

Article

Using Isotopic Data to Evaluate *Esox lucius* (Linnaeus, 1758) Natal Origins in a Hydrologically Complex River Basin

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1. Elemental Data

Location	Year	Mn55	Sr86	Ba137
Stagecoach	2005	20.324	763.104	28.852
Stagecoach	2005	34.398	866.158	40.835
Stagecoach	2005	70.593	913.781	36.405
Stagecoach	2005	53.361	1036.753	49.028
Stagecoach	2005	17.529	701.045	19.038
Stagecoach	2005	44.768	879.636	43.498
Stagecoach	2005	36.278	825.430	24.139
Stagecoach	2005	23.874	805.149	27.241
Stagecoach	2005	40.747	939.098	44.213
Stagecoach	2005	16.264	697.720	15.756
Stagecoach	2005	31.258	834.163	31.259
Stagecoach	2005	24.577	868.910	36.051
Stagecoach	2005	35.382	777.894	32.686
Stagecoach	2005	21.485	765.667	18.254
Stagecoach	2005	11.722	669.086	22.876
Stagecoach	2005	41.100	670.557	19.234
Stagecoach	2005	39.317	703.107	31.925
Stagecoach	2005	25.277	696.244	29.151
Stagecoach	2005	23.455	711.152	38.991
Stagecoach	2005	34.274	655.168	26.759
Stagecoach	2005	15.619	690.728	22.168
Stagecoach	2005	34.757	665.163	21.002
Stagecoach	2005	26.532	611.495	20.644
Stagecoach	2005	27.853	672.936	22.467
Stagecoach	2005	29.414	790.035	34.931
Stagecoach	2005	34.058	750.312	30.607

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Stagecoach	2005	18.485	706.628	28.068
Stagecoach	2005	41.586	756.107	28.221
Stagecoach	2005	27.693	782.193	31.684
Stagecoach	2005	34.167	771.295	40.188
Stagecoach	2005	25.811	691.317	21.369
Stagecoach	2005	32.935	665.496	23.701
Stagecoach	2005	14.396	537.523	14.195
Stagecoach	2005	35.399	633.361	21.820
Catamount	2005	50.926	518.831	45.031
Catamount	2005	93.035	1048.003	34.582
Catamount	2005	26.346	584.129	40.863
Catamount	2005	101.374	917.580	50.147
Catamount	2005	18.918	470.962	43.933
Catamount	2005	59.675	638.766	70.059
Catamount	2005	129.083	775.585	66.930
Catamount	2005	34.191	627.216	54.316
Catamount	2005	15.710	513.759	47.185
Catamount	2005	22.022	431.300	45.037
Catamount	2005	48.469	578.127	51.356
Catamount	2005	17.272	374.757	25.171
Catamount	2005	10.121	416.533	35.984
Catamount	2005	18.491	380.362	26.558
Catamount	2005	20.494	431.207	28.272
Catamount	2005	38.687	720.097	46.115
Catamount	2005	27.273	737.477	65.500
Catamount	2005	23.618	388.046	39.737
Catamount	2005	19.071	549.954	45.980
Catamount	2005	15.685	410.160	32.849
Catamount	2005	23.153	321.526	28.479
Catamount	2005	38.587	352.946	28.936
Catamount	2005	72.128	535.755	27.218
Catamount	2005	22.458	369.527	23.776
Catamount	2005	57.048	516.547	18.723
Catamount	2005	12.750	344.049	24.443
Catamount	2005	19.894	379.327	26.796
Catamount	2005	21.175	370.289	29.146
Catamount	2005	21.435	604.518	41.923
Catamount	2005	15.990	318.658	23.027
Catamount	2005	5.821	350.694	22.553
Catamount	2005	15.179	314.021	23.144
Catamount	2005	17.798	370.350	26.645
Catamount	2005	21.745	301.890	20.180
Catamount	2005	49.919	508.995	41.424
Catamount	2005	48.120	708.936	24.395
Catamount	2005	45.495	473.201	27.121
Catamount	2005	16.635	368.645	24.966
Catamount	2005	185.125	826.280	43.692
Catamount	2005	51.849	780.432	33.651
Catamount	2005	42.851	499.479	35.485

