Title
Effects of dams on downstream molluscan predator-prey interactions in the Colorado River estuary

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Electronic supplementary material S3. Supplemental analyses of *Neverita reclusiana* preference in the pre-dam era Colorado River estuary

Neverita reclusiana exhibited prey preferences at each of the three localities in the pre-dam era CRE and they were not limited to *Mulinia modesta*. As discussed in the main text, these preferences were variable between localities and the preference for *M. modesta* diminished moving southward in the estuary. The complete results of the analysis for the subset of data including only species drilled by *N. reclusiana* are presented in S3 table 1. The section that follows S3 table 1 examines the effects of a supplementary analysis utilizing data for the whole community. As discussed below, this analysis confirms that *N. reclusiana* preferences were inclusive of more species than just *M. modesta*.

S3 Table 1. Results of the analysis for the subset of species that were drilled by *Neverita reclusiana* at one or more of the localities.

Site	Taxon	Neutral	Manly's alpha	95% Credibility Interval		Probability alpha > neutral	Probability alpha < neutral	Probability *Mulinia* alpha is greater	# drilled valves	# individuals
Isla Montague	*Felaniella sericata*	0.111	0.386	0.027	0.796	0.872	0.128	0.302	1	2
	Eupleura limata	0.111	0.209	0.059	0.426	0.830	0.170	0.477	16	121
	Mulinia modesta	0.111	0.205	0.060	0.413	0.827	0.173	0.000	25	194
	Chionopsis gnidia	0.111	0.049	0.000	0.429	0.137	0.863	0.897	0	1
	Chionista fluctifraga	0.111	0.041	0.001	0.154	0.068	0.932	0.991	1	41
	Chionopsis pulicaria	0.111	0.040	0.000	0.362	0.117	0.883	0.916	0	2
	Nassarius moestus	0.111	0.040	0.009	0.099	0.012	0.988	1.000	7	281
	Cosmioconcha palmeri	0.111	0.022	0.000	0.202	0.062	0.938	0.963	0	6
	Neverita reclusiana	0.111	0.008	0.000	0.077	0.013	0.987	0.996	0	17
Las Isletas	*Chionopsis gnidia*	0.077	0.239	0.147	0.331	1.000	0.000	0.000	56	103
	Lamelliconcha concinnus	0.077	0.137	0.032	0.298	0.794	0.206	0.242	3	9
	Eupleura limata	0.077	0.123	0.071	0.182	0.957	0.043	0.038	33	118
	Abra palmeri	0.077	0.123	0.004	0.367	0.602	0.398	0.426	1	3
	Cosmioconcha palmeri	0.077	0.106	0.046	0.186	0.780	0.220	0.257	9	37
	Mulinia modesta	0.077	0.081	0.048	0.119	0.571	0.429	0.000	45	245
	Chionista fluctifraga	0.077	0.067	0.032	0.113	0.293	0.707	0.739	13	85
	Neverita reclusiana	0.077	0.038	0.017	0.066	0.005	0.995	0.994	11	129
	Nassarius moestus	0.077	0.034	0.019	0.054	0.000	1.000	1.000	24	311
	Felaniella sericata	0.077	0.026	0.000	0.233	0.103	0.897	0.894	0	1
	Semele spp.	0.077	0.010	0.000	0.099	0.037	0.963	0.961	0	3
	Tellina hiberna	0.077	0.010	0.000	0.036	0.000	1.000	1.000	1	47
	Turridae spp.	0.077	0.007	0.000	0.068	0.020	0.980	0.978	0	5
Campo don Abel	*Kylix* sp. 1	0.056	0.150	0.003	0.442	0.738	0.262	0.192	1	1
	Chionopsis gnidia	0.056	0.099	0.054	0.156	0.969	0.031	0.000	25	49
	Semele spp.	0.056	0.085	0.024	0.182	0.738	0.262	0.078	4	9
	Lamelliconcha concinnus	0.056	0.085	0.024	0.182	0.737	0.263	0.078	4	9
	Acorylus rickettsi	0.056	0.075	0.010	0.198	0.583	0.417	0.220	2	5
	Cosmioconcha palmeri	0.056	0.064	0.009	0.169	0.495	0.505	0.275	2	6
	Chionopsis pulicaria	0.056	0.062	0.007	0.168	0.476	0.524	0.293	2	6
	Nassarius moestus	0.056	0.059	0.035	0.088	0.577	0.423	0.002	73	241
	Chionista fluctifraga	0.056	0.054	0.014	0.121	0.414	0.586	0.255	4	14
	Eupleura limata	0.056	0.047	0.002	0.159	0.319	0.681	0.493	1	4
	Mulinia modesta	0.056	0.035	0.020	0.054	0.017	0.983	0.000	45	251
	Veneridae sp. 1	0.056	0.034	0.001	0.115	0.193	0.807	0.618	1	6
	Turridae spp.	0.056	0.032	0.001	0.113	0.178	0.822	0.643	1	6
	Neverita reclusiana	0.056	0.032	0.004	0.090	0.139	0.861	0.627	2	12
	Donax californicus	0.056	0.030	0.016	0.048	0.006	0.994	0.737	27	175
	Diplodonta soror	0.056	0.025	0.003	0.068	0.058	0.942	0.764	2	16
	Sphenia gulfensis	0.056	0.021	0.003	0.058	0.031	0.969	0.836	2	19
	Tellina hiberna	0.056	0.012	0.002	0.030	0.000	1.000	0.990	3	49

