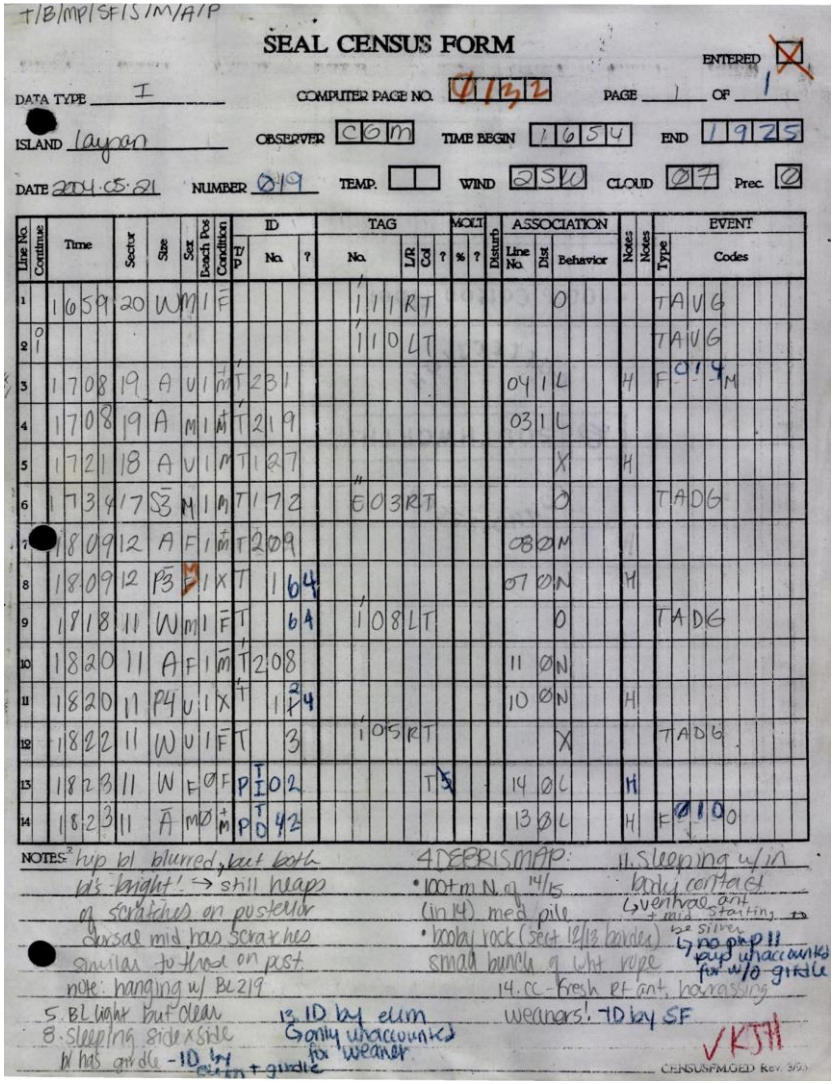
Overview of Hawaiian Monk Seal Range-wide Current Status and Recent Demographic Trends

Marine Mammal Commission Annual Meeting, May 2019, Kona HI

Jason Baker, Pacific Islands Fisheries Science Center

Long-term monitoring supports science-based conservation



T/B/MP/SF/S/M/A/P

SEAL CENSUS FORM

ENTERED ☒

DATA TYPE I COMPUTER PAGE NO. 0162 PAGE 1 OF 1

ISLAND Layan OBSERVER CGM TIME BEGIN 1654 END 1925

DATE 2704.05.21 NUMBER 019 TEMP. WIND 2SW CLOUD 07 Prec. 0

Line No. Continue	Time	Sector	Size	Sex	Beach Pos	Condition	ID PT	ID No.	ID ?	TAG No.	TAG L/R	TAG Col	TAG ?	MOLT %	MOLT ?	Disturb	ASSOCIATION Line No.	ASSOCIATION Dist	ASSOCIATION Behavior	Notes	Notes	EVENT Type	EVENT Codes
1	1659	20	W	M	1	F				111	R	T						0				T	A U G
2	01									110	L	T										T	A U G
3	1708	19	A	U	1	M	T	231									04	1	L	H		F	014 M
4	1708	19	A	M	1	M	T	219									03	1	L				
5	1721	18	A	U	1	M	T	127											X	H			
6	1734	17	S3	M	1	M	T	172		603	R	T							0			T	A D G
7	1809	12	A	F	1	M	T	209									08	0	M				
8	1809	12	P3	F	1	X	T	1	64								07	0	N	H			
9	1818	11	W	M	1	F	T		64	108	L	T							0			T	A D G
10	1820	11	A	F	1	M	T	208									11	0	N				
11	1820	11	P4	U	1	X	T	1	24								10	0	N	H			
12	1822	11	W	U	1	F	T		3	105	R	T							X			T	A D G
13	1823	11	W	F	0	F	P	I 02					T	5			14	0	L	H			
14	1823	11	A	M	0	M	P	T 42									13	0	L	H		F	010 0

NOTES: 2 hip bl blurred, but both id's bright! → still heaps of scratches on posterior dorsal mid has scratches similar to those on post. note: hanging w/ BL219

5. BL light but clear

8. sleeping side x side w/ has girdle - ID by girth + girdle

13. ID by elim (only unaccounted for weaner)

4 DEBRIS MAP:

• 100+ m N. of 14/15 (in 14) med pile

• bookay rock (sect. 12/13 borders) small bunch of wht rope

14. CC - fresh pt. int. harassing weaners! - ID by SF

11. sleeping w/ in body contact ↳ ventral grint + mid starting, to be silver ↳ no pup !! pup unaccounted for w/o girdle

