

Reproductive Success of Wild Jack Coho Salmon Males in Auke Creek

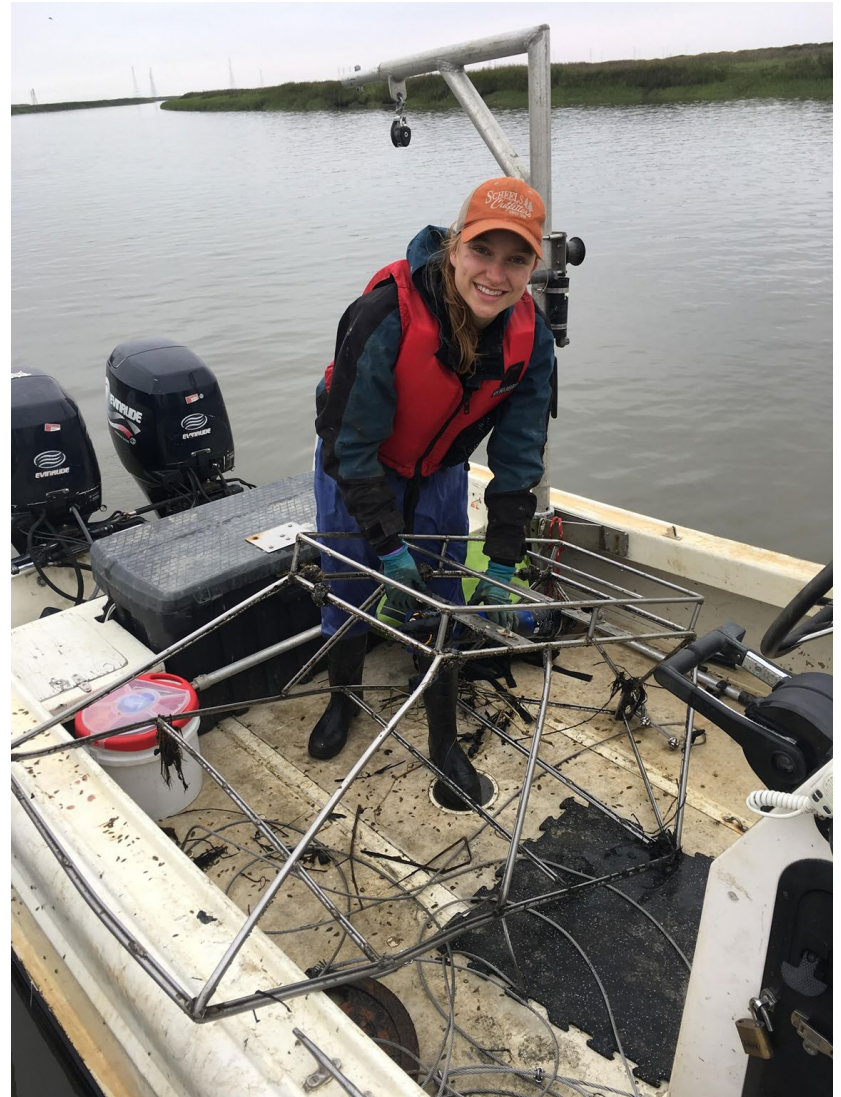
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6 April 2022
Southeast Regional Planning Teams Meeting



This work was conducted primarily by
[Erika King](#), UAF Fisheries M.S. 2022

Now with Habitat Division ADF&G



(all photos courtesy of Erika)

This project is focused on jack coho salmon in the wild



Regular sized coho (female)



“Jack” coho (small male)

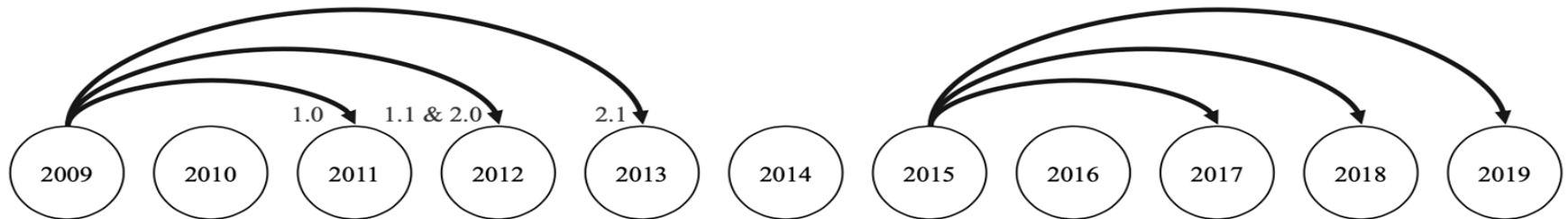
- “Alaska hatcheries do not selectively breed salmon” – Evenson et al. 2018
 - Would imply that coho jack salmon are bred equal to their proportion in return
 - Many hatcheries do not mate jacks
- **What is the reproductive success of jack coho in the wild?**
 - If less than regular males, mating in proportion to return would over represent jacks
 - If > 0 , excluding jacks is deviating from natural mating processes