Whole Community

The first supplementary analysis we preformed was on the whole community—all species found in the bulk samples at each site. This analysis used lower null thresholds for each site, resulting from the addition of non-prey species, and is less conservative than the analysis

presented in the main text, where only species that were preyed upon were included in the analysis. This whole community analysis showed more inclusivity of species in the preferred group due to the reduced null thresholds and confirmed our conclusion that multiple prey species were preferred by *N. reclusiana*, perhaps even more species than observed in the original analysis.

For instance, the whole community results from Isla Montague showed a high probability of preference for *Felaniella sericata*, *M. modesta*, and *Eupleura limata* (S3 table 2). A minor difference in the whole-community result, as compared to the results presented in the main text, is the higher probability that *M. modesta* was more preferred than *E. limata*, even as both species were highly preferred by *N. reclusiana*.

S3 Table 2. Predator preference at Isla Montague with all drilled and undrilled species.

Taxon	Neutral	Manly's alpha	95% Credibility Interval		Probability alpha > neutral	Probability alpha < neutral	Probability *Mulinia* alpha is greater	# drilled valves	# individuals
Felaniella sericata	0.062	0.362	0.019	0.784	0.914	0.086	0.323	1	2
Eupleura limata	0.062	0.202	0.055	0.418	0.960	0.040	0.480	16	121
Mulinia modesta	0.062	0.198	0.055	0.410	0.960	0.040	0.000	25	194
Nassarius moestus	0.062	0.039	0.008	0.097	0.146	0.854	1.000	7	281
Chionista fluctifraga	0.062	0.037	0.001	0.148	0.185	0.815	0.992	1	41
Crepidula sp. 1	0.062	0.030	0.000	0.322	0.120	0.880	0.933	0	1
Chionopsis gnidia	0.062	0.028	0.000	0.328	0.105	0.895	0.941	0	1
Solenosteira capitanea	0.062	0.023	0.000	0.289	0.089	0.911	0.948	0	1
Epitonium sp. 1	0.062	0.021	0.000	0.246	0.089	0.911	0.955	0	2
Chionopsis pulicaria	0.062	0.019	0.000	0.225	0.080	0.920	0.959	0	2
Cumingia pacifica	0.062	0.019	0.000	0.222	0.082	0.918	0.960	0	2
Cosmioconcha palmeri	0.062	0.011	0.000	0.124	0.053	0.947	0.983	0	6
Tagelus affinis	0.062	0.005	0.000	0.058	0.022	0.978	0.997	0	17
Neverita reclusiana	0.062	0.004	0.000	0.048	0.018	0.982	0.997	0	17
Melampus olivaceus	0.062	0.001	0.000	0.011	0.000	1.000	1.000	0	105
Cerithideopsis californica	0.062	0.000	0.000	0.003	0.000	1.000	1.000	0	297

Moving to the middle locality along the past salinity gradient, Las Isletas, several more species were preferred by *N. reclusiana* in the whole community analysis than in the main text

results (S3 table 3). Eight species, in addition to *M. modesta*, were preferred, compared to three in the main analysis. This difference is due to the addition of many more species in the analysis, which reduced the null threshold from 0.091 when considering only species that were drilled to 0.029 when including all species in the community. Regardless, with respect to the hypothesis that species other than *M. modesta* were preferred, the conclusions drawn from the results of these analyses are the same: *N. reclusiana* preferred several species and was likely able to switch prey species after the decline in the *M. modesta* population. Unlike the results from Isla Montague, the whole-community results from Las Isletas also showed low probabilities for *M. modesta* being more greatly preferred than several other species in the community.

S3 Table 3. Predator preference at Las Isletas with all drilled and undrilled species.

