

Supplementary Table 3

Percent bias by estimator type (pooled or stratified) of all sex, age, stock, and stock-by-age groups determined from simulations of the sampling process at Lower Granite Dam in Washington. Bias was computed as the mean of the estimates from 500 simulations minus the true value. Absolute percent bias values >5% are presented in bold type.

Group	Estimator type		Group	Estimator type		Group	Estimator type	
	Pooled	Stratified		Pooled	Stratified		Pooled	Stratified
Female	-0.322	-0.058	Age 7, Stock G	10.17	4.11	Age 5, Stock J	-0.74	-0.33
Male	0.034	-0.841	Age 7, Stock H	2.46	-1.86	Age 4, Stock A	-5.04	0.24
Age 7	3.044	2.411	Age 7, Stock I	5.50	3.72	Age 4, Stock B	-7.07	0.65
Age 6	0.064	0.354	Age 7, Stock J	4.82	2.56	Age 4, Stock C	-3.39	0.52
Age 5	0.113	0.028	Age 6, Stock A	-0.76	0.96	Age 4, Stock D	-0.48	1.34
Age 4	-1.57	-1.398	Age 6, Stock B	-2.30	2.04	Age 4, Stock E	5.09	-2.21
Age 3	-1.35	-1.255	Age 6, Stock C	0.27	0.48	Age 4, Stock F	5.53	-1.96
Stock A	-2.767	0.97	Age 6, Stock D	1.62	0.51	Age 4, Stock G	-2.25	-1.08
Stock B	-6.047	1.115	Age 6, Stock E	6.70	-0.38	Age 4, Stock H	3.40	1.37
Stock C	-2.691	0.809	Age 6, Stock F	7.01	0.35	Age 4, Stock I	-5.09	-3.90
Stock D	1.224	0.672	Age 6, Stock G	1.79	1.22	Age 4, Stock J	-4.20	-2.67
Stock E	8.009	-0.047	Age 6, Stock H	4.46	2.16	Age 3, Stock A	-8.54	-0.46
Stock F	7.087	-0.251	Age 6, Stock I	0.13	-2.03	Age 3, Stock B	-10.48	3.43
Stock G	0.511	0.421	Age 6, Stock J	-1.19	-1.29	Age 3, Stock C	-7.44	-0.21
Stock H	2.963	1.985	Age 5, Stock A	-2.79	0.69	Age 3, Stock D	-4.65	0.66
Stock I	-2.876	-2.299	Age 5, Stock B	-6.40	1.21	Age 3, Stock E	7.50	1.09
Stock J	-1.633	-1.153	Age 5, Stock C	-3.90	-0.04	Age 3, Stock F	2.46	0.64
Age 7, Stock A	1.29	4.65	Age 5, Stock D	1.32	1.24	Age 3, Stock G	-5.42	2.29
Age 7, Stock B	5.95	-0.18	Age 5, Stock E	7.85	-0.42	Age 3, Stock H	-1.05	-0.02
Age 7, Stock C	7.62	-2.79	Age 5, Stock F	7.57	-0.31	Age 3, Stock I	-9.62	-4.11
Age 7, Stock D	9.30	4.82	Age 5, Stock G	0.86	-0.19	Age 3, Stock J	-8.45	-1.91
Age 7, Stock E	4.56	13.57	Age 5, Stock H	2.35	2.13			
Age 7, Stock F	1.16	7.32	Age 5, Stock I	-2.24	-1.22			

Supplementary Table 4

Confidence interval coverage by combinations of estimator (pooled or stratified) and confidence interval type (asymptotically normal or parametric bootstrap) for of all sex, age, stock, and stock-by-age groups based on simulations of the sampling process at Lower Granite Dam in Washington. Confidence interval coverage is the proportion of 500 simulations in which the true value was within the confidence interval. Bold type indicates poor coverage (<0.85). **Bold italic** type indicates very poor coverage (<0.80).