The weir at Auke Creek allows us to genetically sample all returning adults

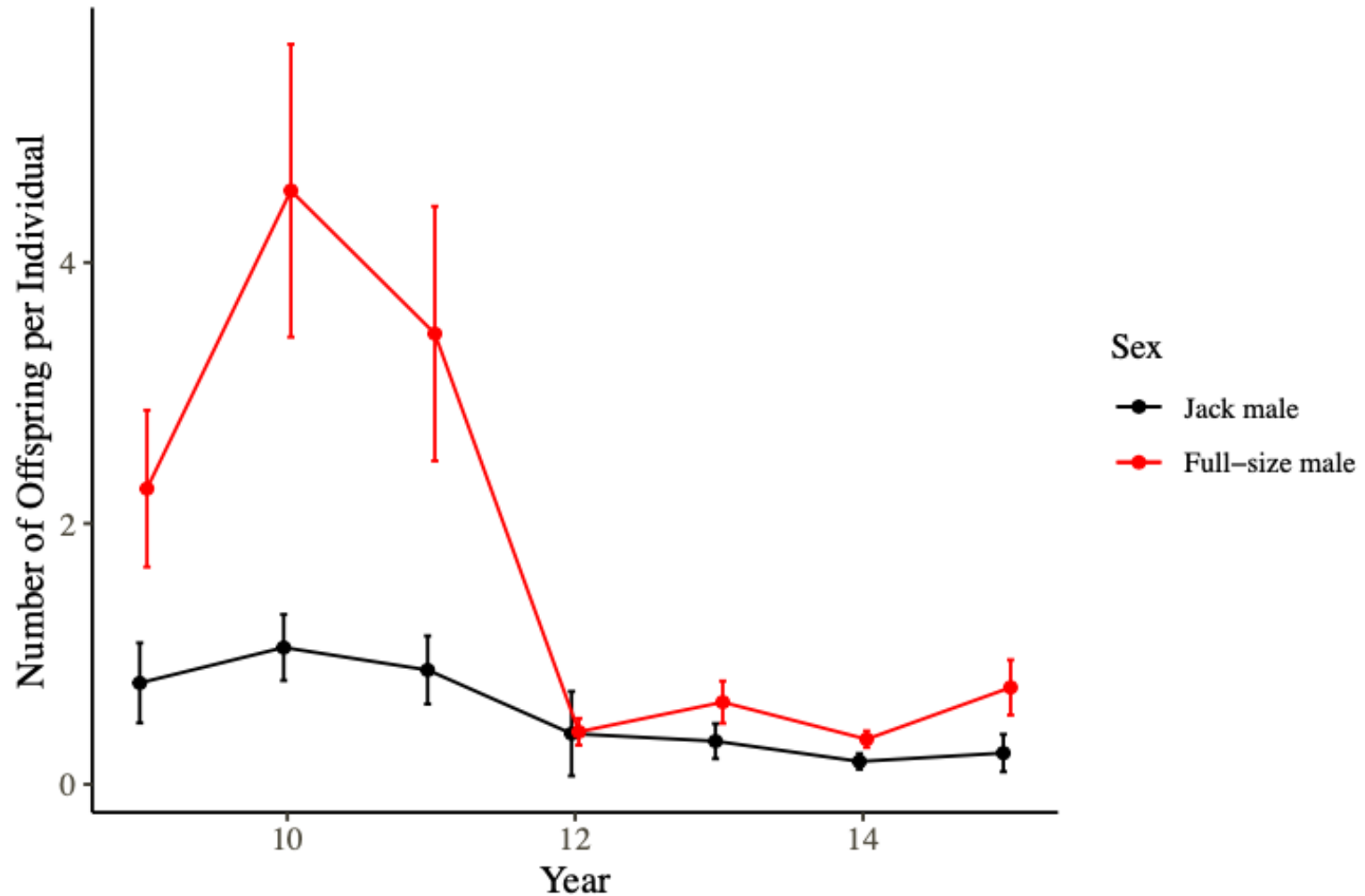
Coho have been genetically sampled since 2009

