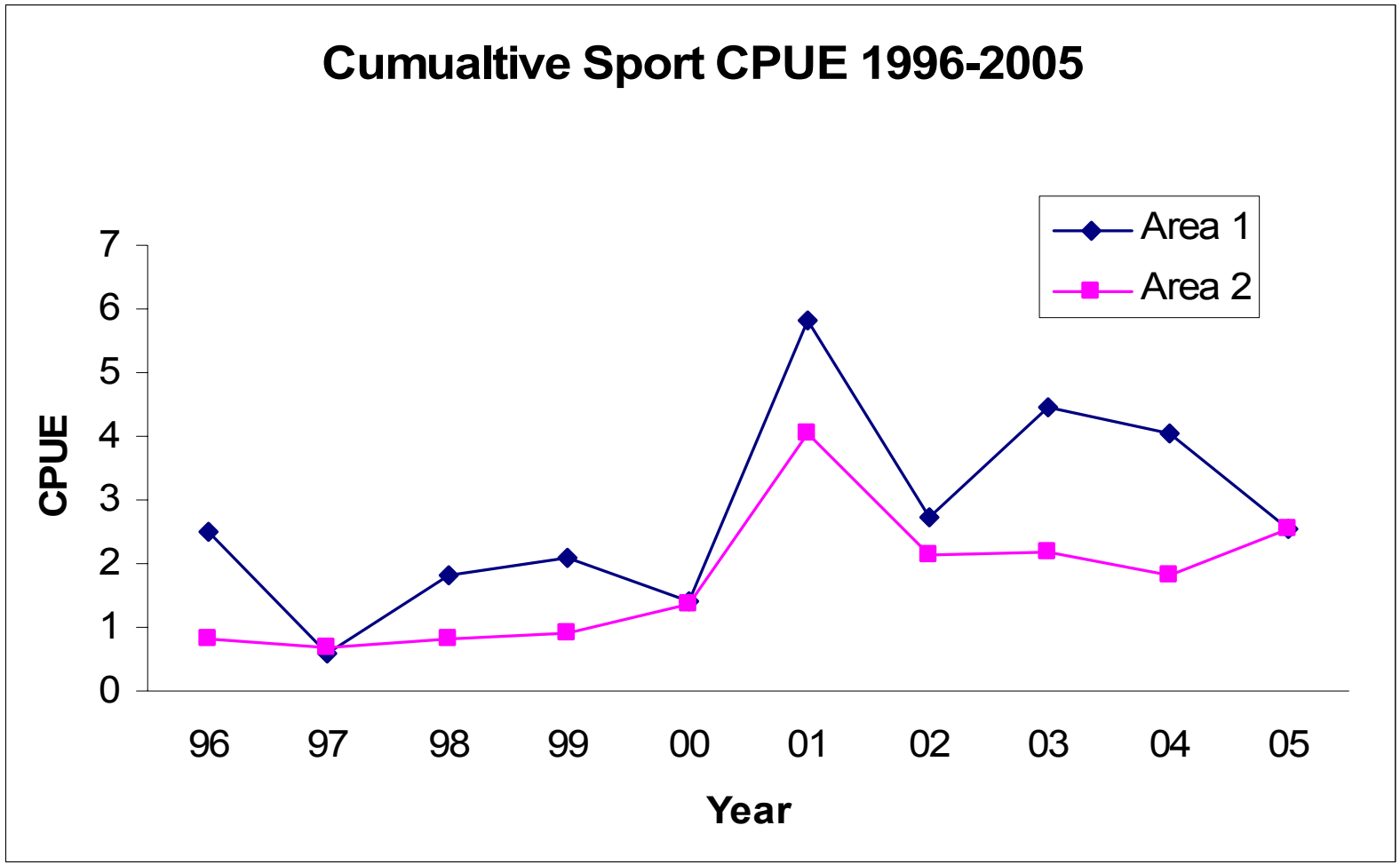


- Cumulative CPUE (June – September) is a very good indicator of Babine coho returns





QCI Sport CPUE



Acknowledgements

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