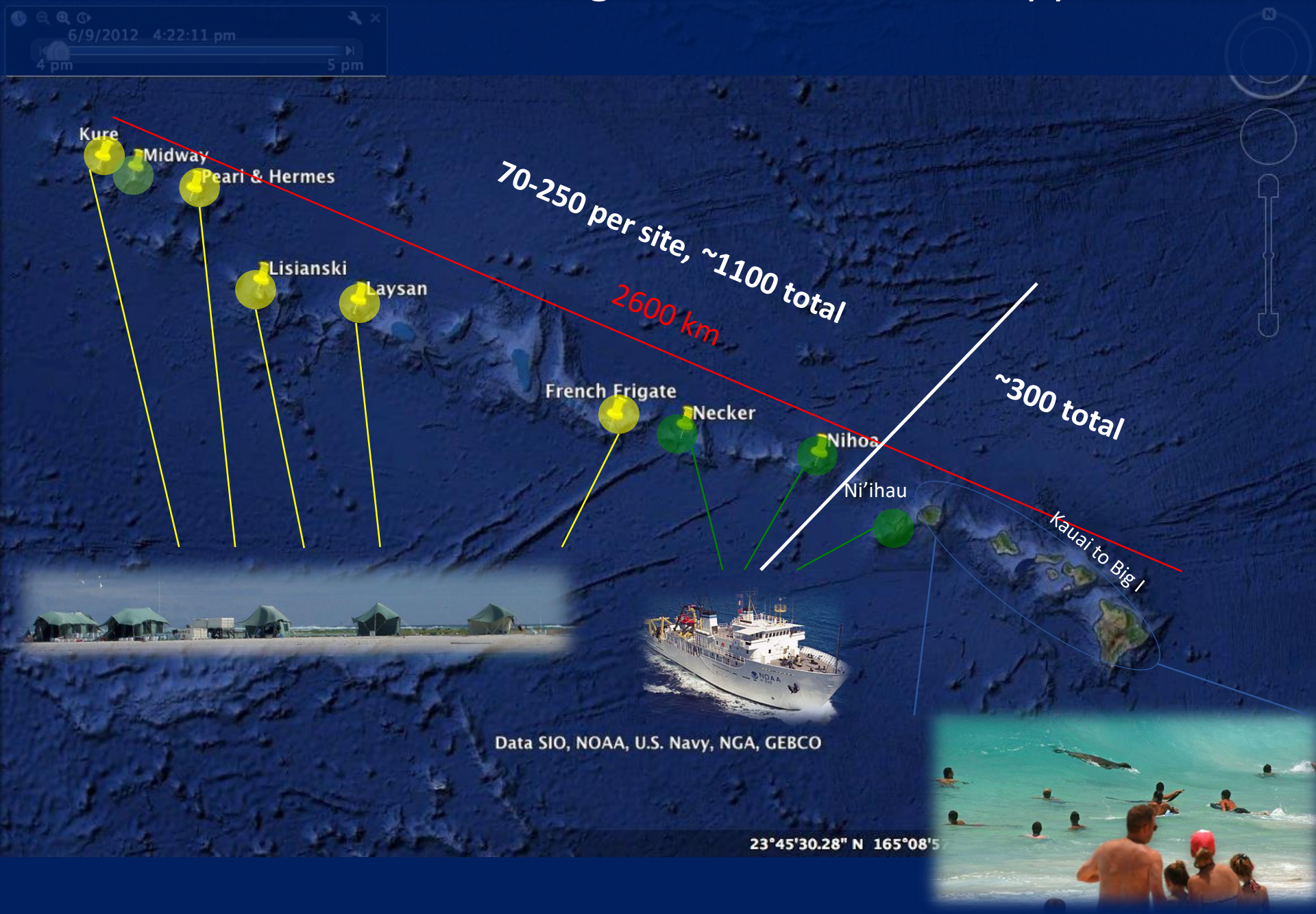
✓KJH

CENSUSFM.QED Rev. 3/93

Key Activities of Monitoring Program

- Tag pups
- Annual resighting effort throughout range
- Augment/maintain ID's (photo ID, retag)
- Document births, mortalities, do necropsies

Hawaiian Monk Seal Range and Assessment Approaches

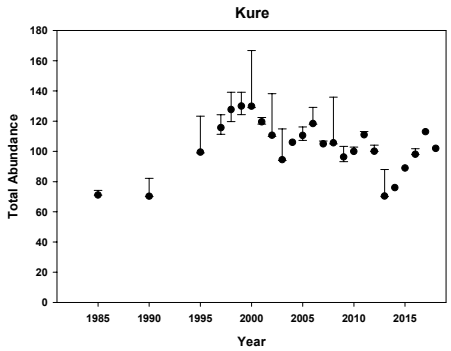


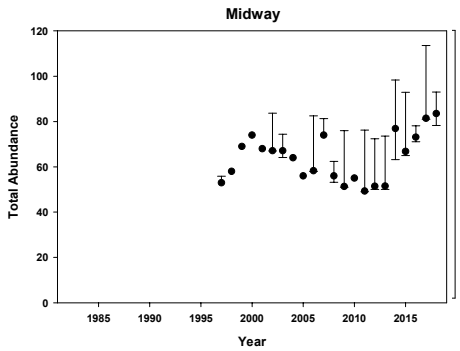
UAS Improving Surveys

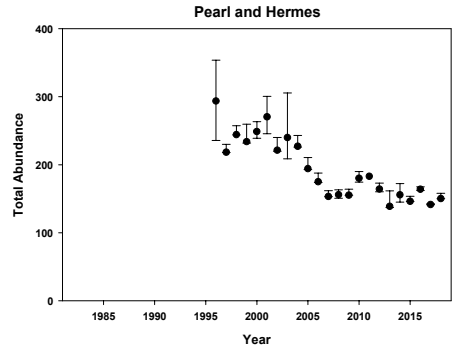
Key Site-specific Demographic Information

