Updated Growth Analysis for CA Quillback Rockfish

Mop Up Panel
September 29-30, 2021


Credit:
NOAA/CBNMS

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Age additional otoliths - Number by Year

Table 1: Number of new otoliths available by year and source.

Year	Abrams	CCFRP	CDFW Comm.	CDFW Rec.	SWFSC boxes	SWFSC trays
1985	0	0	0	0	5	0
2004	0	0	0	0	4	1
2006	0	0	0	0	0	2
2007	0	0	0	0	27	0
2010	44	0	0	0	0	0
2011	79	0	0	0	0	0
2017	0	15	0	0	0	0
2018	0	33	0	11	0	0
2019	0	0	6	18	0	0
	123	48	6	29	36	3

245 total new samples + 21 existing WCGBTS samples
(majority sampled since 2007)

Ages from all sources
(from original report)

Table 6: Summary of the number of samples by year from the NWFSC WCGBTS, and the commercial (com) and recreational (rec) fisheries by state used to estimate length-at-age parameters.

	CA NWFSC WCG-BTS	OR Com	OR NWFSC WCG-BTS	OR Rec	WA Com	WA NWFSC WCG-BTS	WA Rec
1998	0	0	0	0	0	0	50
1999	0	0	0	0	0	0	162
2000	0	0	0	0	0	0	26
2002	0	2	0	0	0	0	0
2003	0	9	0	0	0	0	0
2004	0	63	0	0	0	0	0
2005	0	1	0	91	0	2	0
2006	0	63	2	336	0	1	0
2007	15	0	1	0	0	0	0
2008	0	0	22	356	0	0	0
2009	0	0	3	0	0	0	0
2010	0	0	1	0	0	1	0
2011	0	0	6	0	0	0	0
2012	0	0	0	0	0	26	0
2013	0	0	1	0	0	0	0
2014	4	0	3	0	0	17	0
2015	0	0	5	0	0	3	0
2016	0	0	8	0	0	1	0
2017	2	0	5	0	9	9	0
2018	0	0	16	0	4	5	0
2019	0	0	11	0	19	5	0
	21	138	84	783	32	70	238

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Age additional otoliths - Number by Year

New since August 17th meeting

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245 total new samples + 21 existing WCGBTS samples
(majority sampled since 2007)

122 Aged + 21 existing WCGBTS samples

Ages from all sources
(from original report)

Table 6: Summary of the number of samples by year from the NWFSC WCGBTS, and the commercial (com) and recreational (rec) fisheries by state used to estimate length-at-age parameters.

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Age additional otoliths - Number by Length

Table 2: Number of new otoliths available by length bin and source. Structures are not available for all modeled length bins

Length bins (cm)	Abrams	CCFRP	CDFW Comm.	CDFW Rec.	SWFSC boxes	SWFSC trays
20	1	0	0	0	0	0
22	0	1	0	0	1	0
24	1	4	0	0	0	1
26	2	7	0	0	0	0
28	1	9	0	1	1	0
30	6	9	1	4	5	1
32	12	7	4	0	7	1
34	14	8	1	1	8	0
36	32	3	0	4	4	0
38	18	0	0	5	7	0
40	13	0	0	2	0	0
42	12	0	0	4	1	0
44	7	0	0	7	2	0
46	3	0	0	0	0	0
48	1	0	0	1	0	0

