Table S1. Molecular diversity indices for microsatellite dataset.

Sampling Sites		A113	D2	A6	A10	A108	A111	D8	A3	A117
1. Chinchorro Bank	nA	15	13	9	9	7	18	8	14	13
	H_o	0.917	0.833	0.792	0.875	0.750	0.958	0.625	0.750	0.875
	H_e	0.911	0.904	0.858	0.862	0.736	0.948	0.770	0.844	0.907
2. Glover's Reef	nA	20	17	10	10	7	27	8	20	16
	H_o	0.831	0.949	0.881	0.814	0.695	0.966	0.847	0.746	0.915
	H_e	0.908	0.889	0.849	0.868	0.663	0.947	0.802	0.772	0.921
3. Lighthouse Reef	nA	19	12	9	10	8	26	7	15	17
	H_o	0.938	1.000	0.938	0.781	0.719	1.000	0.906	0.781	0.969
	H_e	0.934	0.880	0.841	0.852	0.657	0.963	0.824	0.805	0.914
4. Turneffe Atoll	nA	17	17	8	7	7	20	10	16	16
	H_o	0.931	0.897	0.759	0.690	0.793	0.931	0.828	0.793	0.931
	H_e	0.930	0.901	0.844	0.852	0.740	0.953	0.818	0.852	0.913
5. Caye Glory	nA	18	17	14	13	11	22	7	17	16
	H_o	0.808	0.923	0.808	0.731	0.731	0.962	0.769	0.808	0.923
	H_e	0.922	0.931	0.899	0.884	0.742	0.959	0.844	0.904	0.911
6. Corona San Carlos	nA	15	14	7	9	6	21	8	11	12
	H_o	0.833	0.792	0.833	0.875	0.750	0.958	0.833	0.875	0.958
	H_e	0.897	0.891	0.783	0.836	0.647	0.957	0.810	0.866	0.899

7. Pardon del Medio	nA	18	19	10	9	7	29	9	17	17
	H_o	0.878	0.902	0.707	0.805	0.610	0.878	0.707	0.805	0.902
	H_e	0.924	0.908	0.843	0.842	0.683	0.957	0.774	0.843	0.901
8. Grand Cayman	nA	11	9	8	7	5	12	7	12	8
	H_o	1.000	0.889	0.778	0.667	0.111	0.889	0.778	1.000	0.556
	H_e	0.935	0.902	0.902	0.810	0.752	0.948	0.876	0.954	0.791
9. Little Cayman	nA	22	18	12	13	6	24	10	21	20
	H_o	0.869	0.951	0.820	0.836	0.607	0.967	0.770	0.803	0.852
	H_e	0.926	0.923	0.844	0.868	0.646	0.950	0.808	0.839	0.909
10. Cayman Brac	nA	16	15	10	11	7	22	10	11	15
	H_o	0.929	0.929	0.893	0.821	0.643	0.964	0.929	0.821	0.893
	H_e	0.932	0.919	0.836	0.851	0.641	0.959	0.846	0.849	0.881
11. Florida Keys	nA	21	17	10	12	6	24	9	16	17
	H_o	0.921	0.895	0.816	0.947	0.737	0.974	0.868	0.842	0.895
	H_e	0.934	0.907	0.817	0.869	0.653	0.956	0.809	0.850	0.891
12. Dog Rocks	nA	14	14	7	8	5	22	9	15	11
	H_o	0.789	0.789	1.000	0.842	0.632	0.895	0.947	0.944	0.833
	H_e	0.910	0.902	0.834	0.765	0.637	0.964	0.841	0.921	0.854
13. Lee Stocking	nA	14	14	8	10	5	22	7	14	15
	H_o	0.739	0.913	0.609	0.913	0.565	0.957	0.696	0.913	0.913
	H_e	0.858	0.906	0.790	0.877	0.675	0.966	0.789	0.875	0.889
14. Long Island	nA	16	14	10	9	7	22	7	18	17

	H_o	0.811	0.811	0.892	0.811	0.595	0.919	0.811	0.838	0.865
	H_e	0.890	0.877	0.834	0.854	0.651	0.955	0.782	0.867	0.913
15. South Caicos	nA	19	17	10	14	7	25	10	17	18
	H_o	0.820	0.880	0.900	0.900	0.640	0.960	0.740	0.800	0.940
	H_e	0.898	0.904	0.862	0.884	0.608	0.955	0.783	0.838	0.910
16. Bajo de Sico	nA	11	8	7	5	7	13	7	9	9
	H_o	0.900	1.000	1.000	1.000	0.800	1.000	0.900	0.700	1.000
	H_e	0.932	0.905	0.863	0.826	0.711	0.947	0.832	0.905	0.900
17. Grammanik Bank	nA	19	17	10	12	7	24	10	14	17
	H_o	0.897	0.897	0.845	0.810	0.759	0.948	0.759	0.862	0.931
	H_e	0.919	0.881	0.829	0.851	0.707	0.953	0.806	0.815	0.898
18. N. of St. Thomas	nA	8	9	7	8	4	11	8	8	8
	H_o	0.500	0.875	0.875	0.875	0.250	0.875	0.750	0.875	0.875
	H_e	0.883	0.933	0.867	0.850	0.692	0.950	0.758	0.875	0.875
19. Antigua	nA	20	19	10	12	7	24	9	16	17
	H_o	0.909	0.909	0.795	0.773	0.727	0.932	0.795	0.795	0.864
	H_e	0.919	0.913	0.857	0.859	0.659	0.950	0.775	0.835	0.905

Number of alleles (nA), observed heterozygosity (H_o) and expected heterozygosity (H_e) for 9 microsatellite loci.