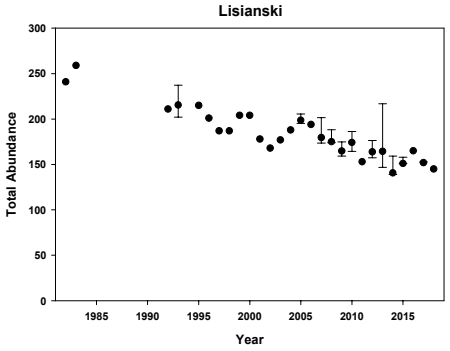
- Abundance and trends
- Age-sex structure
- Age-specific survival
- Age-specific reproductive rates
- Movement between sites

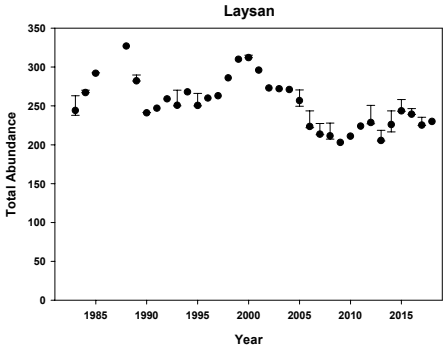
This information is used as input into purpose-designed stochastic simulation model.

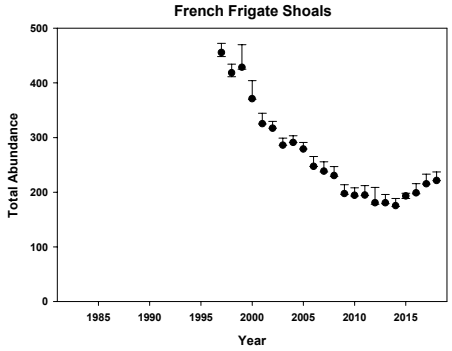

Kure
Total Abundance
Year

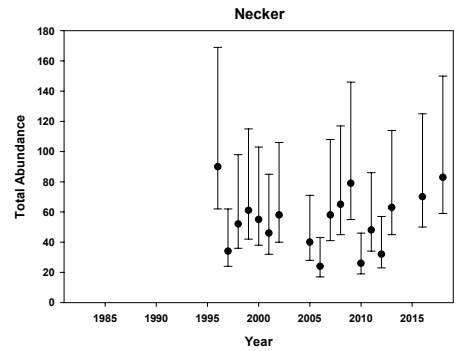