New since August 17th meeting

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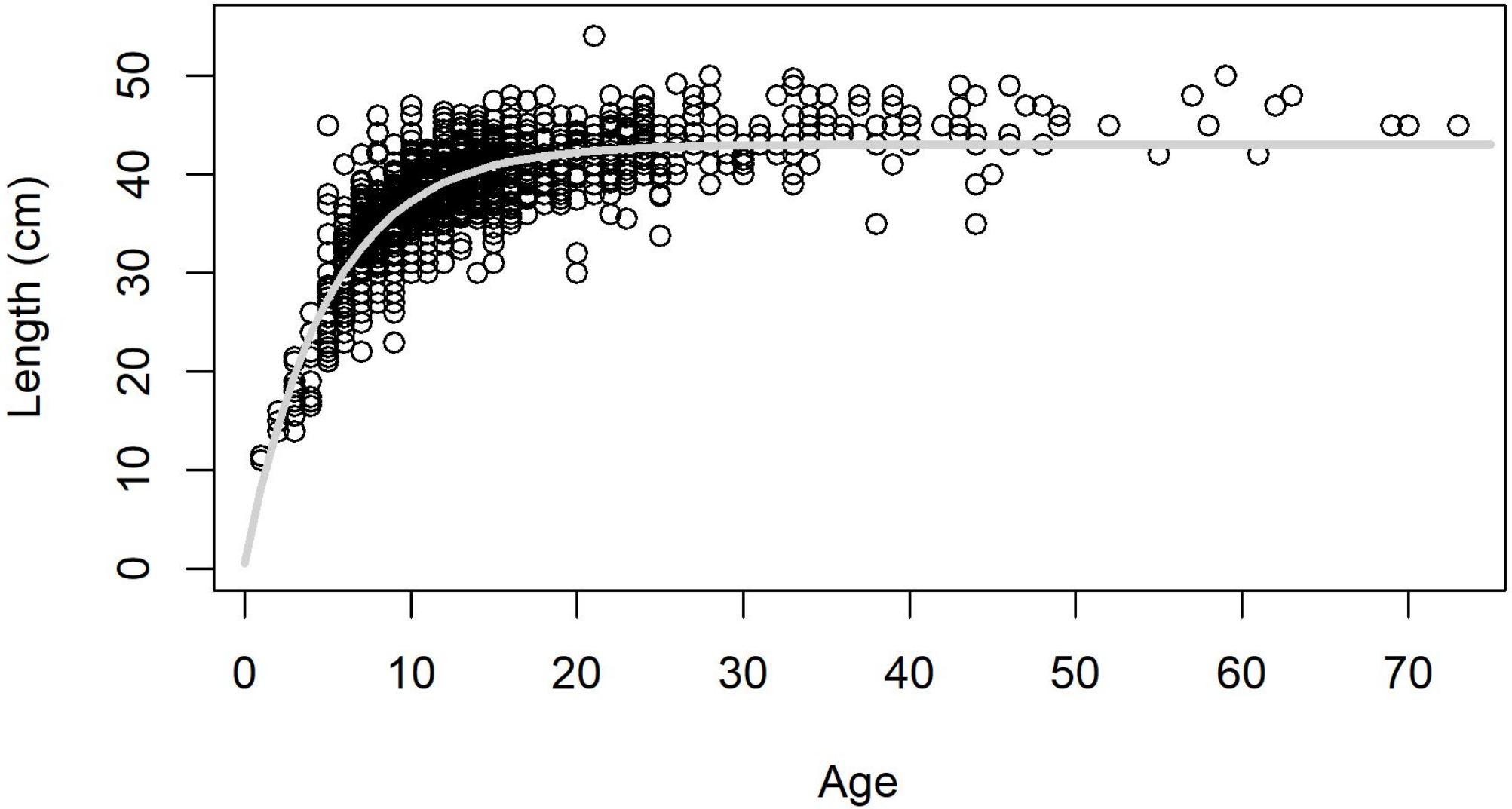
