Electronic appendix for Ph.D. thesis "Ecology And Evolution Of Heavily Exploited Fish Populations"

Daniel Ricard

May 2012

This Electronic Supplement contains Tables and Figures associated with the analyses conducted in Chapter 4. It consists of a total of 31 Tables and 118 Figures. The tables contain parameter estimate values for the different models introduced in the chapter. In addition, maps of distribution, abundance and stratum-based parameter estimates are provided for 24 species from Fisheries and Oceans Canada (DFO) surveys and 22 species from the National Marine Fisheries Service (NMFS) surveys.

Appendix A

Supporting information for Chapter 4

List of Tables

List of Figures

A.0.1 Tables

Table A.1: Parameter estimates for DFO Gadus morhua.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
440	-0.57	0.73	-0.49	0.64	-1.17	0.89
441	2.70	0.82	4.03	0.18	3.96	0.21
442	1.04	1.41	1.98	0.51	1.37	0.73
443	-0.13	1.59	0.34	0.83	-0.33	1.04
444	0.45	1.42	1.71	0.50	1.30	0.66
445	0.12	1.51	1.56	0.43	1.19	0.56
446	-0.41	1.17	0.11	0.49	-0.47	0.69
447	0.33	1.58	3.44	0.14	3.56	0.10
448	-0.30	1.02	0.98	0.37	0.82	0.43
449	0.14	0.65	2.21	-0.04	2.21	-0.04
450	0.46	1.08	3.27	0.16	2.32	0.53
451	0.08	0.82	2.56	0.02	2.55	0.02
452	0.74	0.49	3.75	-0.25	3.88	-0.30
453	-0.63	0.11	-2.28	0.38	-2.53	0.46
454	-0.25	0.88	0.59	0.41	0.32	0.51
455	1.33	1.09	3.06	0.38	3.08	0.37
456	1.06	0.94	1.73	0.85	1.62	0.88
457	0.38	0.64	2.91	0.03	2.91	0.03
458	0.82	1.45	3.07	0.46	1.85	0.94
459	0.50	0.74	1.99	0.30	1.67	0.43
460	0.25	-0.03	1.49	-0.30	1.39	-0.25
461	-0.65	0.07	-2.92	0.23	-2.91	0.22
462	-0.32	-0.02	-0.58	0.02	-0.58	0.02
463	1.20	0.26	2.42	0.18	1.76	0.43
464	1.10	0.91	2.96	0.09	2.80	0.15
465	0.02	0.19	0.98	-0.08	0.98	-0.08
466	-0.72	0.14	-4.44	0.62	-4.39	0.61
470	0.16	-0.22	0.72	-0.21	0.82	-0.26
471	-0.59	0.09	-2.06	0.15	-2.06	0.15
472	-0.16	0.53	-0.21	0.41	-0.12	0.37
473	1.17	0.28	1.61	0.06	1.59	0.07
474	0.90	0.67	1.35	0.21	1.35	0.21
475	1.89	-0.03	2.43	-0.05	2.43	-0.05

476	0.58	0.77	1.66	0.17	1.43	0.27
477	0.38	0.60	0.92	0.21	0.87	0.23
478	-0.47	0.14	-1.34	0.27	-1.24	0.24
480	1.60	0.26	2.52	0.16	2.32	0.24
481	0.73	0.40	1.35	0.19	1.24	0.24
482	0.36	-0.07	1.20	-0.16	1.12	-0.13
483	-0.44	0.09	-0.41	0.01	-0.41	0.01
484	-0.08	-0.07	0.11	-0.06	0.12	-0.07
485	0.73	0.73	1.61	0.11	1.61	0.11
490	1.18	1.10	2.27	0.24	1.98	0.35
491	1.96	0.36	2.24	0.16	2.27	0.15
492	1.21	0.25	1.99	0.10	2.01	0.10
493	0.44	0.98	1.17	0.32	1.02	0.37
494	0.49	0.37	0.94	0.20	0.90	0.21
495	1.00	0.56	2.58	-0.02	2.57	-0.02

Table A.2: Parameter estimates for DFO Melanogrammus aeglefinus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
440	-0.65	0.00	-2.50	-0.06	-2.46	-0.06
441	0.64	-0.22	2.01	-0.11	2.58	-0.19
442	-0.21	-0.16	0.08	-0.22	0.45	-0.28
443	-0.56	-0.01	-0.92	-0.08	-0.56	-0.13
444	-0.33	-0.03	0.48	-0.10	0.57	-0.11
445	-0.61	-0.00	-1.50	-0.11	-1.27	-0.15
446	-0.87	0.28	1.15	0.21	-5.22	0.85
447	0.47	-0.19	2.96	-0.09	4.55	-0.33
448	0.02	-0.15	2.48	-0.16	4.00	-0.41
449	0.18	0.18	1.57	0.10	1.49	0.11
450	1.13	-0.03	3.62	-0.00	3.63	-0.00
451	-0.81	1.50	2.62	0.11	2.43	0.14
452	-0.15	0.63	1.65	0.10	1.10	0.17
453	-1.57	1.42	0.61	0.29	0.06	0.34
454	0.63	0.96	3.69	0.06	3.47	0.09
455	1.21	0.75	4.28	0.12	3.97	0.16
456	0.90	1.07	4.34	0.13	4.04	0.17
457	0.71	0.05	2.04	0.15	2.02	0.15
458	0.94	0.56	3.49	0.06	3.39	0.07
459	1.10	-0.28	3.37	-0.08	3.37	-0.08
460	0.90	0.33	2.21	0.06	2.23	0.06
461	-0.51	0.26	-0.08	0.05	-0.12	0.06
462	1.00	0.41	2.90	0.07	2.72	0.09
463	3.35	0.66	4.69	0.09	4.50	0.11
464	2.18	1.14	4.24	0.12	4.23	0.12
465	2.64	0.47	4.03	0.04	3.98	0.05
466	-1.06	0.81	-1.21	0.31	-0.70	0.25
470	0.73	0.22	2.55	0.00	2.55	0.00
471	-0.40	0.26	-1.80	0.36	-0.39	0.22
472	2.49	0.31	3.44	0.05	3.32	0.06
473	3.11	0.48	3.93	0.07	3.92	0.08
474	2.87	0.09	3.42	0.09	3.57	0.07
475	3.34	0.37	3.76	0.09	3.77	0.09
476	1.16	0.67	4.05	0.00	4.06	0.00

477	3.02	0.43	3.36	0.13	3.47	0.12
478	0.21	0.61	1.48	0.11	1.42	0.12
480	4.04	0.50	4.78	0.10	4.74	0.11
481	2.98	0.39	3.77	0.09	3.92	0.07
482	0.78	0.57	2.28	0.07	2.09	0.10
483	0.80	0.47	2.50	0.05	2.25	0.08
484	-0.60	0.67	0.35	0.13	0.53	0.10
485	1.48	0.58	3.14	0.08	3.17	0.07
490	3.45	0.04	5.20	-0.00	5.21	-0.00
491	0.80	0.68	1.62	0.16	1.73	0.14
492	1.04	0.11	1.32	0.18	1.72	0.13
493	0.60	0.02	1.27	0.11	1.13	0.13
494	0.83	0.12	1.38	0.16	1.51	0.14
495	1.62	-0.13	1.91	0.09	1.97	0.08

Table A.3: Parameter estimates for DFO Pollachius virens.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
440	-0.31	0.35	-1.61	2.19	-6.23	6.65
441	-0.05	0.44	-0.23	1.99	-2.33	4.00
442	-0.61	0.05	-4.00	1.60	-3.87	1.47
444	-0.59	0.09	-6.55	4.22	-6.18	3.89
445	-0.57	0.08	-1.97	1.70	-5.47	5.15
446	-0.17	0.33	-0.47	0.77	-0.66	1.00
447	-0.61	-0.05	1.47	-1.07	4.27	-5.22
449	-0.39	0.07	0.05	1.76	0.08	1.75
450	-0.29	0.16	1.74	0.24	1.44	0.62
451	0.95	0.77	3.64	0.25	3.62	0.26
452	0.23	0.20	2.36	-0.38	2.55	-0.64
453	0.04	0.52	-2.12	3.81	-2.10	4.02
454	-0.51	0.11	-3.87	1.91	-3.80	1.82
455	-0.35	0.26	-3.42	2.85	-3.12	2.59
456	-0.22	0.18	0.78	0.29	0.67	0.42
457	-0.60	-0.02	-1.94	-0.57	-1.94	-0.57
458	-0.46	0.11	-2.76	2.23	-2.38	1.87
459	-0.23	0.12	1.09	0.16	0.88	0.43
460	1.79	0.73	2.59	1.09	2.47	1.23
461	0.55	0.51	1.86	0.04	1.80	0.11
462	0.61	0.53	1.61	0.51	1.49	0.66
463	0.62	0.47	1.25	0.36	1.12	0.52
464	0.20	0.31	1.23	0.26	1.22	0.27
465	0.37	0.33	1.50	0.06	1.50	0.05
466	0.15	0.53	1.04	1.57	-0.08	2.97
470	1.90	0.47	2.10	1.79	2.15	1.72
471	1.33	1.09	0.36	2.14	-0.12	2.66
472	1.16	0.25	2.47	0.73	1.77	1.51
473	-0.09	0.30	-1.03	1.14	-1.35	1.53
474	-0.49	0.05	-1.32	-0.03	-1.30	-0.05
475	-0.10	0.26	-0.44	0.51	-1.00	1.23
476	0.82	0.25	-0.79	3.48	0.78	2.05
477	0.25	0.38	3.34	-0.31	4.00	-1.12
478	1.27	1.00	2.26	0.85	1.20	2.22

480	0.01	0.22	1.09	0.18	1.05	0.23
481	0.25	0.29	-0.76	2.77	0.18	1.90
482	1.20	0.80	0.50	1.54	0.17	1.89
483	0.87	0.91	-0.08	2.26	-1.57	3.75
484	1.45	0.50	2.16	0.63	1.75	1.13
485	1.63	0.20	2.97	0.66	3.03	0.59
490	0.44	0.20	1.12	1.00	1.10	1.02
491	1.28	0.39	1.85	0.39	1.81	0.44
492	0.41	0.09	0.98	0.01	0.98	0.01
493	-0.24	0.01	-0.33	1.06	-0.49	1.23
494	-0.50	-0.14	-0.11	-1.17	0.41	-1.96
495	-0.38	-0.12	-0.15	-0.86	0.05	-1.16

Table A.4: Parameter estimates for DFO Illex illecebrosus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
440	-0.23	0.48	-0.22	0.34	-0.11	0.32
441	0.17	0.16	-0.19	0.56	0.22	0.47
442	-0.32	0.14	0.86	0.16	-0.08	0.36
443	-0.40	0.23	0.59	0.01	0.61	0.01
444	-0.05	0.30	2.01	0.25	2.42	0.16
445	-0.47	0.24	-2.19	0.58	-2.12	0.55
446	-0.20	0.49	-0.74	0.48	-0.36	0.41
447	-0.52	0.31	-0.86	0.28	-0.85	0.28
448	-0.49	0.44	-0.20	0.22	-0.19	0.22
449	0.33	0.30	2.38	-0.04	2.37	-0.04
450	1.02	-0.08	0.39	0.53	1.02	0.41
451	1.51	0.23	1.58	0.38	1.91	0.31
452	-0.12	0.65	0.73	0.40	1.08	0.33
453	1.50	0.74	3.12	0.24	3.35	0.19
454	1.16	0.68	4.35	0.02	4.20	0.06
455	-0.15	0.38	1.66	0.08	1.30	0.16
456	-0.18	0.49	0.81	0.26	0.78	0.26
457	-0.00	1.16	1.88	0.47	1.31	0.58
458	-0.24	0.20	-0.04	0.14	-0.03	0.14
459	-0.03	0.40	1.52	0.24	1.34	0.28
460	1.71	-0.20	2.31	0.19	2.59	0.13
461	1.22	0.19	2.81	0.18	3.07	0.13
462	1.87	0.38	4.31	0.12	4.16	0.15
463	0.73	0.20	1.22	0.27	1.00	0.32
464	0.70	0.03	0.63	0.31	1.04	0.23
465	2.52	0.11	4.82	-0.00	4.83	-0.00
466	1.77	0.85	2.28	0.49	2.94	0.36
470	1.27	0.15	2.62	0.27	2.63	0.27
471	0.05	0.75	0.57	0.53	1.03	0.45
472	1.44	0.61	2.54	0.51	2.77	0.47
473	-0.26	0.37	3.07	0.18	-1.15	1.03
474	0.41	-0.17	1.90	0.16	1.11	0.33
475	0.42	0.13	2.12	-0.12	2.01	-0.09
476	1.43	-0.18	1.90	0.43	2.45	0.33

477	1.39	0.22	0.66	0.66	1.32	0.55
478	1.44	0.79	2.69	0.38	3.39	0.24
480	0.63	0.01	2.90	0.10	2.56	0.18
481	1.38	0.22	3.29	0.19	2.99	0.25
482	0.80	0.61	3.12	0.10	3.18	0.09
483	-0.28	0.45	1.52	0.03	1.53	0.03
484	0.35	-0.09	3.26	-0.22	4.32	-0.49
485	1.23	-0.28	2.56	0.16	2.81	0.11
490	-0.32	0.28	0.20	0.43	0.73	0.33
491	-0.55	0.14	0.26	0.03	0.26	0.03
492	-0.25	-0.01	0.42	-0.03	0.40	-0.02
493	-0.57	0.19	-0.88	0.20	-0.74	0.17
494	-0.82	0.24	-4.77	0.82	-5.82	0.98
495	-0.70	0.24	0.71	0.03	0.62	0.05

Table A.5: Parameter estimates for DFO Clupea harengus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
440	-0.57	0.02	-1.61	0.03	-1.67	0.04
441	0.38	0.29	3.04	0.01	3.01	0.01
442	0.39	0.19	4.26	0.02	4.27	0.02
443	-0.65	0.01	-3.40	0.07	-3.51	0.09
444	-0.30	0.16	1.04	0.03	0.26	0.17
445	-0.28	0.19	-0.33	0.07	-1.33	0.25
446	-0.55	0.03	-1.69	0.05	-1.71	0.06
447	-0.64	0.03	1.52	0.06	-3.65	0.88
448	-0.63	0.02	-2.69	0.10	-2.86	0.13
449	-0.57	0.05	0.00	0.04	-2.23	0.49
450	-0.24	0.18	1.69	-0.00	1.69	-0.00
451	-0.60	0.06	-1.14	0.12	-3.89	0.58
452	0.20	0.40	1.68	0.11	1.27	0.18
454	-0.57	0.01	-0.38	-0.06	-0.07	-0.15
455	-0.33	0.17	1.92	0.24	-0.61	0.55
456	0.56	0.36	4.30	0.04	4.10	0.08
457	0.69	0.51	1.97	0.18	1.68	0.23
458	-0.35	0.11	2.37	0.03	2.34	0.04
459	0.50	0.42	2.35	0.23	1.87	0.29
460	1.92	0.86	4.22	0.16	2.40	0.43
461	1.06	0.81	2.37	0.17	0.80	0.43
462	1.54	0.87	3.19	0.15	1.82	0.39
463	0.61	0.54	1.47	0.26	0.92	0.34
464	0.40	0.49	2.79	0.20	1.62	0.36
465	0.14	0.45	2.33	0.15	1.29	0.31
470	1.86	0.73	3.82	0.12	3.10	0.25
471	1.00	0.70	2.38	0.25	0.90	0.47
472	0.17	0.47	2.24	0.13	1.61	0.23
473	0.25	0.52	2.13	0.17	-2.88	0.94
474	-0.17	0.20	0.87	0.09	0.27	0.20
475	0.10	0.43	0.04	0.31	-1.72	0.55
476	0.92	0.70	4.04	0.11	1.80	0.46
477	-0.13	0.43	0.82	0.19	-0.27	0.33
480	0.06	0.39	1.70	0.14	1.13	0.22

481	0.27	0.47	2.49	0.10	1.12	0.32
482	0.37	0.51	3.58	0.05	-1.42	1.00
483	0.36	0.46	0.67	0.21	-0.49	0.38
484	0.59	0.52	1.83	0.17	1.20	0.27
485	0.64	0.52	1.83	0.19	0.66	0.37
490	1.43	0.58	3.24	0.24	1.85	0.41
491	0.33	0.27	0.59	0.16	0.23	0.22
492	0.60	0.40	3.73	0.09	0.61	0.61
493	1.74	0.69	3.97	0.15	3.52	0.23
494	2.20	0.66	4.51	0.06	2.68	0.40
495	1.82	0.50	3.71	0.08	3.36	0.14

Table A.6: Parameter estimates for DFO Limanda ferruginea.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
442	-0.44	0.08	-3.10	0.83	-2.71	0.72
443	0.47	-0.24	2.62	-0.36	3.71	-0.69
444	0.16	-0.48	0.24	-0.17	0.34	-0.20
445	-0.68	0.07	-2.47	0.21	-2.69	0.27
446	-0.35	-0.22	1.32	-1.11	0.68	-0.89
447	6.01	-2.01	5.02	0.01	5.00	0.01
448	3.71	-0.86	4.77	-0.23	5.03	-0.31
449	1.59	-1.27	2.08	-0.31	2.32	-0.38
450	0.23	0.12	1.64	-0.01	1.68	-0.02
451	-0.68	0.14	-1.77	0.22	-2.10	0.31
452	-0.29	-0.17	-0.33	-0.29	0.22	-0.46
453	-0.55	0.18	-1.48	0.39	-1.12	0.28
454	2.35	0.03	2.93	0.15	3.07	0.11
455	3.89	0.04	3.96	0.23	4.16	0.17
456	3.83	-0.67	4.96	-0.15	4.92	-0.14
457	0.32	-0.18	0.37	0.12	0.38	0.11
458	3.78	-0.43	4.42	0.01	4.43	0.01
459	0.02	-0.23	1.25	-0.30	1.69	-0.43
462	-0.01	-0.29	0.99	-0.37	0.98	-0.37
463	0.64	0.20	2.40	-0.09	2.68	-0.17
464	2.04	0.57	3.36	0.12	3.43	0.10
465	0.13	-0.09	3.10	-0.61	2.46	-0.42
466	-0.87	0.24	-10.48	2.42	-7.91	1.81
472	-0.92	0.35	-2.49	0.47	-3.51	0.75
474	-0.63	0.65	0.22	0.35	0.38	0.30
475	-0.03	-0.35	2.34	-0.95	1.42	-0.66
476	-0.59	0.04	-1.99	0.41	-3.63	0.85
477	-0.67	0.67	0.29	0.19	0.06	0.26
480	1.58	0.40	3.29	0.01	3.29	0.01
481	-0.95	1.22	0.44	0.36	0.57	0.33
485	-0.68	0.16	1.92	-0.65	1.61	-0.55
490	-0.04	0.05	0.70	-0.01	0.69	-0.01
494	-0.53	-0.08	-4.70	0.64	-4.05	0.46

495	-0.80	0.22	-4.76	0.93	-4.90	0.97

Table A.7: Parameter estimates for DFO Hippoglossoides platessoides.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
440	0.28	0.04	1.11	-0.07	1.18	-0.09
441	2.41	0.74	4.03	0.07	3.94	0.09
442	2.68	-0.01	3.52	0.08	3.44	0.10
443	3.36	-0.07	4.04	0.04	4.02	0.04
444	3.20	0.65	4.25	0.09	4.23	0.09
445	1.81	0.94	2.75	0.29	2.85	0.27
446	0.77	0.03	1.41	0.17	0.96	0.28
447	2.08	0.70	3.57	0.14	3.36	0.19
448	3.24	-0.59	5.04	-0.30	5.56	-0.44
449	2.51	0.02	3.81	0.02	3.82	0.02
450	2.82	-0.33	4.02	-0.13	4.75	-0.32
451	-0.56	1.80	1.49	0.50	-0.53	1.00
452	0.91	1.13	0.60	0.63	1.07	0.51
453	2.66	-0.73	2.48	0.02	2.48	0.02
454	0.70	1.10	1.88	0.25	1.63	0.31
455	1.58	-0.22	3.23	-0.15	3.85	-0.32
456	2.23	-0.54	3.82	-0.21	3.80	-0.20
457	2.79	-0.58	3.12	-0.07	3.18	-0.09
458	1.27	0.70	2.43	0.19	2.22	0.24
459	2.41	0.71	3.71	0.10	3.64	0.12
460	2.19	-0.39	2.96	-0.11	3.08	-0.15
461	0.02	0.28	0.50	0.07	0.39	0.10
462	2.00	0.26	2.80	0.01	2.79	0.01
463	-1.55	1.93	0.47	0.40	-0.33	0.61
464	1.07	0.58	1.73	0.27	1.73	0.27
465	0.47	0.22	1.55	0.03	1.59	0.02
466	0.75	0.12	2.20	-0.18	2.49	-0.25
470	1.21	0.33	1.59	0.14	1.47	0.17
471	0.39	-0.09	1.11	-0.14	1.41	-0.22
472	0.72	-0.08	2.37	-0.25	2.50	-0.28
473	0.35	-0.27	1.16	-0.24	0.79	-0.14
474	-1.07	1.21	-0.49	0.51	-1.83	0.85
475	1.33	-0.61	1.96	-0.24	1.83	-0.21
476	1.91	0.65	3.56	-0.00	3.56	-0.00

477	0.12	0.72	0.87	0.28	0.98	0.25
478	0.23	0.00	1.95	-0.26	3.22	-0.61
480	-0.48	0.41	0.11	0.11	0.22	0.08
481	0.24	0.57	2.34	-0.03	2.36	-0.04
482	-0.65	0.29	-2.52	0.63	-2.15	0.54
483	0.11	-0.27	0.63	-0.28	0.39	-0.21
484	-0.16	0.52	0.27	0.28	-0.21	0.41
485	1.01	-0.22	2.94	-0.32	2.64	-0.24
490	0.70	-0.50	1.89	-0.29	2.37	-0.42
491	-0.20	-0.01	-0.20	-0.00	-0.19	-0.00
492	0.69	-0.13	1.86	-0.17	2.79	-0.43
493	1.01	-0.24	3.06	-0.30	4.35	-0.65
495	-0.65	0.06	-1.69	-0.06	-1.63	-0.07

Table A.8: Parameter estimates for DFO Pseudopleuronectes americanus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
442	-0.64	0.05	-7.40	3.56	-6.93	3.26
454	-0.64	0.01	-3.23	0.19	-3.24	0.20
455	1.11	0.34	1.34	0.83	1.56	0.65
456	0.60	0.49	1.12	1.11	1.03	1.19
458	-0.62	0.05	-4.82	1.64	-4.85	1.67
464	0.39	0.71	-0.21	1.44	-1.66	2.53
474	-0.54	0.09	-2.66	0.84	-3.07	1.20
480	1.22	1.11	1.52	0.97	0.28	1.90
481	-0.30	0.21	-0.93	0.62	-1.57	1.12
485	0.29	0.54	0.16	1.30	-0.41	1.77
490	3.46	0.78	3.67	0.43	3.53	0.55
491	0.30	0.38	0.84	0.40	0.55	0.67
492	-0.13	0.21	-0.42	0.54	-0.67	0.77
493	1.77	0.89	1.80	0.71	1.42	1.05
494	2.59	1.09	3.64	0.46	2.46	1.53
495	3.14	1.53	2.10	1.33	1.48	1.84

Table A.9: Parameter estimates for DFO Glyptocephalus cynoglossus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
440	2.11	0.06	3.32	-0.45	3.39	-0.57
441	2.34	1.10	1.37	2.41	1.15	2.67
442	-0.17	-0.10	0.34	-0.23	0.35	-0.24
443	-0.18	0.00	0.40	-0.21	0.43	-0.27
444	2.07	1.18	1.64	1.15	1.07	1.91
445	2.83	1.20	2.06	1.36	1.85	1.64
446	1.90	0.01	2.47	-0.10	2.47	-0.12
447	0.37	0.26	0.13	0.84	0.15	0.81
448	-0.25	-0.23	0.41	-0.75	0.38	-0.70
449	1.56	1.28	1.01	1.70	-0.41	3.67
450	0.80	0.05	1.85	-0.14	1.86	-0.14
451	2.76	2.19	2.60	1.35	-0.20	5.29
452	3.54	0.94	3.21	1.12	3.13	1.24
453	1.34	0.97	1.05	1.05	0.12	2.53
454	0.56	0.59	0.20	0.69	0.14	0.80
455	-0.35	-0.23	0.31	-0.94	0.39	-1.07
456	-0.16	-0.19	0.63	-0.22	0.60	-0.17
457	0.53	0.07	0.98	0.00	0.98	0.00
458	-0.56	-0.31	0.54	-2.44	0.65	-2.65
459	1.26	0.35	1.78	0.41	1.77	0.42
460	1.06	0.29	1.61	0.41	1.54	0.51
461	-0.01	-0.05	0.53	-0.68	0.69	-0.95
462	0.62	-0.11	1.59	-0.58	1.62	-0.64
463	-0.20	0.01	0.37	-0.37	0.30	-0.25
464	0.40	0.21	0.29	0.57	0.29	0.58
465	0.10	0.46	-0.50	0.84	-0.68	1.11
466	0.27	0.14	0.16	0.60	0.24	0.47
470	1.66	0.72	1.32	0.74	1.15	1.01
471	-0.01	0.20	-0.78	0.62	-0.81	0.67
472	-0.25	0.14	-0.78	0.41	-0.86	0.54
474	-0.18	0.29	-1.60	1.00	-1.58	0.98
475	-0.22	0.23	-1.17	0.82	-1.38	1.15
476	0.70	-0.15	2.10	-0.44	2.10	-0.45
477	-0.01	0.37	-1.33	1.49	-1.56	1.77

478	-0.12	0.05	0.21	0.03	0.20	0.04
480	-0.53	0.03	-2.30	0.81	-2.27	0.76
481	0.08	0.19	-0.06	0.97	-0.24	1.22
482	-0.04	0.37	-1.38	1.19	-1.51	1.38
483	0.20	0.18	0.45	0.33	0.22	0.69
484	0.73	-0.19	1.35	0.04	1.35	0.04
485	0.62	0.29	0.87	0.76	0.78	0.90
490	-0.36	-0.32	1.48	-2.36	1.24	-1.86
491	0.27	0.44	0.05	0.67	-0.22	1.08
492	0.92	0.05	1.65	0.30	1.64	0.32
493	0.83	0.20	1.71	0.14	1.67	0.21
494	-0.11	0.15	-0.10	0.19	-0.10	0.19

Table A.10: Parameter estimates for DFO Hippoglossus hippoglossus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
440	-0.14	0.14	-5.28	52.86	-5.43	56.29
441	0.14	0.21	-3.89	40.65	-4.05	44.38
444	-0.46	0.06	-3.90	21.33	-3.95	22.41
445	0.20	0.24	-5.79	68.01	-5.92	70.91
446	0.23	0.21	-1.66	14.79	-1.76	17.62
448	-0.80	-0.04	-2.04	-62.63	-2.13	-59.36
449	-1.35	-0.24	0.24	-60.37	0.01	-52.28
450	-0.01	0.06	-0.58	6.86	-0.62	7.83
451	0.05	-0.01	0.58	-8.67	0.65	-10.55
452	4.02	0.99	0.12	22.24	-0.06	27.15
453	-0.03	0.08	-0.95	9.44	-0.98	10.23
454	1.95	0.62	-1.31	28.60	-1.69	38.56
455	-0.76	-0.05	-1.50	-17.70	-1.53	-16.85
456	-0.18	0.10	-2.04	14.45	-2.08	15.76
457	-0.12	0.10	-1.72	6.31	-1.75	7.35
458	-0.58	0.01	-2.57	3.81	-2.58	3.93
459	-0.40	0.06	-2.65	7.51	-2.66	7.87
460	0.05	0.17	-2.30	15.99	-2.27	15.15
462	0.57	0.30	-2.48	29.23	-2.52	30.28
463	0.21	0.07	0.02	-2.07	0.04	-2.77
464	-0.42	-0.04	-0.61	-5.56	-0.57	-6.67
465	0.73	0.30	-1.37	18.50	-1.44	20.39
466	0.10	0.19	-3.61	40.04	-3.51	37.46
470	-0.05	0.16	-3.90	34.41	-4.07	38.88
472	-0.59	-0.03	-1.06	-9.49	-1.07	-9.16
473	-0.03	0.14	-2.56	22.96	-2.66	25.64
474	-0.96	-0.19	0.11	-21.09	0.16	-22.81
475	-0.21	-0.01	-0.61	1.85	-0.61	1.94
476	0.64	0.34	-3.31	39.53	-3.52	44.50
477	1.63	0.48	-1.07	24.78	-1.16	26.93
478	-0.70	-0.04	-1.66	-13.08	-1.64	-13.52
480	1.46	0.34	0.41	9.10	0.35	10.74
481	1.00	0.38	-1.73	32.98	-1.81	34.75
485	0.92	0.41	-3.10	46.87	-3.60	58.38

490	0.58	0.23	-0.41	2.62	-0.42	2.94
491	-0.26	0.11	-4.20	33.62	-4.27	35.34
492	0.20	0.24	-4.15	50.00	-5.03	69.92
493	0.13	0.19	-2.94	33.19	-2.94	33.44
494	-0.50	0.02	-1.76	-3.88	-1.74	-4.43
495	-0.63	-0.04	-1.48	4.44	-1.49	4.60