Catamount	2005	106.554	793.792	40.878
Catamount	2005	104.941	867.138	47.957
Catamount	2005	151.341	776.893	32.260
Catamount	2005	110.975	760.890	46.856
Catamount	2005	125.286	899.940	39.647
Catamount	2005	84.053	654.757	40.698
Catamount	2005	149.333	856.087	49.902
Catamount	2005	67.760	826.260	52.056
Catamount	2005	111.921	773.856	49.558
Catamount	2005	60.637	733.112	27.760
Catamount	2005	95.440	609.665	30.151
Catamount	2005	54.481	898.436	29.465
Catamount	2005	177.479	798.309	55.521
Catamount	2005	48.035	791.093	46.941
Stagecoach	2006	31.853	773.574	35.274
Stagecoach	2006	45.667	913.721	48.536
Stagecoach	2006	8.042	687.422	16.601
Stagecoach	2006	43.105	875.347	28.404
Stagecoach	2006	41.140	649.250	21.310
Stagecoach	2006	40.831	834.679	33.303
Stagecoach	2006	23.455	654.397	25.917
Stagecoach	2006	21.459	769.498	30.957
Stagecoach	2006	31.625	632.105	24.407
Stagecoach	2006	35.152	598.084	19.304
Stagecoach	2006	67.942	712.796	36.683
Stagecoach	2006	29.613	723.760	19.992
Stagecoach	2006	44.219	713.404	26.402
Stagecoach	2006	32.746	761.617	25.168
Stagecoach	2006	23.440	848.606	50.060
Stagecoach	2006	37.460	1202.914	65.728
Stagecoach	2006	37.109	741.248	25.934
Stagecoach	2006	46.601	937.148	35.815
Stagecoach	2006	76.290	1016.031	36.624
Stagecoach	2006	35.434	1077.169	49.166
Stagecoach	2006	20.414	903.700	41.282
Stagecoach	2006	38.230	807.084	35.343
Stagecoach	2006	40.041	580.461	17.628
Stagecoach	2006	33.546	859.151	36.110
Stagecoach	2006	20.477	804.630	39.098
Stagecoach	2006	26.209	901.424	37.478
Stagecoach	2006	19.514	804.533	33.113
Stagecoach	2006	71.737	794.693	30.454
Stagecoach	2006	51.772	587.941	21.837
Stagecoach	2006	15.922	925.253	35.492
Stagecoach	2006	38.168	928.438	62.636
Stagecoach	2006	67.582	762.874	27.006
Stagecoach	2006	111.460	995.005	59.716
Stagecoach	2006	41.182	665.863	24.383
Stagecoach	2006	21.454	660.538	20.722

Stagecoach	2006	49.198	751.387	40.310
Stagecoach	2006	85.884	666.237	25.426
Stagecoach	2006	26.895	759.772	34.834
Stagecoach	2006	36.165	608.866	26.430
Stagecoach	2006	27.984	591.981	11.914
Catamount	2006	42.999	942.076	56.474
Catamount	2006	39.413	808.961	34.136
Catamount	2006	84.766	849.038	31.948
Catamount	2006	48.108	823.513	34.516
Catamount	2006	59.847	733.033	58.448
Catamount	2006	52.950	1033.655	55.767
Catamount	2006	38.002	721.008	49.495
Catamount	2006	40.446	1014.368	57.585
Catamount	2006	74.848	1026.493	46.232
Catamount	2006	99.258	908.062	42.550
Catamount	2006	77.989	954.313	85.795
Catamount	2006	58.964	985.550	42.574
Catamount	2006	53.731	1093.280	47.241
Catamount	2006	43.559	1032.296	50.235
Catamount	2006	35.113	811.681	45.649
Catamount	2006	55.837	1029.241	47.506
Catamount	2006	35.559	764.130	43.790
Catamount	2006	36.068	807.492	31.518
Catamount	2006	34.871	872.182	45.527
Catamount	2006	26.813	686.007	52.081
Catamount	2006	46.980	1087.368	46.209
Catamount	2006	42.008	1040.875	36.831
Catamount	2006	34.435	585.618	74.376
Catamount	2006	44.064	908.658	44.572
Catamount	2006	41.650	738.721	26.622
Catamount	2006	51.968	808.868	53.088
Catamount	2006	107.016	962.095	41.622
Catamount	2006	81.382	877.904	36.896
Catamount	2006	22.297	498.704	39.680
Catamount	2006	38.016	809.371	39.240
Catamount	2006	230.753	226.130	7.064
Catamount	2006	71.506	1260.247	56.264
Catamount	2006	52.937	1211.269	72.687
Catamount	2006	38.604	903.940	48.448
Catamount	2006	90.440	932.520	39.711
Catamount	2006	49.000	828.342	30.689
Catamount	2006	54.117	1142.473	65.661
Catamount	2006	38.906	752.066	47.027
Catamount	2006	45.933	924.938	65.295
Catamount	2006	50.100	1009.132	58.015
Catamount	2006	150.197	924.563	44.768
Stagecoach	2007	91.448	854.314	22.279
Stagecoach	2007	59.727	881.944	21.944
Stagecoach	2007	17.196	911.530	25.526