Midway
Total Abundance
Year

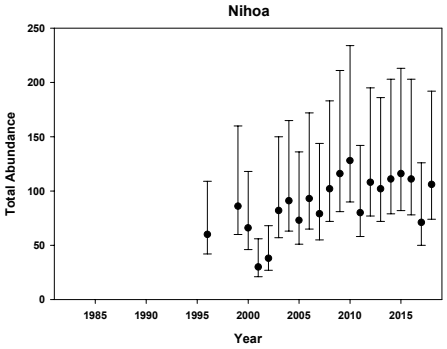

Pearl and Hermes
Total Abundance
Year

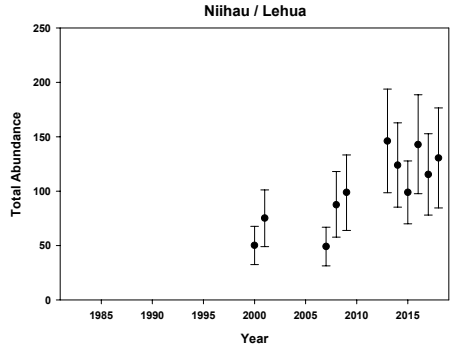

Lisianski
Total Abundance
Year

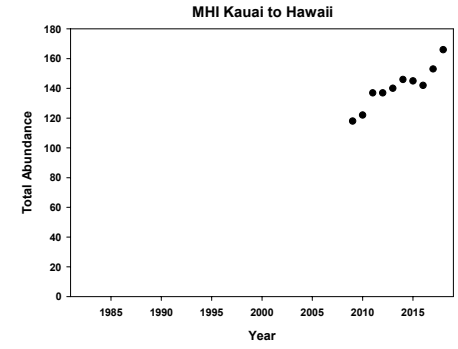

Laysan
Total Abundance
Year

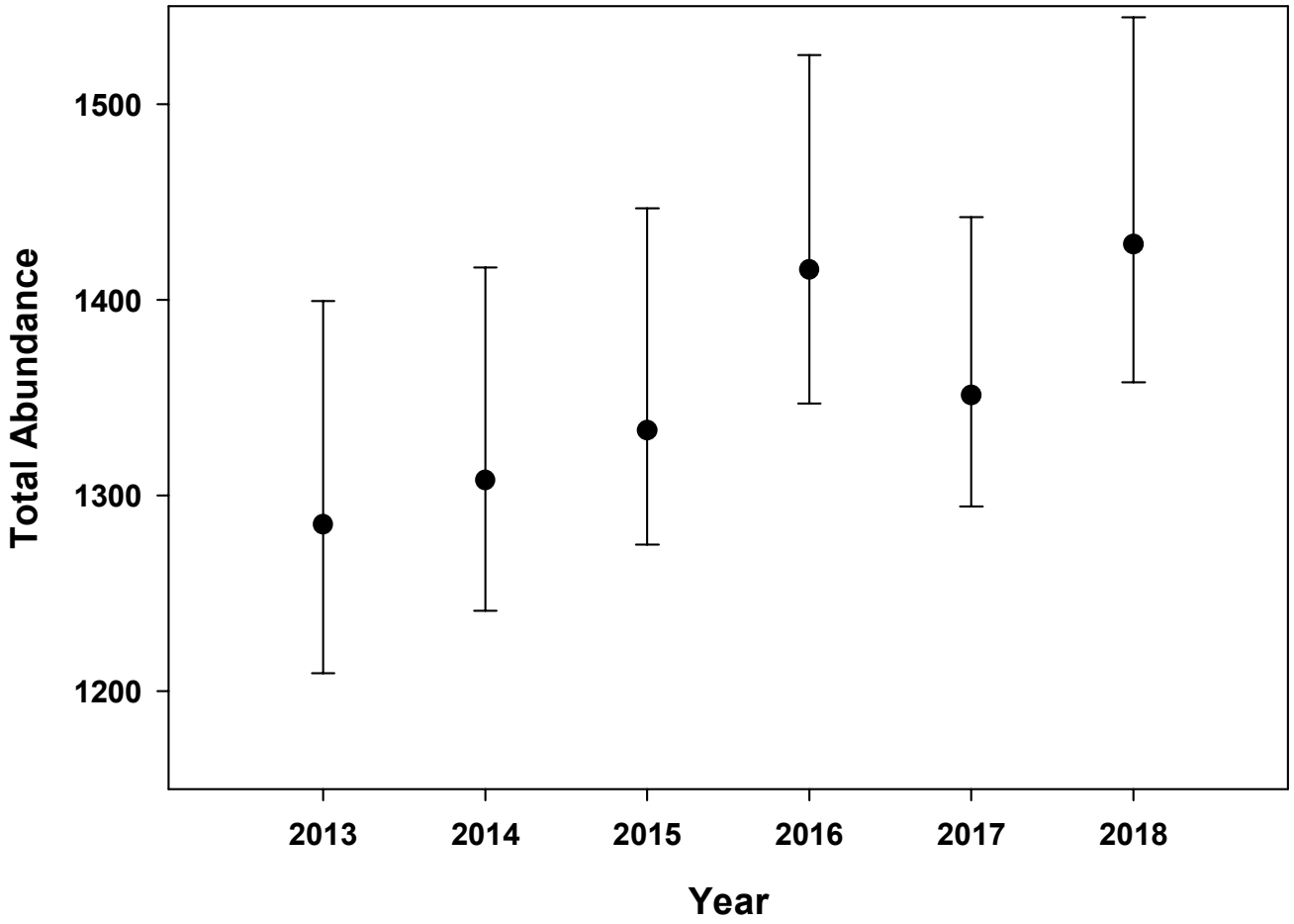

French Frigate Shoals
Total Abundance
Year

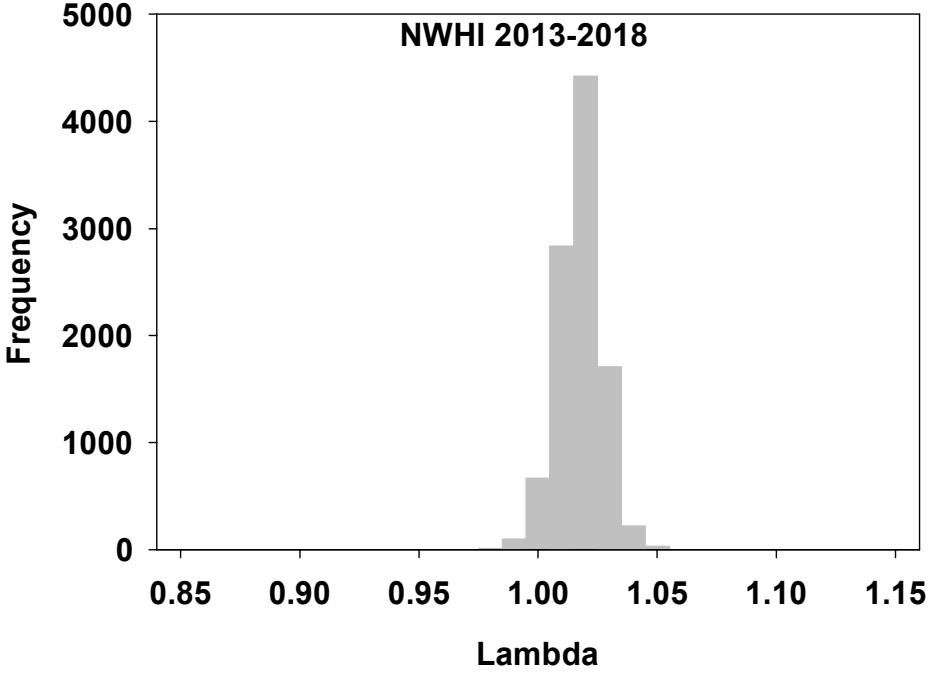