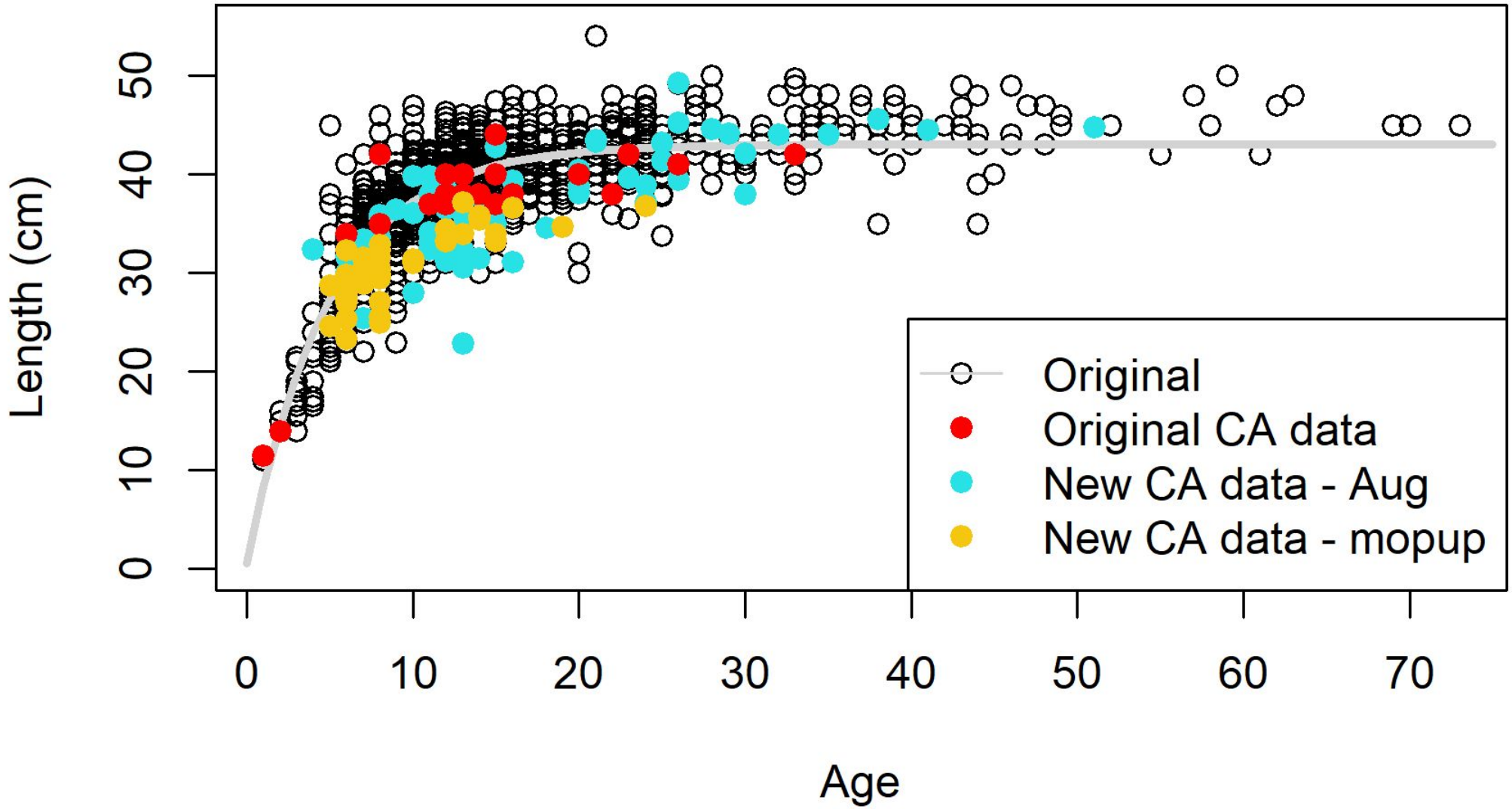
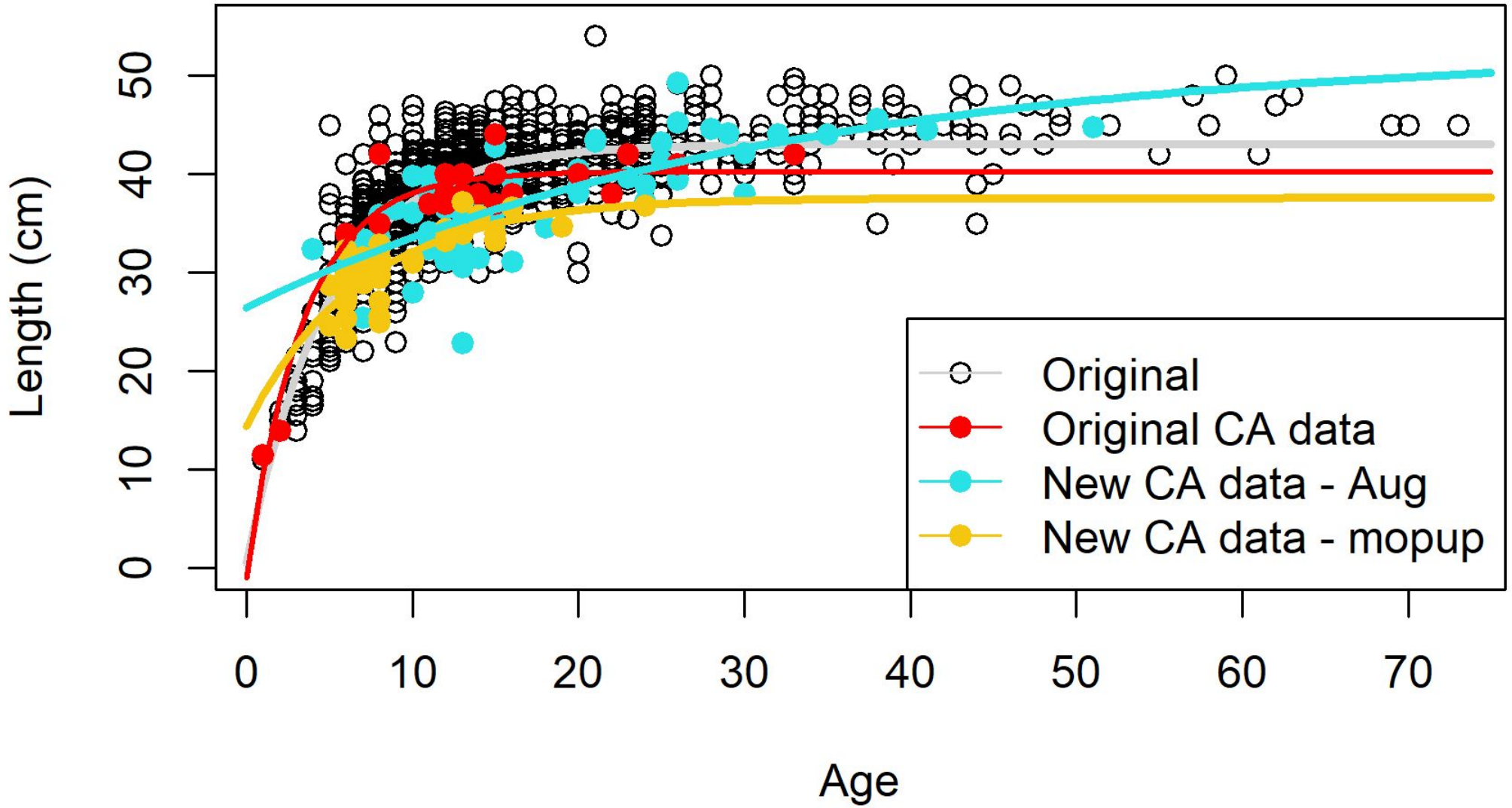
Original length-age relationship