Stagecoach	2007	86.030	962.731	32.327
Stagecoach	2007	42.710	891.953	21.615
Stagecoach	2007	31.418	843.176	21.985
Stagecoach	2007	160.865	935.328	26.767
Stagecoach	2007	51.977	830.831	19.540
Stagecoach	2007	110.848	925.820	37.135
Stagecoach	2007	57.073	910.991	24.979
Stagecoach	2007	46.234	940.291	26.943
Stagecoach	2007	43.443	829.512	25.092
Stagecoach	2007	36.228	880.968	21.611
Stagecoach	2007	51.308	965.911	25.931
Stagecoach	2007	164.110	943.946	35.573
Stagecoach	2007	31.706	785.424	17.871
Stagecoach	2007	89.448	907.448	23.827
Stagecoach	2007	30.700	936.489	12.306
Stagecoach	2007	42.238	867.226	18.219
Stagecoach	2007	25.251	962.344	19.822
Stagecoach	2007	9.616	714.337	10.470
Stagecoach	2007	18.650	1019.911	35.100
Catamount	2007	83.183	1257.562	31.846
Catamount	2007	193.909	1637.068	63.932
Catamount	2007	39.234	1190.012	23.139
Catamount	2007	126.822	1226.497	47.478
Catamount	2007	80.594	1057.477	43.184
Catamount	2007	59.551	1457.254	46.477
Catamount	2007	250.957	1175.061	48.242
Catamount	2007	136.576	1460.523	53.146
Catamount	2007	72.573	1328.859	44.403
Catamount	2007	114.947	1508.840	84.469
Catamount	2007	57.060	1455.840	38.514
Catamount	2007	72.629	1443.396	40.166
Catamount	2007	243.920	1294.860	48.520
Catamount	2007	101.882	1322.277	32.008
Catamount	2007	74.358	983.434	43.477
Catamount	2007	193.812	1537.734	69.389
Catamount	2007	99.655	1090.807	32.396
Catamount	2007	167.949	1274.462	40.272
Catamount	2007	172.559	1254.795	38.713
Catamount	2007	173.185	1221.791	36.397
Catamount	2007	180.215	1316.025	48.803
Catamount	2007	130.832	728.321	39.468
Catamount	2007	68.662	838.691	23.267
Catamount	2007	196.545	1069.410	36.793
Catamount	2007	112.768	1158.892	29.609
Catamount	2007	90.065	1295.298	37.501
Catamount	2007	92.268	1081.435	36.745
Catamount	2007	171.733	1233.986	43.784
Catamount	2007	94.112	1005.449	31.737
Catamount	2007	131.709	1227.763	39.295