We obtained funding from Sea Grant to genotype all adults 2009-2019

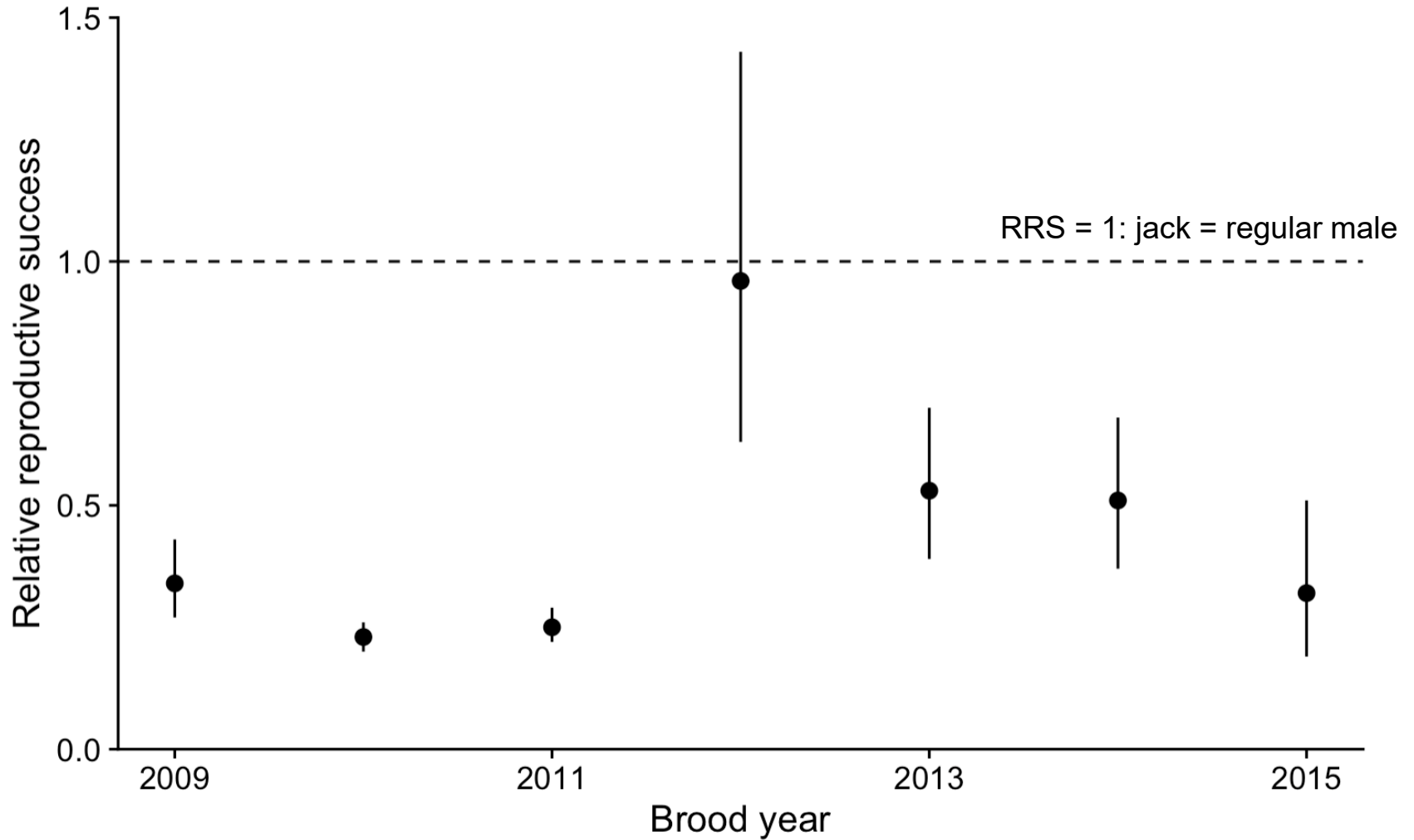
and calculate reproductive success for brood years 2009-2015



Jacks consistently had **lower reproductive success** than regular males, but they sired **23%** of the adult offspring that returned over the study period



Jack relative reproductive success < 1 (except in 2012)