Table A.11: Parameter estimates for NMFS Gadus morhua.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	-0.84	0.40	-3.30	0.86	-3.50	0.94
1020	-0.72	0.06	-9.10	1.86	-9.00	1.82
1050	-0.66	0.54	-0.29	0.21	-0.29	0.21
1060	-0.70	0.08	-3.92	0.50	-3.93	0.50
1090	-0.86	0.89	-0.89	0.58	-1.09	0.65
1100	-0.70	0.31	-1.39	0.36	-1.44	0.38
1130	-0.61	0.48	-1.69	0.68	-1.91	0.77
1160	-0.12	0.82	-0.10	0.73	-0.09	0.73
1170	0.23	0.39	0.49	0.31	0.43	0.33
1180	0.10	-0.05	0.19	0.11	0.13	0.13
1190	-0.56	0.96	-0.64	0.66	-0.79	0.72
1200	-0.88	1.79	-2.71	1.74	-1.78	1.41
1210	1.09	0.47	2.78	-0.09	2.81	-0.10
1220	-0.03	0.40	0.22	0.30	0.03	0.37
1230	0.12	1.02	1.27	0.30	1.22	0.31
1240	-0.25	0.71	-0.04	0.37	-0.12	0.41
1250	1.16	0.71	1.88	0.34	1.88	0.33
1260	1.84	0.31	2.89	0.09	2.87	0.10
1270	-0.31	1.24	0.24	0.47	0.02	0.55
1280	-0.71	0.33	-1.47	0.24	-1.57	0.27
1290	0.06	-0.15	0.53	-0.19	0.59	-0.22
1300	-0.63	0.22	-2.75	0.67	-2.62	0.62
1330	0.61	0.65	1.07	0.18	1.02	0.20
1340	0.78	-0.10	0.81	0.12	0.77	0.14
1360	-0.14	-0.10	-0.01	-0.17	0.01	-0.18
1370	0.17	0.17	0.94	-0.08	0.95	-0.08
1380	-0.56	1.04	-0.37	0.48	-0.90	0.69
1390	-0.87	1.37	-0.57	0.57	-1.26	0.84
1400	0.06	1.07	2.46	-0.23	2.59	-0.28
1650	-0.71	0.04	-9.52	1.81	-9.37	1.76
1690	-0.83	0.23	-13.62	3.81	-12.06	3.32
1730	-0.82	0.27	-6.00	1.44	-5.75	1.35

Table A.12: Parameter estimates for NMFS Melanogrammus aeglefinus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	-0.57	0.02	-2.14	0.22	-1.65	0.19
1020	-0.49	-0.04	1.36	0.07	1.47	0.06
1050	-0.64	0.03	-2.25	0.11	-2.06	0.10
1060	-0.49	-0.01	0.52	0.03	0.57	0.03
1090	-0.68	0.05	-1.40	0.03	-1.46	0.03
1100	-0.55	0.11	-0.19	0.05	-0.28	0.06
1130	-0.34	0.34	2.25	0.07	1.93	0.09
1140	-0.65	0.06	-0.65	0.00	-0.65	0.00
1160	-0.36	0.93	2.35	0.09	2.31	0.09
1170	0.41	0.65	2.62	0.06	2.60	0.06
1180	-0.21	0.40	1.93	0.03	1.82	0.04
1190	-0.35	0.16	1.46	0.05	1.39	0.05
1200	-0.56	0.25	1.81	0.05	1.47	0.07
1210	0.06	0.93	3.55	0.07	3.46	0.07
1220	-1.09	1.02	2.97	0.08	1.90	0.15
1230	0.61	0.26	3.02	0.01	3.01	0.02
1240	-0.09	0.28	1.73	0.03	1.60	0.04
1250	0.51	-0.07	2.21	-0.00	2.22	-0.00
1260	-0.63	0.83	2.35	0.04	2.16	0.05
1270	-0.56	0.32	0.79	0.02	0.65	0.03
1280	-0.39	0.15	0.54	0.00	0.51	0.01
1290	-0.81	0.60	1.18	0.06	1.07	0.07
1300	-1.02	0.53	0.64	0.05	0.22	0.08
1330	3.33	-0.17	4.27	-0.01	4.28	-0.01
1340	0.32	0.59	2.53	0.03	2.53	0.03
1360	-0.74	0.34	-0.16	0.04	-0.22	0.05
1370	-0.89	0.39	0.22	0.05	0.08	0.06
1380	-0.38	0.12	0.22	0.02	0.15	0.03
1390	-0.12	-0.06	0.09	-0.02	0.14	-0.03
1400	-0.78	0.38	0.44	0.02	0.30	0.03
1690	-0.66	0.00	-2.59	0.01	-2.58	0.01
1700	-0.60	-0.02	-1.65	-0.06	-1.70	-0.06
1730	-0.75	0.07	-4.61	0.24	-3.46	0.19
1740	-0.61	0.03	0.13	0.12	0.34	0.11

Table A.13: Parameter estimates for NMFS Pollachius virens.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1020	-0.67	-0.03	-2.17	-1.57	-2.06	-1.65
1050	-0.60	-0.05	-1.08	-0.49	-1.10	-0.47
1060	-0.66	-0.05	-0.48	-2.89	-0.47	-2.89
1090	-0.63	-0.04	-1.92	-0.76	-1.89	-0.78
1100	-0.64	-0.06	-0.59	-1.89	-0.42	-2.03
1130	-0.63	-0.06	-1.03	-1.17	-0.80	-1.34
1140	-0.66	-0.01	-2.10	-0.72	-1.96	-0.83
1160	-0.59	0.09	-2.00	1.13	-3.24	1.92
1170	0.20	-0.08	2.61	-0.30	2.75	-0.40
1180	-0.13	0.25	0.33	0.43	0.24	0.49
1190	-0.56	-0.13	-0.32	-1.15	0.33	-1.64
1200	-0.44	-0.19	-0.16	-0.71	-0.01	-0.82
1210	0.19	-0.02	0.87	0.71	0.99	0.63
1220	0.12	-0.37	0.90	0.33	0.86	0.36
1230	-0.26	-0.23	0.06	-0.03	0.05	-0.03
1240	-0.15	-0.24	0.51	-0.25	0.54	-0.27
1250	-0.02	-0.08	1.55	-0.14	1.68	-0.23
1260	0.19	0.41	0.85	0.76	0.49	1.01
1270	0.11	-0.12	1.00	0.05	0.96	0.07
1280	-0.21	0.13	-0.16	0.16	-0.36	0.30
1290	-0.04	0.17	-0.62	0.73	-0.49	0.65
1300	-0.51	0.05	-1.71	0.31	-1.72	0.32
1330	-0.09	0.49	-1.05	0.94	-1.14	1.00
1340	0.29	0.20	0.24	0.41	0.21	0.43
1360	0.09	0.02	0.29	0.39	0.21	0.43
1370	-0.08	0.15	-3.00	2.59	-2.15	2.10
1380	-0.09	-0.00	0.17	0.14	0.14	0.17
1390	-0.34	0.31	-1.03	0.97	-1.59	1.33
1400	0.07	-0.21	1.08	-0.42	1.07	-0.41

Table A.14: Parameter estimates for NMFS Urophycis tenuis.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	-0.67	-0.00	-3.61	-0.04	-3.61	-0.04
1020	-0.72	0.11	-2.27	0.27	-2.73	0.39
1030	-0.76	0.11	-3.93	0.35	-4.28	0.44
1040	-0.51	0.28	-0.81	0.20	-1.40	0.35
1050	-0.54	-0.06	-0.77	-0.36	-0.65	-0.39
1060	-0.97	0.54	-1.56	0.37	-2.36	0.57
1070	-0.43	0.03	-0.01	-0.15	0.18	-0.20
1080	-0.88	0.70	-0.41	0.22	-1.04	0.38
1090	-0.60	0.04	-1.14	-0.05	-1.03	-0.08
1100	-1.12	0.66	-4.22	1.15	-4.27	1.16
1110	-0.69	0.30	-0.47	0.07	-0.55	0.09
1120	-0.45	0.32	0.44	0.03	0.33	0.06
1130	-0.93	0.39	-2.53	0.46	-3.17	0.62
1140	-1.08	0.67	-2.70	0.65	-2.52	0.61
1150	-0.43	0.58	0.30	0.14	0.12	0.19
1160	-0.87	0.37	-1.49	0.31	-1.80	0.39
1170	-1.27	0.84	-2.19	0.62	-3.54	0.94
1180	-0.58	0.83	-0.55	0.53	-0.96	0.64
1190	-0.40	-0.09	0.73	-0.24	1.65	-0.49
1200	-0.71	0.17	-1.89	0.42	-1.92	0.42
1210	-0.56	0.32	-0.98	0.51	-1.00	0.51
1220	-1.17	1.70	0.41	0.39	-0.28	0.56
1230	-0.46	0.34	-0.56	0.41	-0.91	0.49
1240	-0.85	1.31	-0.25	0.41	-0.35	0.43
1250	-0.95	0.47	-0.74	0.48	-2.03	0.79
1260	-0.40	0.44	0.72	0.05	0.64	0.07
1270	-0.07	0.88	0.71	0.27	0.46	0.33
1280	0.55	0.69	0.96	0.24	0.96	0.24
1290	-0.13	0.79	0.51	0.24	0.47	0.25
1300	0.27	0.96	1.49	0.22	1.55	0.21
1330	-0.81	0.73	-1.36	0.55	-1.15	0.50
1340	0.69	0.26	1.19	0.12	1.26	0.10
1360	1.16	0.39	1.24	0.25	1.35	0.22
1370	0.06	0.99	1.01	0.22	0.97	0.23
1380	0.71	0.85	1.82	0.17	1.68	0.21
1390	1.02	0.31	2.35	0.05	2.34	0.05
1400	0.35	0.83	1.73	0.17	1.25	0.29
1640	-0.24	-0.17	0.63	-0.39	0.66	-0.40
1680	-0.01	-0.16	-0.16	0.04	-0.18	0.04
1720	-0.90	0.45	-2.02	0.46	-2.72	0.64
1760	-0.62	0.09	-1.72	0.12	-1.86	0.16

Table A.15: Parameter estimates for NMFS Merluccius bilinearis.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	2.42	-0.18	3.16	0.01	3.08	0.01
1020	5.56	-0.85	4.05	-0.01	3.99	-0.01
1030	3.81	-0.66	4.50	-0.03	4.39	-0.03
1040	4.85	-0.82	4.19	-0.01	4.27	-0.02
1050	-1.45	0.93	2.92	0.02	2.92	0.02
1060	4.92	-0.40	5.04	-0.00	5.05	-0.00
1070	4.71	-0.87	4.27	-0.02	4.20	-0.02
1080	2.75	-0.29	3.49	0.00	3.44	0.01
1090	1.36	0.03	3.15	0.02	3.06	0.02
1100	2.42	-0.05	3.13	0.01	3.16	0.01
1110	5.91	-1.21	3.79	-0.03	3.68	-0.02
1120	3.63	-0.48	3.91	-0.01	3.98	-0.01
1130	-0.49	0.58	2.60	0.02	2.32	0.03
1140	2.41	0.05	3.32	0.01	3.06	0.02
1150	1.27	0.33	3.99	0.01	3.97	0.01
1160	-0.69	0.40	2.60	0.01	2.33	0.01
1170	-1.73	0.78	2.84	0.01	2.65	0.01
1180	-1.15	0.79	-0.23	0.09	0.93	0.07
1190	-0.23	0.21	2.85	0.01	2.79	0.01
1200	-0.37	0.27	3.76	-0.01	3.73	-0.01
1210	0.19	0.32	3.43	0.00	3.42	0.00
1220	-2.62	1.53	3.55	0.02	3.31	0.02
1230	-0.69	0.67	3.64	0.00	3.63	0.00
1240	-4.64	1.97	2.44	0.03	2.44	0.03
1250	-1.68	0.54	1.16	0.03	0.83	0.03
1260	-3.47	1.34	3.02	0.01	2.90	0.01
1270	-4.70	2.07	2.76	0.03	2.96	0.03
1280	-4.39	2.01	2.95	0.03	2.79	0.03
1290	-2.39	1.27	2.61	0.03	2.25	0.03
1300	-5.14	1.98	3.05	0.03	2.27	0.04
1330	-1.92	0.61	0.91	0.01	0.82	0.01
1340	-5.01	1.83	1.59	0.04	1.34	0.04
1360	-5.49	2.20	2.19	0.04	2.03	0.04
1370	-5.08	2.16	2.18	0.04	2.31	0.04
1380	-6.87	2.64	1.53	0.06	2.17	0.05
1390	-3.61	1.64	2.62	0.03	3.02	0.03
1400	-3.45	1.74	2.88	0.03	3.06	0.02
1610	1.75	-0.49	2.79	-0.04	3.57	-0.06
1620	1.53	-0.43	2.19	-0.03	2.61	-0.04
1630	3.65	-0.79	3.11	-0.02	3.24	-0.02
1640	4.62	-0.82	3.24	0.02	2.94	0.03
1650	1.93	-0.49	1.48	0.00	1.40	0.01
1660	1.43	-0.29	2.47	-0.03	2.75	-0.03
1670	3.10	-0.60	3.05	-0.02	3.41	-0.03

Table A.16: Parameter estimates for NMFS Limanda ferruginea.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	-1.06	1.42	1.71	0.13	1.38	0.16
1020	-1.22	1.05	1.47	0.12	0.65	0.19
1050	-0.18	1.11	2.09	0.11	1.92	0.13
1060	-0.86	0.88	1.41	0.10	0.97	0.14
1070	-0.68	0.01	-3.50	0.05	-3.58	0.06
1090	-0.90	1.29	1.42	0.12	1.27	0.13
1100	-0.41	0.68	1.52	0.07	1.22	0.10
1130	-0.45	0.89	1.47	0.08	1.30	0.10
1140	-0.71	0.11	-0.83	0.00	-0.84	0.00
1150	-0.78	0.08	-4.89	0.16	-4.86	0.16
1160	1.39	0.26	3.07	-0.00	3.07	-0.00
1170	-0.79	0.39	0.24	0.09	0.29	0.08
1180	-0.61	-0.00	-2.40	-0.02	-2.39	-0.02
1190	-1.25	0.88	-0.31	0.14	-0.41	0.15
1200	-0.74	0.38	-0.48	0.09	-0.46	0.09
1210	0.26	0.09	1.70	-0.00	1.71	-0.00
1220	-0.56	0.03	-0.10	-0.01	-0.01	-0.02
1230	0.60	0.28	2.01	0.01	2.00	0.01
1240	-0.67	0.03	-2.82	0.03	-2.83	0.03
1250	0.71	0.12	2.21	0.01	2.21	0.01
1260	0.96	-0.22	2.39	-0.04	2.47	-0.06
1270	-0.44	-0.04	-0.67	-0.04	-0.68	-0.04
1290	-0.68	0.01	-3.76	0.02	-3.77	0.02
1330	1.18	-0.45	1.73	-0.10	1.78	-0.11
1340	-0.55	-0.04	-1.43	-0.11	-1.43	-0.11
1370	-0.63	-0.02	-1.15	-0.23	-0.86	-0.30
1380	-0.60	-0.03	-2.45	-0.07	-2.46	-0.07
1390	-0.28	-0.06	-0.47	-0.04	-0.39	-0.05
1400	0.58	-0.31	1.46	-0.09	1.62	-0.12
1650	-0.76	0.06	-5.60	0.18	-5.79	0.19
1690	-1.49	0.75	-2.11	0.21	-2.12	0.21
1700	-0.83	0.16	-1.77	0.11	-1.84	0.12
1730	-1.54	1.20	0.28	0.16	-0.08	0.19
1740	-1.25	0.68	-0.48	0.16	-0.46	0.16

Table A.17: Parameter estimates for NMFS Hippoglossoides platessoides.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1060	-0.75	0.07	-3.87	0.32	-4.77	0.43
1090	-0.58	-0.03	-2.75	0.03	-2.76	0.03
1100	-0.50	-0.02	-1.96	0.10	-2.00	0.11
1120	-0.61	-0.01	-2.87	-0.00	-2.86	-0.00
1130	-0.11	-0.18	-0.11	-0.10	-0.11	-0.10
1140	-0.83	0.09	-4.49	0.22	-4.64	0.24
1150	-1.07	0.27	-3.55	0.27	-4.37	0.36
1160	0.45	-0.30	0.73	-0.08	0.92	-0.10
1170	-0.71	0.12	-1.88	0.13	-2.00	0.15
1180	-0.14	-0.06	0.57	-0.09	0.61	-0.10
1190	-0.18	-0.11	0.16	-0.11	0.09	-0.10
1200	-0.67	0.08	-2.30	0.10	-2.27	0.09
1210	0.47	-0.19	2.02	-0.07	2.06	-0.08
1220	0.35	0.45	1.24	0.12	1.34	0.11
1230	0.19	0.20	1.50	0.10	1.48	0.11
1240	-0.17	1.14	1.68	0.14	1.70	0.14
1250	-0.51	-0.00	-2.16	0.19	-2.27	0.20
1260	2.69	0.01	3.85	0.04	3.82	0.04
1270	1.23	0.90	2.52	0.12	2.40	0.14
1280	-1.16	1.53	0.63	0.22	0.54	0.24
1290	-1.09	0.53	-0.76	0.13	-0.91	0.15
1300	-1.04	0.30	-2.68	0.21	-2.66	0.21
1330	-0.79	0.83	0.68	0.13	0.72	0.13
1340	0.66	0.12	1.12	0.07	1.12	0.07
1360	-0.79	0.69	0.08	0.13	0.07	0.13
1370	-1.03	1.65	1.15	0.21	0.97	0.23
1380	-0.48	1.36	1.14	0.20	1.19	0.20
1390	-1.00	1.41	0.27	0.28	0.79	0.21
1400	2.99	0.29	3.52	0.06	3.53	0.06

Table A.18: Parameter estimates for NMFS Hippoglossus hippoglossus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1160	-0.68	-0.00	-3.87	-0.24	-3.87	-0.23
1170	-0.47	0.07	-5.09	20.63	-5.08	20.51
1200	-0.80	-0.05	3.49	-162.89	3.75	-168.91
1210	-0.69	-0.03	-2.15	-2.89	-2.16	-2.75
1220	-0.68	-0.01	-3.36	-2.20	-3.36	-2.17
1230	-0.64	0.01	-4.55	7.81	-4.54	7.62
1240	-0.68	-0.00	-3.78	-1.18	-3.78	-1.17
1250	-0.71	-0.02	-3.27	-4.85	-3.28	-4.62
1260	-0.67	-0.01	-2.82	-1.65	-2.82	-1.66
1290	-0.58	0.04	-6.56	24.36	-6.55	24.22
1330	0.65	0.32	-1.19	7.76	-1.22	8.13
1340	0.30	0.28	-2.64	15.12	-2.68	15.69
1360	-0.68	0.00	-4.16	-4.96	-4.15	-5.07
1370	-0.58	0.03	-4.65	10.27	-4.66	10.35
1380	-0.35	0.10	-3.84	12.72	-3.86	12.89
1390	0.82	0.44	-2.24	13.24	-2.33	14.58
1400	-0.68	-0.00	-3.25	-6.64	-3.23	-6.91

Table A.19: Parameter estimates for NMFS Glyptocephalus cynoglossus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	-0.67	0.00	-1.96	-0.89	-1.96	-0.89
1020	-0.60	0.03	-2.32	0.19	-2.35	0.21
1030	-0.66	0.02	-2.83	-0.17	-2.83	-0.16
1040	0.10	-0.34	0.64	0.02	0.64	0.02
1060	-0.59	0.29	-4.98	2.23	-4.46	1.95
1070	-0.65	0.02	-2.98	0.04	-2.99	0.04
1080	-0.23	0.44	-0.60	0.59	-0.88	0.75
1090	-0.70	0.10	-9.29	3.44	-9.75	3.68
1100	-0.57	0.24	-3.36	1.25	-3.14	1.12
1110	-0.64	0.03	-3.06	0.32	-3.04	0.31
1120	-0.25	0.14	-0.18	0.10	-0.18	0.10
1130	-0.59	0.16	-2.98	0.88	-2.95	0.86
1140	-0.43	-0.18	-0.50	-0.64	-0.41	-0.69
1150	-0.26	0.30	-1.08	0.54	-0.96	0.48
1160	-0.69	0.04	-5.60	1.14	-5.65	1.17
1170	-0.63	0.05	-3.01	0.38	-3.00	0.38
1180	-0.17	0.02	-0.63	0.49	-0.67	0.52
1190	-0.69	0.01	-9.25	2.18	-9.25	2.18
1200	-0.68	-0.00	-4.11	-0.13	-4.11	-0.13
1210	-0.64	0.10	-3.07	0.61	-3.22	0.69
1220	-0.00	0.87	-1.06	1.26	-0.97	1.21
1230	-0.63	0.15	-4.33	1.62	-4.30	1.60
1240	0.13	1.15	-0.58	0.93	-0.56	0.93
1260	-0.02	0.43	1.24	0.25	0.96	0.42
1270	0.69	1.13	0.39	0.88	0.48	0.83
1280	-0.14	0.33	-0.38	0.32	-0.38	0.31
1290	-0.33	0.47	-1.35	0.71	-1.41	0.75
1300	-0.29	0.32	-2.02	1.10	-1.79	0.96
1330	-0.56	0.24	-2.49	0.98	-2.69	1.10
1340	0.29	0.21	0.59	0.28	0.59	0.28
1360	0.25	0.61	-0.11	0.59	-0.12	0.60
1370	0.90	0.94	0.80	0.60	0.79	0.60
1380	1.33	1.17	1.13	0.76	1.04	0.81
1390	0.64	0.03	1.37	0.03	1.37	0.03
1400	0.60	0.99	0.50	0.77	0.40	0.83
1640	-0.16	-0.13	0.95	-0.36	1.41	-0.63
1650	-0.69	0.04	-8.46	2.51	-8.46	2.50
1670	-0.59	0.02	-2.33	0.21	-2.34	0.22
1680	-0.09	0.60	-0.30	0.70	-0.78	0.98
1690	-0.69	0.14	-8.60	3.25	-8.88	3.40
1700	-0.67	0.14	-5.47	1.77	-5.56	1.82
1710	-0.70	0.24	-11.64	4.72	-11.90	4.85
1720	0.51	-0.18	1.87	-0.37	1.85	-0.36
1730	-0.66	0.05	-4.89	1.21	-4.88	1.20

Table A.20: Parameter estimates for NMFS Pseudopleuronectes americanus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	-0.03	0.60	0.57	0.31	0.39	0.37
1020	-0.67	0.17	-2.30	0.48	-2.55	0.57
1050	0.52	1.23	1.41	0.50	1.32	0.53
1060	-0.57	0.12	-1.85	0.46	-1.86	0.46
1090	1.24	-0.15	2.13	-0.02	2.13	-0.02
1100	-0.32	-0.01	-0.08	0.09	-0.08	0.08
1130	-0.46	-0.06	-0.19	-0.35	-0.15	-0.36
1160	-0.29	0.30	-0.08	0.26	-0.06	0.25
1190	0.70	-0.18	1.53	-0.00	1.53	-0.00
1200	0.56	0.27	1.39	0.15	1.36	0.16
1210	-0.75	0.49	-1.92	0.57	-1.81	0.53
1220	-0.63	-0.04	-0.93	-1.01	-0.93	-1.01
1230	-0.73	1.09	-1.53	1.02	-1.04	0.86
1240	-0.72	0.05	-4.81	0.53	-4.90	0.56
1250	1.01	0.96	1.86	0.45	1.73	0.49
1260	-1.29	1.49	-2.41	1.29	-2.20	1.22
1270	-0.49	-0.07	0.82	-0.87	0.67	-0.81
1280	-0.70	0.03	-5.39	0.50	-5.39	0.50
1330	1.40	1.23	1.93	0.50	2.06	0.45
1340	-0.64	0.72	-0.54	0.62	-0.55	0.62
1360	-0.70	0.04	-4.36	0.44	-4.36	0.44
1380	-0.40	-0.08	-0.91	0.00	-0.91	0.00
1390	1.48	-0.48	1.93	-0.09	1.92	-0.08
1400	0.22	0.02	1.15	-0.14	1.12	-0.13
1650	-0.63	-0.03	-1.93	-0.46	-1.88	-0.48
1660	-0.69	0.02	-4.69	0.27	-4.73	0.28
1690	-0.67	0.20	-2.10	0.46	-2.84	0.71
1700	-0.63	-0.02	-2.36	-0.20	-2.30	-0.22
1730	-0.40	0.29	-0.62	0.37	-1.13	0.56
1740	-0.67	0.05	-2.78	0.21	-2.81	0.21

Table A.21: Parameter estimates for NMFS Clupea harengus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	-0.60	0.44	2.62	0.03	2.56	0.03
1020	-0.96	0.46	1.64	0.05	0.99	0.08
1030	-0.86	0.15	-1.48	0.04	-3.33	0.12
1050	0.20	0.29	2.98	0.04	2.95	0.04
1060	-1.00	0.66	2.52	0.05	1.92	0.08
1070	-0.76	0.10	-1.54	0.06	-2.68	0.10
1090	-0.50	0.31	1.87	0.05	2.00	0.04
1100	-0.63	0.37	1.50	0.05	0.95	0.07
1110	-0.80	0.09	-3.56	0.10	-3.42	0.10
1130	-0.66	0.31	0.48	0.07	0.43	0.07
1140	-0.79	0.15	-1.34	0.05	-1.65	0.06
1160	-0.68	0.21	0.39	0.08	0.18	0.08
1170	-0.77	0.17	-2.17	0.09	-1.48	0.07
1180	-0.69	0.02	-3.41	0.03	-3.34	0.03
1190	-0.77	0.20	-0.52	0.08	-0.94	0.09
1200	-0.68	0.23	0.30	0.06	-0.04	0.07
1210	-0.87	0.60	1.67	0.06	0.54	0.10
1220	-1.37	0.85	1.27	0.07	-0.51	0.13
1230	-0.98	0.80	2.12	0.06	1.69	0.08
1240	-1.46	1.09	2.11	0.07	0.29	0.13
1250	-0.67	0.47	-0.58	0.13	1.28	0.08
1260	-0.51	0.70	3.30	0.03	2.79	0.05
1270	-1.29	0.89	2.55	0.04	2.19	0.05
1280	-1.38	0.83	1.02	0.05	-0.29	0.10
1290	-0.95	0.39	-0.50	0.07	-1.17	0.09
1300	-0.82	0.18	-1.69	0.04	-1.87	0.05
1330	-0.47	0.36	1.46	0.04	1.34	0.04
1340	-0.56	0.35	1.09	0.03	0.62	0.05
1360	-0.94	0.47	0.23	0.04	-0.67	0.08
1370	-1.24	0.74	0.15	0.07	-0.53	0.09
1380	-1.11	0.63	0.13	0.07	-0.99	0.10
1390	-0.63	0.83	3.04	0.05	3.16	0.05
1400	-1.08	0.68	2.09	0.07	1.32	0.09
1610	-0.65	0.13	0.46	0.05	0.05	0.06
1650	-0.86	0.34	0.09	0.07	-0.06	0.08
1660	-0.68	0.04	0.22	0.05	-2.47	0.14
1690	-0.83	0.43	0.70	0.07	0.45	0.08
1700	-0.79	0.17	-0.31	0.05	-1.69	0.10
1730	-0.63	0.38	1.74	0.03	1.64	0.03
1740	-0.88	0.25	-0.03	0.05	-0.25	0.06
1750	-0.73	0.04	-3.10	0.06	-4.15	0.10

Table A.22: Parameter estimates for NMFS Illex illecebrosus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	-0.58	0.07	-1.69	0.24	-1.69	0.24
1020	-0.42	0.50	0.39	0.26	0.09	0.31
1030	0.24	0.78	3.02	0.08	2.23	0.22
1040	0.65	0.59	2.53	0.16	2.28	0.20
1050	-0.66	0.02	-5.39	0.44	-4.24	0.29
1060	-0.53	0.31	0.31	0.23	0.21	0.25
1070	0.45	0.42	2.78	0.13	2.26	0.21
1080	0.59	0.60	2.05	0.17	1.80	0.21
1090	-0.69	0.10	-2.42	0.23	-2.35	0.22
1100	-0.59	0.41	-0.03	0.30	-1.02	0.43
1110	0.24	0.65	3.13	0.10	2.61	0.19
1120	0.54	0.50	1.88	0.14	1.67	0.18
1130	-0.25	0.40	0.29	0.20	0.31	0.20
1140	0.07	0.54	1.01	0.18	0.70	0.23
1150	-0.10	0.58	0.02	0.30	0.18	0.28
1160	-0.50	0.52	-0.25	0.33	-0.64	0.38
1170	-0.57	0.63	-1.10	0.46	-1.02	0.45
1180	-0.46	0.49	-2.81	0.60	-1.08	0.39
1190	-0.54	0.39	0.41	0.16	-0.75	0.33
1200	-0.67	0.42	0.53	0.19	-1.39	0.47
1210	-0.66	0.48	-0.20	0.29	-1.74	0.50
1220	-0.78	0.44	-2.69	0.52	-1.77	0.41
1230	-0.52	0.56	-0.20	0.38	-0.28	0.39
1240	-0.79	0.50	0.75	0.18	-0.74	0.40
1250	-0.62	0.46	0.66	0.20	-0.35	0.35
1260	-0.31	0.27	-0.54	0.27	-0.12	0.22
1270	-0.42	0.23	0.33	0.14	-0.07	0.20
1280	-0.57	0.13	-1.35	0.19	-1.53	0.22
1290	-0.81	0.46	-1.57	0.35	-1.88	0.40
1300	-0.69	0.17	-2.56	0.31	-2.71	0.33
1330	-0.40	0.34	0.27	0.14	-0.48	0.26
1340	-0.51	0.38	0.96	0.20	-1.25	0.52
1360	-0.72	0.28	-1.55	0.25	-2.36	0.37
1370	-0.56	0.28	-0.58	0.18	-1.06	0.25
1380	-0.59	0.27	-0.82	0.22	-1.12	0.26
1390	-0.13	0.20	1.45	0.02	1.49	0.01
1400	-0.19	0.28	0.29	0.23	0.88	0.15
1610	-0.49	0.05	1.78	-0.30	1.76	-0.29
1620	-0.03	0.36	2.79	-0.04	2.85	-0.05
1630	1.67	0.12	4.26	-0.01	4.30	-0.01
1640	1.33	0.34	3.05	0.03	3.05	0.03
1650	-0.61	0.05	-1.08	0.01	-1.11	0.01
1660	0.20	0.35	2.66	0.02	2.48	0.05
1670	1.01	0.64	3.10	0.09	2.79	0.14