Table S2. Pairwise *F*-statistics for concatenated mitochondrial markers and microsatellite loci for Nassau grouper.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Chinchorro Bank	---	0.004	0.002	0.000	-0.002	0.001	-0.003	0.004	-0.001	0.001	-0.001	0.002	-0.001	0.004	0.006	0.001	0.005	0.014	0.007
2. Glover's Reef	-0.061	---	-0.002	-0.002	0.004	0.007	0.003	0.018	0.002	0.002	0.002	-0.001	0.002	0.011	0.008	0.004	0.000	0.022	0.003
3. Lighthouse Reef	0.378	0.344	---	-0.001	0.000	0.004	0.000	0.007	0.000	-0.004	-0.002	-0.002	-0.001	0.006	0.007	0.002	0.001	0.016	-0.001
4. Turneffe Atoll	0.404	0.356	**0.180**	---	0.001	0.004	0.002	0.012	0.001	0.000	0.000	-0.004	0.001	0.004	0.005	0.003	0.002	0.001	-0.003
5. Caye Glory	0.537	0.428	0.086	0.028	---	0.005	0.002	0.005	0.000	-0.001	0.003	0.000	0.006	0.001	0.005	0.001	0.004	0.010	0.005
6. Corona San Carlos	**0.407**	0.302	0.937	**0.936**	**0.800**	---	0.006	0.018	0.004	0.000	-0.001	0.000	0.005	0.006	0.005	0.009	0.001	0.022	0.004
7. Pardon del Medio	0.161	0.146	**0.760**	**0.766**	**0.933**	0.021	---	0.003	-0.003	-0.001	-0.002	-0.002	0.000	-0.001	0.007	0.003	0.001	0.014	0.001
8. Grand Cayman	0.301	0.250	0.922	0.922	**0.925**	0.000	-0.021	---	0.010	0.005	0.068	0.011	0.015	-0.003	0.020	0.008	0.014	0.026	0.013
9. Little Cayman	**0.574**	**0.477**	**0.915**	**0.915**	**0.916**	0.083	-0.021	-0.028	---	-0.002	-0.002	-0.002	-0.001	0.000	0.005	0.003	0.000	0.014	-0.001
10. Cayman Brac	**0.507**	**0.376**	**0.937**	**0.937**	**0.935**	0.054	-0.029	-0.003	-0.014	---	-0.006	-0.002	0.002	-0.002	0.007	0.006	0.003	0.019	-0.002
11. Florida Keys	-0.059	-0.026	0.416	0.425	**0.481**	0.217	0.081	0.173	**0.357**	**0.272**	---	-0.006	-0.001	-0.001	0.004	0.004	-0.002	0.016	-0.002
12. Dog Rocks	-0.174	-0.152	0.315	0.355	**0.519**	0.538	0.228	0.417	0.675	0.636	-0.104	---	0.002	0.005	0.004	-0.005	-0.004	0.008	-0.001
13. Lee Stocking	0.201	0.192	0.965	0.960	0.944	0.038	-0.045	-0.089	-0.126	0.525	0.114	0.307	---	0.010	0.005	0.004	0.001	0.018	0.002
14. Long Island	0.017	0.062	0.583	0.595	**0.646**	0.096	-0.014	0.057	**0.196**	0.138	0.019	0.057	-0.008	---	0.006	0.006	0.007	0.018	0.001
15. South Caicos	0.027	0.052	0.573	0.580	**0.623**	0.197	-0.114	0.054	**0.186**	0.133	0.010	0.041	0.001	-0.024	---	0.007	0.006	0.018	0.006
16. Bajo de Sico	-0.050	-0.002	0.187	0.205	**0.306**	**0.537**	**0.340**	**0.456**	**0.699**	**0.626**	0.057	-0.143	0.388	0.187	0.195	---	0.005	0.018	0.007
17. Grammanik Bank	**0.602**	**0.494**	**0.929**	**0.929**	**0.929**	-0.122	0.095	-0.020	-0.003	-0.006	**0.368**	0.707	-0.030	0.209	**0.198**	**0.720**	---	0.018	-0.002
18. North of St. Thomas	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	---	0.007
19. Antigua	0.015	0.058	0.109	0.091	**0.167**	**0.476**	**0.353**	**0.434**	**0.629**	**0.537**	**0.118**	-0.080	0.392	0.244	0.249	-0.053	0.641	N/A	---

Pairwise Φ_{ST} values for mitochondrial markers are below diagonal and pairwise F_{ST} values for microsatellites are above diagonal. Bolded values denote statistical significance of $p < 0.00029$ (mtDNA) and $p < 0.00027$ (microsatellites), using Bonferroni correction for multiple tests. N/A indicates pairwise comparisons that could not be generated due to poor amplification of mtDNA.

Table S3. Pairwise *F*-statistics for 4,234 SNP loci for Nassau grouper.

	2	9	16	19
2. Glover's Reef	---			
9. Little Cayman	**0.003**	---		
14. Long Island	**0.004**	**0.001**	---	
19. Antigua	**0.006**	0.001	**0.003**	---

Pairwise F_{ST} values. Bolded values denote statistical significance of $p < 0.00512$ (Bonferroni correction for multiple tests).