Necker
Total Abundance
Year

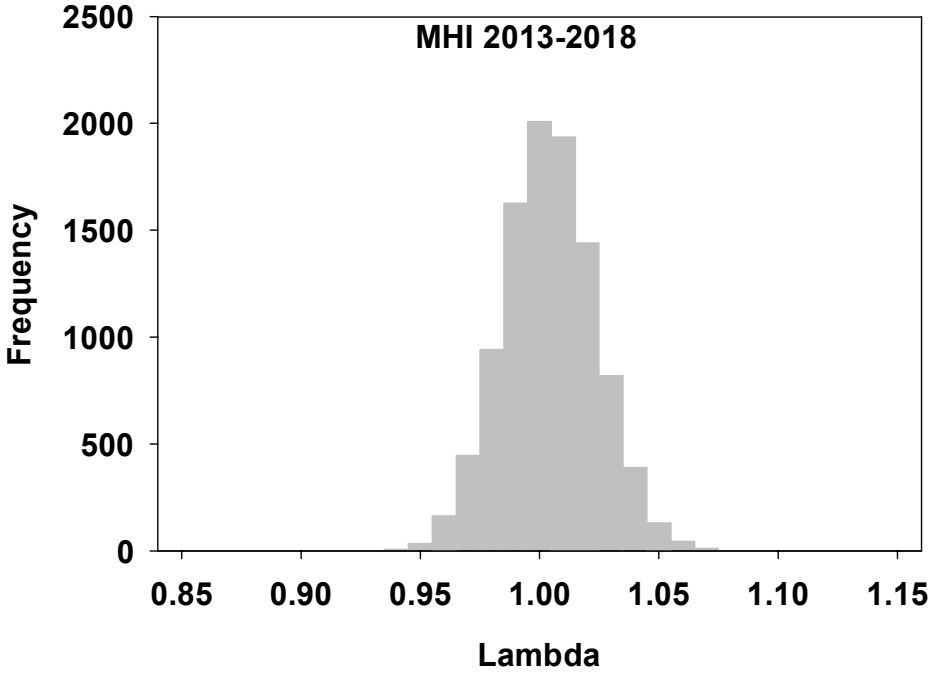

Nihoa
Total Abundance
Year

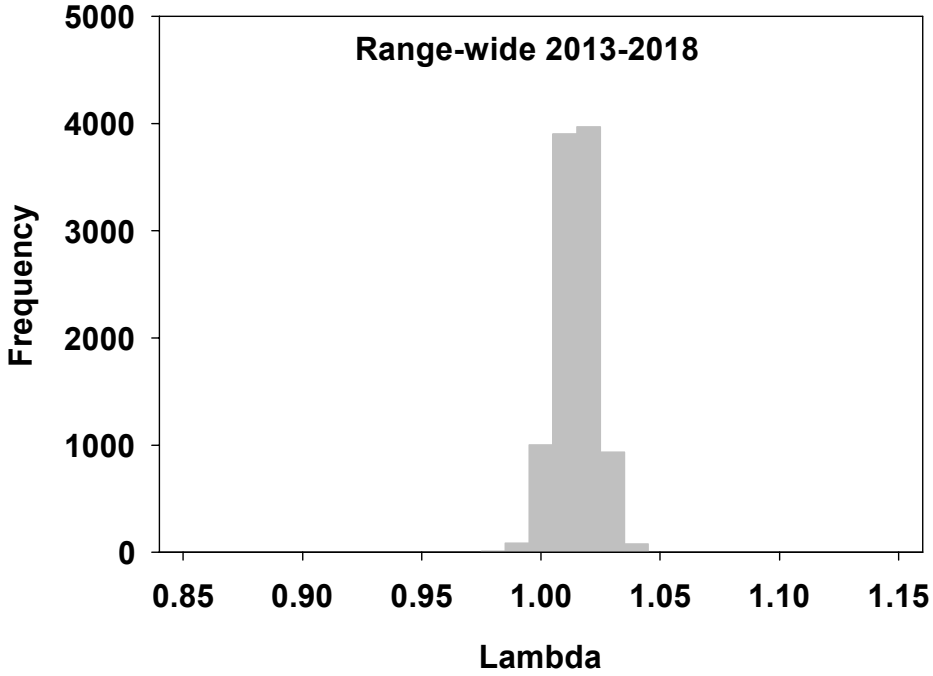

Niihau / Lehua
Total Abundance
Year


MHI Kauai to Hawaii
Total Abundance
Year

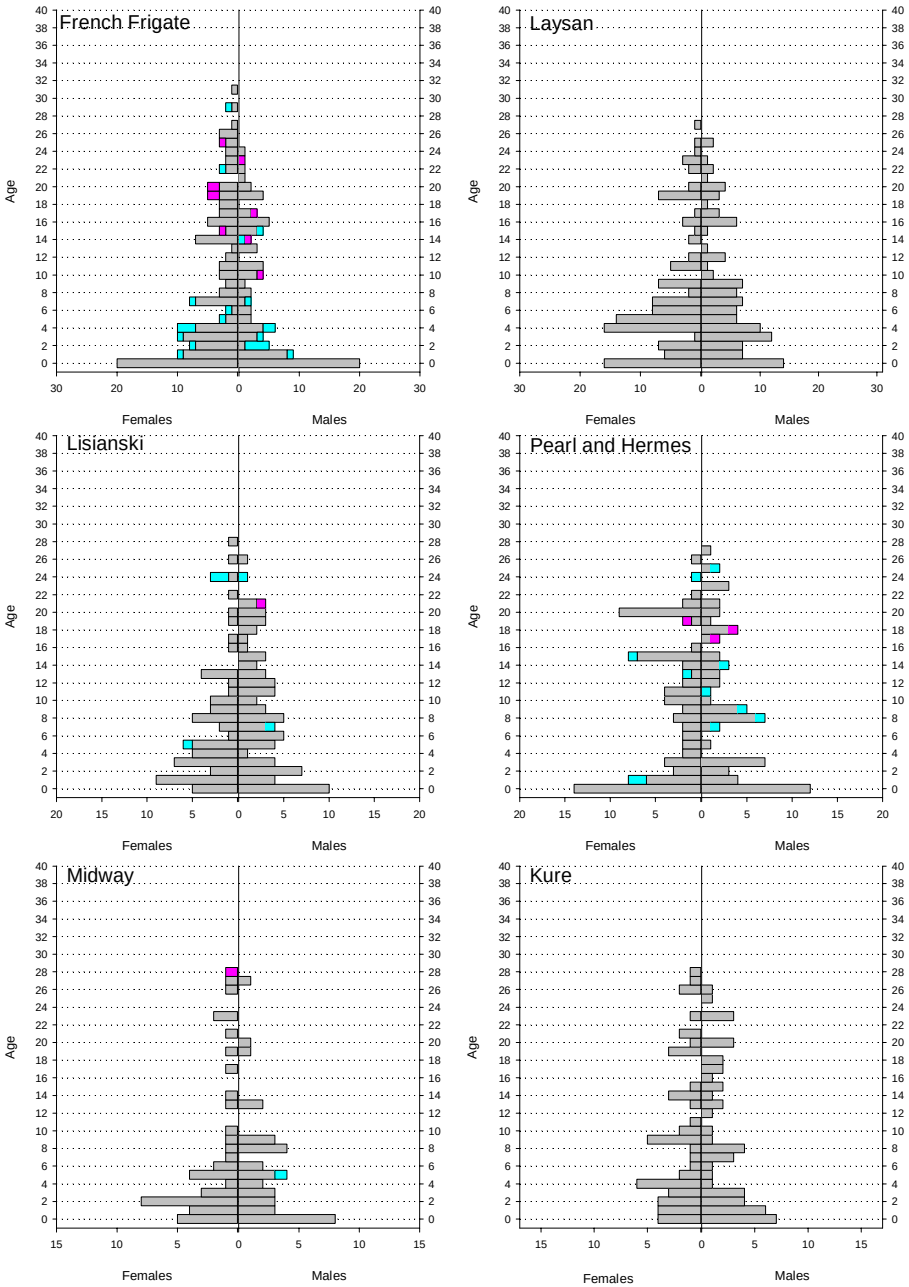

Total Abundance
1500
1400
1300
1200
2013
2014
2015
2016
2017
2018
Year


NWHI 2013-2018
Frequency
5000
4000
3000
2000