Table A.23: Parameter estimates for NMFS Lophius americanus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	-0.18	0.45	-3.53	3.65	-3.50	3.60
1020	0.22	0.63	-1.73	2.47	-1.81	2.60
1030	-0.20	0.04	-0.66	0.26	-0.66	0.28
1040	0.12	0.01	0.10	0.28	0.10	0.27
1050	-0.17	0.37	-2.28	2.32	-2.24	2.27
1060	0.77	0.82	-0.80	2.38	-0.82	2.41
1070	0.14	0.25	-0.63	1.12	-0.66	1.17
1080	0.41	0.32	-0.21	0.97	-0.24	1.02
1090	-0.21	0.35	-2.51	2.55	-2.60	2.68
1100	0.10	0.47	-1.14	1.52	-1.16	1.55
1110	-0.23	0.00	-0.59	0.08	-0.59	0.07
1120	0.11	0.15	-0.60	1.09	-0.56	1.02
1130	-0.37	0.14	-1.81	1.06	-1.78	1.02
1140	-0.18	0.28	-2.18	2.17	-2.19	2.17
1150	-0.30	0.05	-0.58	-0.11	-0.58	-0.11
1160	-0.51	0.08	-1.94	0.26	-1.93	0.25
1170	-0.68	-0.18	0.25	-4.02	0.34	-4.18
1180	-0.31	0.19	-1.80	1.32	-1.75	1.24
1190	-0.64	0.00	-2.97	-0.08	-2.97	-0.08
1200	-0.59	0.08	-3.98	1.78	-4.05	1.89
1210	-0.35	0.31	-3.88	3.56	-3.88	3.56
1220	0.11	0.44	-1.54	1.96	-1.55	1.97
1230	-0.31	0.17	-1.60	0.87	-1.62	0.91
1240	0.01	0.34	-1.36	1.43	-1.38	1.45
1250	-0.44	0.10	-1.76	0.48	-1.78	0.52
1260	-0.06	0.46	-1.92	2.00	-2.10	2.27
1270	0.38	0.46	-0.61	1.44	-0.60	1.42
1280	0.27	0.19	-0.33	0.80	-0.32	0.79
1290	-0.34	-0.02	-0.52	-0.38	-0.51	-0.40
1300	-0.12	0.15	-1.12	1.10	-1.11	1.08
1330	-0.49	0.09	-2.33	0.71	-2.33	0.71
1340	-0.33	0.25	-2.49	1.79	-2.53	1.86
1360	-0.12	0.14	-0.87	0.56	-0.89	0.58
1370	0.12	0.13	-0.46	0.83	-0.45	0.82
1380	0.11	0.22	-0.45	0.58	-0.46	0.59
1390	0.12	0.44	-1.21	1.53	-1.30	1.67
1400	0.43	0.69	-1.31	2.27	-1.26	2.21
1610	-0.45	0.20	-3.02	1.93	-3.12	2.10
1620	-0.21	0.34	-2.11	1.85	-2.22	2.03
1630	-0.07	0.28	-0.98	1.16	-1.03	1.24
1640	0.68	0.87	-0.45	1.95	-0.87	2.59
1650	-0.43	0.26	-5.09	4.84	-5.13	4.90
1660	-0.06	0.28	-1.05	1.41	-1.09	1.46
1670	-0.08	0.37	-1.45	1.90	-1.36	1.77

Table A.24: Parameter estimates for NMFS Sebastes fasciatus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1070	-0.62	-0.01	-2.94	-0.01	-2.95	-0.01
1120	-0.54	-0.03	-0.40	-0.04	-0.44	-0.04
1130	-0.67	-0.00	-2.92	-0.04	-2.94	-0.04
1140	-0.68	0.01	-2.91	-0.00	-2.89	-0.00
1150	-0.52	0.09	0.76	-0.00	0.91	-0.01
1160	-0.69	0.00	-4.06	-0.00	-4.06	-0.00
1170	-0.75	0.10	-0.78	0.01	-0.93	0.01
1180	0.91	0.06	3.20	-0.00	3.38	-0.01
1200	-0.68	0.00	-3.34	-0.01	-3.32	-0.01
1210	-0.73	0.04	-1.92	0.01	-2.05	0.01
1220	-1.24	0.41	0.59	0.02	-0.12	0.04
1230	-0.71	0.04	-1.94	0.00	-2.02	0.01
1240	-0.97	0.86	2.99	0.02	2.76	0.03
1250	-0.69	0.01	-2.53	-0.00	-2.52	-0.00
1260	-1.15	0.62	2.73	0.02	2.44	0.02
1270	-1.70	1.31	4.20	0.02	3.58	0.03
1280	-1.83	0.92	2.75	0.02	2.39	0.02
1290	-0.45	0.58	3.14	0.02	3.09	0.02
1300	1.17	0.01	2.42	0.00	2.43	0.00
1330	-1.13	0.27	0.61	-0.00	0.61	-0.00
1340	-0.03	0.39	2.89	0.01	2.97	0.01
1360	-0.49	0.79	3.03	0.02	2.92	0.03
1370	-1.42	1.19	3.63	0.02	3.27	0.03
1380	-0.58	0.63	2.63	0.02	2.28	0.02
1390	-1.05	0.40	1.18	0.01	0.50	0.02
1400	1.71	0.04	3.62	-0.00	3.64	-0.00

Table A.25: Parameter estimates for NMFS Zoarces americanus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	0.20	0.39	0.84	0.38	0.72	0.44
1020	-0.10	0.48	-0.11	0.56	-0.28	0.64
1050	0.42	0.66	1.77	0.24	1.58	0.34
1060	-0.07	0.96	0.53	0.64	0.23	0.78
1090	-0.34	1.10	0.61	0.75	-0.41	1.21
1100	-0.44	0.46	-0.67	0.49	-1.20	0.74
1110	-0.65	0.03	-2.53	0.15	-2.62	0.20
1120	-0.61	-0.04	-1.91	-0.57	-1.72	-0.67
1130	0.16	-0.20	1.56	-0.50	1.28	-0.33
1140	-0.29	-0.10	-0.31	-0.02	-0.29	-0.03
1150	-0.34	0.01	0.82	-0.44	0.72	-0.39
1160	-0.27	0.01	-0.10	-0.10	-0.10	-0.10
1170	-0.23	-0.18	0.16	-0.20	0.21	-0.23
1180	-0.53	0.00	-1.32	0.19	-1.37	0.21
1190	-0.44	0.22	-0.74	0.19	-0.99	0.32
1200	-0.48	0.16	-0.91	0.11	-1.00	0.16
1210	0.06	-0.19	0.82	-0.34	0.81	-0.34
1220	-0.51	-0.05	-1.32	-0.05	-1.32	-0.04
1230	0.20	0.19	0.71	0.30	0.61	0.35
1240	-0.25	-0.18	-0.22	-0.11	-0.25	-0.09
1250	0.04	0.38	0.56	0.33	0.58	0.32
1260	0.53	0.32	1.39	0.15	1.43	0.13
1270	-0.46	0.13	-1.59	0.39	-1.57	0.38
1280	-0.67	-0.00	-3.49	-0.12	-3.48	-0.13
1290	-0.59	-0.01	-1.58	-0.21	-1.61	-0.20
1330	-0.24	0.04	-0.33	0.04	-0.32	0.03
1340	-0.21	-0.30	0.39	-0.74	0.18	-0.61
1360	-0.52	-0.03	-1.51	-0.13	-1.54	-0.12
1370	-0.28	-0.20	0.20	-0.57	0.31	-0.63
1380	-0.52	0.04	-1.66	0.19	-1.67	0.20
1390	-0.57	0.45	-1.79	0.56	-2.50	0.91
1400	-0.52	0.42	-1.80	0.77	-1.80	0.77
1690	-0.64	0.18	-3.32	0.87	-3.26	0.84
1700	-0.66	0.03	-3.60	0.39	-3.57	0.37
1730	-0.42	0.43	-0.62	0.36	-0.94	0.51
1740	-0.54	0.30	-1.94	0.71	-2.11	0.79

Table A.26: Parameter estimates for NMFS Myoxocephalus octodecemspinosus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	0.89	-0.49	2.04	-0.17	2.37	-0.21
1020	-0.42	0.03	0.30	0.04	0.10	0.07
1050	1.11	-0.08	2.96	-0.08	3.03	-0.09
1060	0.10	-0.14	3.41	-0.31	3.24	-0.29
1090	-0.20	0.71	0.78	0.25	0.92	0.23
1100	0.42	-0.03	1.30	0.05	1.30	0.05
1130	0.24	0.48	1.89	0.11	1.65	0.14
1140	-0.29	-0.10	1.82	-0.31	3.19	-0.50
1150	-0.88	0.13	-3.97	0.21	-4.39	0.27
1160	0.43	0.98	2.75	0.12	2.72	0.13
1170	-1.30	1.25	1.80	0.16	1.26	0.23
1180	-0.08	-0.06	0.97	-0.12	0.94	-0.12
1190	-0.31	0.67	1.07	0.19	1.14	0.18
1200	-0.02	0.58	2.18	0.07	2.10	0.08
1210	-0.51	1.34	2.16	0.23	2.47	0.19
1220	0.69	-0.29	3.13	-0.19	2.60	-0.12
1230	0.18	0.83	1.65	0.17	1.50	0.19
1240	-0.70	0.19	-0.92	0.18	-0.77	0.16
1250	1.64	0.24	2.93	0.08	2.80	0.10
1260	-2.28	1.89	1.64	0.19	1.28	0.24
1270	-0.47	0.15	-1.29	0.16	-0.96	0.12
1280	-0.76	0.06	-4.12	0.17	-4.25	0.19
1290	-0.40	-0.08	-1.09	-0.07	-1.12	-0.06
1300	-0.56	-0.03	-2.64	0.02	-2.62	0.02
1330	-2.02	1.69	0.72	0.26	0.93	0.23
1340	-1.65	0.93	-0.21	0.18	-0.68	0.24
1360	-0.66	0.00	-3.18	0.00	-3.18	0.00
1370	-0.75	0.05	-4.16	0.11	-4.24	0.12
1380	-1.00	0.29	-1.68	0.13	-2.15	0.19
1390	-3.35	2.11	0.31	0.22	-0.08	0.27
1400	-1.46	0.97	-0.03	0.15	-0.22	0.18
1690	-0.80	0.11	-2.07	0.09	-2.48	0.14
1730	-0.16	-0.16	-0.10	-0.09	0.05	-0.11
1740	-0.38	-0.09	-0.25	-0.04	-0.15	-0.05

Table A.27: Parameter estimates for NMFS Hemitripterus americanus.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	-0.29	0.05	-0.90	0.44	-0.95	0.49
1020	-0.56	-0.14	-0.66	-1.10	-0.63	-1.14
1050	-0.06	0.29	-0.94	1.02	-0.95	1.03
1060	-0.52	-0.04	-1.18	-0.46	-1.17	-0.46
1090	-0.08	0.32	-0.36	0.34	-0.38	0.37
1100	-0.27	0.00	-0.47	0.05	-0.47	0.05
1110	-0.69	-0.13	1.16	-6.35	1.17	-6.36
1120	-0.69	-0.11	0.22	-5.04	0.16	-4.94
1130	0.43	0.10	0.61	0.23	0.62	0.22
1140	-0.50	-0.39	0.34	-1.22	0.23	-1.08
1150	-0.62	-0.36	0.75	-3.39	0.78	-3.42
1160	0.40	0.30	-0.12	1.07	-0.07	1.01
1170	-0.01	-0.29	1.03	-0.98	1.04	-0.98
1180	-0.45	-0.18	-0.32	-0.70	-0.30	-0.72
1190	-0.21	0.19	-1.33	1.28	-1.31	1.26
1200	0.33	1.00	-2.08	3.05	-2.24	3.23
1210	0.68	0.69	0.26	0.87	0.22	0.91
1220	-0.41	0.03	-1.30	0.57	-1.30	0.57
1230	0.37	0.58	-0.78	1.68	-0.80	1.70
1240	-0.36	0.25	-2.24	1.33	-2.28	1.38
1250	1.35	1.46	-0.34	2.48	-0.42	2.57
1260	0.72	1.10	-0.77	1.93	-0.82	1.99
1270	0.09	0.71	-2.13	2.42	-2.35	2.67
1280	-0.66	-0.00	-3.33	-0.18	-3.33	-0.18
1290	-0.59	0.07	-3.57	1.35	-3.63	1.42
1300	-0.67	-0.02	-2.71	-1.07	-2.71	-1.08
1330	1.28	1.80	-1.56	3.45	-1.49	3.37
1340	0.10	1.04	-4.01	4.42	-4.61	5.07
1360	-0.61	0.12	-7.20	4.78	-7.24	4.82
1370	-0.21	0.52	-3.33	2.90	-3.46	3.05
1380	-0.18	0.50	-3.13	2.90	-3.05	2.82
1390	0.31	0.45	-0.85	1.60	-0.85	1.61
1400	0.21	0.39	-0.39	0.82	-0.40	0.84
1690	-0.64	0.01	-2.65	0.12	-2.65	0.12
1730	-0.48	0.10	-2.13	1.19	-2.30	1.39
1740	-0.68	-0.12	-0.20	-4.14	-0.22	-4.10

Table A.28: Parameter estimates for NMFS Amblyraja radiata.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1100	-0.66	0.02	-3.99	0.76	-4.02	0.78
1130	-0.65	0.06	-6.05	2.00	-5.80	1.86
1140	-0.64	0.06	-5.09	1.43	-5.04	1.40
1150	-0.37	0.10	-0.52	0.07	-0.53	0.08
1160	-0.36	0.25	-1.19	0.85	-1.11	0.79
1170	0.13	0.46	-0.63	0.83	-0.63	0.84
1180	0.24	0.15	0.35	0.13	0.38	0.11
1190	-0.68	0.02	-5.65	1.16	-5.72	1.20
1200	-0.65	0.05	-4.21	0.89	-4.27	0.93
1210	-0.08	0.57	-1.46	1.22	-1.55	1.28
1220	-0.02	0.67	-1.00	0.96	-1.12	1.04
1230	0.08	0.46	0.12	0.61	0.05	0.65
1240	0.42	0.82	-0.20	0.74	-0.38	0.86
1250	-0.37	0.38	-2.42	1.20	-2.80	1.44
1260	0.36	0.20	0.71	0.10	0.68	0.12
1270	0.29	0.44	-0.24	0.51	-0.37	0.60
1280	0.27	0.97	-1.42	1.30	-1.73	1.50
1290	-0.06	0.52	-1.37	0.94	-1.59	1.08
1300	0.21	0.62	-0.73	0.88	-1.03	1.07
1330	-0.05	0.44	-0.71	0.52	-1.03	0.75
1340	0.10	0.33	-0.44	0.46	-0.50	0.50
1360	0.08	0.45	-0.78	0.67	-0.86	0.73
1370	0.48	0.94	-0.49	0.90	-0.94	1.19
1380	0.52	0.84	-0.21	0.75	-0.56	0.99
1390	0.20	0.73	-0.54	0.73	-1.15	1.15
1400	0.17	0.44	-0.47	0.55	-0.64	0.66

Table A.29: Parameter estimates for NMFS Leucoraja ocellata.

stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	-0.73	0.42	-2.29	0.72	-2.09	0.66
1020	-0.59	0.06	-0.92	0.16	-1.09	0.22
1050	-0.10	0.43	0.77	0.24	0.63	0.29
1060	-0.60	0.09	-1.42	0.35	-1.59	0.41
1090	0.17	0.86	1.57	0.33	1.37	0.39
1100	-0.29	0.13	0.35	0.08	0.22	0.12
1110	-0.68	0.05	-1.71	0.02	-1.75	0.04
1130	0.02	0.27	0.74	0.21	0.67	0.24
1140	-0.65	0.10	-1.57	0.35	-3.04	0.82
1150	-0.66	0.04	-0.22	0.05	-0.86	0.29
1160	0.56	0.55	1.47	0.19	1.42	0.21
1170	-0.59	0.35	-0.33	0.21	-0.73	0.35
1180	-0.51	0.02	-1.08	-0.11	-0.95	-0.16
1190	1.01	0.89	1.61	0.33	1.66	0.31
1200	0.93	1.00	1.74	0.32	1.71	0.34
1210	0.32	0.46	1.69	0.21	1.39	0.31
1220	-0.55	0.30	0.10	0.11	-0.29	0.25
1230	-0.17	1.25	0.84	0.42	0.56	0.51
1240	-0.62	0.10	-1.93	0.21	-2.01	0.23
1250	-0.23	1.64	1.44	0.39	1.17	0.48
1260	-0.74	0.39	-2.22	0.71	-1.97	0.63
1270	-0.71	0.04	-5.27	0.49	-5.29	0.49
1280	-0.69	0.02	-2.82	0.05	-2.83	0.05
1290	-0.68	0.07	-3.00	0.27	-3.14	0.32
1300	-0.69	0.05	-3.39	0.15	-3.46	0.17
1330	-0.75	0.31	-2.08	0.43	-2.99	0.72
1340	-0.68	0.01	-2.75	-0.01	-2.74	-0.02
1380	-0.66	0.00	-3.14	0.07	-3.13	0.06
1390	-0.70	0.16	-2.52	0.36	-2.55	0.37
1400	-0.78	0.19	-4.88	0.84	-5.11	0.90
1610	-0.67	0.00	-3.52	-0.04	-3.51	-0.05
1650	-0.67	0.05	-2.89	0.13	-2.95	0.15
1690	-0.73	0.20	-2.60	0.44	-2.56	0.42
1700	-0.67	-0.00	-2.72	-0.30	-2.75	-0.29
1730	-0.71	0.24	-1.20	0.13	-1.17	0.12
1740	-0.69	0.04	-4.21	0.34	-4.15	0.33

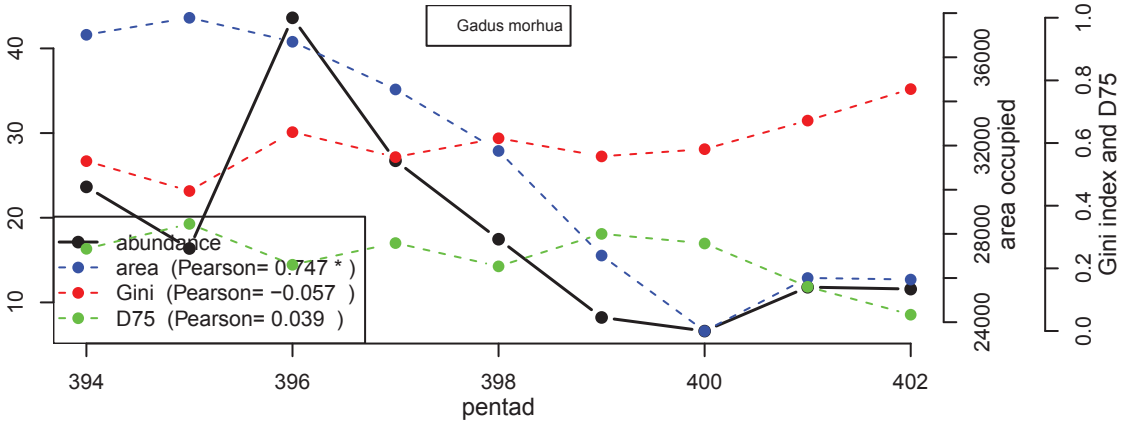
Table A.30: Parameter estimates for NMFS Malacoraja senta.

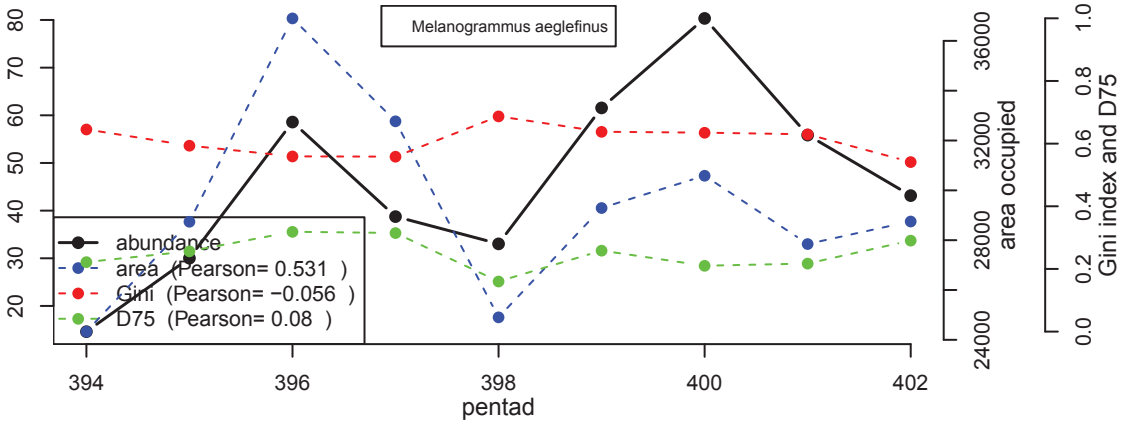
stratum	LM α	β	GLM1 α	β	GLM2 α	β
1090	-0.68	-0.00	-4.01	-0.64	-4.01	-0.63
1150	-0.62	-0.10	-0.59	-2.04	-0.74	-1.76
1160	-0.67	-0.01	-2.28	-1.80	-2.30	-1.77
1170	-0.52	0.07	-2.79	1.52	-2.74	1.44
1180	-0.48	0.03	-1.88	0.59	-1.86	0.56
1200	-0.67	0.02	-7.03	4.14	-7.03	4.14
1210	-0.54	0.10	-5.01	5.19	-4.88	4.98
1220	-0.29	0.03	-1.93	2.39	-1.67	1.94
1230	-0.45	0.10	-2.19	1.43	-2.21	1.45
1240	0.34	0.59	-1.30	2.75	-1.42	2.94
1250	-0.63	0.05	-4.91	2.41	-4.91	2.42
1260	-0.68	-0.21	-0.41	-2.24	-0.50	-2.06
1270	-0.21	0.03	-1.09	1.08	-1.04	1.00
1280	-0.05	0.25	-0.84	0.95	-0.87	1.01
1290	-0.14	0.10	-0.99	1.17	-0.93	1.06
1300	0.52	0.38	-0.11	1.60	-0.18	1.72
1330	-0.67	-0.09	-1.70	-1.64	-1.76	-1.54
1340	-0.10	0.29	-1.63	2.12	-1.70	2.25
1360	0.20	0.65	-1.96	2.67	-2.07	2.85
1370	-0.18	0.17	-1.11	0.81	-1.11	0.81
1380	-0.28	0.04	-0.83	0.77	-0.89	0.88
1390	-0.47	-0.08	-0.63	-0.51	-0.61	-0.54
1400	-0.56	-0.07	-1.08	-0.93	-1.00	-1.06

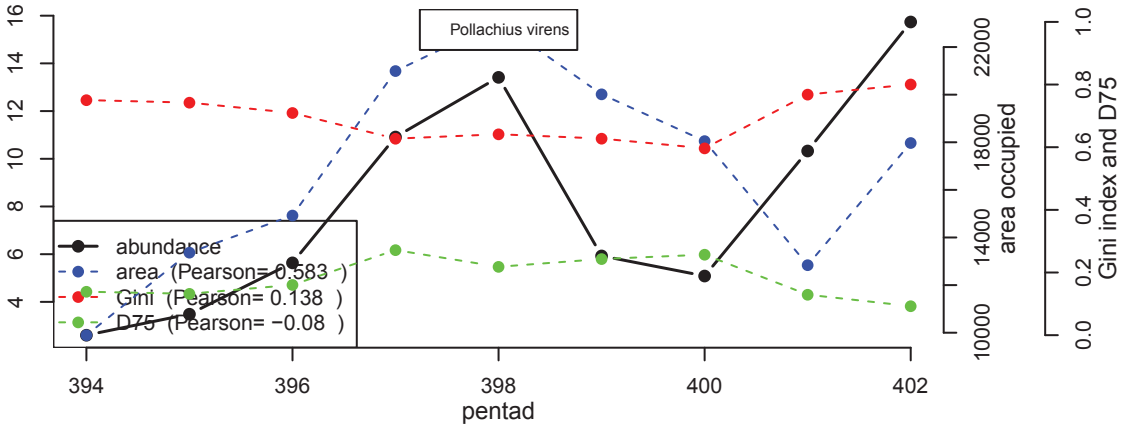
Table A.31: Parameter estimates for NMFS Squalus acanthias.