Some info on unmarked returns (*putative* strays)

Year	All individuals	Unmarked individuals				Total	Percent unmarked
		Female	Jack	Full-size male	Unknown		
9	477	22	0	13	0	35	7.71
10	816	3	5	9	4	21	2.95
11	882	4	1	11	0	16	1.83
12	958	3	1	4	0	8	0.84
13	949	7	3	9	0	19	2.00
14	1832	42	13	54	0	109	5.95
15	656	20	5	39	0	64	9.76

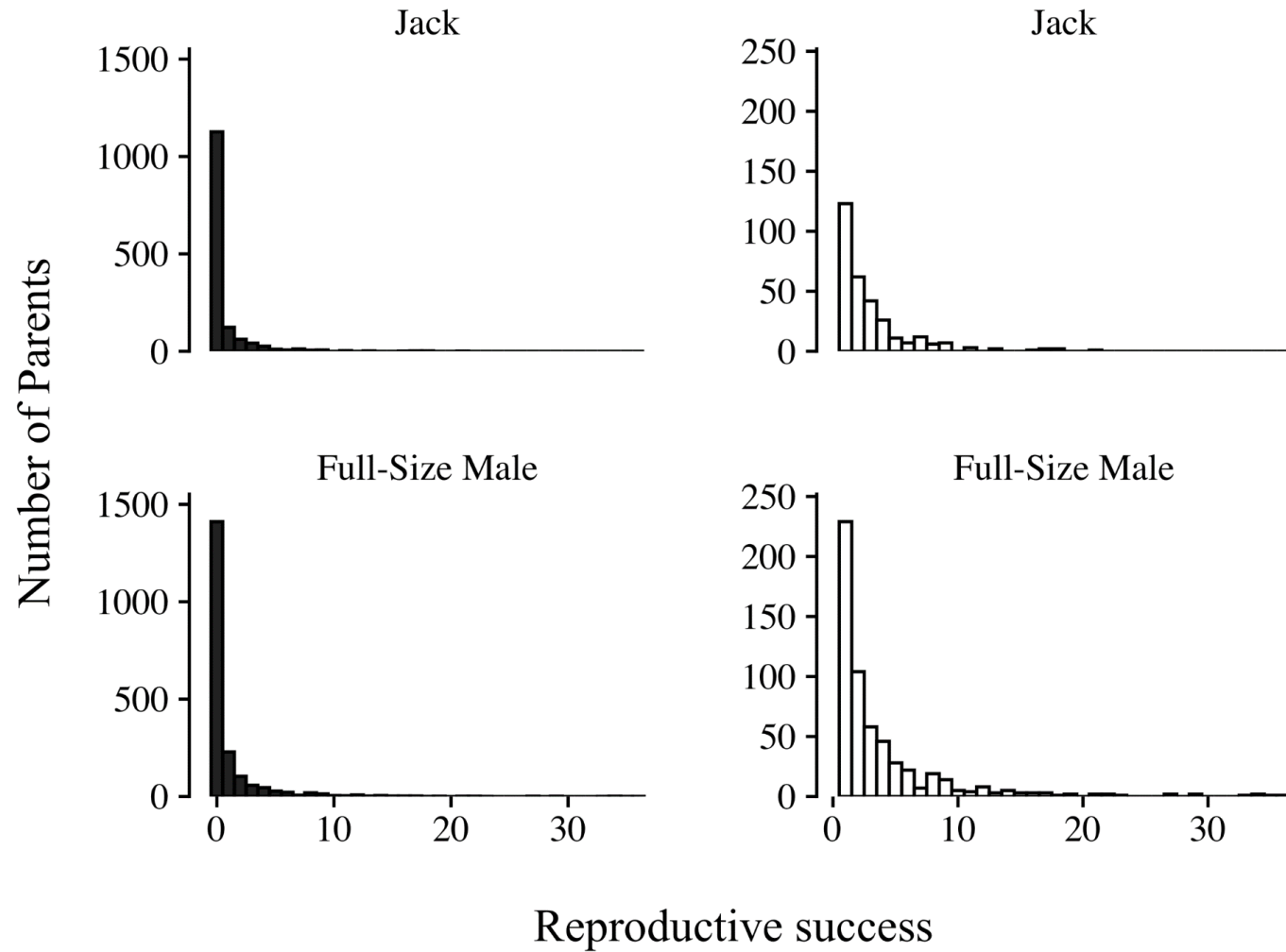
Most strays didn't reproduce successfully but some did