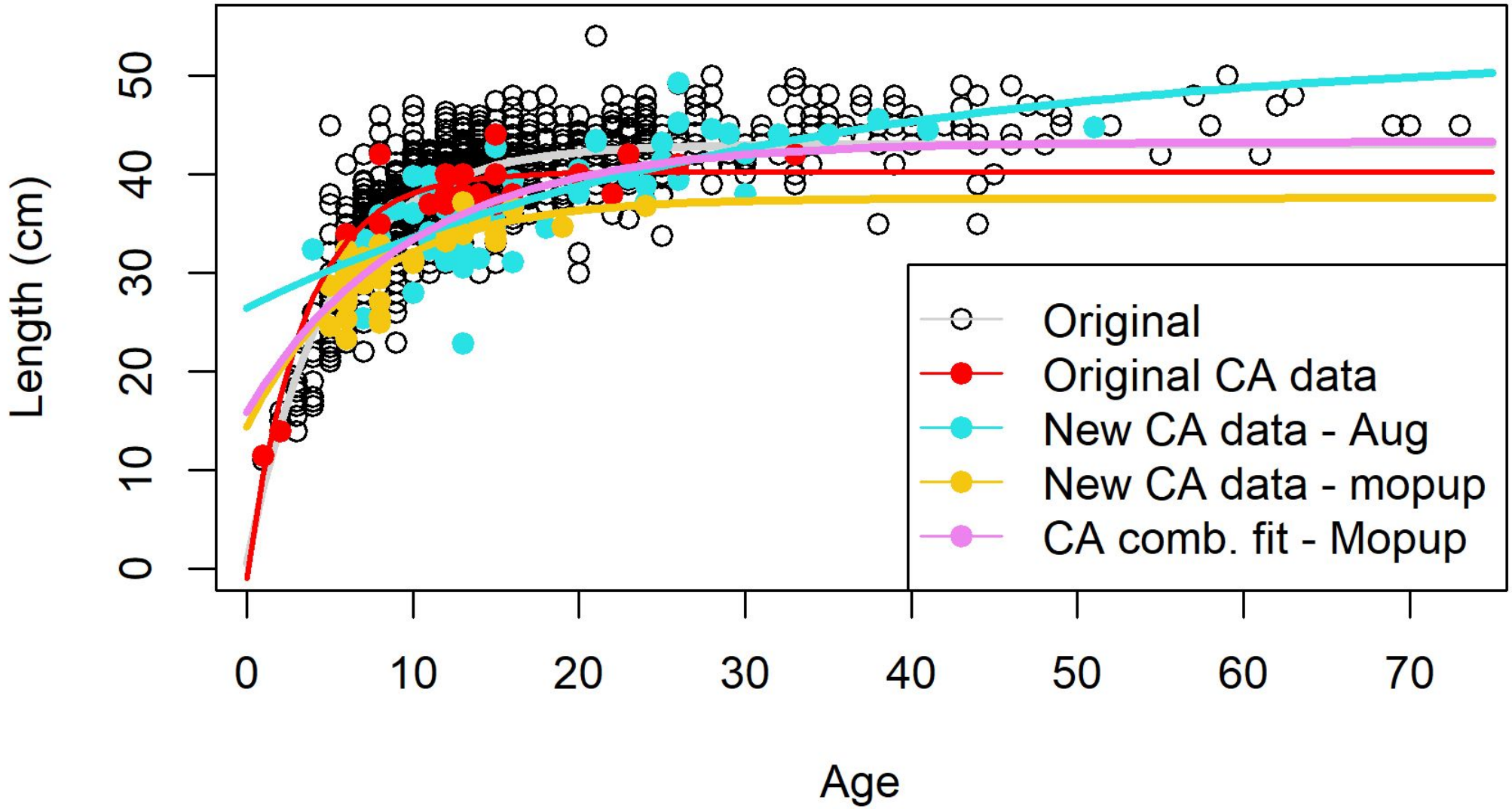
Highlight original and new northern CA data