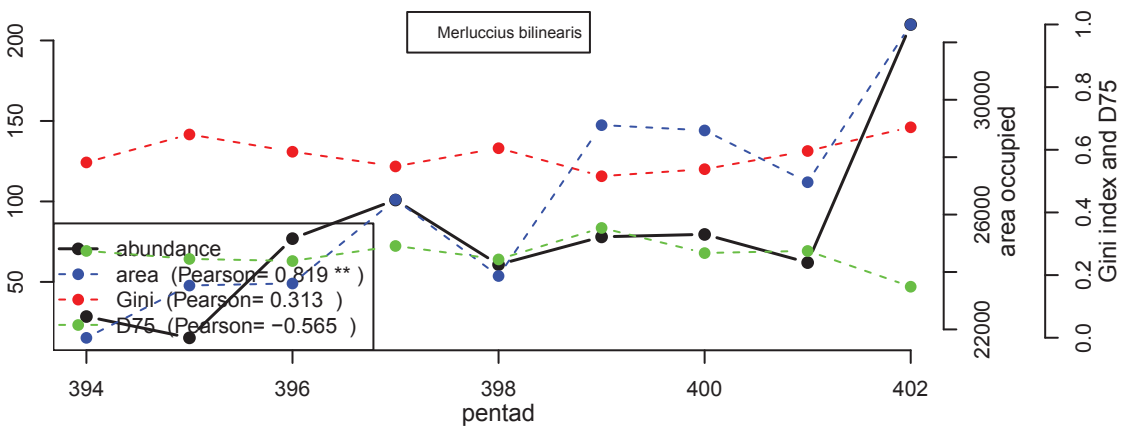
stratum	LM α	β	GLM1 α	β	GLM2 α	β
1010	6.06	-1.47	5.06	-0.07	4.35	-0.05
1020	3.53	-0.49	3.85	0.01	3.91	0.01
1030	0.80	-0.04	7.98	-0.17	6.71	-0.12
1040	-2.94	1.19	5.55	-0.06	5.65	-0.07
1050	8.13	-2.08	4.09	-0.02	4.43	-0.03
1060	3.40	-0.50	3.11	0.03	3.01	0.03
1070	-2.42	0.94	4.04	-0.00	4.04	-0.00
1080	-3.81	1.26	2.68	0.03	-0.30	0.13
1090	3.72	-0.60	2.71	0.04	2.91	0.03
1100	-0.02	0.46	3.13	0.03	2.86	0.04
1110	-5.03	1.71	2.50	0.07	1.07	0.12
1120	-6.87	2.30	4.36	-0.01	4.47	-0.01
1130	-5.41	1.98	1.53	0.07	0.64	0.09
1140	-11.17	3.76	0.37	0.13	0.12	0.14
1150	-9.50	3.10	0.61	0.13	-2.67	0.23
1160	-4.36	1.49	1.90	0.03	1.42	0.04
1170	-8.56	2.93	2.92	0.04	2.17	0.06
1180	-8.48	2.70	-0.29	0.11	-1.33	0.14
1190	4.70	-1.15	2.32	0.01	1.91	0.03
1200	1.86	-0.20	2.32	0.04	1.10	0.08
1210	-4.24	1.31	0.45	0.05	-0.50	0.08
1220	-2.44	0.94	1.32	0.04	1.35	0.04
1230	-0.51	0.39	2.59	0.03	1.41	0.06
1240	1.03	-0.16	1.48	-0.00	1.50	-0.00
1250	-2.85	1.26	1.23	0.09	0.50	0.12
1260	4.31	-1.01	3.45	-0.00	3.54	-0.01
1270	1.95	-0.34	1.72	0.01	1.66	0.02
1280	1.30	-0.07	3.10	-0.03	3.12	-0.03
1290	-2.12	1.07	1.96	0.04	1.79	0.05
1300	-0.12	0.35	2.78	-0.01	2.79	-0.01
1330	-5.44	1.86	1.52	0.07	1.27	0.08
1340	-3.55	1.37	-1.67	0.14	-0.39	0.10
1360	-2.22	1.02	0.98	0.05	0.95	0.05
1370	1.97	-0.38	2.53	-0.02	2.59	-0.02
1380	1.13	-0.15	0.74	0.05	-0.00	0.08
1390	0.61	-0.06	0.80	0.02	0.84	0.01
1400	1.54	-0.35	1.66	0.01	1.57	0.01
1610	-0.93	0.60	3.82	-0.01	3.87	-0.02
1620	5.72	-1.41	5.21	-0.04	4.94	-0.03
1630	3.28	-0.63	3.15	0.04	3.14	0.04
1640	2.94	-0.61	4.15	-0.00	4.13	-0.00
1650	-2.09	0.96	1.99	0.05	1.15	0.08
1660	0.43	0.20	3.09	0.02	2.66	0.04
1670	-4.23	1.64	1.66	0.08	1.72	0.07

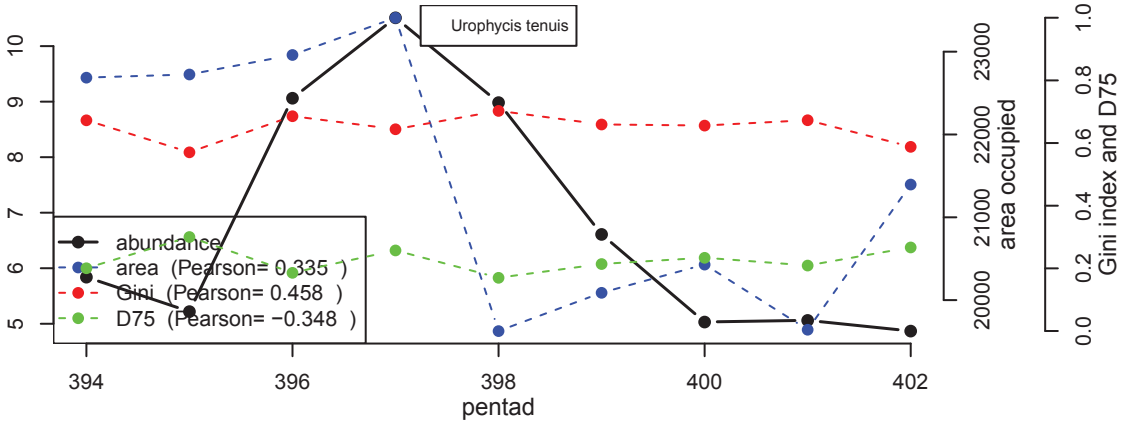
A.0.2 Figures

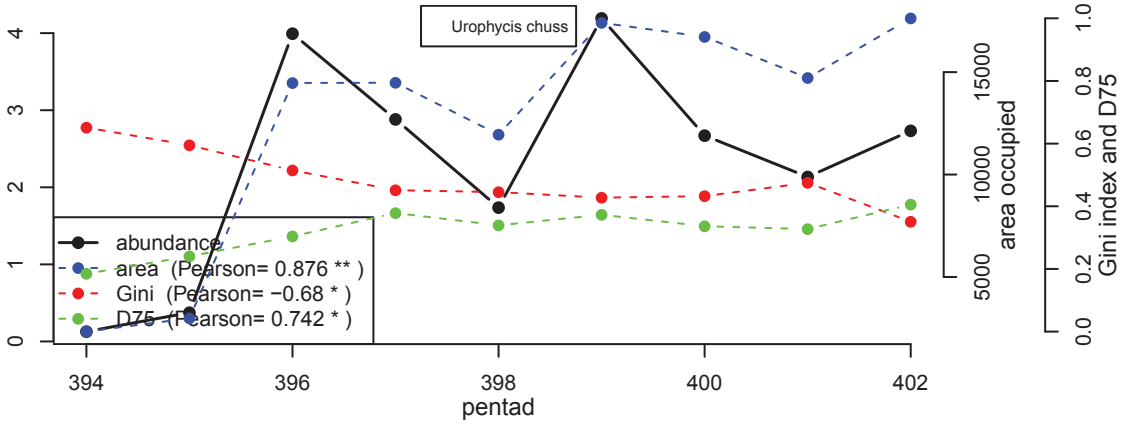

Gadus morhua
abundance
area (Pearson= 0.747 *)
Gini (Pearson= −0.057)
D75 (Pearson= 0.039)
pentad
area occupied
Gini index and D75

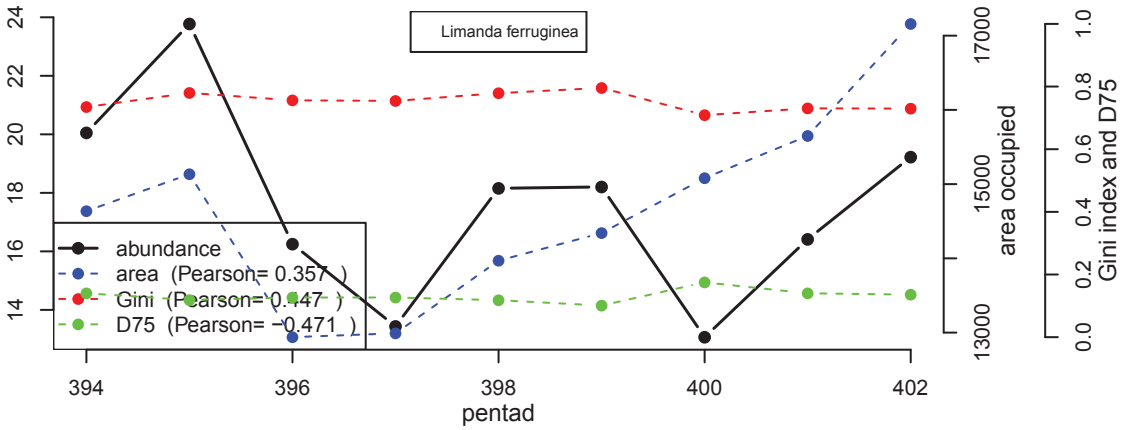

Melanogrammus aeglefinus
abundance
area (Pearson= 0.531)
Gini (Pearson= −0.056)
D75 (Pearson= 0.08)
pentad
area occupied
Gini index and D75

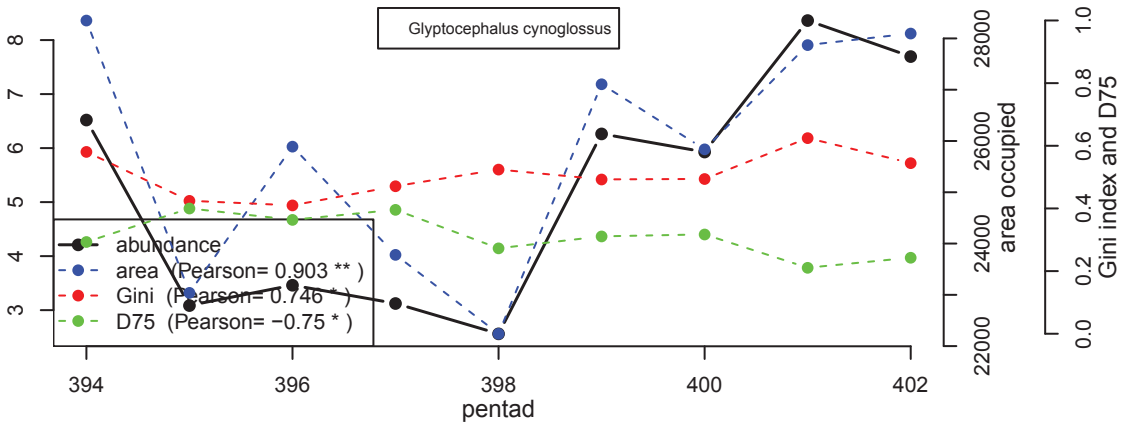

Pollachius virens
abundance
area (Pearson= 0.583)
Gini (Pearson= 0.138)
D75 (Pearson= −0.08)
pentad
area occupied
Gini index and D75

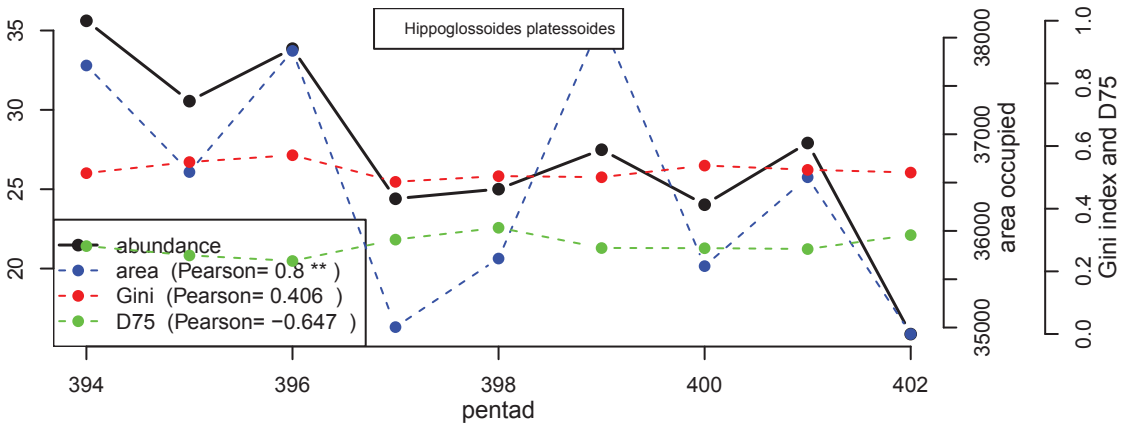

Merluccius bilinearis
abundance
area (Pearson= 0.819 **)
Gini (Pearson= 0.313)
D75 (Pearson= −0.565)
pentad
area occupied
Gini index and D75

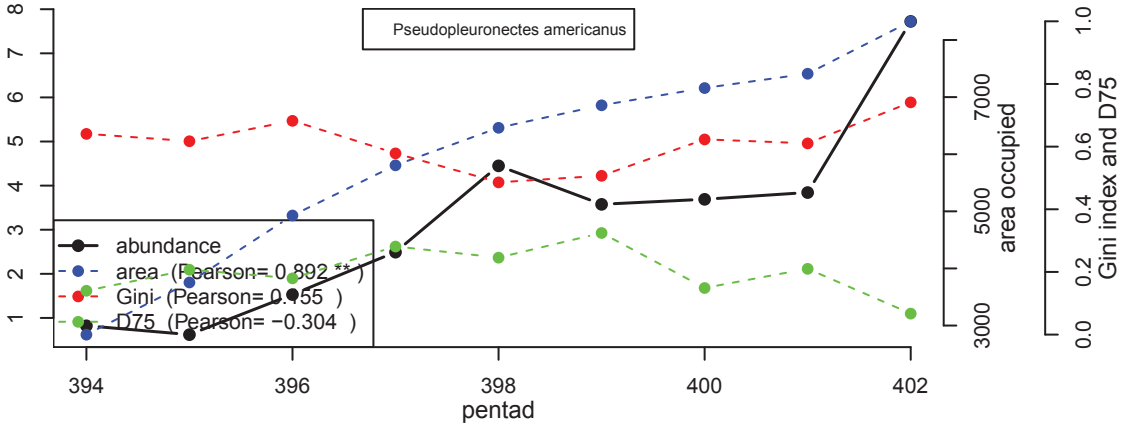

Urophycis tenuis
abundance
area (Pearson= 0.335)
Gini (Pearson= 0.458)
D75 (Pearson= −0.348)
pentad
area occupied
Gini index and D75

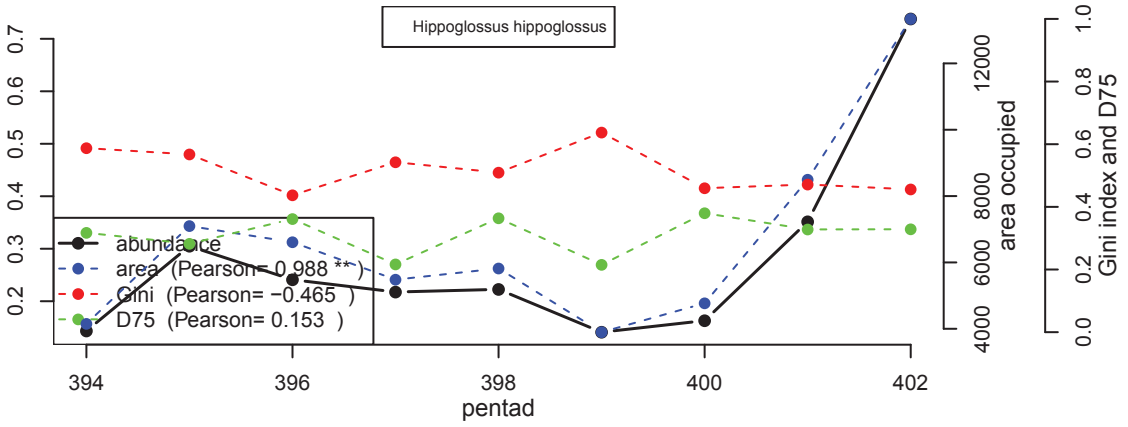

Urophycis chuss
abundance
area (Pearson= 0.876 **)
Gini (Pearson= −0.68 *)
D75 (Pearson= 0.742 *)
pentad
area occupied
Gini index and D75

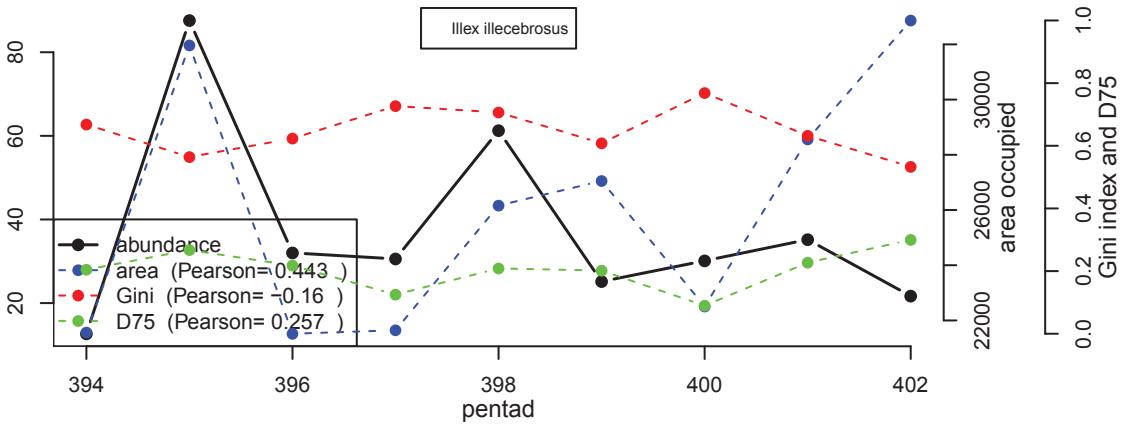

Limanda ferruginea
abundance
area (Pearson= 0.357)
Gini (Pearson= 0.447)
D75 (Pearson= −0.471)
pentad
area occupied
Gini index and D75

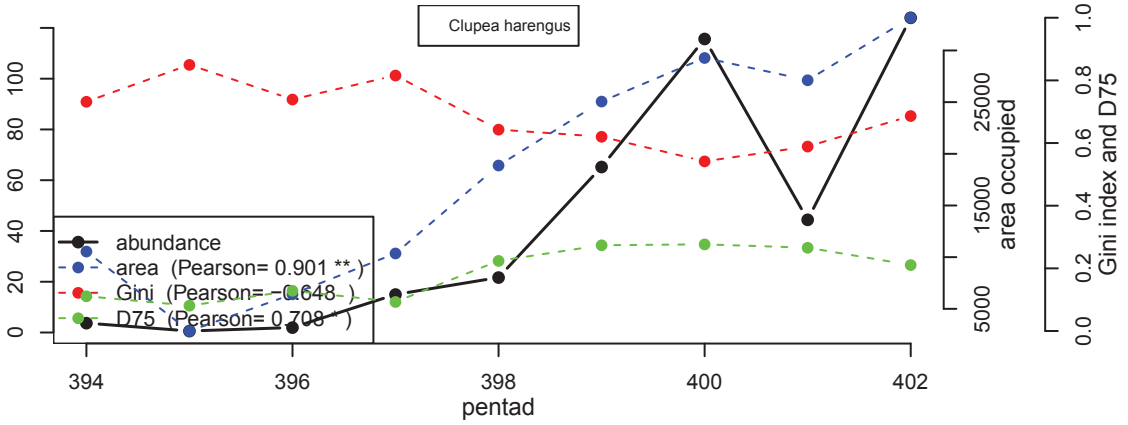

Glyptocephalus cynoglossus
abundance
area (Pearson= 0.903 **)
Gini (Pearson= 0.746 **)
D75 (Pearson= −0.75 *)
pentad
area occupied
Gini index and D75

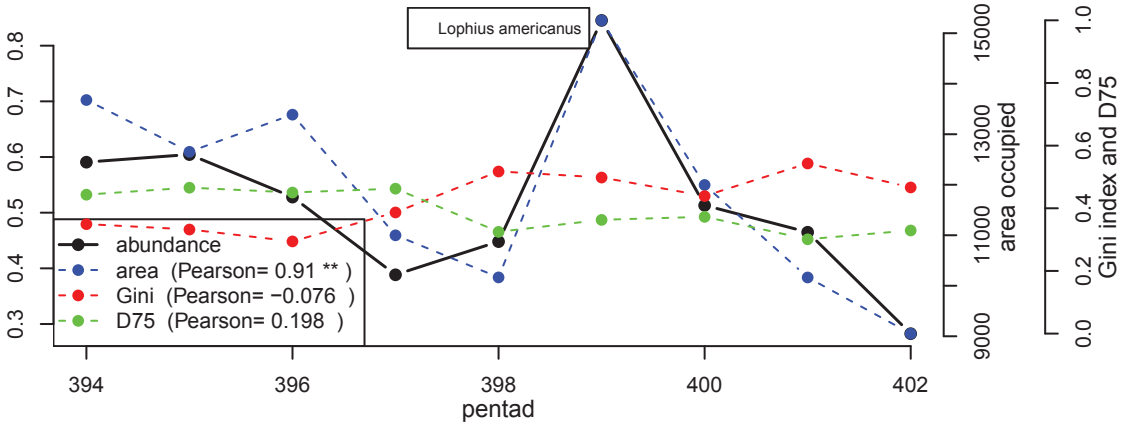

Hippoglossoides platessoides
abundance
area (Pearson= 0.8 **)
Gini (Pearson= 0.406)
D75 (Pearson= −0.647)
pentad
area occupied
Gini index and D75

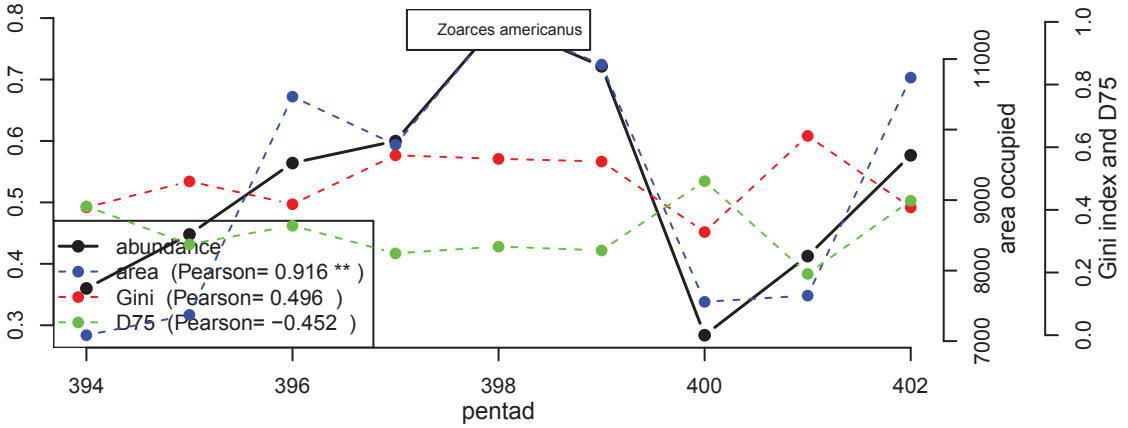

Pseudopleuronectes americanus
abundance
area (Pearson= 0.892 **)
Gini (Pearson= 0.455)
D75 (Pearson= −0.304)
pentad
area occupied
Gini index and D75

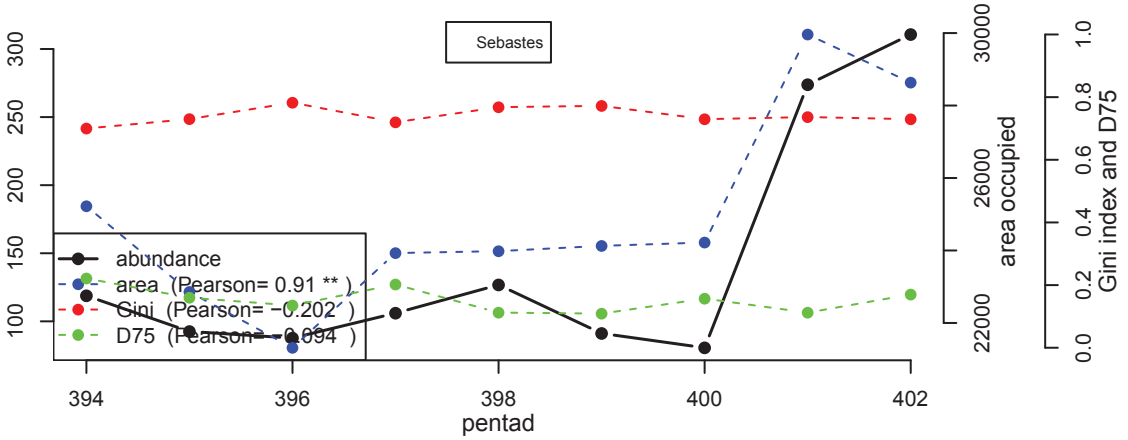

Hippoglossus hippoglossus
abundance
area (Pearson= 0.988 **)
Gini (Pearson= −0.465)
D75 (Pearson= 0.153)
pentad
area occupied
Gini index and D75

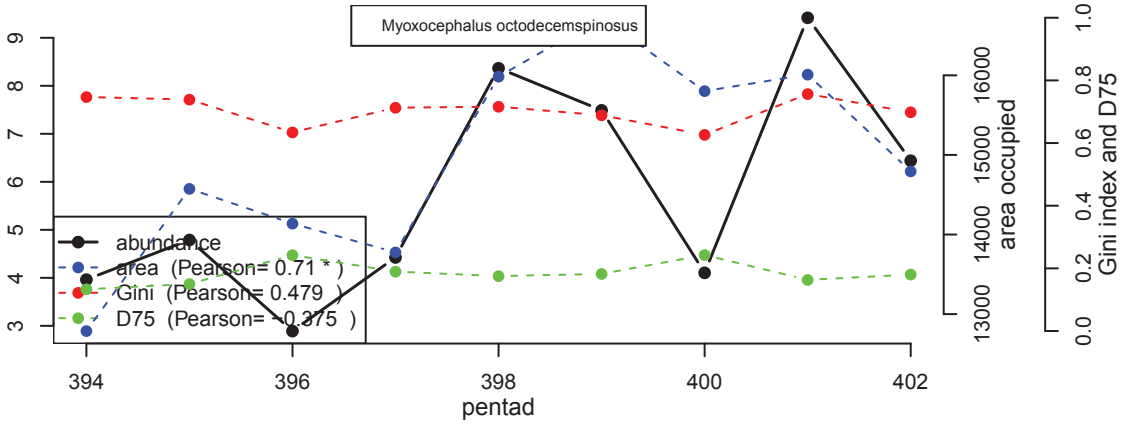

Illex illecebrosus
abundance
area (Pearson= 0.443)
Gini (Pearson= −0.16)
D75 (Pearson= 0.257)
pentad
area occupied
Gini index and D75

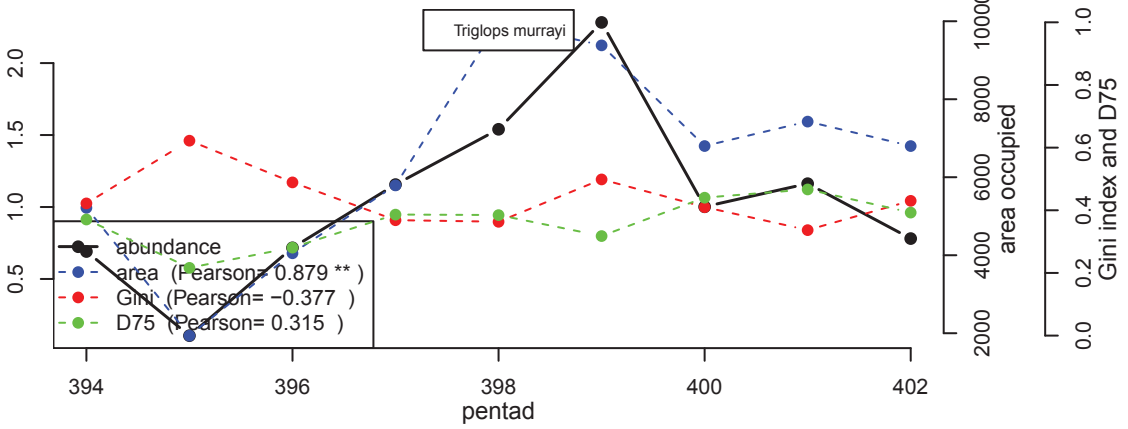

Clupea harengus
abundance
area (Pearson= 0.901 **)
Gini (Pearson= −0.648)
D75 (Pearson= 0.709 **)
pentad
area occupied
Gini index and D75

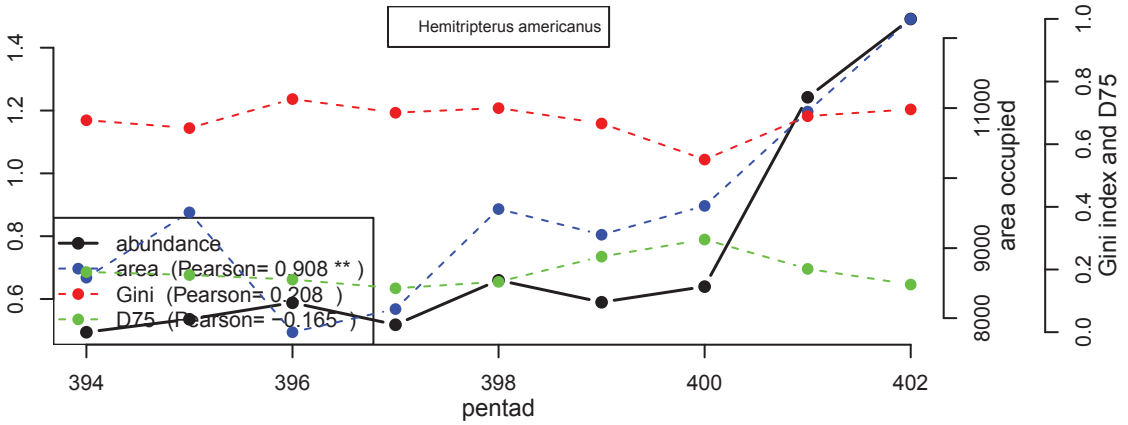

Lophius americanus
abundance
area (Pearson= 0.91 **)
Gini (Pearson= −0.076)
D75 (Pearson= 0.198)
pentad
area occupied
Gini index and D75

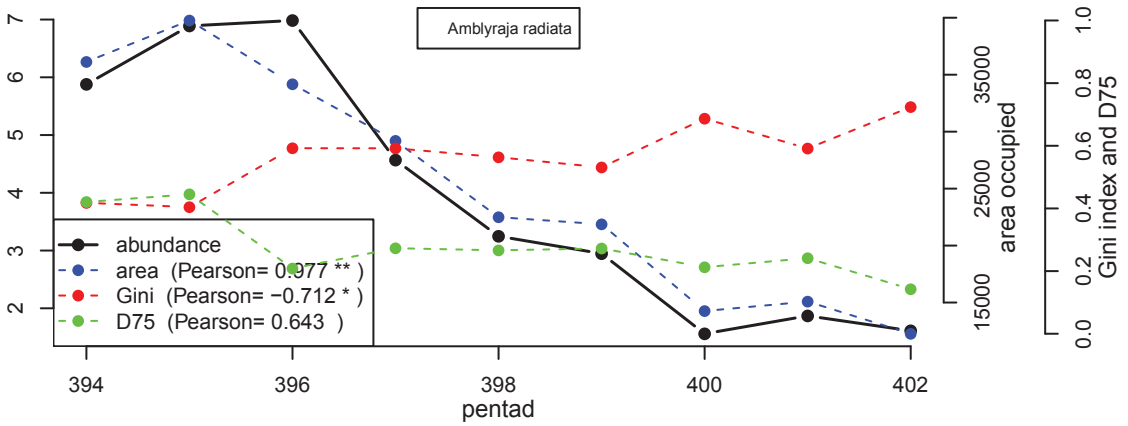

Zoarces americanus
abundance
area (Pearson= 0.916 **)
Gini (Pearson= 0.496)
D75 (Pearson= −0.452)
pentad
area occupied
Gini index and D75