(strays: no ad clip/CWT, assigned with confidence to no parents from Auke Creek)

Year	Strays	Strays with no offspring	Successful stray RS	
			Min	Max
2013	9 (1.2%)	6	2	4
2014	49 (2.9%)	43	2	3
2015	45 (7.0%)	37	1	12

(extra slides)

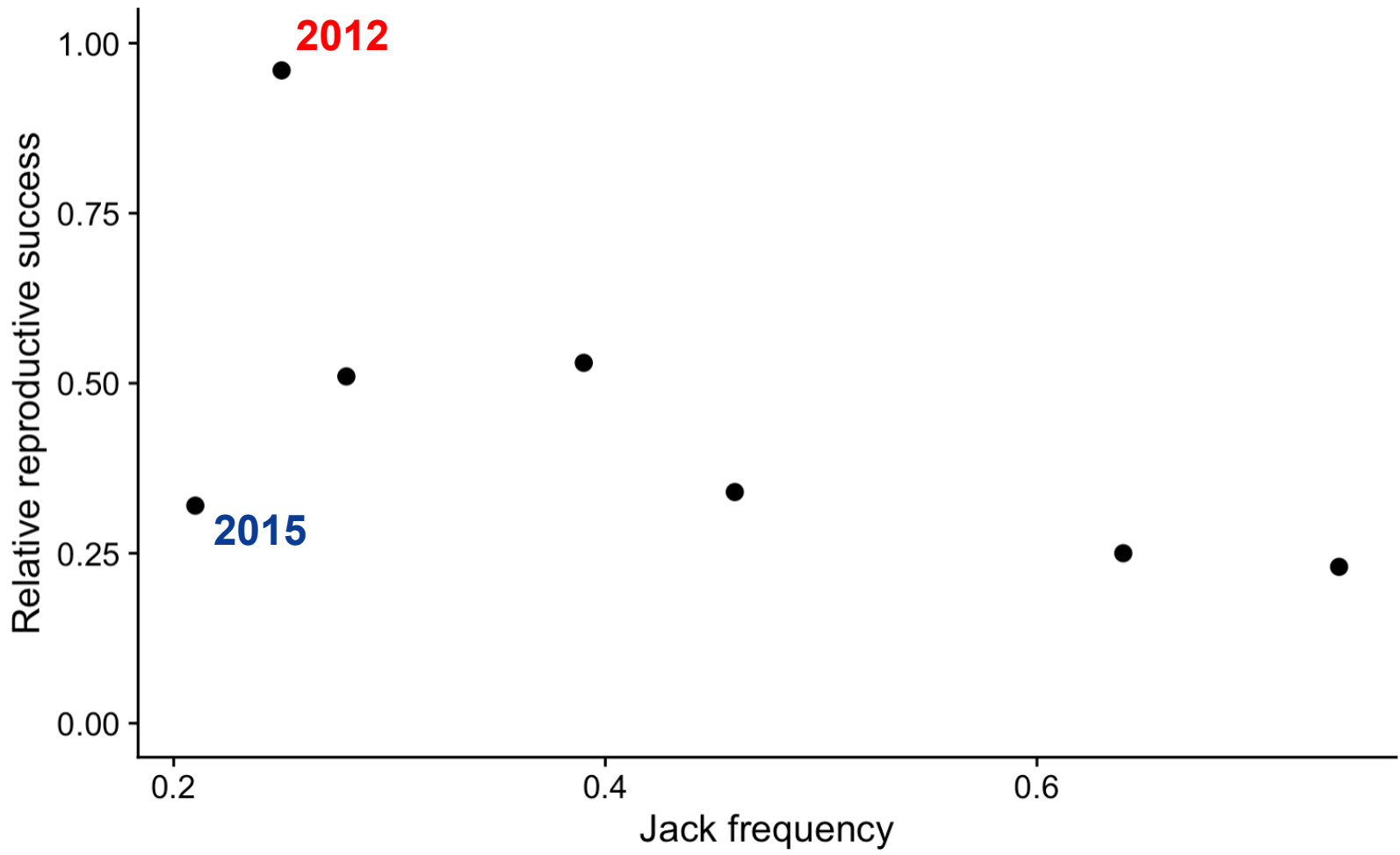
Most fish didn't reproduce successfully

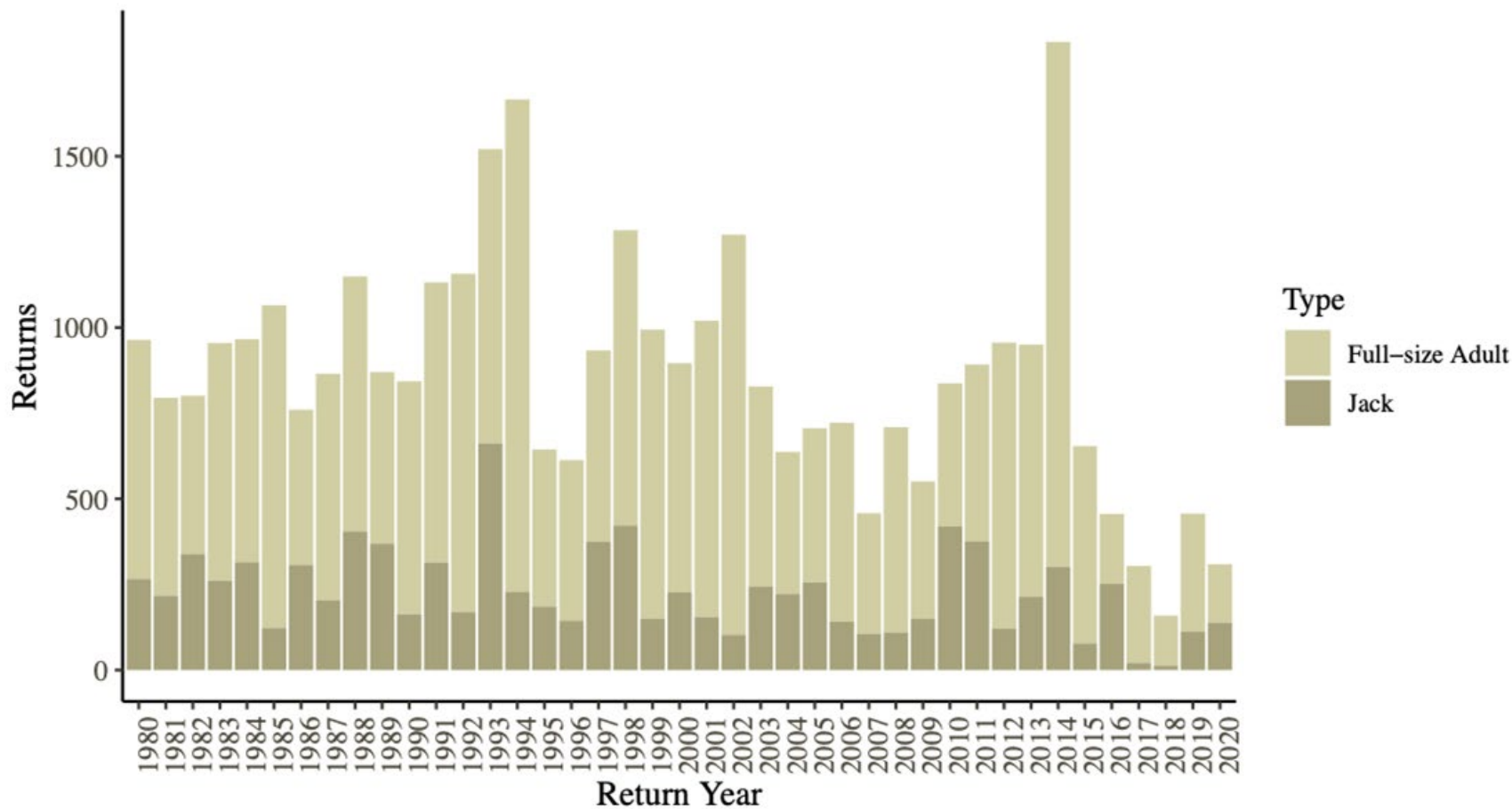


Do jacks beget jacks? Yes

	Jack offspring	Regular male offspring	% jack offspring
Jack sire	226	345	39.6%
Regular male sire	366	874	29.5%

(effect of sire type on offspring type is significant even after accounting for brood year; more formal quantitative genetics analysis coming....)





Genotyped by GTseek, Nathan Campbell

SNP panel:

- 259 SNPs
- Developed for Coho Salmon parentage by the Columbia River Inter-Tribal Fisheries Commission.
- Sufficient diversity
 - >150 loci have a minor allele frequency > 0.25