Northern CA length-age relationships

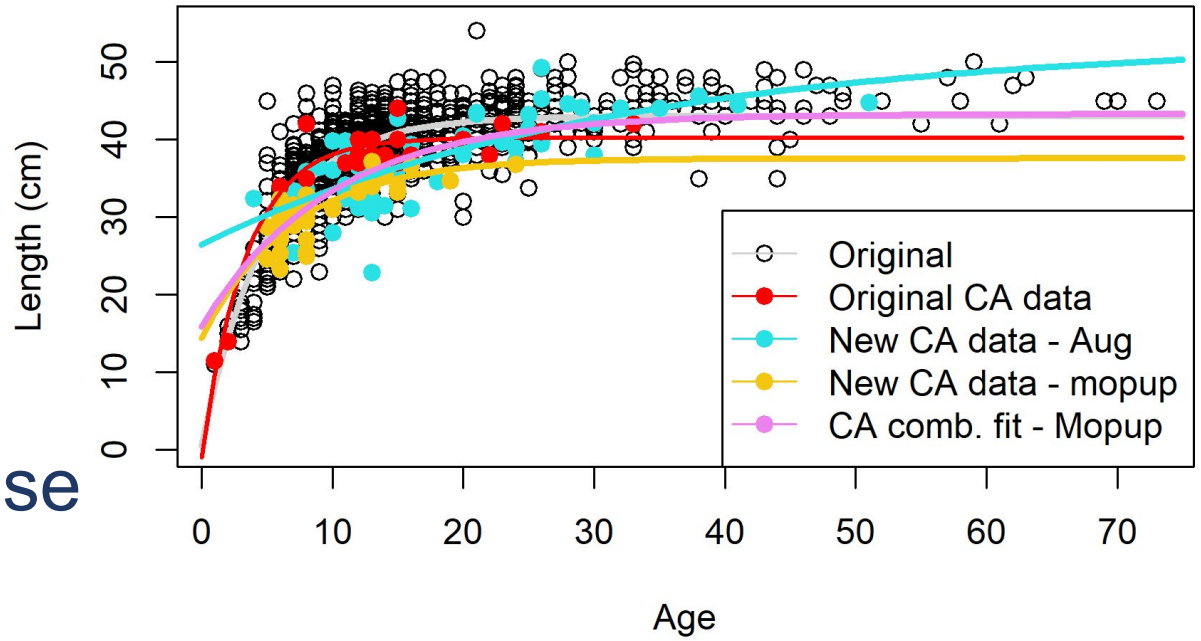


Northern CA length-age relationships

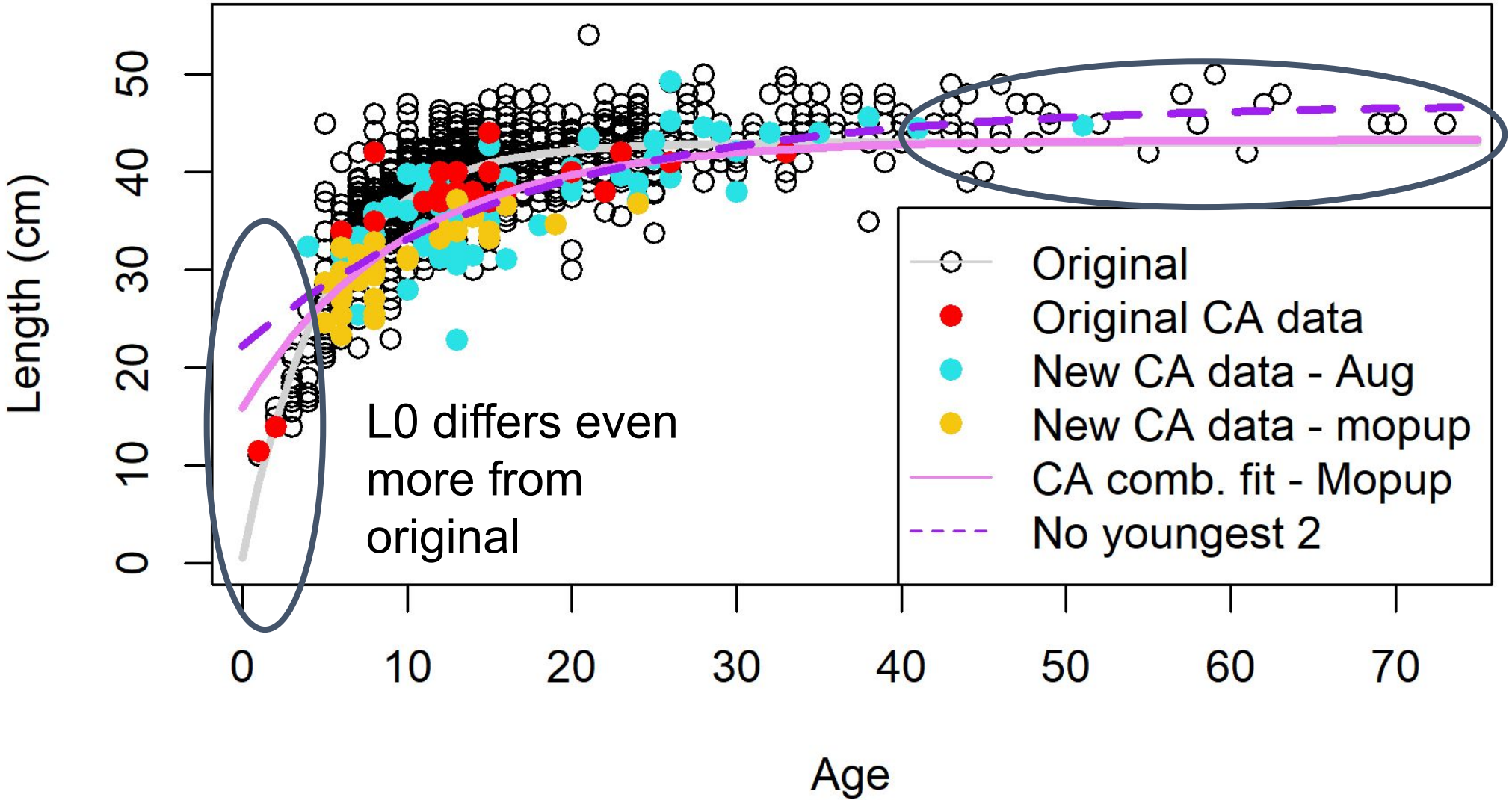


Northern CA length-age observations

- CA lengths are on smaller end of the range of base lengths at the same age
- Curves from subsets of CA data are very different
- Comb. CA Linf same as base
- Comb. CA L0 is larger than base
  - Due to few young fish to inform estimate (3 fish < age 5)