1000
0
0.85
0.90
0.95
1.00
1.05
1.10
1.15
Lambda

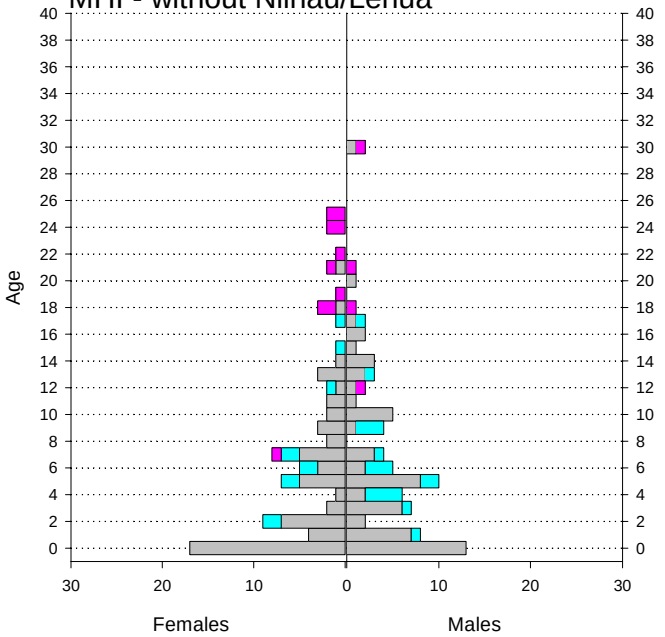

MHI 2013-2018
Frequency
2500
2000
1500
1000
500
0
0.85
0.90
0.95
1.00
1.05
1.10
1.15
Lambda


Range-wide 2013-2018
Frequency
5000
4000
3000
2000
1000
0
0.85
0.90
0.95
1.00
1.05
1.10
1.15
Lambda

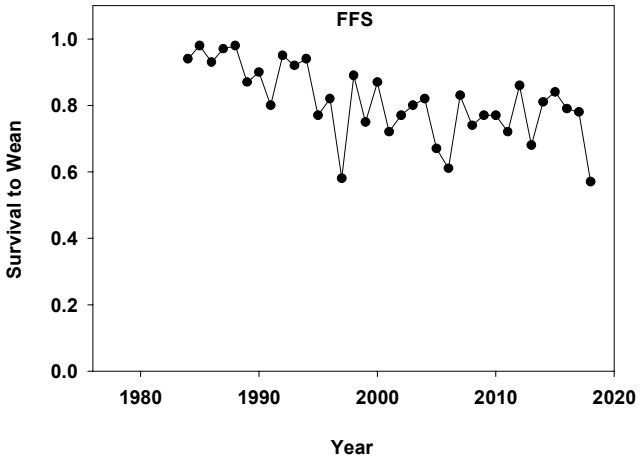
Age Structure of Hawaiian Monk Seal Subpopulations in 2018