Taxon	Neutral	Manly's alpha	95% Credibility Interval		Probability alpha > neutral	Probability alpha < neutral	Probability *Mulinia* alpha is greater	# drilled valves	# individuals
Chionopsis gnidia	0.029	0.226	0.133	0.320	1.000	0.000	0.000	56	103
Lamelliconcha concinnus	0.029	0.126	0.027	0.277	0.972	0.028	0.259	3	9
Eupleura limata	0.029	0.116	0.065	0.176	1.000	0.000	0.036	33	118
Abra palmeri	0.029	0.112	0.004	0.339	0.815	0.185	0.445	1	3
Cosmioconcha palmeri	0.029	0.099	0.042	0.177	0.997	0.003	0.266	9	37
Mulinia modesta	0.029	0.077	0.044	0.114	0.999	0.001	0.000	45	245
Chionista fluctifraga	0.029	0.063	0.030	0.109	0.981	0.019	0.743	13	85
Neverita reclusiana	0.029	0.036	0.016	0.064	0.685	0.315	0.994	11	129
Nassarius moestus	0.029	0.032	0.017	0.051	0.641	0.359	1.000	24	311
Felaniella sericata	0.029	0.016	0.000	0.173	0.124	0.876	0.930	0	1
Terebridae sp. 1	0.029	0.010	0.000	0.121	0.071	0.929	0.961	0	1
Tellina hiberna	0.029	0.009	0.000	0.033	0.041	0.959	1.000	1	47
Turritella leucostoma	0.029	0.009	0.000	0.126	0.064	0.936	0.960	0	1
Adrana penascoensis	0.029	0.008	0.000	0.104	0.067	0.933	0.963	0	1
Knefastia funiculata	0.029	0.008	0.000	0.086	0.070	0.930	0.968	0	2
Trachycardium procerum	0.029	0.008	0.000	0.091	0.072	0.928	0.966	0	2
Cyclinella saccata	0.029	0.006	0.000	0.065	0.048	0.952	0.977	0	1
Psammotreta aurora	0.029	0.006	0.000	0.076	0.054	0.946	0.974	0	2
Dallocardiua senticosum	0.029	0.005	0.000	0.061	0.055	0.945	0.980	0	4
Cryptomya californica	0.029	0.004	0.000	0.042	0.037	0.963	0.987	0	5
Notocochlis chemnitzii	0.029	0.004	0.000	0.042	0.034	0.966	0.986	0	3
Semele spp.	0.029	0.004	0.000	0.047	0.039	0.961	0.984	0	3
Ostrea sp. 1	0.029	0.003	0.000	0.029	0.025	0.975	0.994	0	5
Turridae spp.	0.029	0.003	0.000	0.030	0.026	0.974	0.993	0	5
Crepidula sp. 2	0.029	0.002	0.000	0.022	0.020	0.980	0.994	0	5
Tampaella meropsis	0.029	0.002	0.000	0.024	0.022	0.978	0.992	0	4
Calyptraea mamillaris	0.029	0.001	0.000	0.014	0.008	0.992	0.999	0	20
Cerithideopsis californica	0.029	0.001	0.000	0.012	0.009	0.991	0.999	0	11
Crucibulum spinosum	0.029	0.001	0.000	0.014	0.011	0.989	0.998	0	12
Solenosteira capitanea	0.029	0.001	0.000	0.008	0.003	0.997	1.000	0	26
Tagelus affinis	0.029	0.001	0.000	0.011	0.005	0.995	1.000	0	18
Anomia peruviana	0.029	0.000	0.000	0.002	0.000	1.000	1.000	0	95
Argopecten sp. 1	0.029	0.000	0.000	0.006	0.001	0.999	1.000	0	48
Crepidula sp. 1	0.029	0.000	0.000	0.006	0.001	0.999	1.000	0	36
Cumingia pacifica	0.029	0.000	0.000	0.004	0.000	1.000	1.000	0	50

And finally, analysis of the whole-community from the southernmost site, Campo don Abel, resulted in a similar pattern as observed at Las Isletas. More species, including *M. modesta*, were categorized as preferred but likely as an artifact of the inclusion of substantially more species in the analysis (S3 table 4). Sixteen species were included in the main text analysis for Campo don Abel compared to 43 for the whole community analysis. Still, the conclusions

from the two analyses are largely the same: *M. modesta* was not the only prey species to be preferred by *N. reclusiana*.

S3 Table 4. Predator preference at Campo don Abel with all drilled and undrilled species.