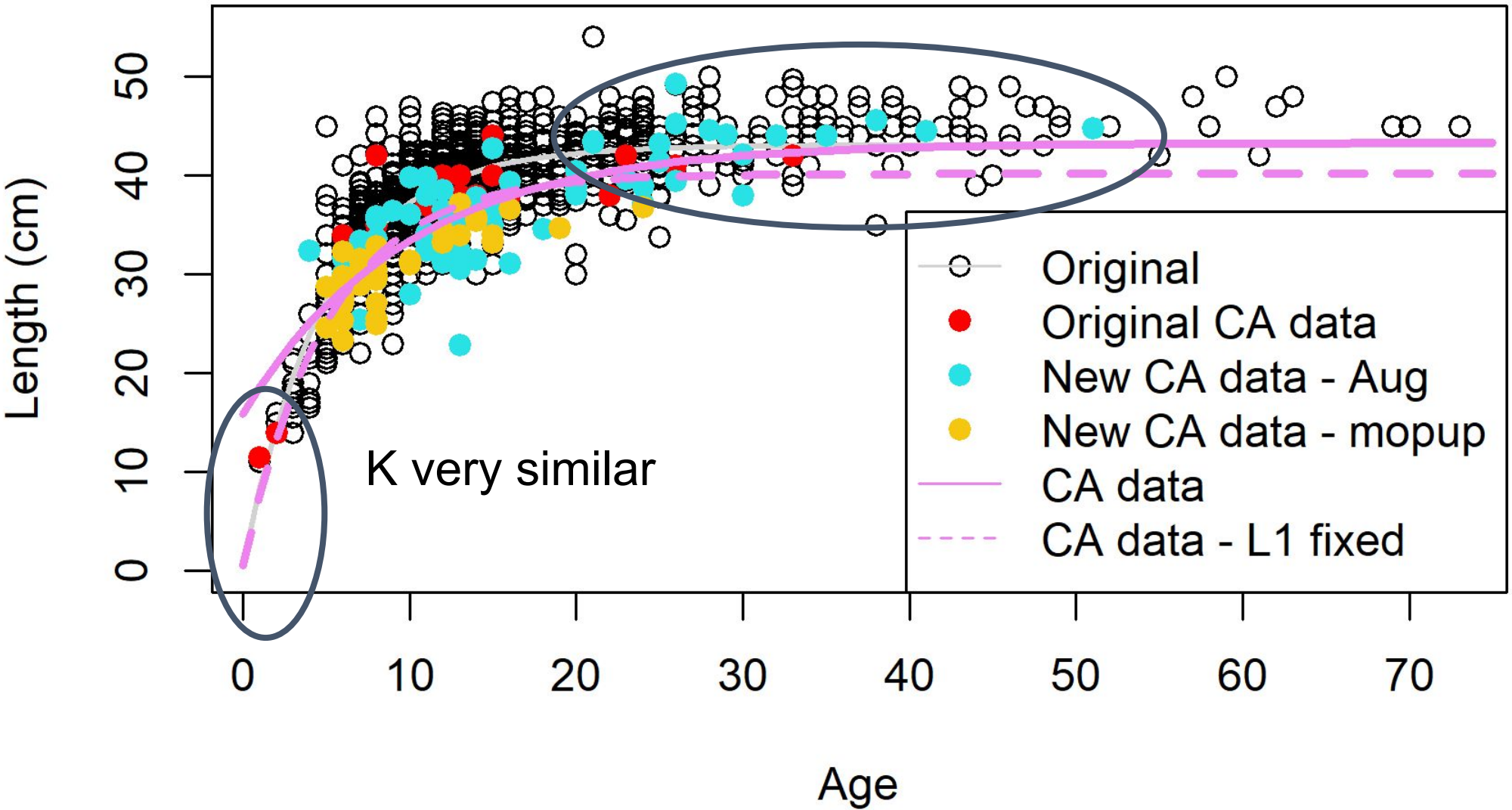


Two youngest fish have large impact: Removing causes L0 to differ greatly



Linf much larger than original

Fixing lower edge causes Linf to differ

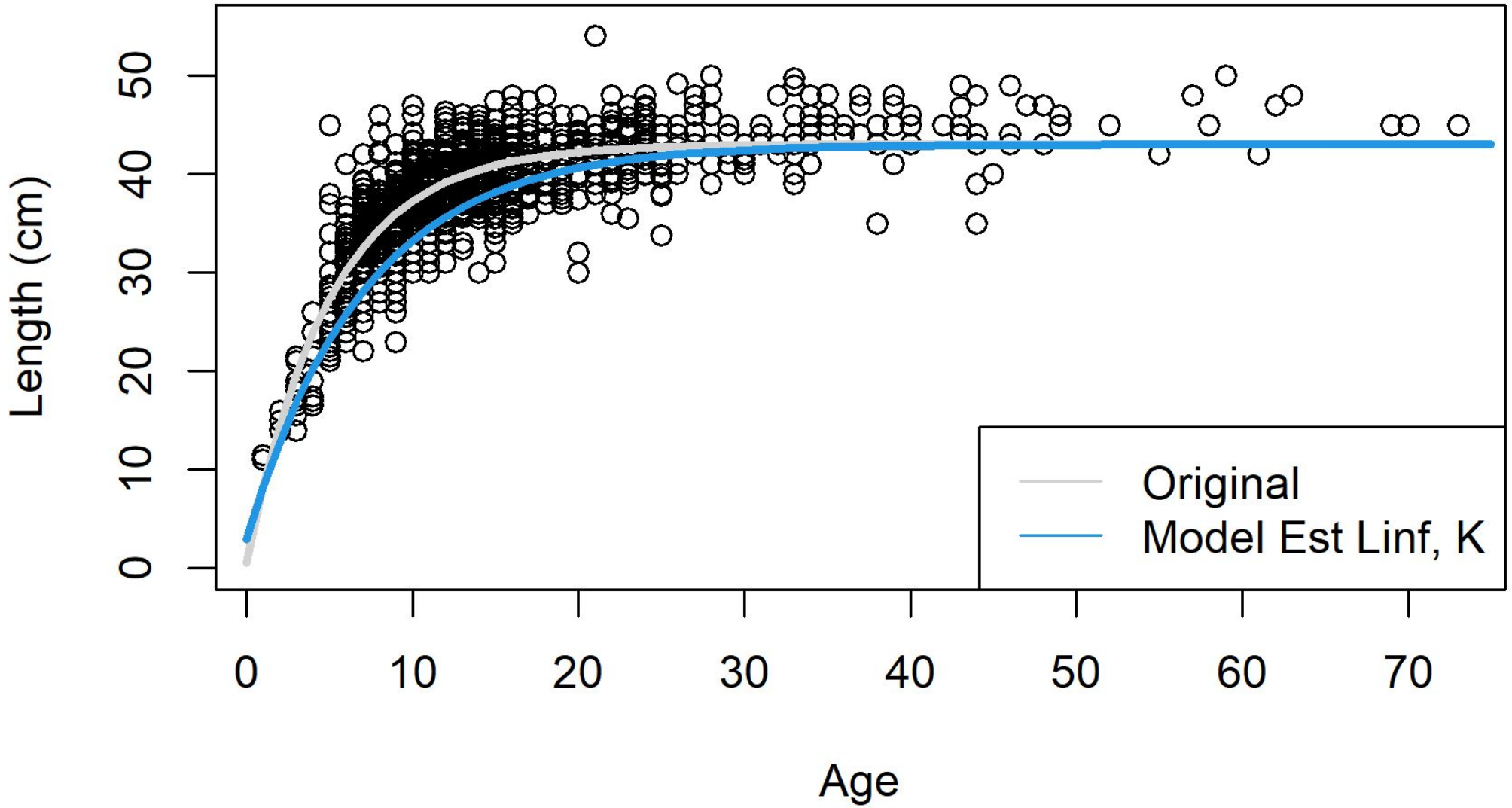


Linf unreasonably small given the CA data