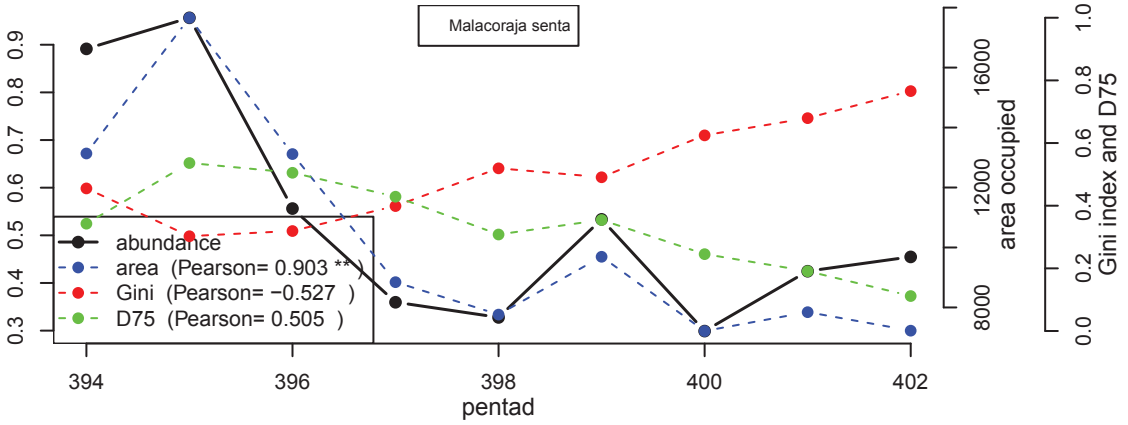

Sebastes
abundance
area (Pearson= 0.91 **)
Gini (Pearson= −0.202)
D75 (Pearson= 0.094)
pentad
area occupied
Gini index and D75

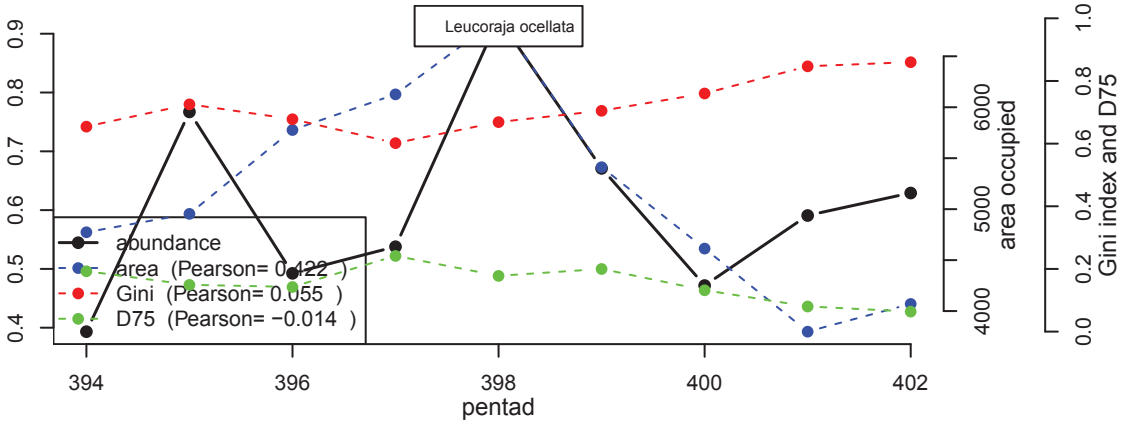

Myoxocephalus octodecemspinosus
abundance
area (Pearson= 0.71 *)
Gini (Pearson= 0.479)
D75 (Pearson= −0.375)
pentad
area occupied
Gini index and D75

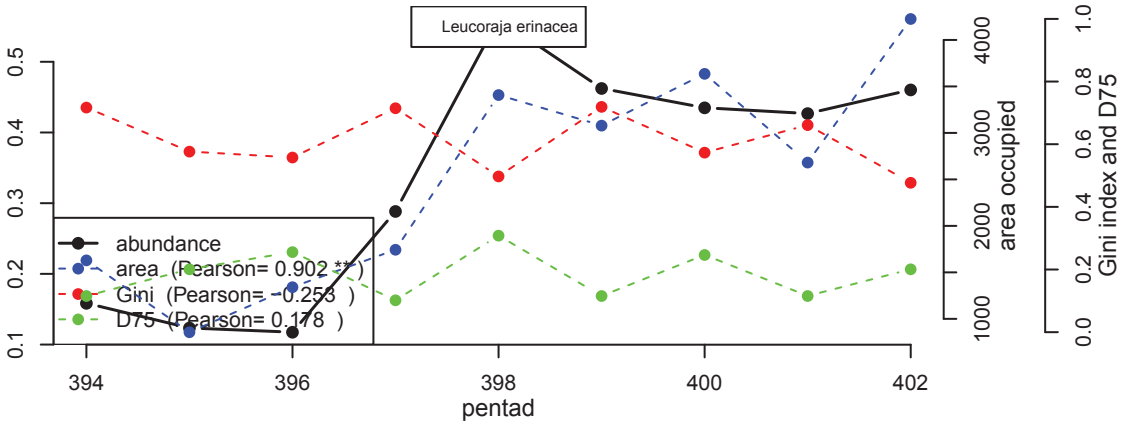

Triglops murrayi
abundance
area (Pearson= 0.879 **)
Gini (Pearson= −0.377)
D75 (Pearson= 0.315)
pentad
area occupied
Gini index and D75

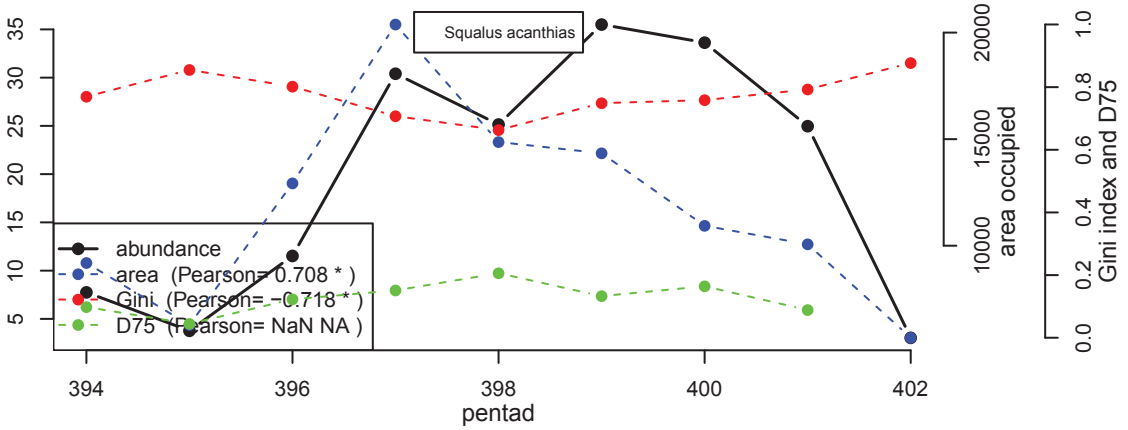

Hemitripterus americanus
abundance
area (Pearson= 0.908 **)
Gini (Pearson= 0.208)
D75 (Pearson= −0.165)
pentad
area occupied
Gini index and D75

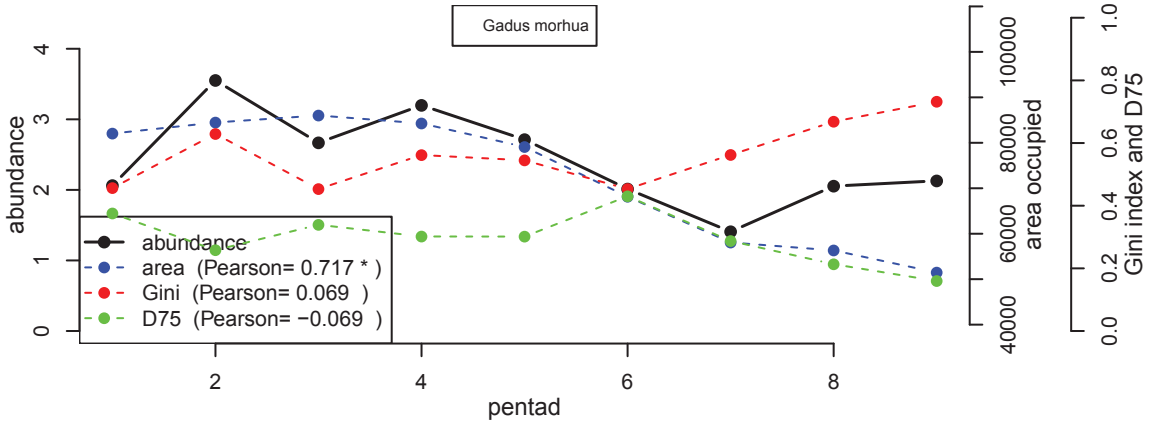

Amblyraja radiata
abundance
area (Pearson= 0.977 **)
Gini (Pearson= −0.712 *)
D75 (Pearson= 0.643)
pentad
area occupied
Gini index and D75

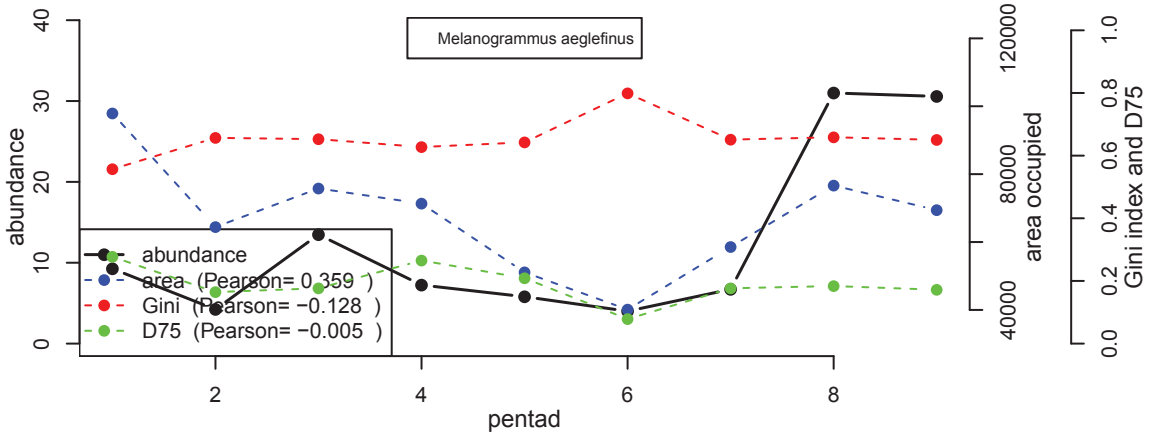

Malacoraja senta
abundance
area (Pearson= 0.903 **)
Gini (Pearson= −0.527)
D75 (Pearson= 0.505)
pentad
area occupied
Gini index and D75

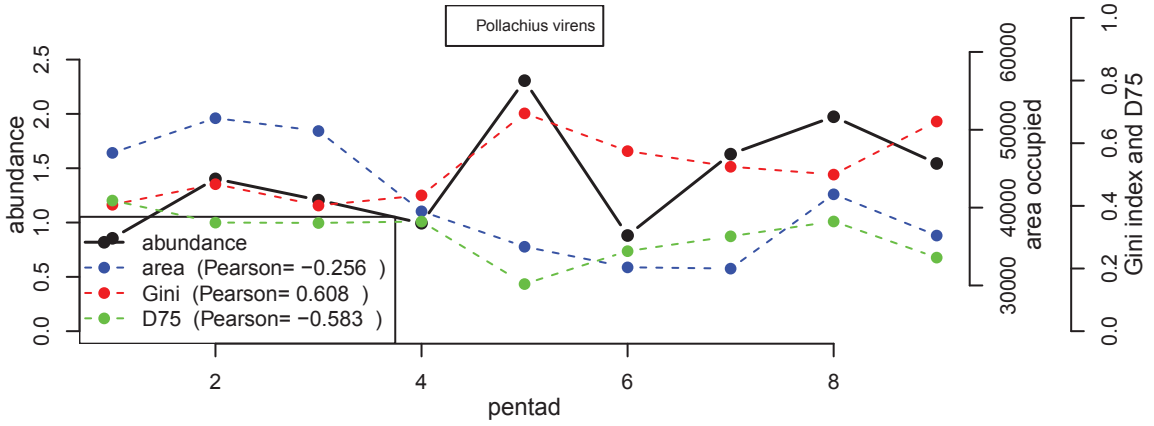

Leucoraja ocellata
abundance
area (Pearson= 0.422)
Gini (Pearson= 0.055)
D75 (Pearson= −0.014)
pentad
area occupied
Gini index and D75

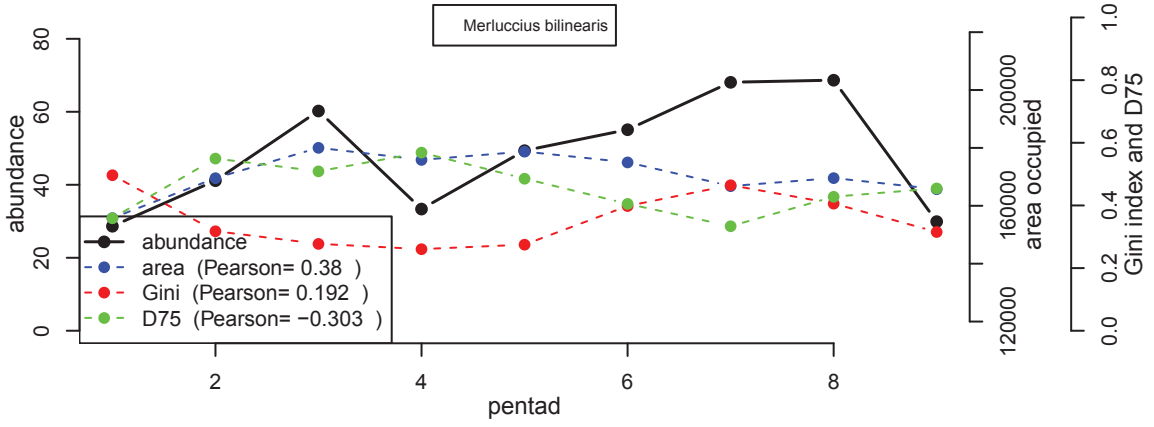

Leucoraja erinacea
abundance
area (Pearson= 0.902 **)
Gini (Pearson= −0.253)
D75 (Pearson= 0.178)
pentad
area occupied
Gini index and D75

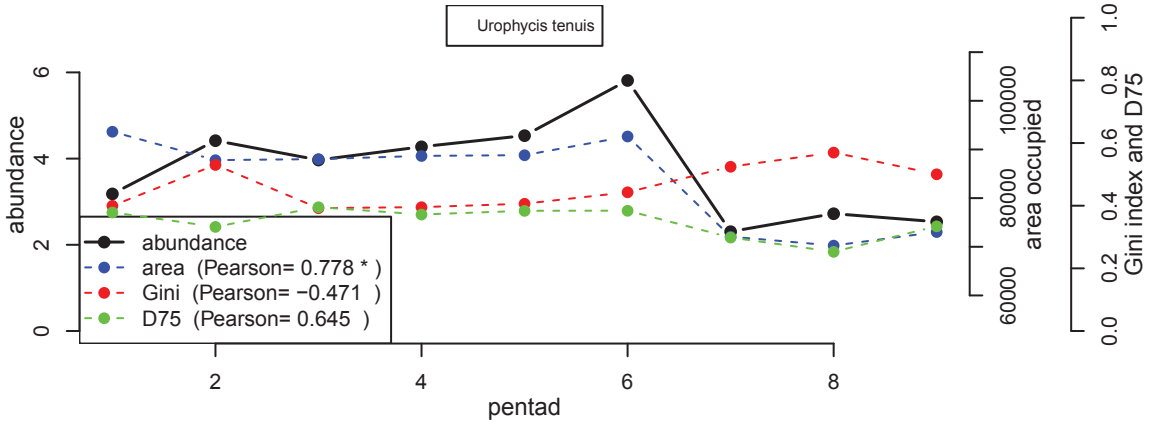

Squalus acanthias
abundance
area (Pearson= 0.708 *)
Gini (Pearson= −0.718 *)
D75 (Pearson= NaN NA)
pentad
area occupied
Gini index and D75

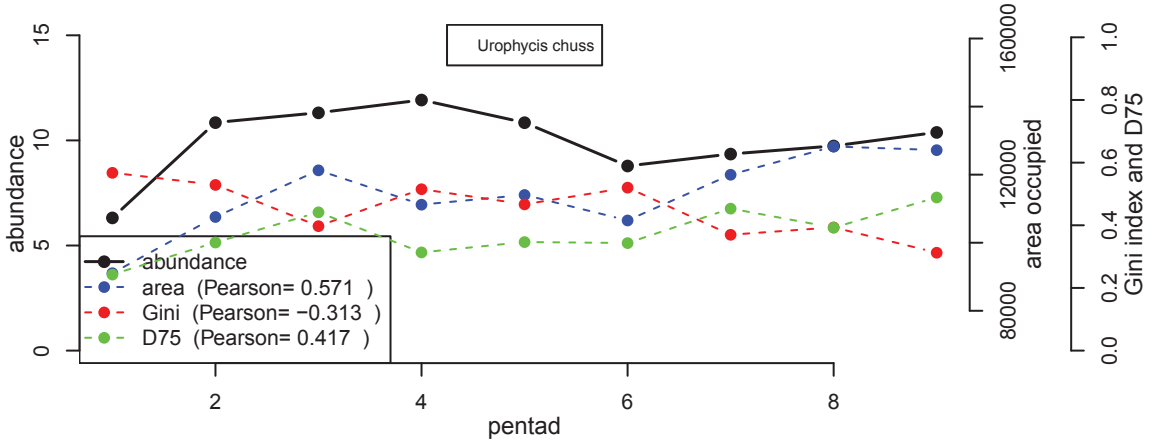

Gadus morhua
abundance
area (Pearson= 0.717 *)
Gini (Pearson= 0.069)
D75 (Pearson= −0.069)
abundance
area occupied
Gini index and D75
pentad

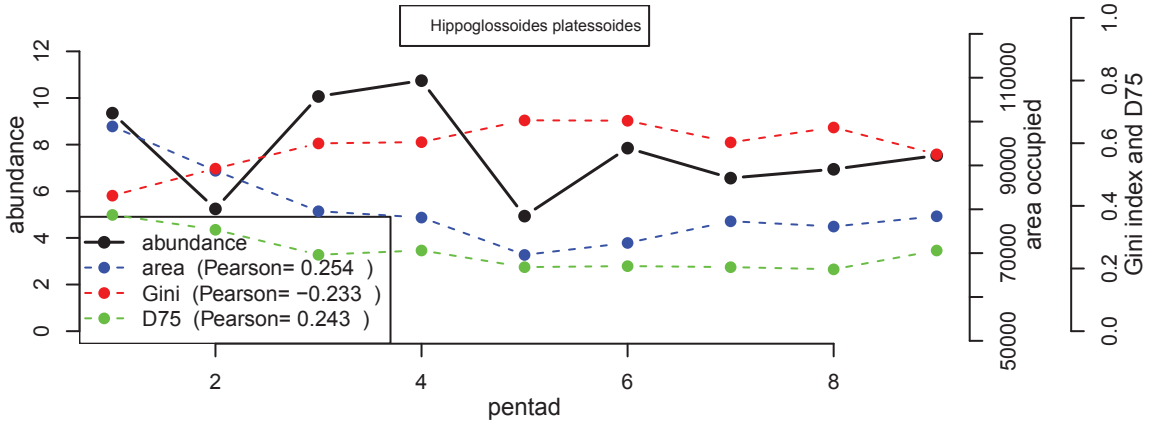

Melanogrammus aeglefinus
abundance
area (Pearson= 0.359)
Gini (Pearson= −0.128)
D75 (Pearson= −0.005)
abundance
area occupied
Gini index and D75
pentad

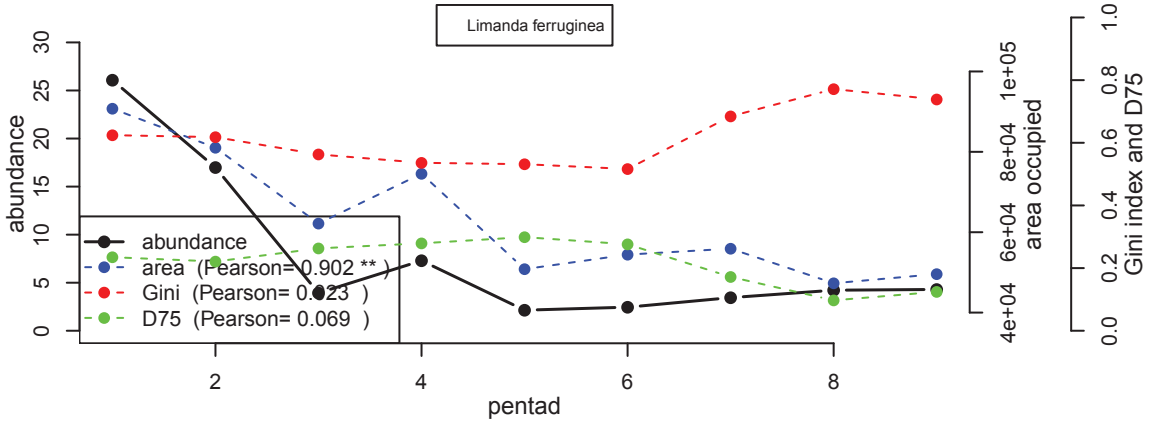

Pollachius virens
abundance
area (Pearson= −0.256)
Gini (Pearson= 0.608)
D75 (Pearson= −0.583)
abundance
area occupied
Gini index and D75
pentad

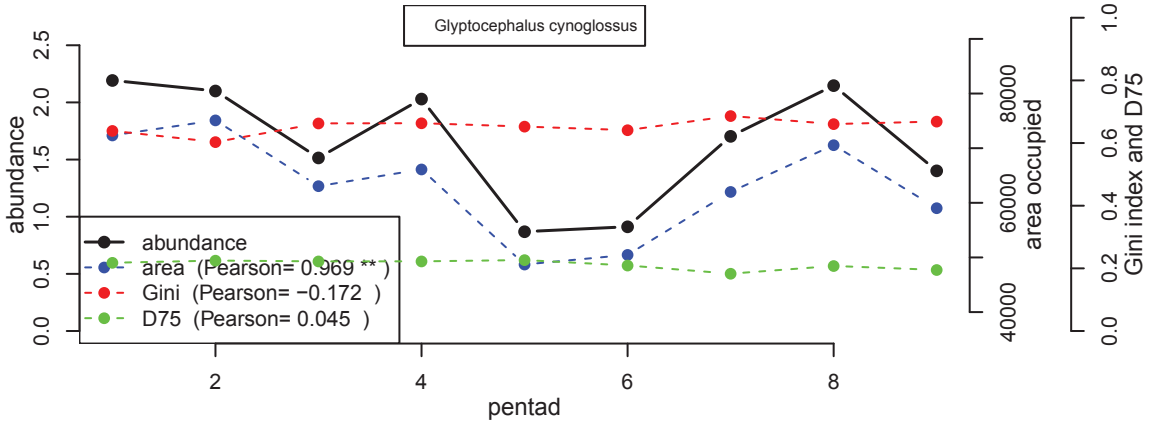

Merluccius bilinearis
abundance
area (Pearson= 0.38)
Gini (Pearson= 0.192)
D75 (Pearson= −0.303)
abundance
area occupied
Gini index and D75
pentad

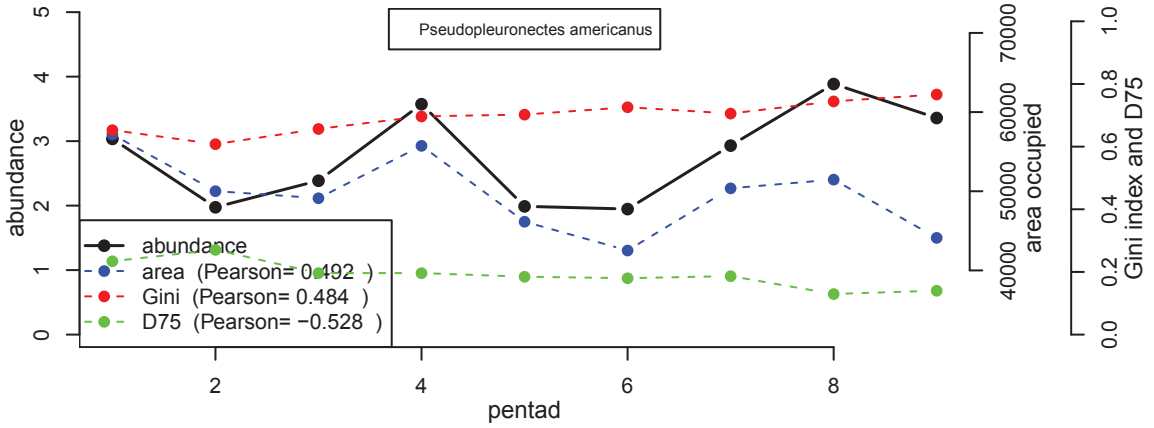

Urophycis tenuis
abundance
area (Pearson= 0.778 *)
Gini (Pearson= −0.471)
D75 (Pearson= 0.645)
pentad
area occupied
Gini index and D75

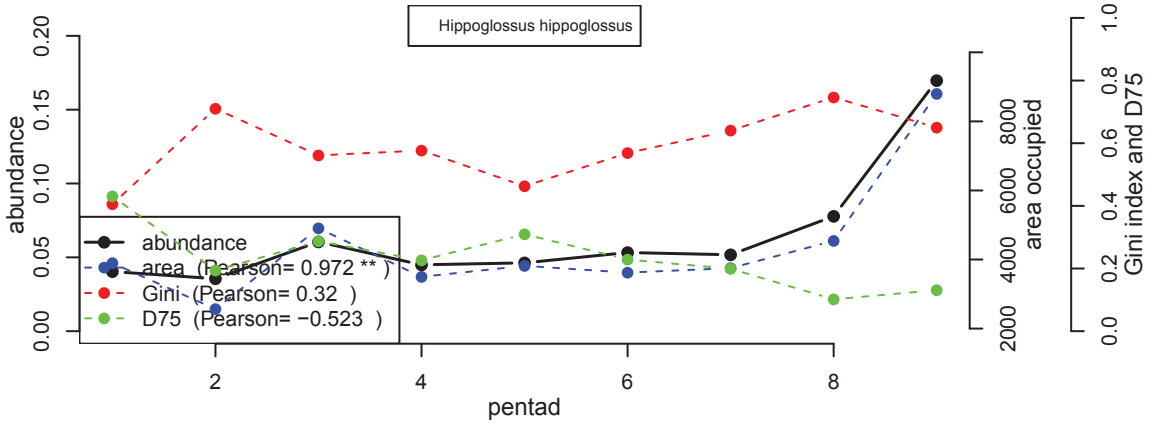

Urophycis chuss
abundance
area (Pearson= 0.571)
Gini (Pearson= −0.313)
D75 (Pearson= 0.417)
pentad
area occupied
Gini index and D75

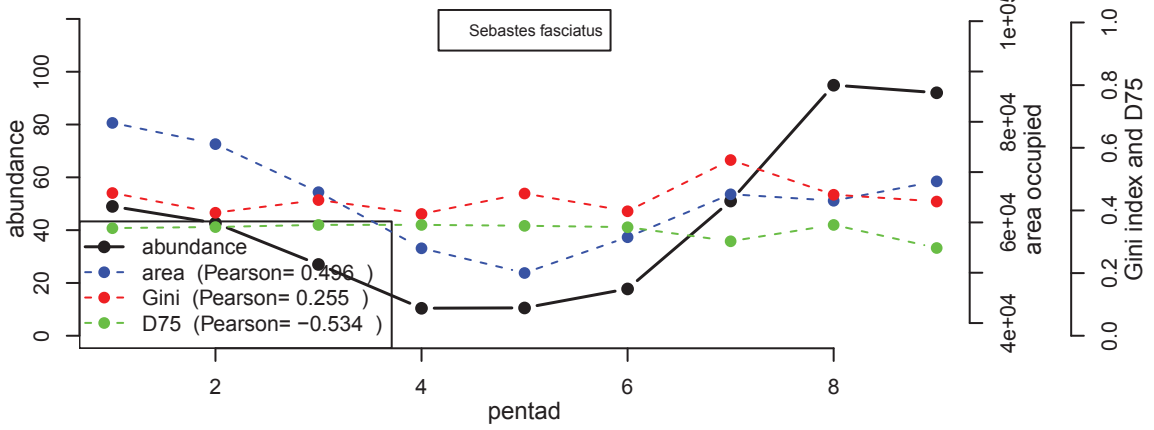

Hippoglossoides platessoides
abundance
area (Pearson= 0.254)
Gini (Pearson= −0.233)
D75 (Pearson= 0.243)
pentad
area occupied
Gini index and D75