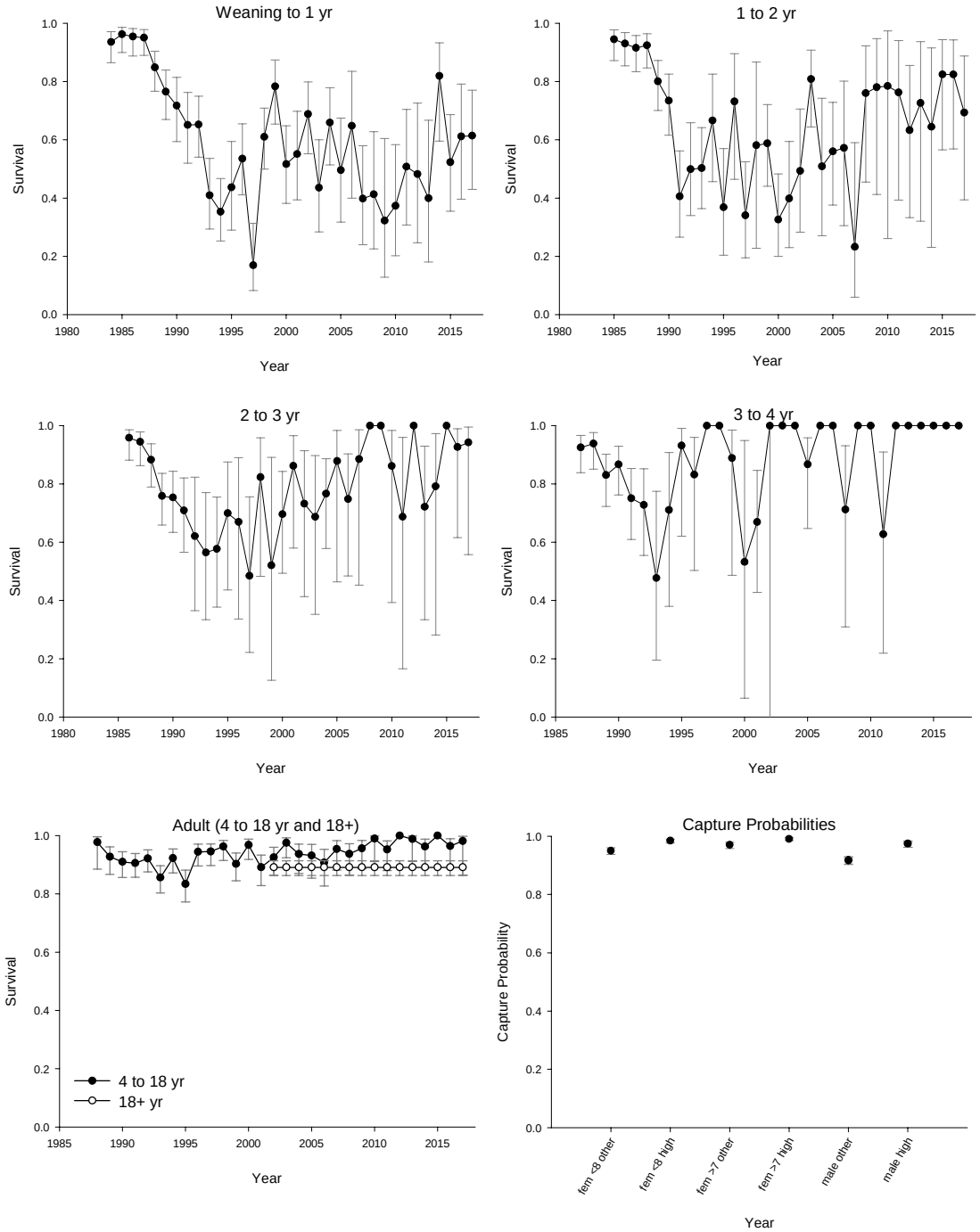
known age
age estimated
age randomly assigned above minimum