Conclusion (Part 1)

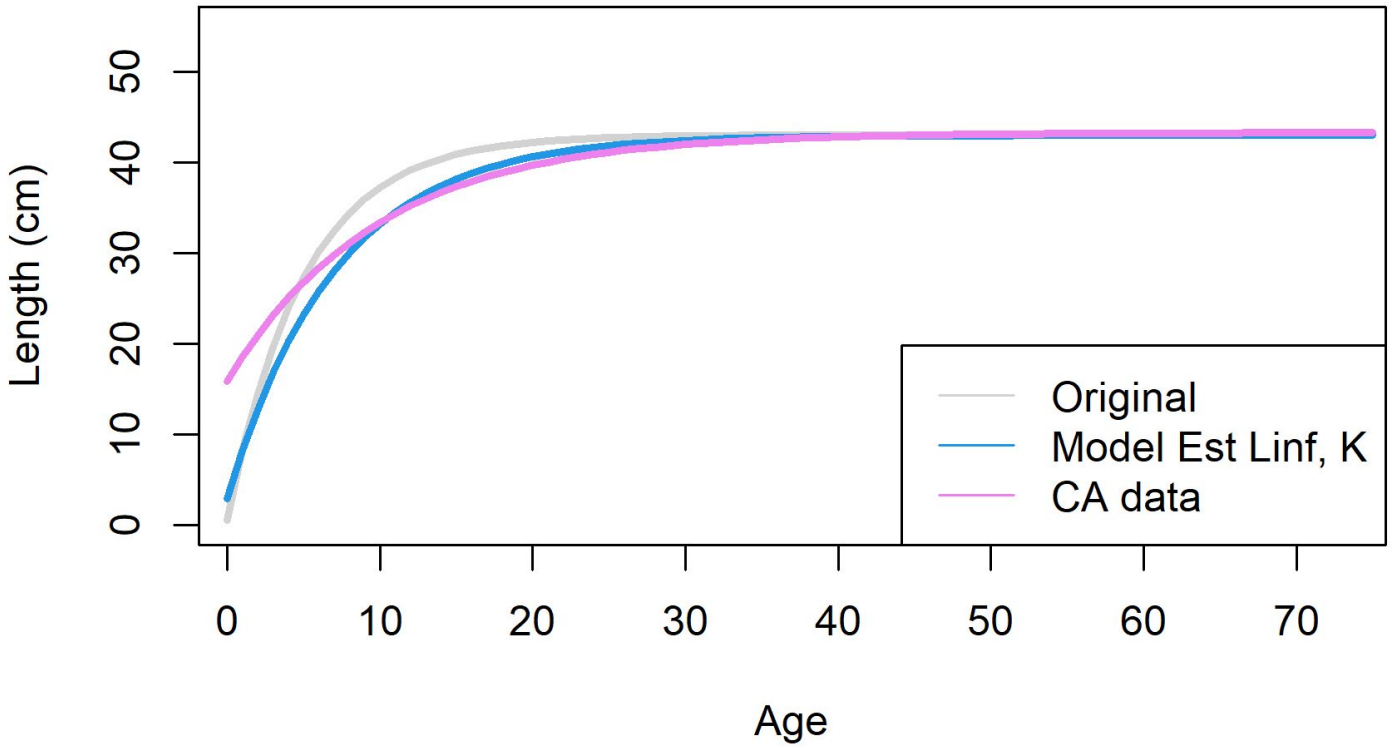
- Insufficient number of samples of young fish to robustly estimate a CA growth curve at this time
  - Two samples < 20 cm
  - Three samples < 5 yrs
  - Few young samples have high influence on curve