Catamount	2007	166.335	1155.273	39.171
Catamount	2007	124.443	1307.793	38.971
Catamount	2007	137.140	1204.008	36.281
Catamount	2007	81.880	1386.680	36.113
Catamount	2007	54.388	843.345	38.670
Catamount	2007	103.952	1166.826	31.917
Catamount	2007	102.453	1036.437	42.979
Catamount	2007	231.659	1283.416	41.083
Catamount	2007	143.618	1283.791	39.767
Catamount	2007	148.929	1260.352	39.233
Catamount	2007	91.205	915.422	40.312
Catamount	2007	116.758	1041.034	32.714
Catamount	2007	139.213	1326.903	37.002
Catamount	2007	56.139	1129.337	32.191
Catamount	2007	116.846	1278.205	71.965
Catamount	2007	133.617	1286.528	34.861
Catamount	2007	51.000	1119.984	28.059

2. Isotopic data

Site	Year	$^{87}\text{Sr}/^{86}\text{Sr}$ ratio
Stagecoach	2005	0.70922
Stagecoach	2005	0.70935
Stagecoach	2005	0.70931
Stagecoach	2005	0.70944
Stagecoach	2005	0.70932
Stagecoach	2005	0.70934
Stagecoach	2005	0.70936
Stagecoach	2005	0.70935
Stagecoach	2005	0.70934
Stagecoach	2005	0.70934
Stagecoach	2005	0.70934
Stagecoach	2005	0.70930
Stagecoach	2005	0.70934
Stagecoach	2005	0.70934
Stagecoach	2005	0.70930
Catamount	2005	0.71073
Catamount	2005	0.71060
Catamount	2005	0.71110
Catamount	2005	0.71077
Catamount	2005	0.71076
Catamount	2005	0.71083
Catamount	2005	0.71076
Catamount	2005	0.71064
Catamount	2005	0.71070
Catamount	2005	0.71070
Catamount	2005	0.71042
Catamount	2005	0.71035
Catamount	2005	0.71101
Catamount	2005	0.71077

Catamount	2005	0.71220
Catamount	2005	0.71075
Catamount	2005	0.71184
Catamount	2005	0.71073
Stagecoach	2006	0.70934
Stagecoach	2006	0.70938
Stagecoach	2006	0.70934
Stagecoach	2006	0.70950
Stagecoach	2006	0.70932
Stagecoach	2006	0.70930
Stagecoach	2006	0.70956
Stagecoach	2006	0.70941
Stagecoach	2006	0.70936
Stagecoach	2006	0.70941
Stagecoach	2006	0.70932
Stagecoach	2006	0.70949
Stagecoach	2006	0.70942
Stagecoach	2006	0.70925
Stagecoach	2006	0.70933
Catamount	2006	0.71116
Catamount	2006	0.71120
Catamount	2006	0.71097
Catamount	2006	0.71126
Catamount	2006	0.71081
Catamount	2006	0.71127
Catamount	2006	0.71142
Catamount	2006	0.71045
Catamount	2006	0.71103
Catamount	2006	0.71102
Catamount	2006	0.71134
Catamount	2006	0.71085
Catamount	2006	0.71173
Catamount	2006	0.71080
Stagecoach	2007	0.70944
Stagecoach	2007	0.70948
Stagecoach	2007	0.70929
Stagecoach	2007	0.70940
Stagecoach	2007	0.70946
Stagecoach	2007	0.70928
Stagecoach	2007	0.70949
Stagecoach	2007	0.70936
Stagecoach	2007	0.70927
Stagecoach	2007	0.70946
Stagecoach	2007	0.70944
Stagecoach	2007	0.70934
Stagecoach	2007	0.70934
Stagecoach	2007	0.70905
Stagecoach	2007	0.70925
Catamount	2007	0.71145

Catamount	2007	0.71084
Catamount	2007	0.71096
Catamount	2007	0.71146
Catamount	2007	0.71160
Catamount	2007	0.71168
Catamount	2007	0.71080
Catamount	2007	0.71191
Catamount	2007	0.71100
Catamount	2007	0.71128
Catamount	2007	0.71081
Catamount	2007	0.71171
Catamount	2007	0.71174
Catamount	2007	0.71083
Catamount	2007	0.71193