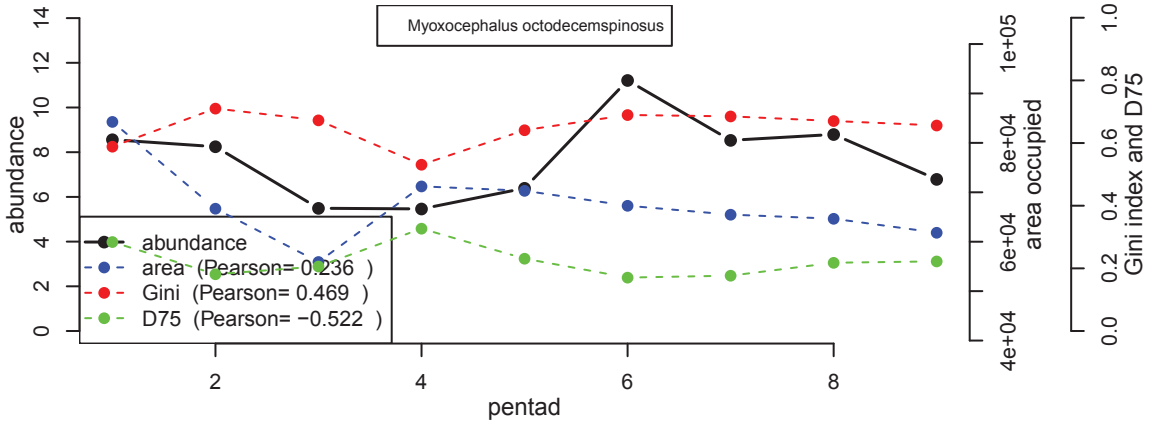

Limanda ferruginea
abundance
area (Pearson= 0.902 **)
Gini (Pearson= 0.023)
D75 (Pearson= 0.069)
pentad
area occupied
Gini index and D75

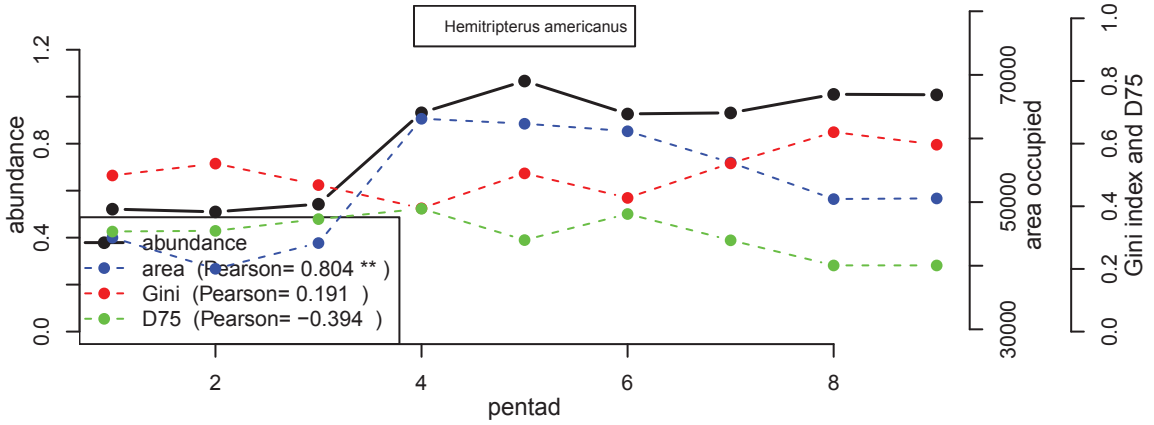

Glyptocephalus cynoglossus
abundance
area (Pearson= 0.969 **)
Gini (Pearson= −0.172)
D75 (Pearson= 0.045)
abundance
area occupied
Gini index and D75
pentad

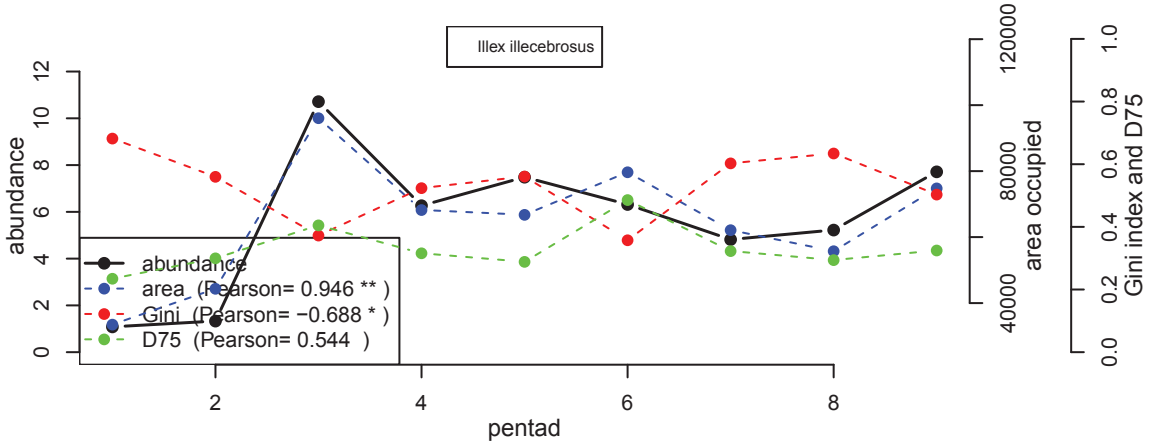

Pseudopleuronectes americanus
abundance
area (Pearson= 0.492)
Gini (Pearson= 0.484)
D75 (Pearson= −0.528)
abundance
area occupied
Gini index and D75
pentad

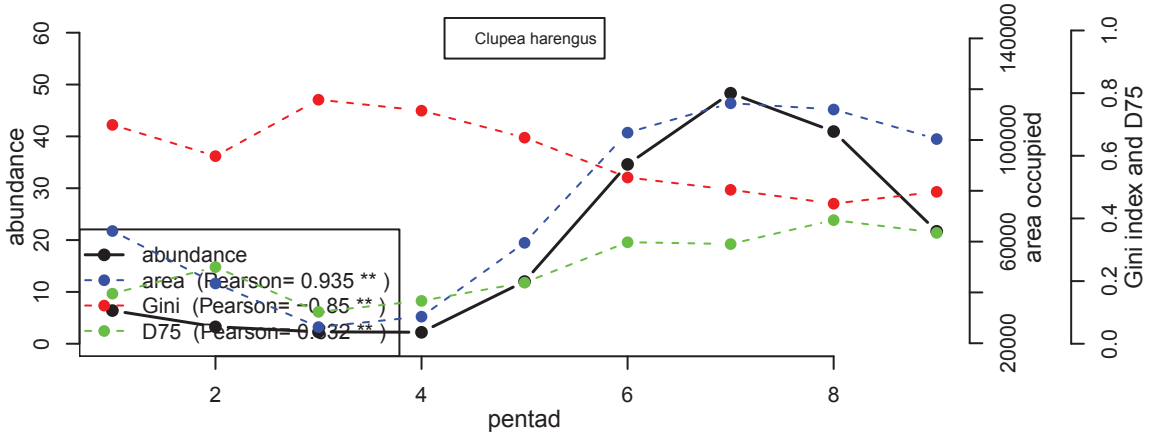

Hippoglossus hippoglossus
abundance
area (Pearson= 0.972 **)
Gini (Pearson= 0.32)
D75 (Pearson= −0.523)
abundance
area occupied
Gini index and D75
pentad

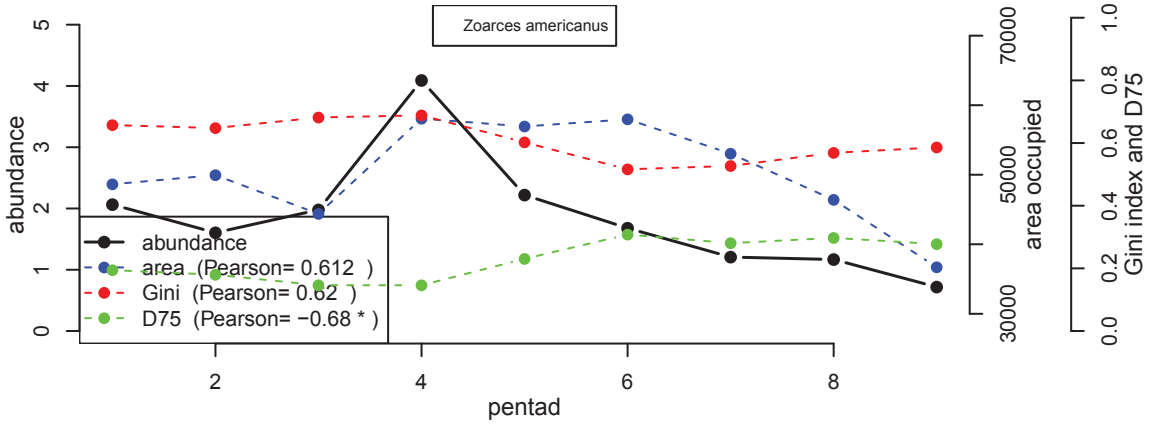

Sebastes fasciatus
abundance
area (Pearson= 0.496)
Gini (Pearson= 0.255)
D75 (Pearson= −0.534)
abundance
area occupied
Gini index and D75
pentad

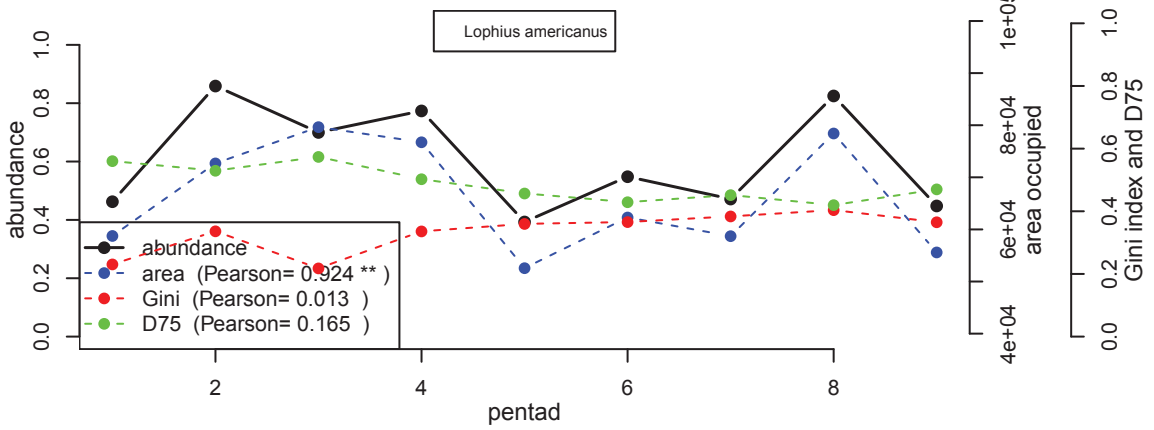

Myoxocephalus octodecemspinosus
abundance
area occupied
Gini index and D75
pentad
abundance
area (Pearson= 0.236)
Gini (Pearson= 0.469)
D75 (Pearson= −0.522)

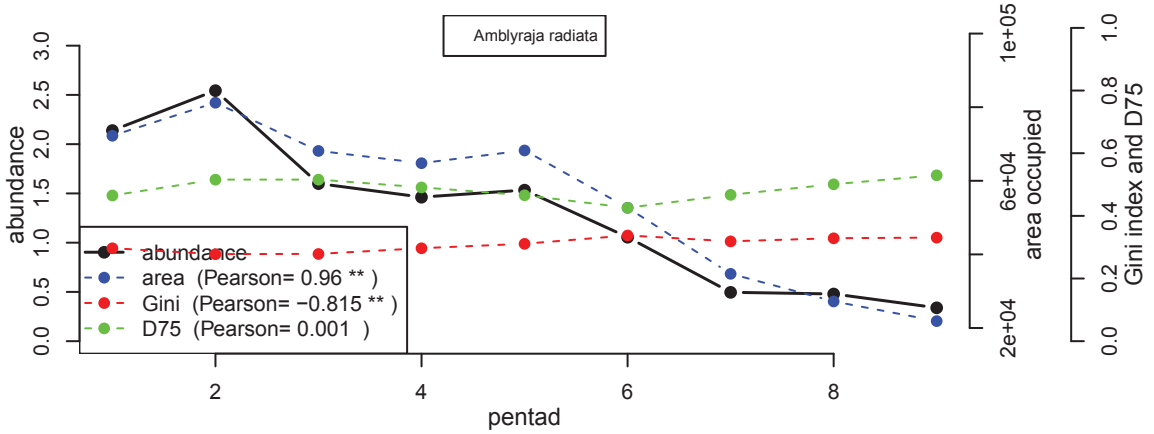

Hemitripterus americanus
abundance
area occupied
Gini index and D75
pentad
abundance
area (Pearson= 0.804 **)
Gini (Pearson= 0.191)
D75 (Pearson= −0.394)

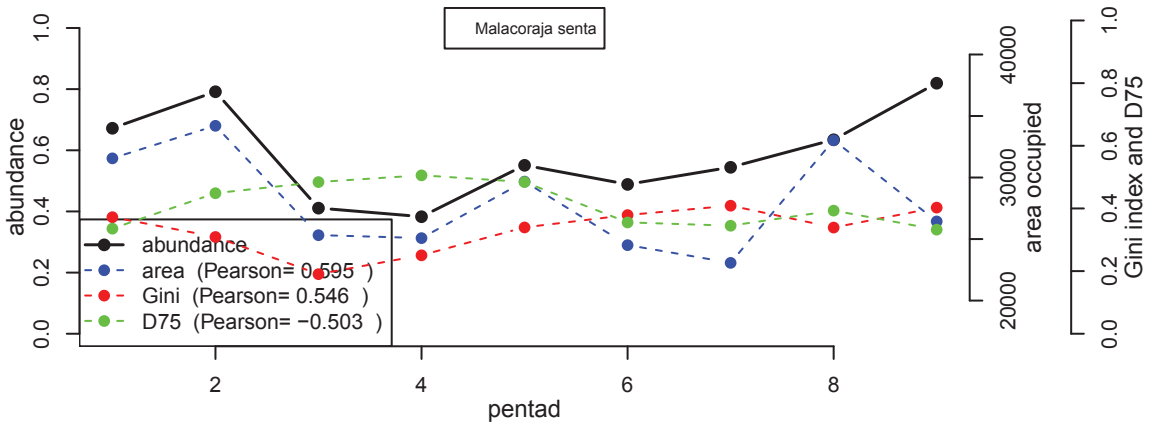

Illex illecebrosus
abundance
area occupied
Gini index and D75
pentad
abundance
area (Pearson= 0.946 **)
Gini (Pearson= −0.688 *)
D75 (Pearson= 0.544)

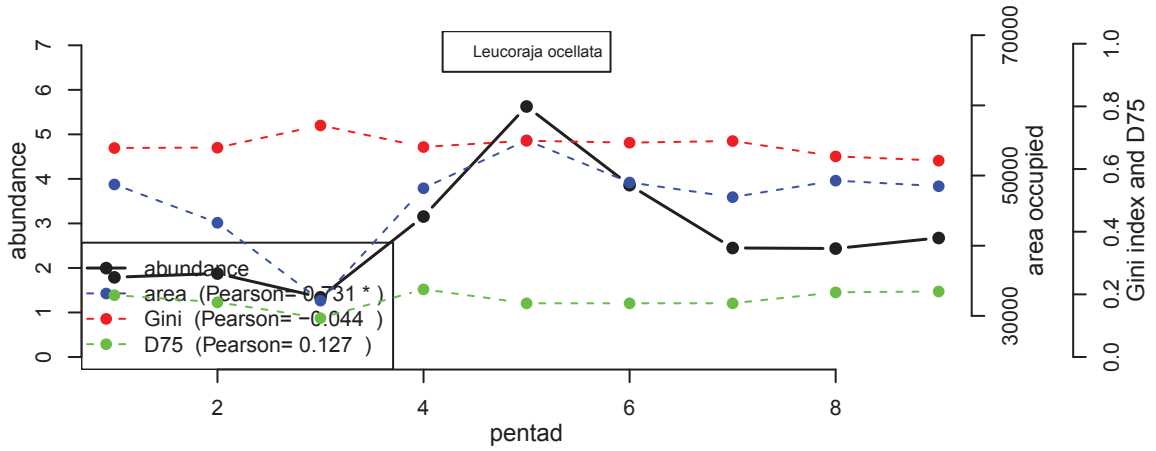

Clupea harengus
abundance
area occupied
Gini index and D75
pentad
abundance
area (Pearson= 0.935 **)
Gini (Pearson= −0.85 **)
D75 (Pearson= 0.632 **)

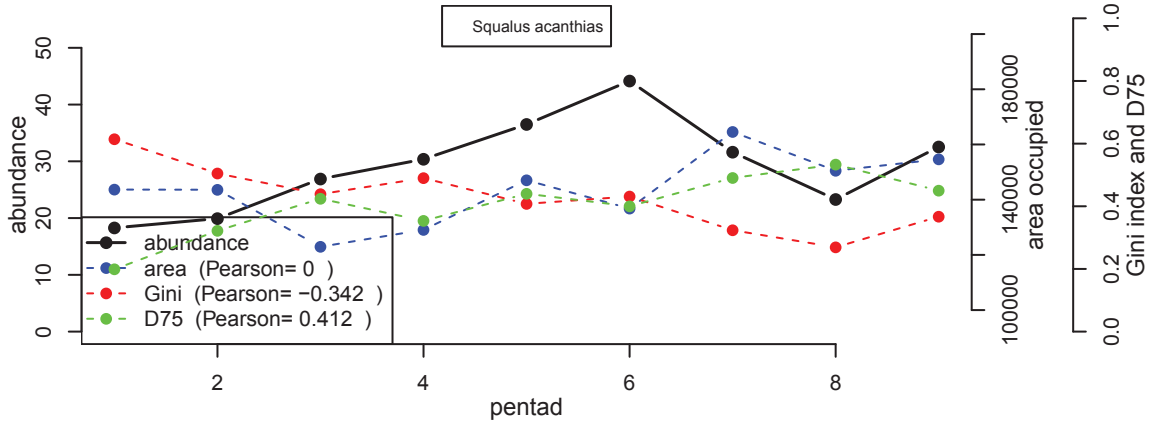

Zoarces americanus
abundance
area (Pearson= 0.612)
Gini (Pearson= 0.62)
D75 (Pearson= −0.68 *)
abundance
area occupied
Gini index and D75
pentad


Lophius americanus
abundance
area (Pearson= 0.924 **)
Gini (Pearson= 0.013)
D75 (Pearson= 0.165)
abundance
area occupied
Gini index and D75
pentad


Amblyraja radiata
abundance
area (Pearson= 0.96 **)
Gini (Pearson= −0.815 **)
D75 (Pearson= 0.001)
abundance
area occupied
Gini index and D75
pentad


Malacoraja senta
abundance
area (Pearson= 0.595)
Gini (Pearson= 0.546)
D75 (Pearson= −0.503)
abundance
area occupied
Gini index and D75
pentad


Leucoraja ocellata
abundance
area occupied
Gini index and D75
pentad
abundance
area (Pearson= 0.731 *)
Gini (Pearson= −0.044)
D75 (Pearson= 0.127)


Squalus acanthias
abundance
area occupied
Gini index and D75
pentad
abundance
area (Pearson= 0)
Gini (Pearson= −0.342)
D75 (Pearson= 0.412)

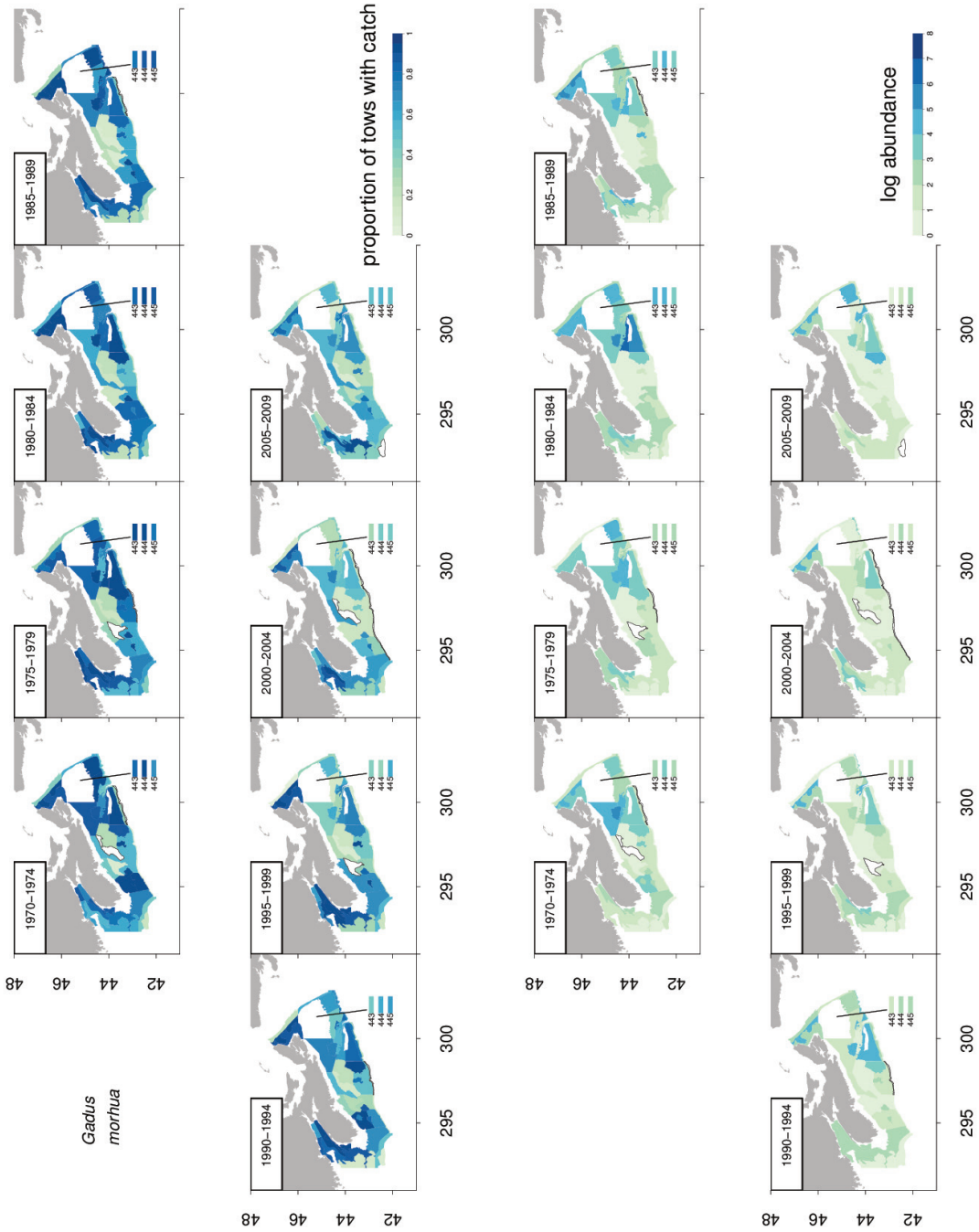


Figure A.3: Proportion of tows with catch and stratified random estimates of abundance for DFO Atlantic cod (*Gadus morhua*).

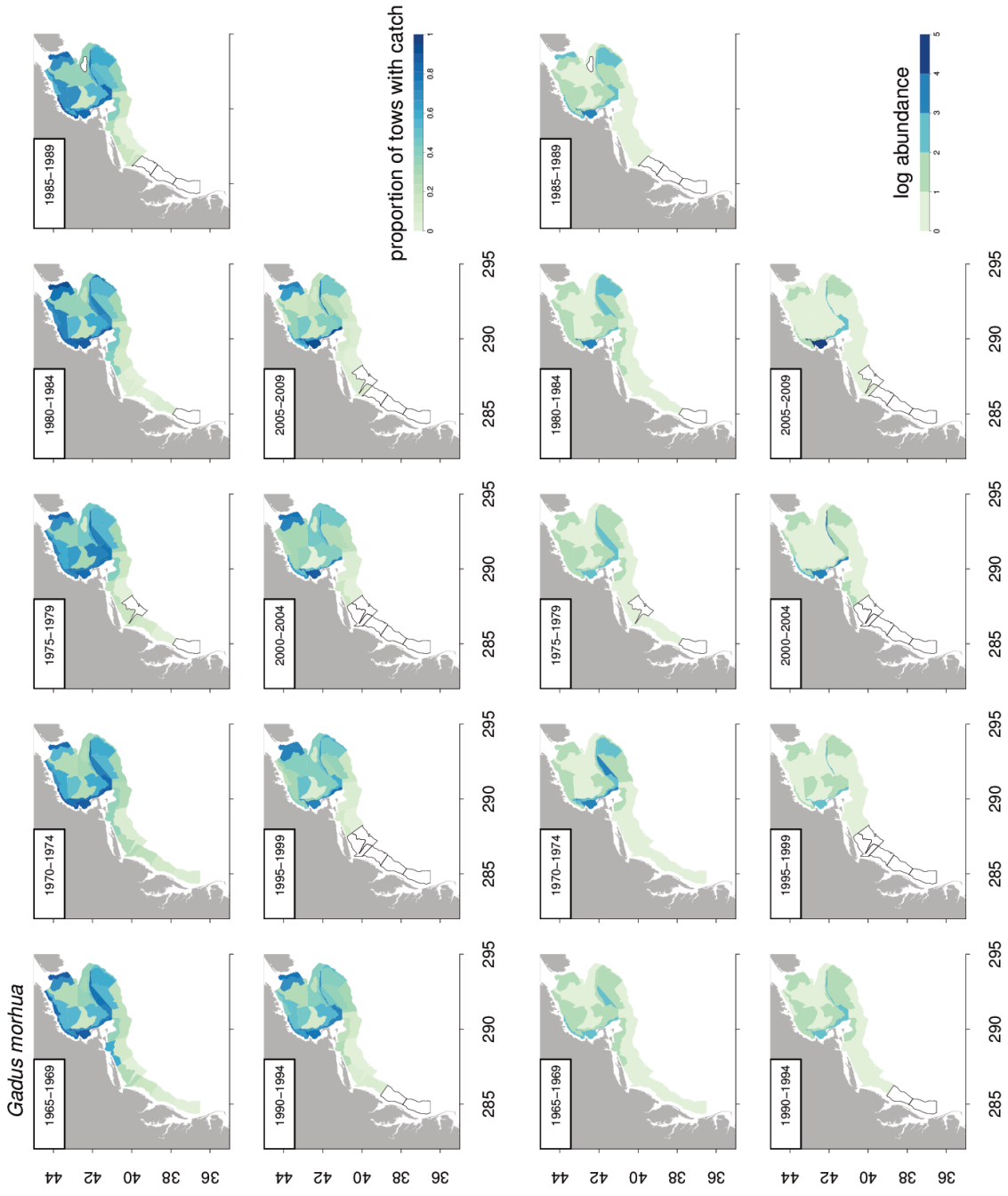


Figure A.4: Proportion of tows with catch and stratified random estimates of abundance for NMFS Atlantic cod (*Gadus morhua*).

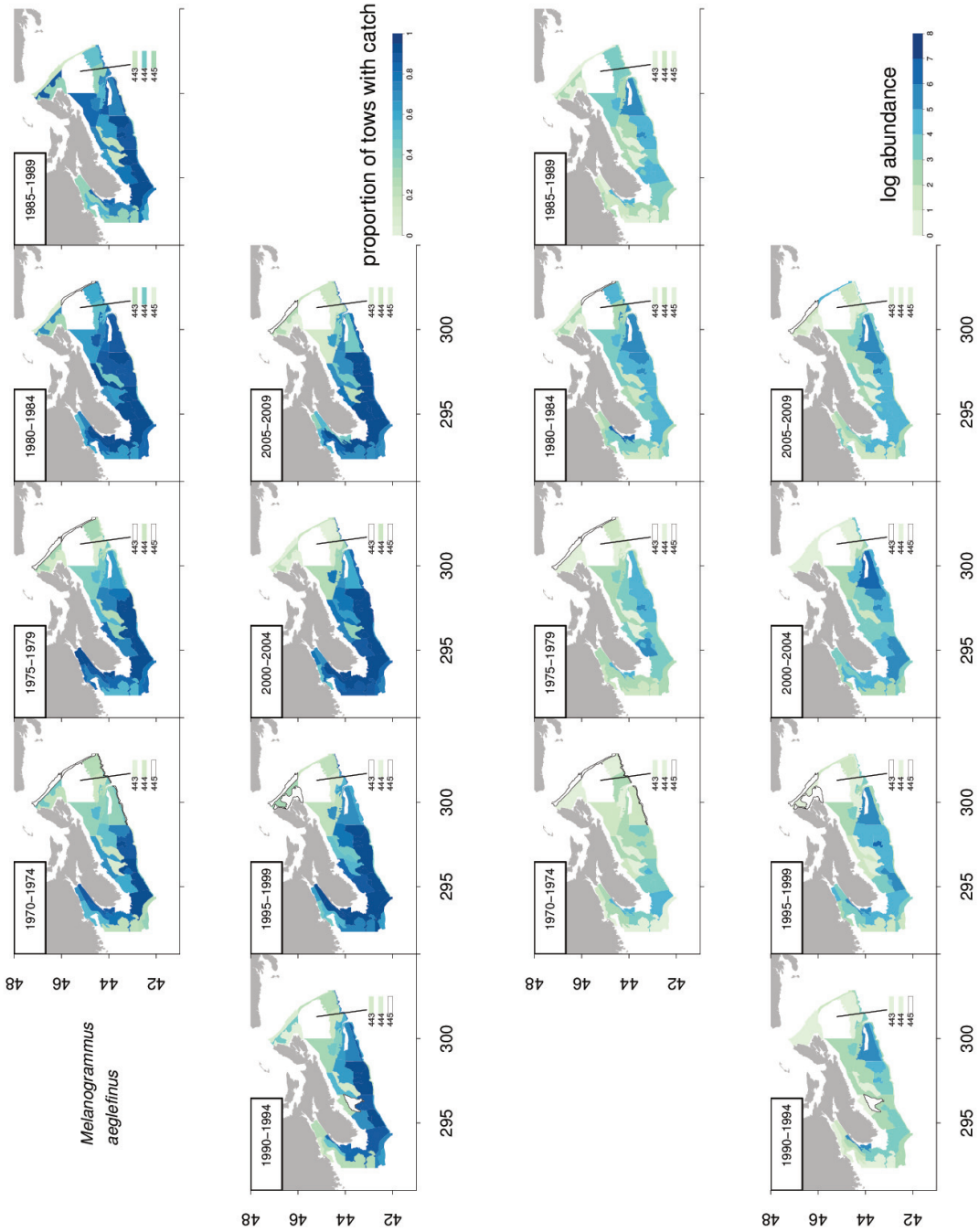


Figure A.5: Proportion of tows with catch and stratified random estimates of abundance for DFO haddock (*Melanogrammus aeglefinus*).