Compare to model estimated Linf-K curve which has smaller K than base



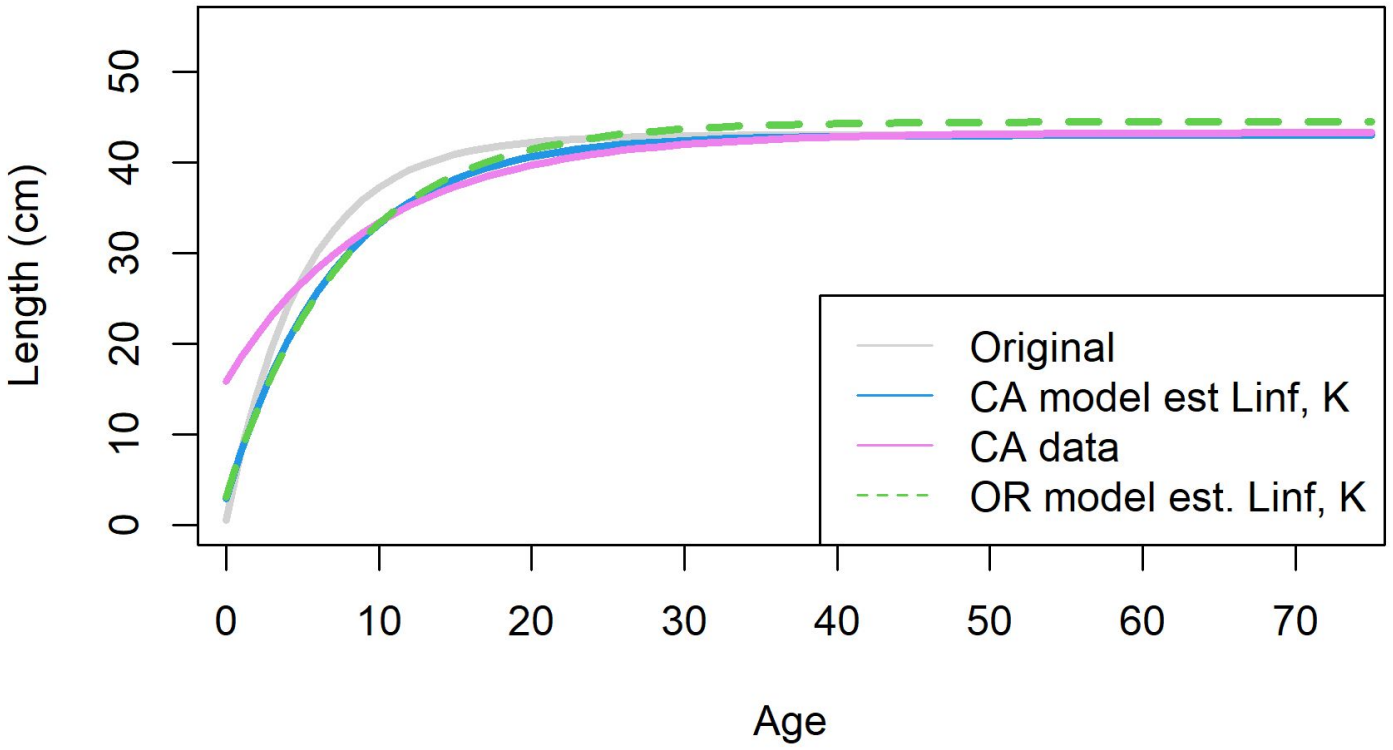
CA data also has smaller K than base, but comparison to internal curve is questionable

- Use of internally estimated estimated growth curve from model without ages is atypical and not best practice



Example where external data do not support an internally estimated growth curve

- Use of internally estimated estimated growth curve from model without ages is atypical and not best practice
- Internally estimated OR curve similar to internally estimated CA curve, but differs from data despite Oregon having 74% of otolith samples



Conclusion (Part 2)

- Insufficient number of samples of young fish to robustly estimate a CA growth curve at this time
  - Two samples < 20 cm
  - Three samples < 5 yrs
  - Few young samples have high influence on curve
- Use of internally estimated growth curve when model has no ages is not a viable alternative

Data recommendation

- Continue collection of commercial and recreational lengths and otoliths, as well as from surveys
  - Possibly explore new data sources to fill gaps

- Need wide distribution of ages, particularly young, but also old, individuals.

Questions/Comments?

Extra slides

Northern CA length-age relationships