Taxon	Neutral	Manly's alpha	95% Credibility Interval		Probability alpha > neutral	Probability alpha < neutral	Probability *Mulinia* alpha is greater	# drilled valves	# individuals
Kylix sp. 1	0.023	0.129	0.005	0.391	0.874	0.126	0.195	1	1
Chionopsis gnidia	0.023	0.094	0.050	0.150	1.000	0.000	0.000	25	49
Lamelliconcha concinnus	0.023	0.079	0.021	0.171	0.968	0.032	0.085	4	9
Semele spp.	0.023	0.079	0.021	0.172	0.965	0.035	0.092	4	9
Acorylus rickettsi	0.023	0.068	0.009	0.182	0.862	0.138	0.241	2	5
Cosmioconcha palmeri	0.023	0.059	0.009	0.158	0.834	0.166	0.284	2	6
Chionopsis pulicaria	0.023	0.058	0.007	0.157	0.806	0.194	0.311	2	6
Nassarius moestus	0.023	0.056	0.033	0.084	0.999	0.001	0.003	73	241
Chionista fluctifraga	0.023	0.052	0.013	0.116	0.883	0.117	0.251	4	14
Eupleura limata	0.023	0.042	0.001	0.147	0.585	0.415	0.529	1	4
Mulinia modesta	0.023	0.033	0.019	0.052	0.892	0.108	0.000	45	251
Neverita reclusiana	0.023	0.030	0.004	0.084	0.540	0.460	0.632	2	12
Turridae spp.	0.023	0.029	0.001	0.104	0.453	0.547	0.662	1	6
Veneridae sp. 1	0.023	0.029	0.001	0.107	0.457	0.543	0.663	1	6
Donax californicus	0.023	0.028	0.015	0.046	0.728	0.272	0.739	27	175
Diplodonta soror	0.023	0.022	0.002	0.064	0.380	0.620	0.781	2	16
Sphenia gulfensis	0.023	0.019	0.002	0.054	0.290	0.710	0.851	2	19
Tellina hiberna	0.023	0.011	0.002	0.028	0.058	0.942	0.989	3	49
Abra palmeri	0.023	0.009	0.000	0.101	0.098	0.902	0.921	0	1
Anomia peruviana	0.023	0.009	0.000	0.108	0.087	0.913	0.927	0	1
Nassarius guaymasensis	0.023	0.009	0.000	0.101	0.086	0.914	0.926	0	1
Marginella sp. 1	0.023	0.007	0.000	0.079	0.075	0.925	0.938	0	1
Calliostoma palmeri	0.023	0.006	0.000	0.076	0.070	0.930	0.943	0	1
Limaria orbinyi	0.023	0.006	0.000	0.071	0.058	0.942	0.951	0	1
Solenosteira capitanea	0.023	0.006	0.000	0.071	0.063	0.937	0.947	0	1
Solen gemmelli	0.023	0.005	0.000	0.050	0.044	0.956	0.963	0	1
Tampaella meropsis	0.023	0.005	0.000	0.062	0.055	0.945	0.954	0	1
Terebridae sp. 1	0.023	0.004	0.000	0.053	0.044	0.956	0.962	0	1
Crepidula sp. 1	0.023	0.003	0.000	0.042	0.041	0.959	0.967	0	2
Crepidula sp. 2	0.023	0.002	0.000	0.021	0.021	0.979	0.985	0	5
Nuculana marella	0.023	0.002	0.000	0.025	0.027	0.973	0.981	0	3
Trachycardium procerum	0.023	0.002	0.000	0.024	0.027	0.973	0.982	0	5
Argopecten sp. 1	0.023	0.001	0.000	0.014	0.014	0.986	0.992	0	6
Cavilinga lingualis	0.023	0.001	0.000	0.010	0.008	0.992	0.996	0	9
Cerithideopsis californica	0.023	0.001	0.000	0.016	0.014	0.986	0.994	0	9
Dallocardiua senticosum	0.023	0.001	0.000	0.011	0.012	0.988	0.993	0	5
Olivella sp. 1	0.023	0.001	0.000	0.008	0.004	0.996	0.998	0	12
Saccella acrita	0.023	0.001	0.000	0.006	0.006	0.994	0.997	0	7
Strigilla cicercula	0.023	0.001	0.000	0.011	0.008	0.992	0.996	0	9
Calyptraea mamillaris	0.023	0.000	0.000	0.004	0.001	0.999	1.000	0	25
Crucibulum spinosum	0.023	0.000	0.000	0.005	0.001	0.999	1.000	0	18
Ostrea sp. 1	0.023	0.000	0.000	0.003	0.003	0.997	0.999	0	11
Semelina capbellorum	0.023	0.000	0.000	0.004	0.001	0.999	1.000	0	18

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