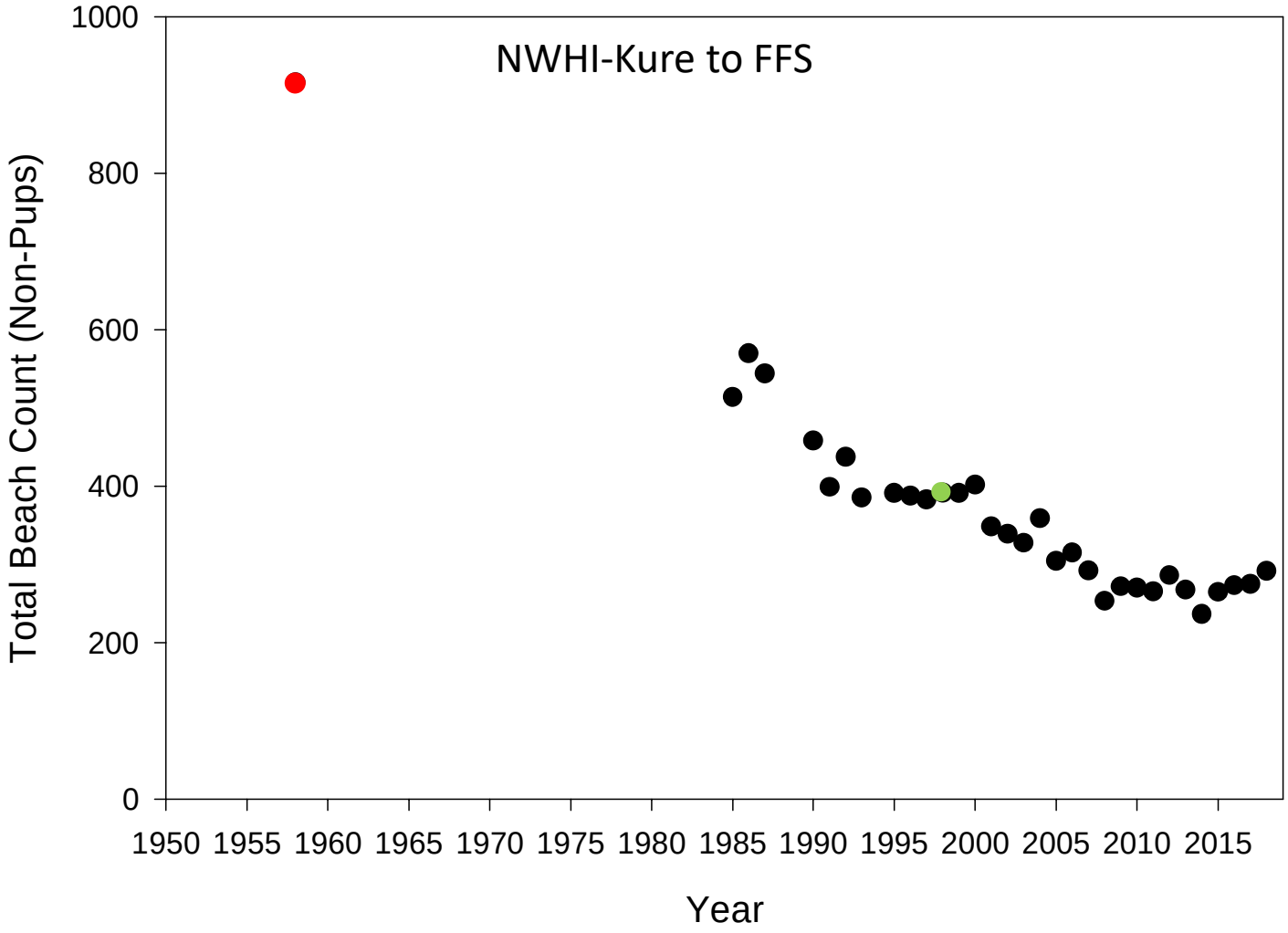
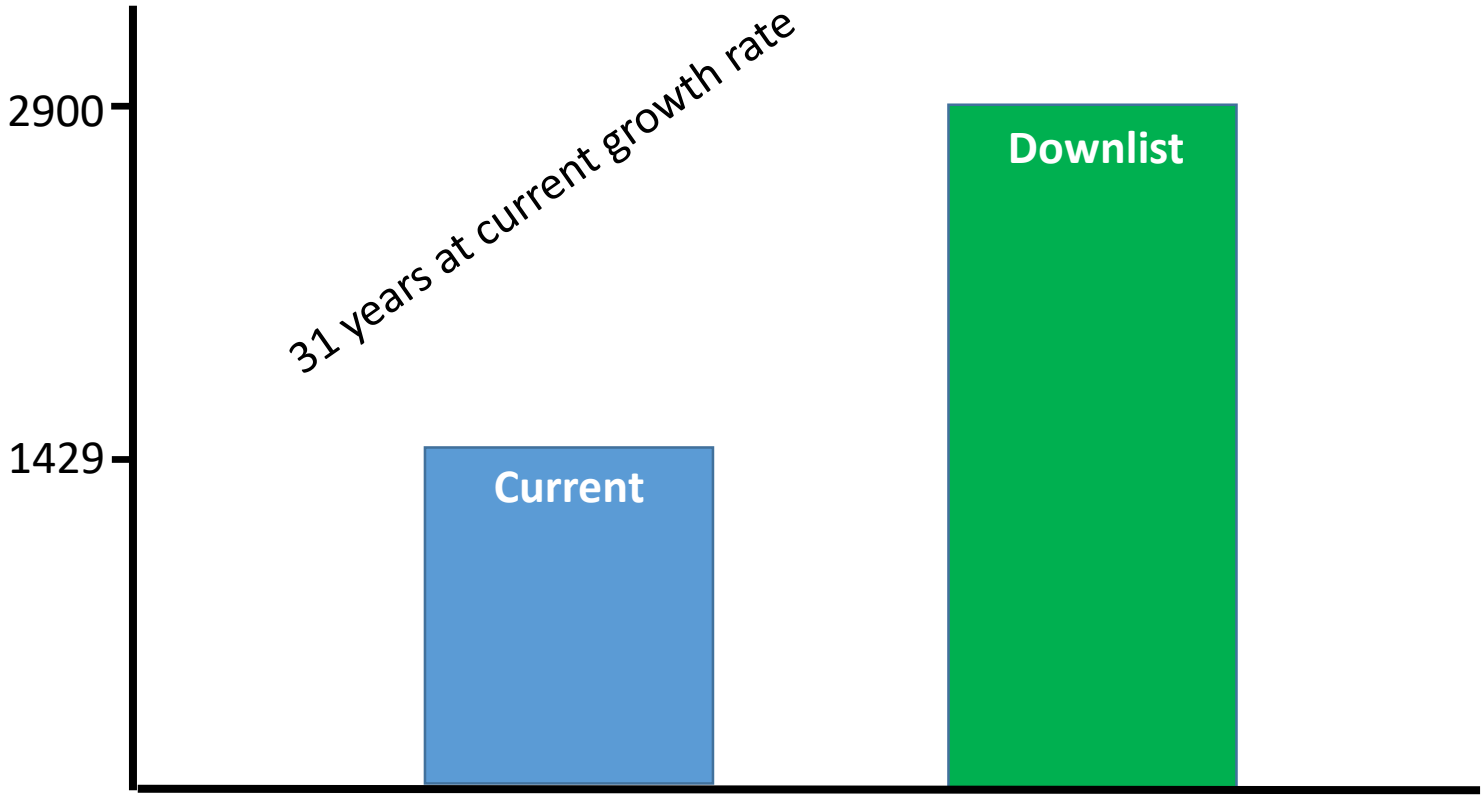
known age
age estimated
age randomly assigned above minimum



FFS Female Survival Estimates 1984 to 2018



Historical Context



Conclusions – Tempered Optimism