Group	Estimator and confidence interval type				Group	Estimator and confidence interval type			
	Pooled asyp.	Pooled bootstrap	Stratified asyp.	Stratified bootstrap		Pooled asyp.	Pooled bootstrap	Stratified asyp.	Stratified bootstrap
Female	0.896	0.906	0.886	0.894	Age 6, Stock H	0.898	0.898	0.886	0.89
Male	0.896	0.916	0.864	0.872	Age 6, Stock I	0.884	0.892	0.864	0.876
Age 7	0.884	0.882	0.888	0.896	Age 6, Stock J	0.91	0.91	0.904	0.906
Age 6	0.91	0.91	0.902	0.908	Age 5, Stock A	0.856	0.856	0.89	0.894
Age 5	0.88	0.89	0.894	0.90	Age 5, Stock B	0.82	0.83	0.90	0.898
Age 4	0.836	0.852	0.85	0.864	Age 5, Stock C	0.86	0.874	0.898	0.896
Age 3	0.876	0.874	0.87	0.882	Age 5, Stock D	0.876	0.892	0.878	0.878
Stock A	0.846	0.846	0.888	0.89	Age 5, Stock E	0.788	0.798	0.868	0.878
Stock B	0.736	0.758	0.888	0.898	Age 5, Stock F	0.842	0.836	0.898	0.91
Stock C	0.858	0.864	0.874	0.876	Age 5, Stock G	0.902	0.904	0.906	0.906
Stock D	0.854	0.854	0.884	0.89	Age 5, Stock H	0.908	0.914	0.882	0.89
Stock E	0.694	0.706	0.896	0.90	Age 5, Stock I	0.864	0.884	0.872	0.886
Stock F	0.722	0.72	0.894	0.91	Age 5, Stock J	0.904	0.914	0.896	0.898
Stock G	0.90	0.902	0.878	0.88	Age 4, Stock A	0.83	0.848	0.88	0.892
Stock H	0.87	0.874	0.90	0.896	Age 4, Stock B	0.808	0.822	0.89	0.892
Stock I	0.814	0.832	0.854	0.862	Age 4, Stock C	0.852	0.866	0.87	0.88
Stock J	0.858	0.866	0.888	0.894	Age 4, Stock D	0.89	0.894	0.886	0.908
Age 7, Stock A	0.894	0.884	0.862	0.88	Age 4, Stock E	0.892	0.896	0.898	0.898
Age 7, Stock B	0.846	0.874	0.844	0.872	Age 4, Stock F	0.878	0.878	0.884	0.902
Age 7, Stock C	0.742	0.908	0.82	0.878	Age 4, Stock G	0.874	0.904	0.906	0.916
Age 7, Stock D	0.832	0.804	0.85	0.84	Age 4, Stock H	0.89	0.888	0.876	0.886
Age 7, Stock E	0.858	0.89	0.876	0.886	Age 4, Stock I	0.848	0.852	0.852	0.866
Age 7, Stock F	0.81	0.844	0.822	0.844	Age 4, Stock J	0.866	0.876	0.866	0.874
Age 7, Stock G	0.872	0.836	0.844	0.842	Age 3, Stock A	0.86	0.86	0.88	0.89
Age 7, Stock H	0.732	0.896	0.77	0.848	Age 3, Stock B	0.81	0.882	0.86	0.874
Age 7, Stock I	0.896	0.882	0.86	0.876	Age 3, Stock C	0.722	0.902	0.79	0.826
Age 7, Stock J	0.864	0.888	0.89	0.884	Age 3, Stock D	0.806	0.776	0.844	0.838
Age 6, Stock A	0.86	0.866	0.884	0.89	Age 3, Stock E	0.90	0.896	0.84	0.864
Age 6, Stock B	0.856	0.866	0.892	0.906	Age 3, Stock F	0.796	0.838	0.84	0.866
Age 6, Stock C	0.89	0.902	0.88	0.89	Age 3, Stock G	0.83	0.83	0.88	0.872
Age 6, Stock D	0.892	0.918	0.9	0.908	Age 3, Stock H	0.774	0.92	0.796	0.83
Age 6, Stock E	0.872	0.862	0.868	0.882	Age 3, Stock I	0.876	0.876	0.836	0.848
Age 6, Stock F	0.852	0.846	0.904	0.902	Age 3, Stock J	0.81	0.826	0.882	0.88
Age 6, Stock G	0.892	0.896	0.89	0.894					