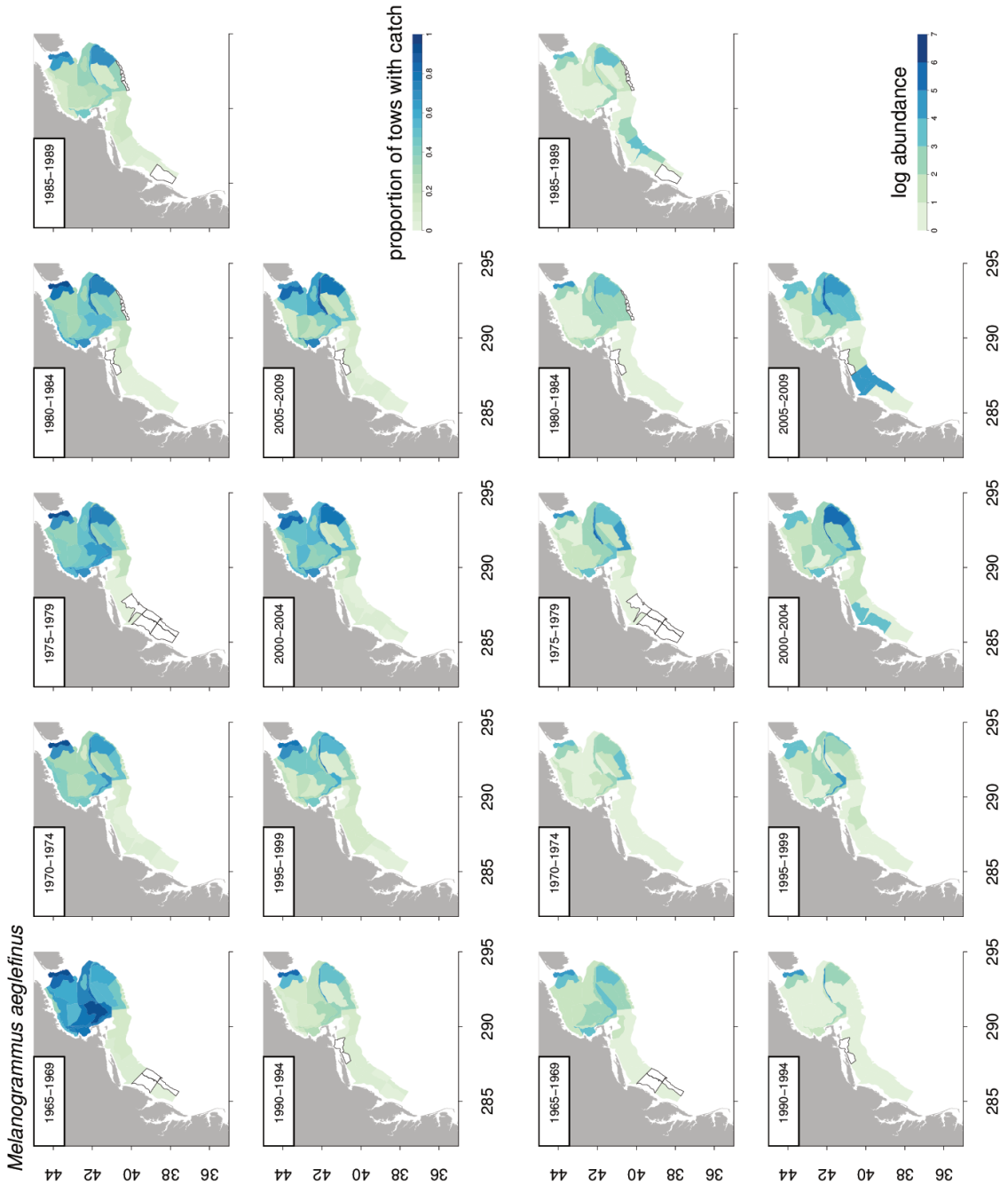


Figure A.6: Proportion of tows with catch and stratified random estimates of abundance for NMFS haddock (*Melanogrammus aeglefinus*).

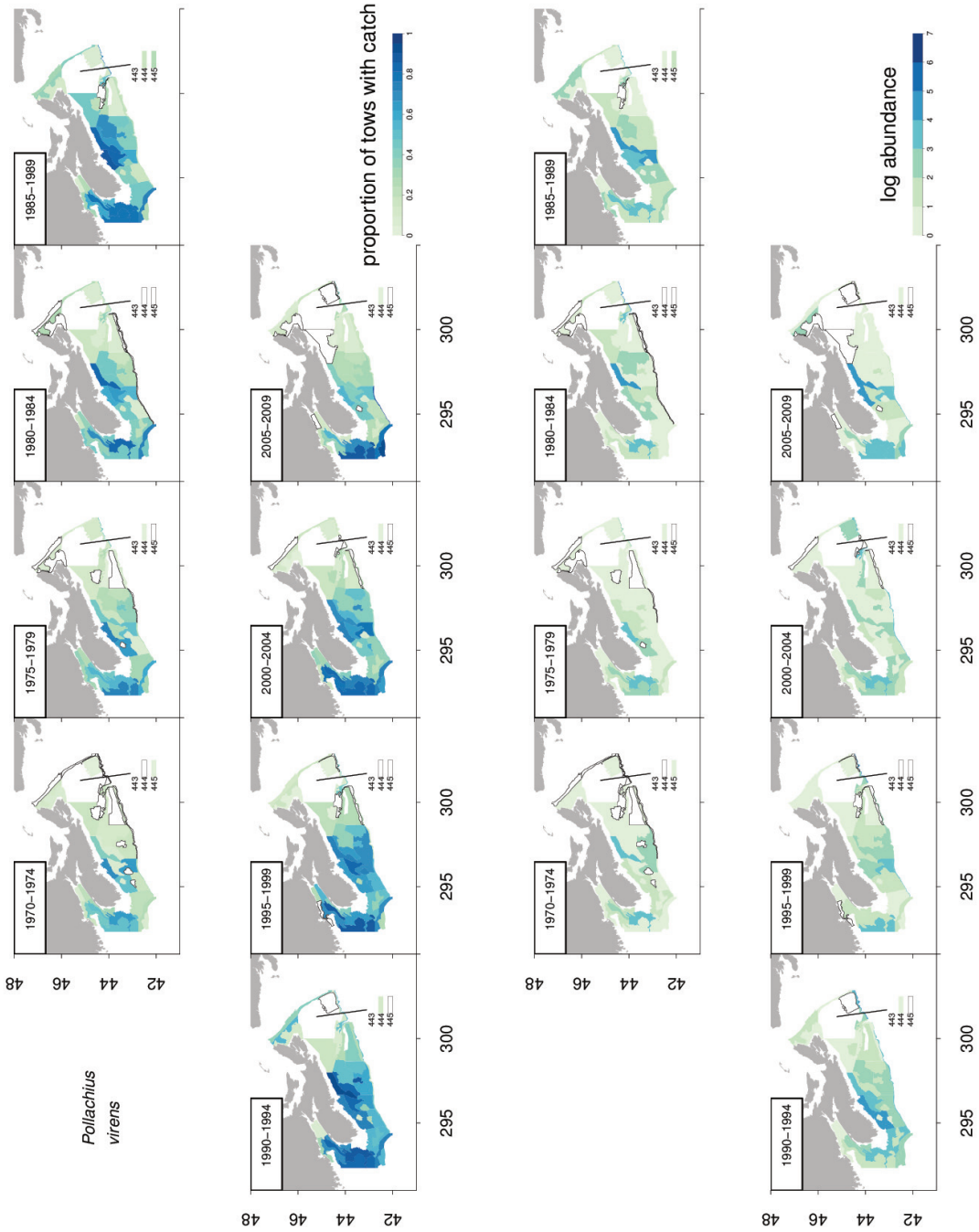


Figure A.7: Proportion of tows with catch and stratified random estimates of abundance for DFO pollock (*Pollachius virens*).

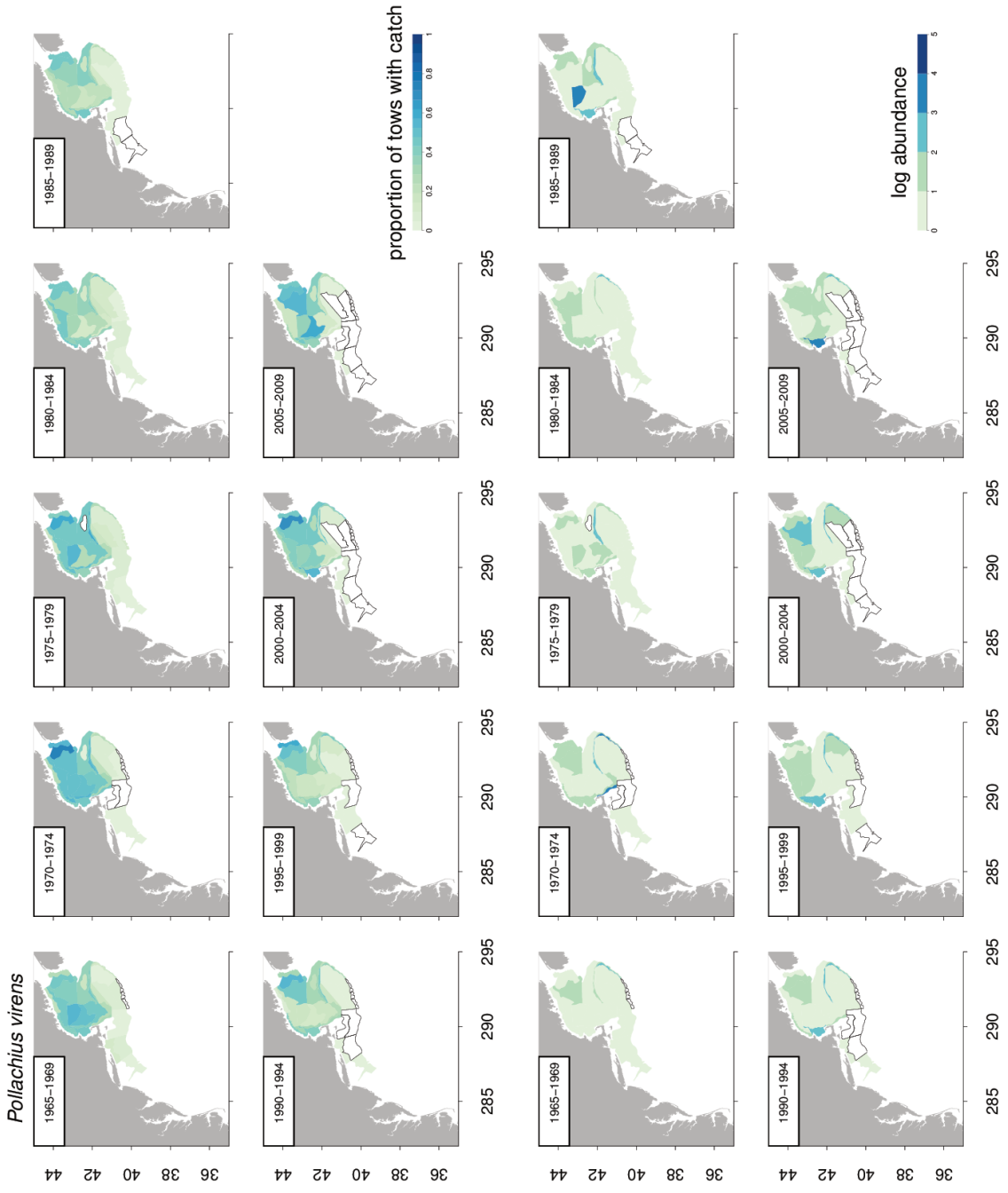


Figure A.8: Proportion of tows with catch and stratified random estimates of abundance for NMFS pollock (*Pollachius virens*).

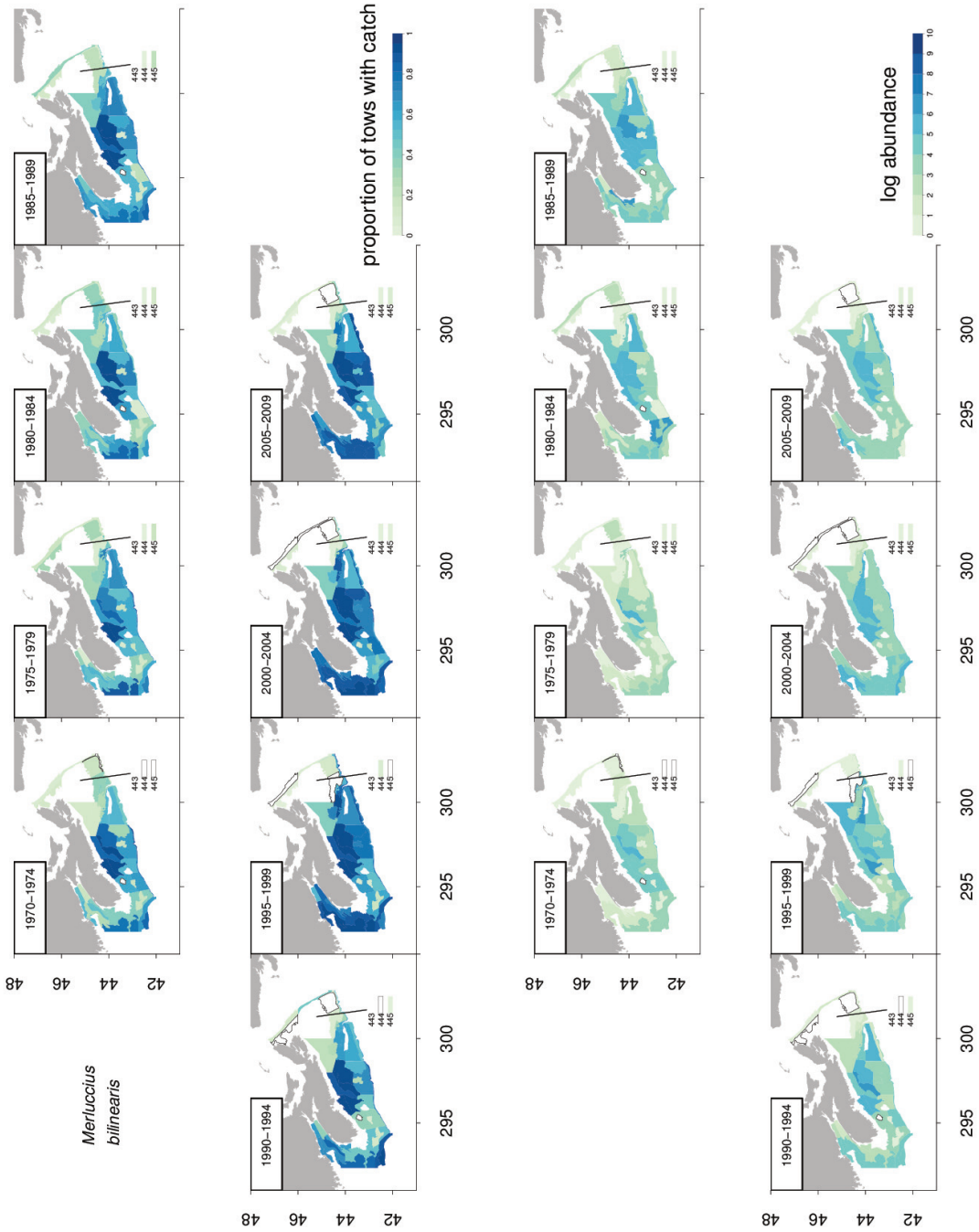


Figure A.9: Proportion of tows with catch and stratified random estimates of abundance for DFO silver hake (*Merluccius bilinearis*).

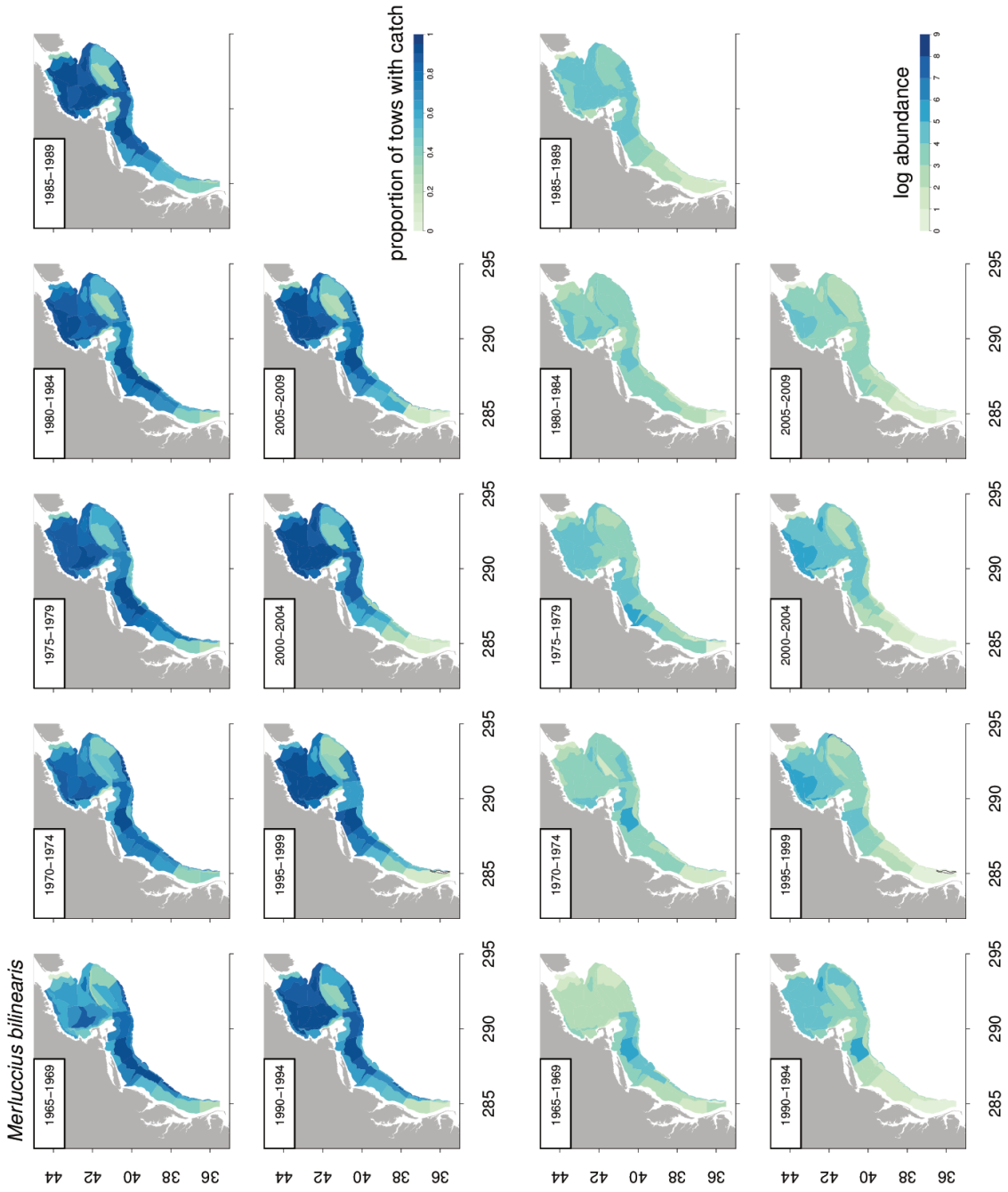


Figure A.10: Proportion of tows with catch and stratified random estimates of abundance for NMFS silver hake (*Merluccius bilinearis*).

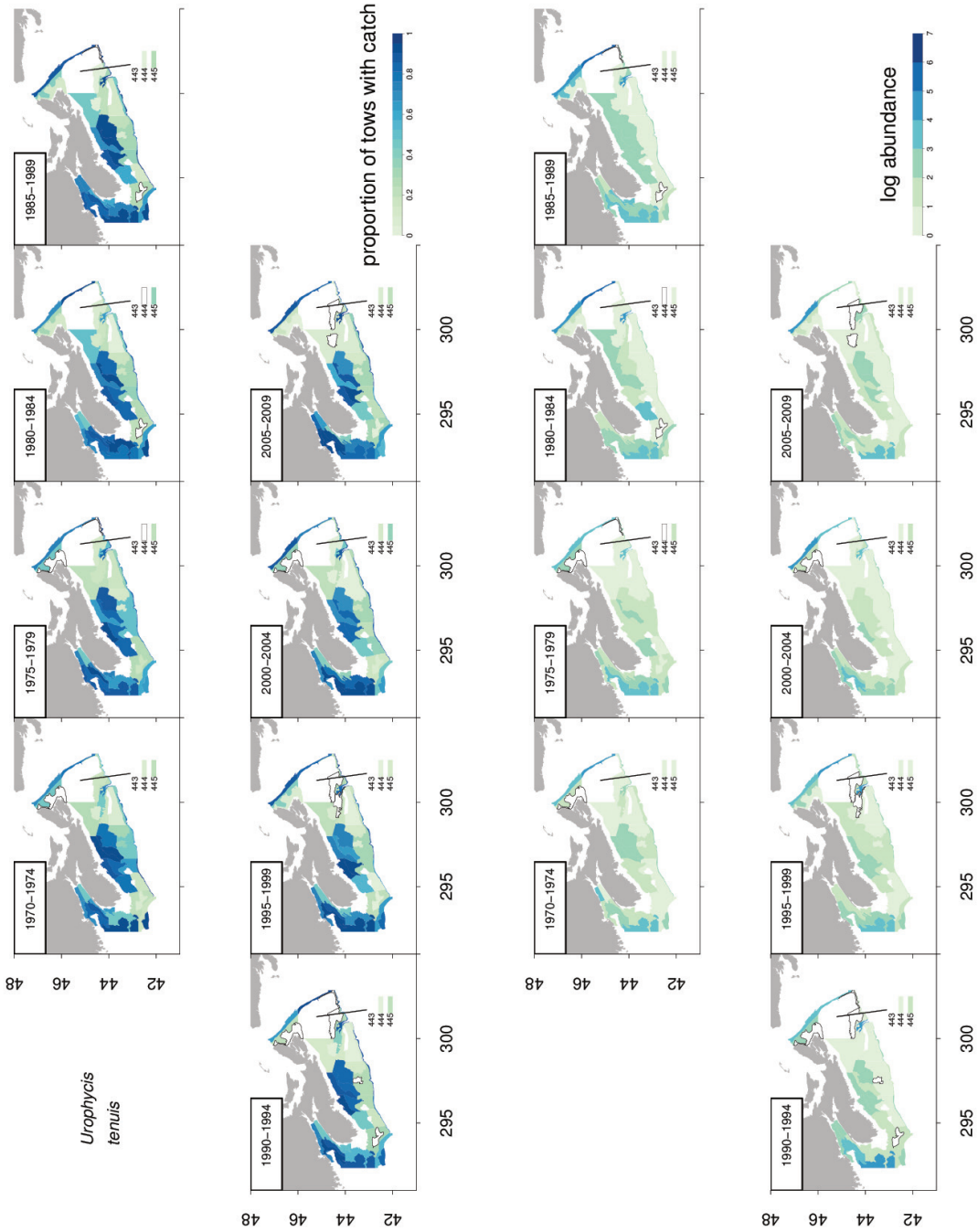


Figure A.11: Proportion of tows with catch and stratified random estimates of abundance for DFO white hake (*Urophycis tenuis*).

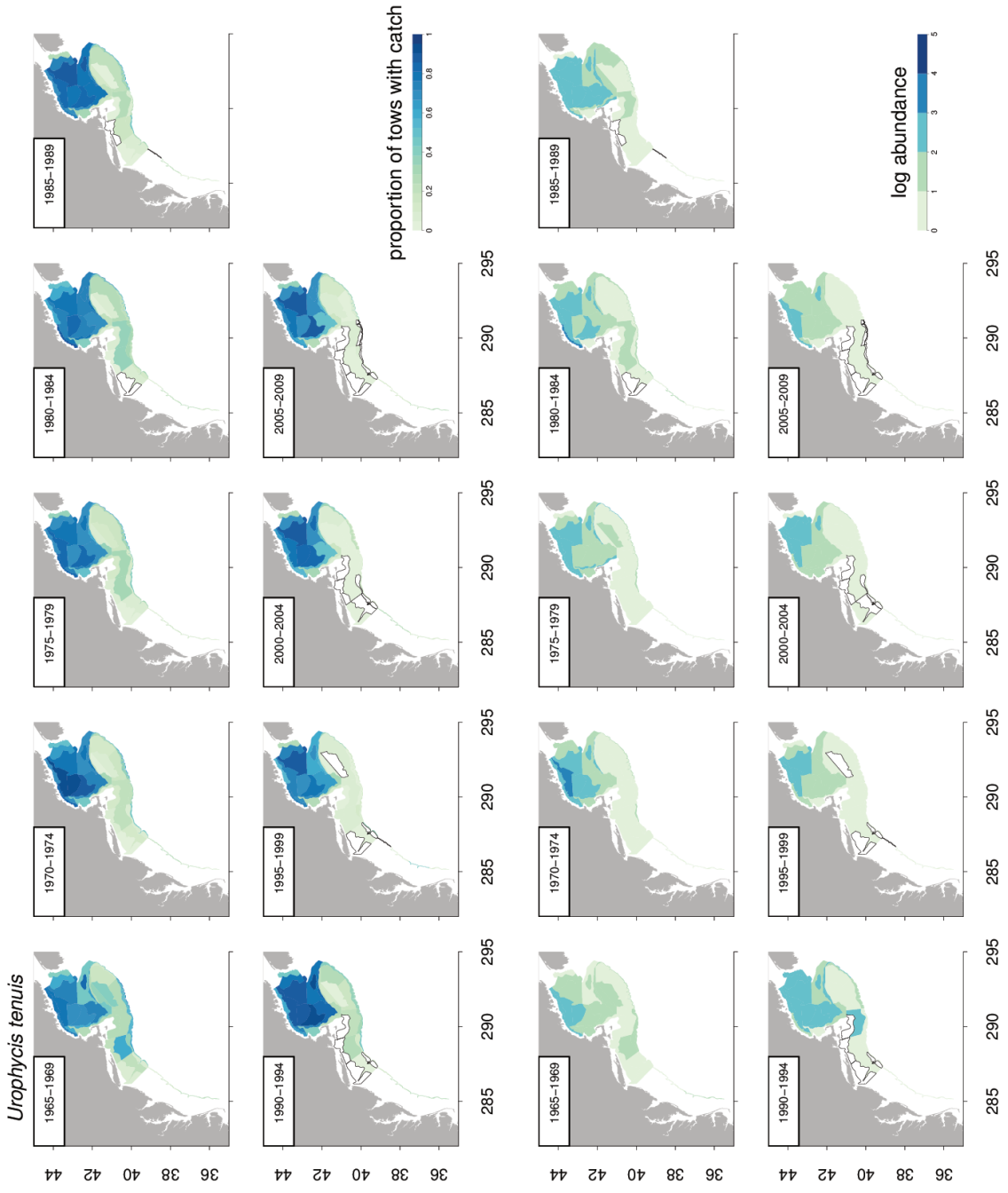


Figure A.12: Proportion of tows with catch and stratified random estimates of abundance for NMFS white hake (*Urophycis tenuis*).

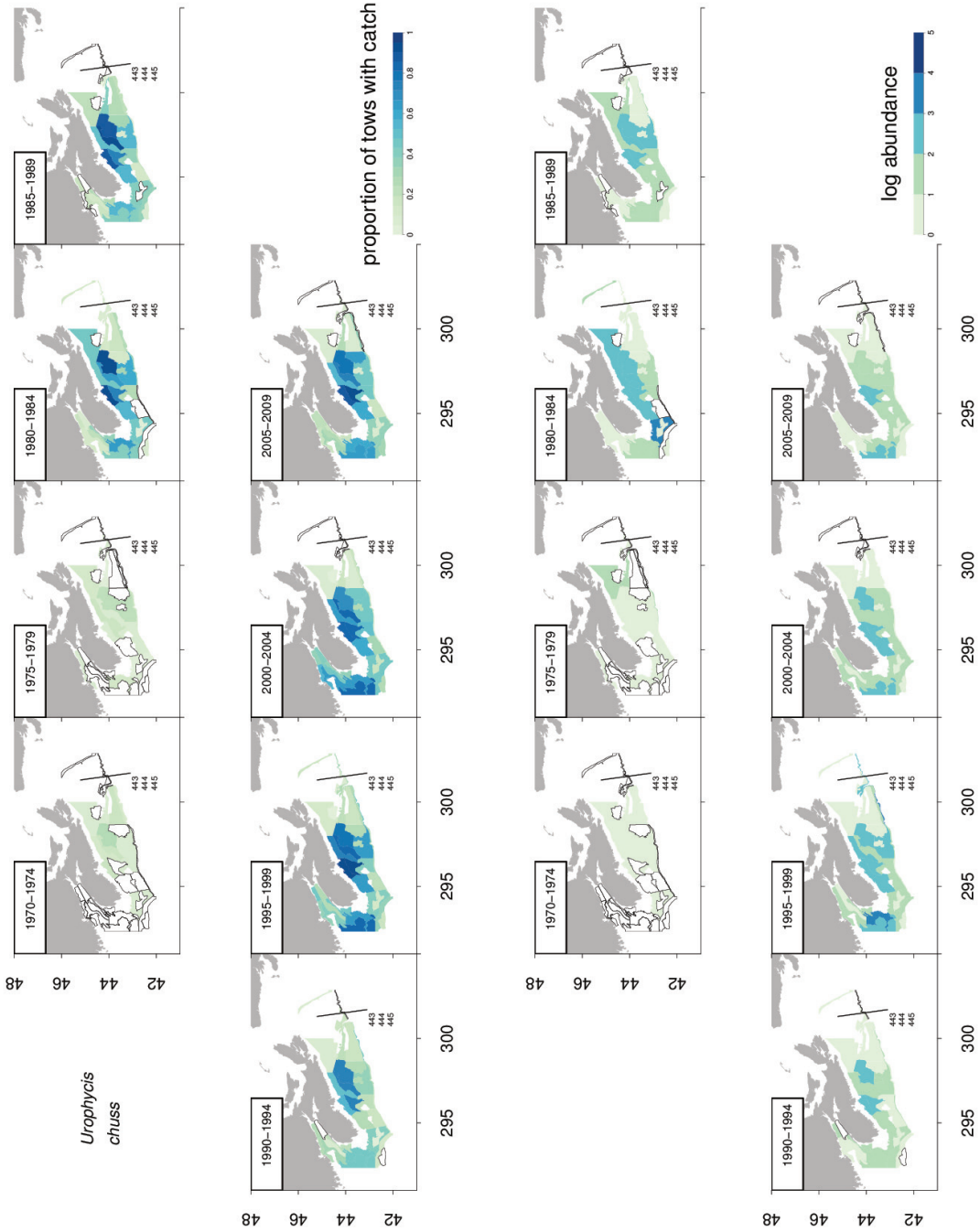


Figure A.13: Proportion of tows with catch and stratified random estimates of abundance for DFO red hake (*Urophycis chuss*).

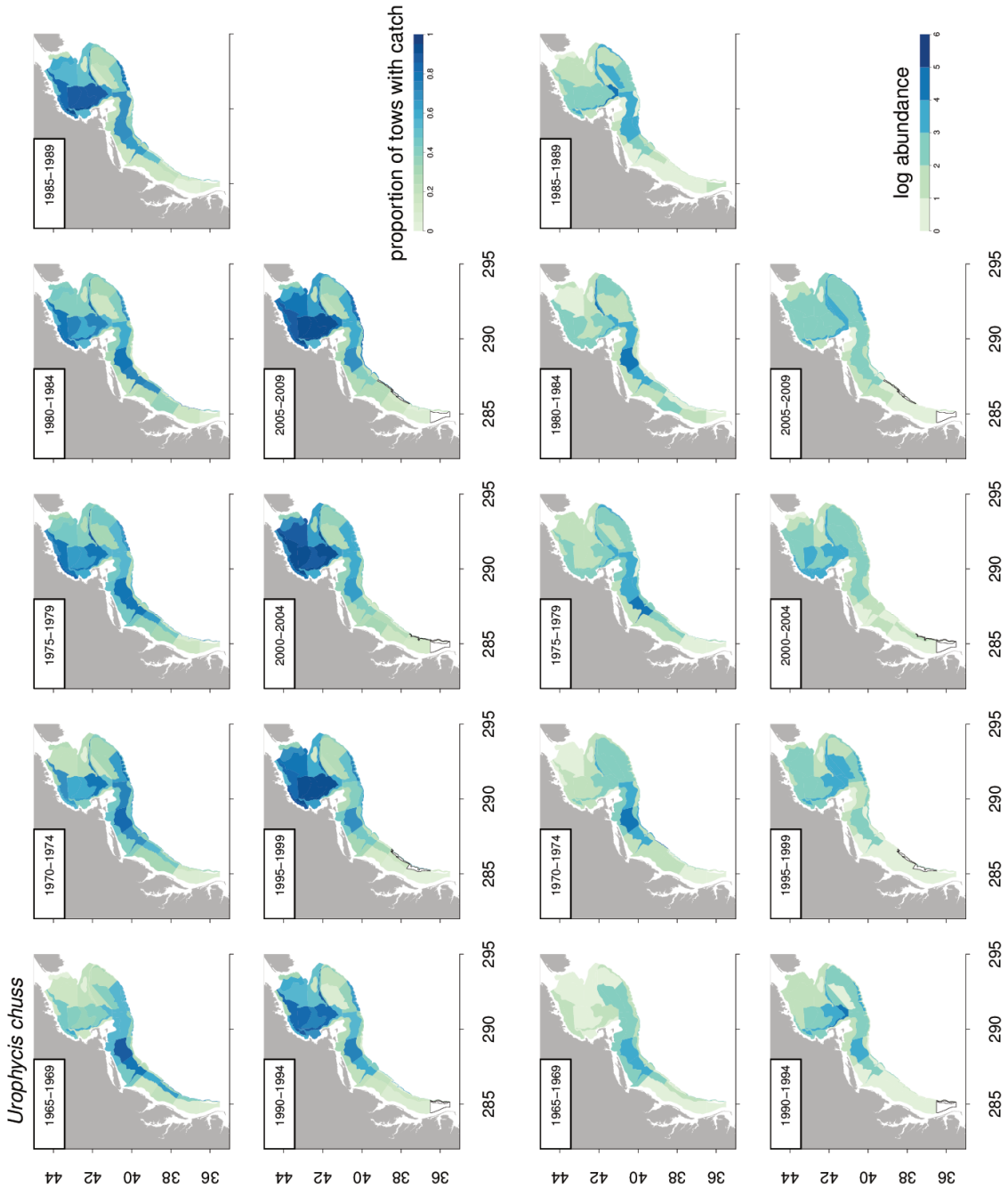


Figure A.14: Proportion of tows with catch and stratified random estimates of abundance for NMFS red hake (*Urophycis chuss*).

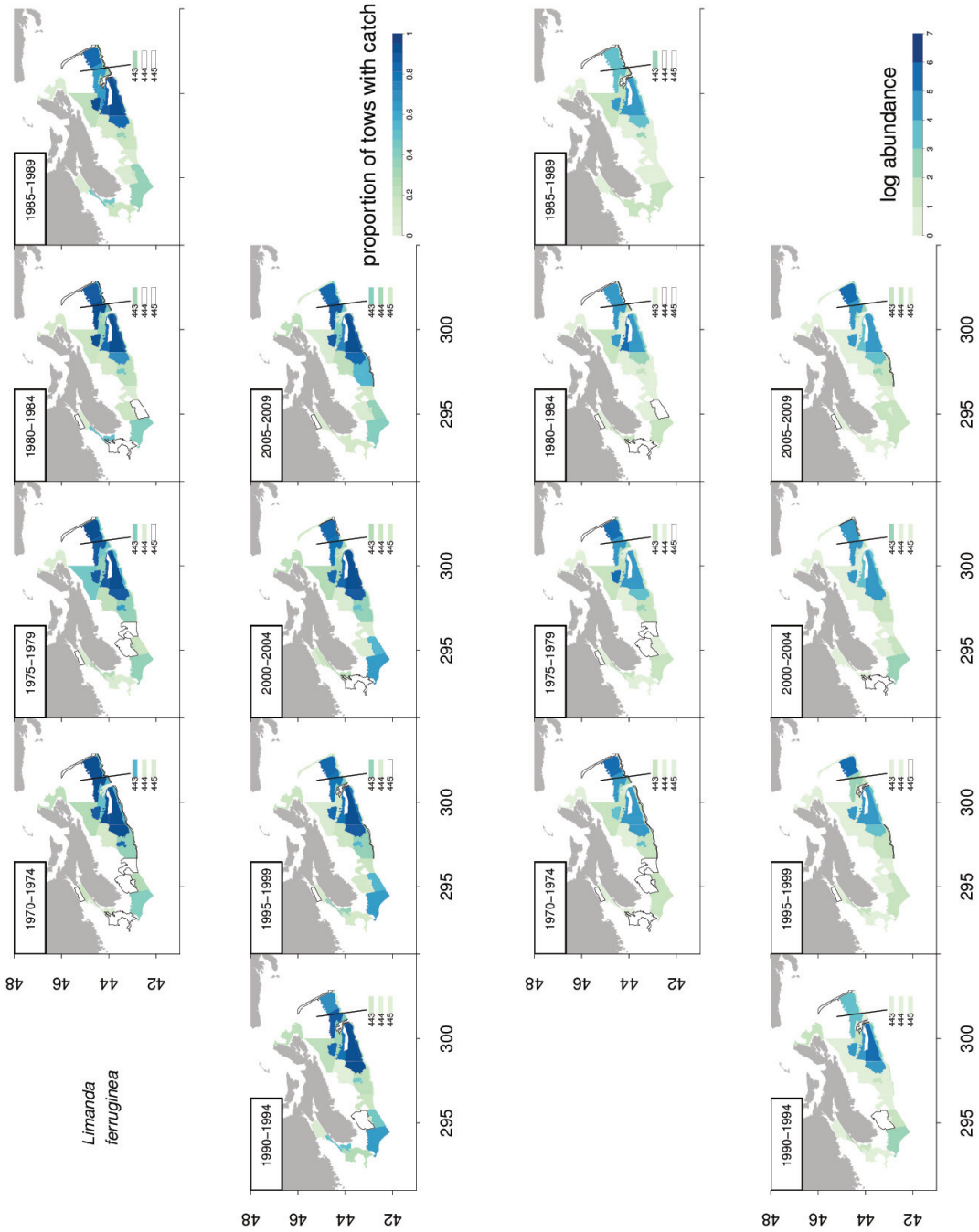


Figure A.15: Proportion of tows with catch and stratified random estimates of abundance for DFO yellowtail flounder (*Limanda ferruginea*).

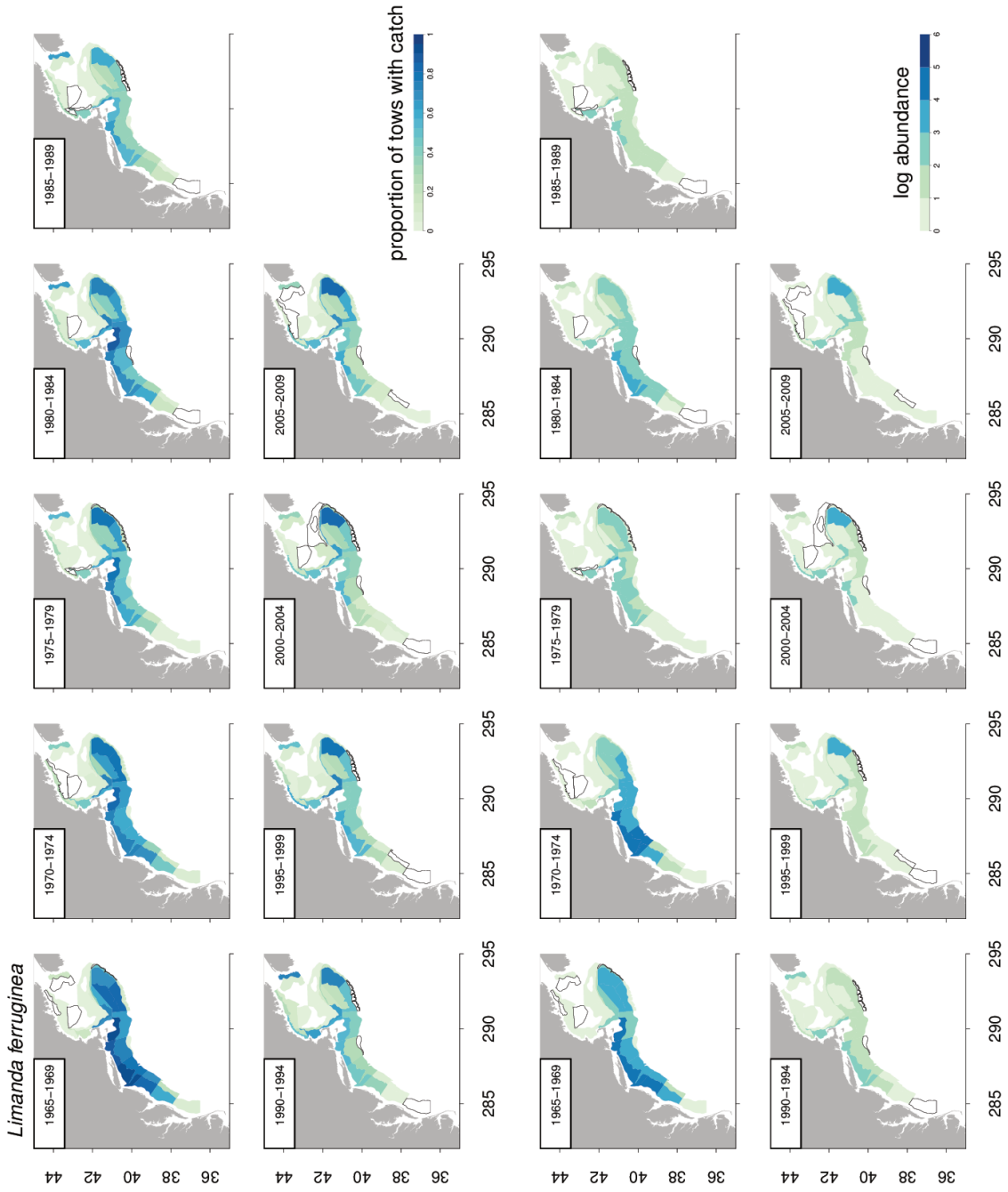


Figure A.16: Proportion of tows with catch and stratified random estimates of abundance for NMFS yellowtail flounder (*Limanda ferruginea*).

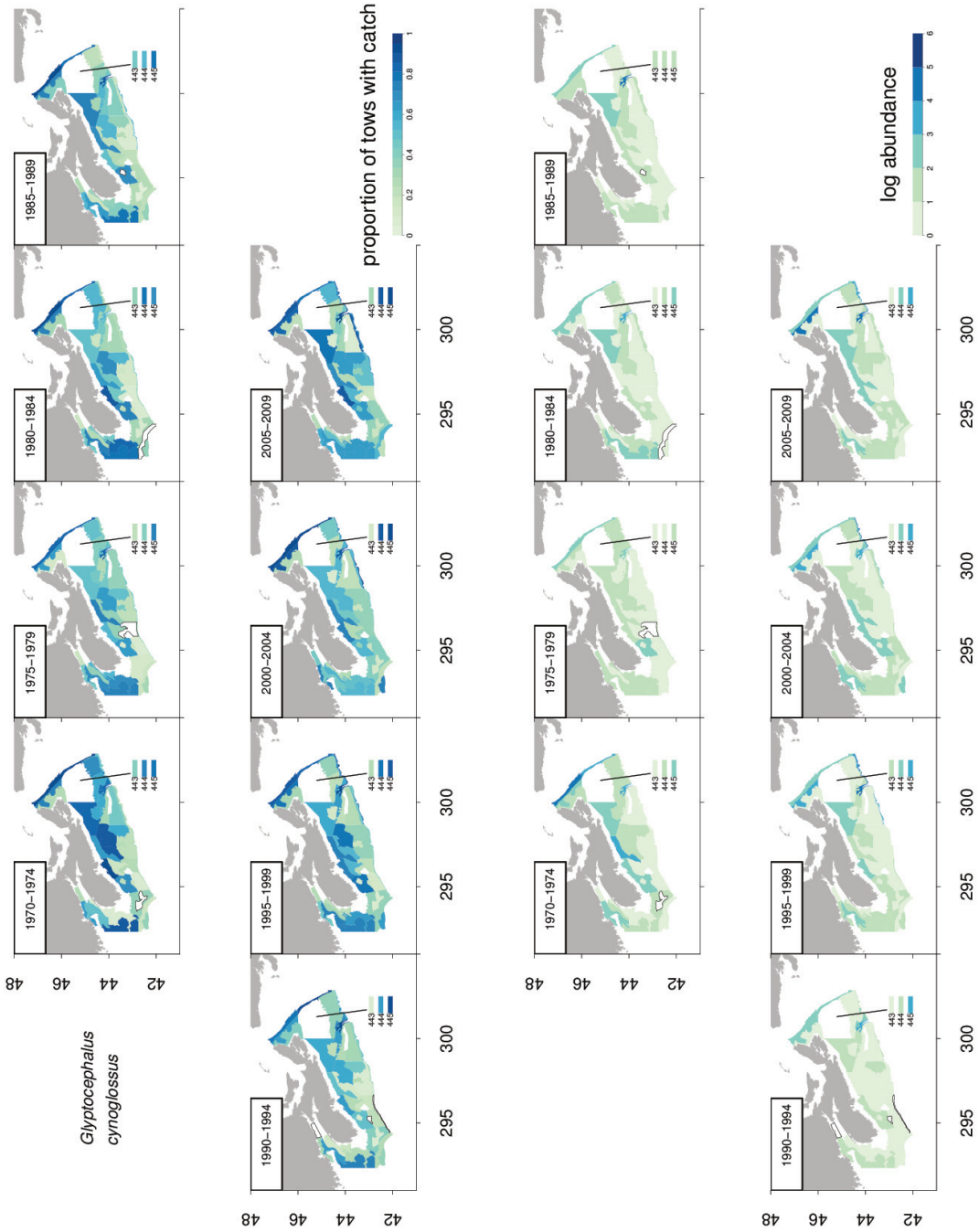


Figure A.17: Proportion of tows with catch and stratified random estimates of abundance for DFO witch flounder (*Glyptocephalus cynoglossus*).

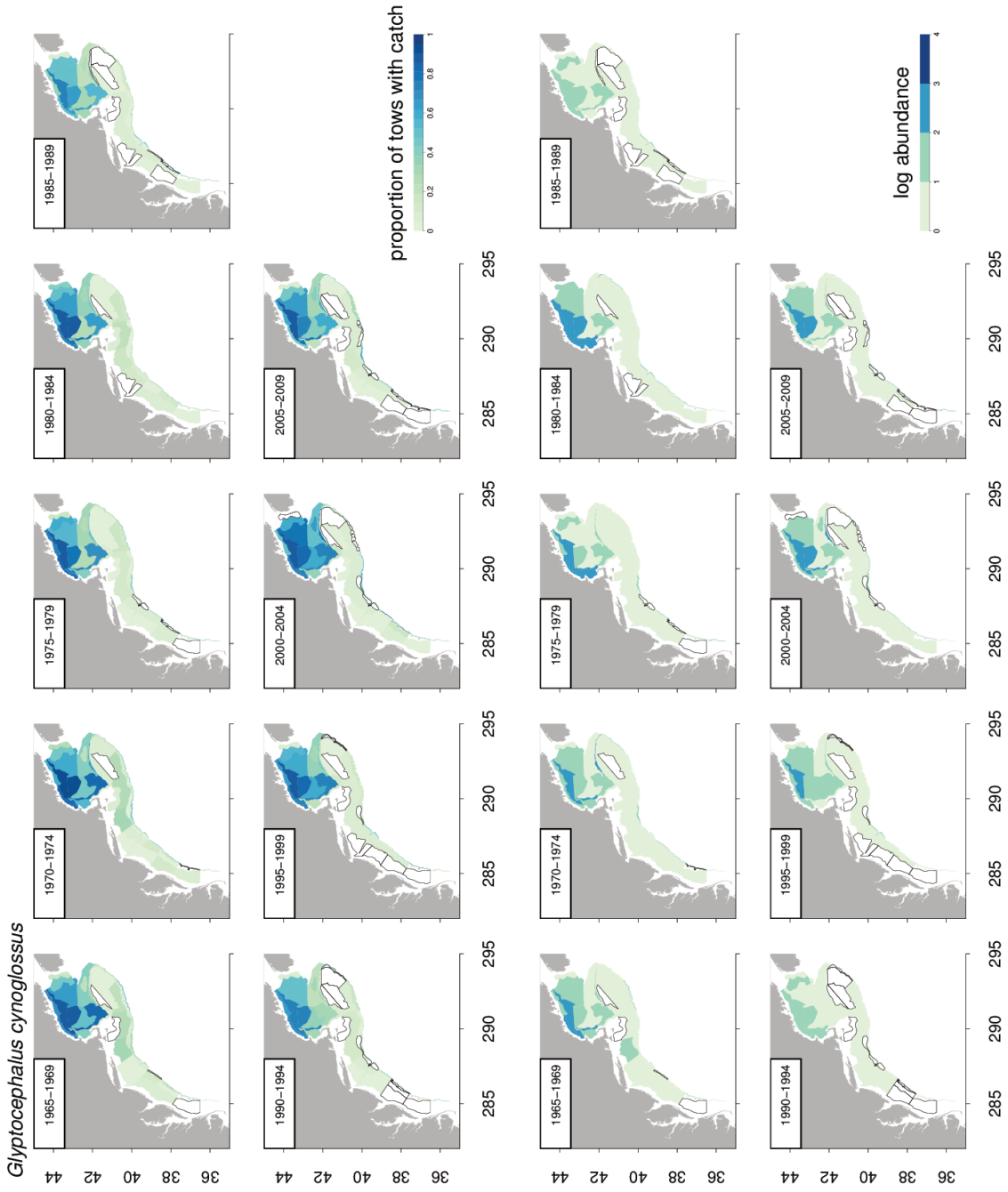


Figure A.18: Proportion of tows with catch and stratified random estimates of abundance for NMFS witch flounder (*Glyptocephalus cynoglossus*).

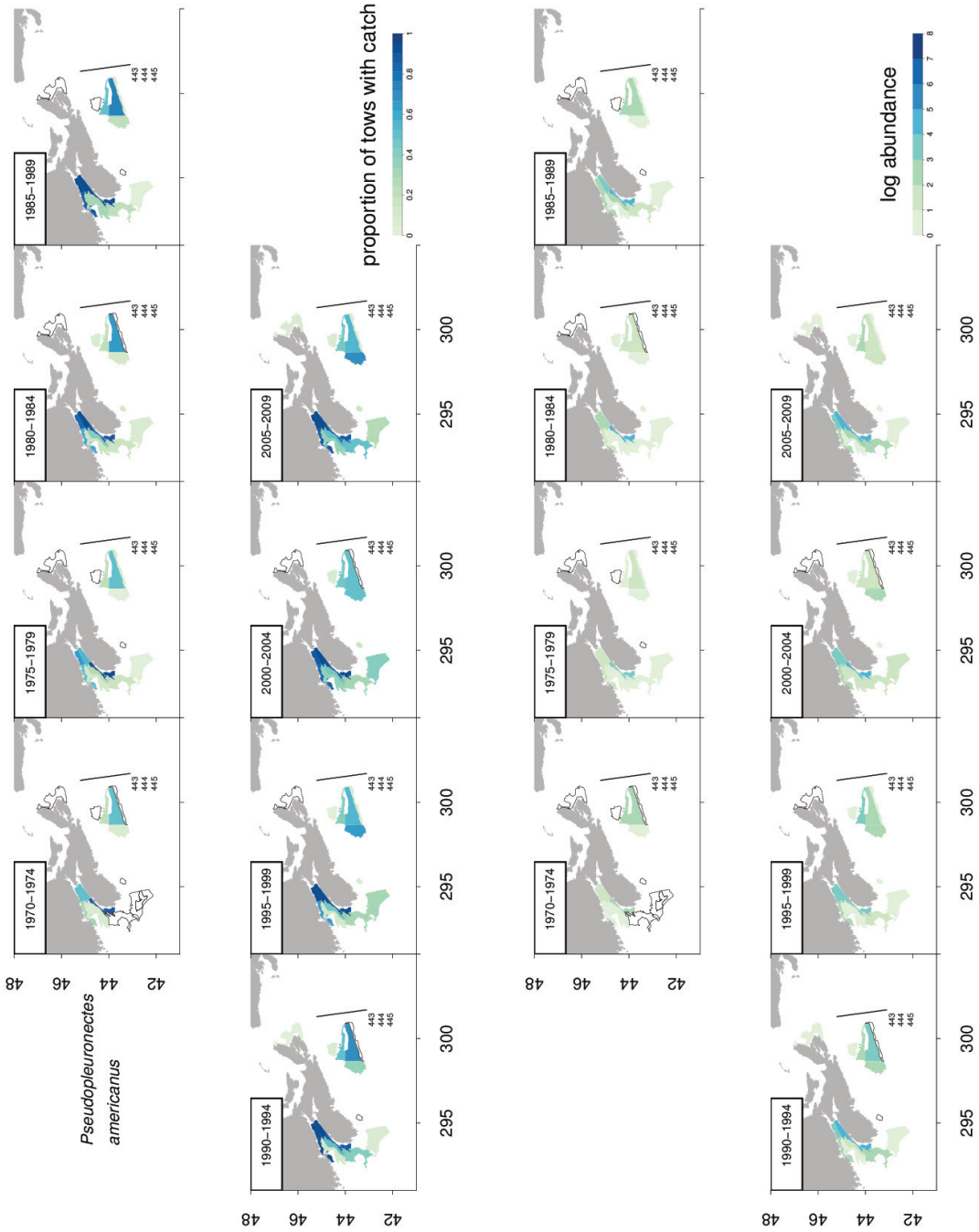


Figure A.19: Proportion of tows with catch and stratified random estimates of abundance for DFO winter flounder (*Pseudopleuronectes americanus*).

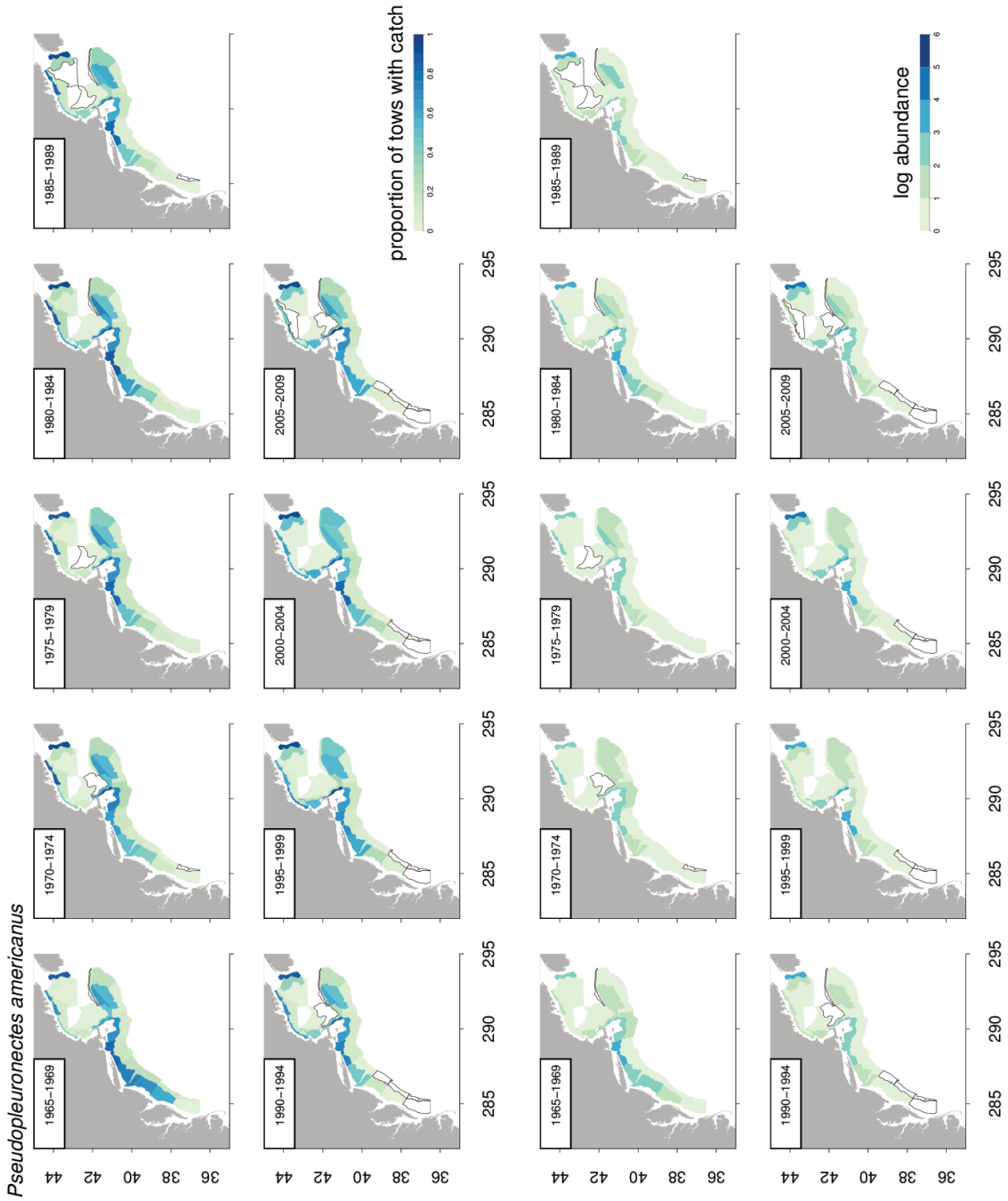


Figure A.20: Proportion of tows with catch and stratified random estimates of abundance for NMFS winter flounder (*Pseudopleuronectes americanus*).

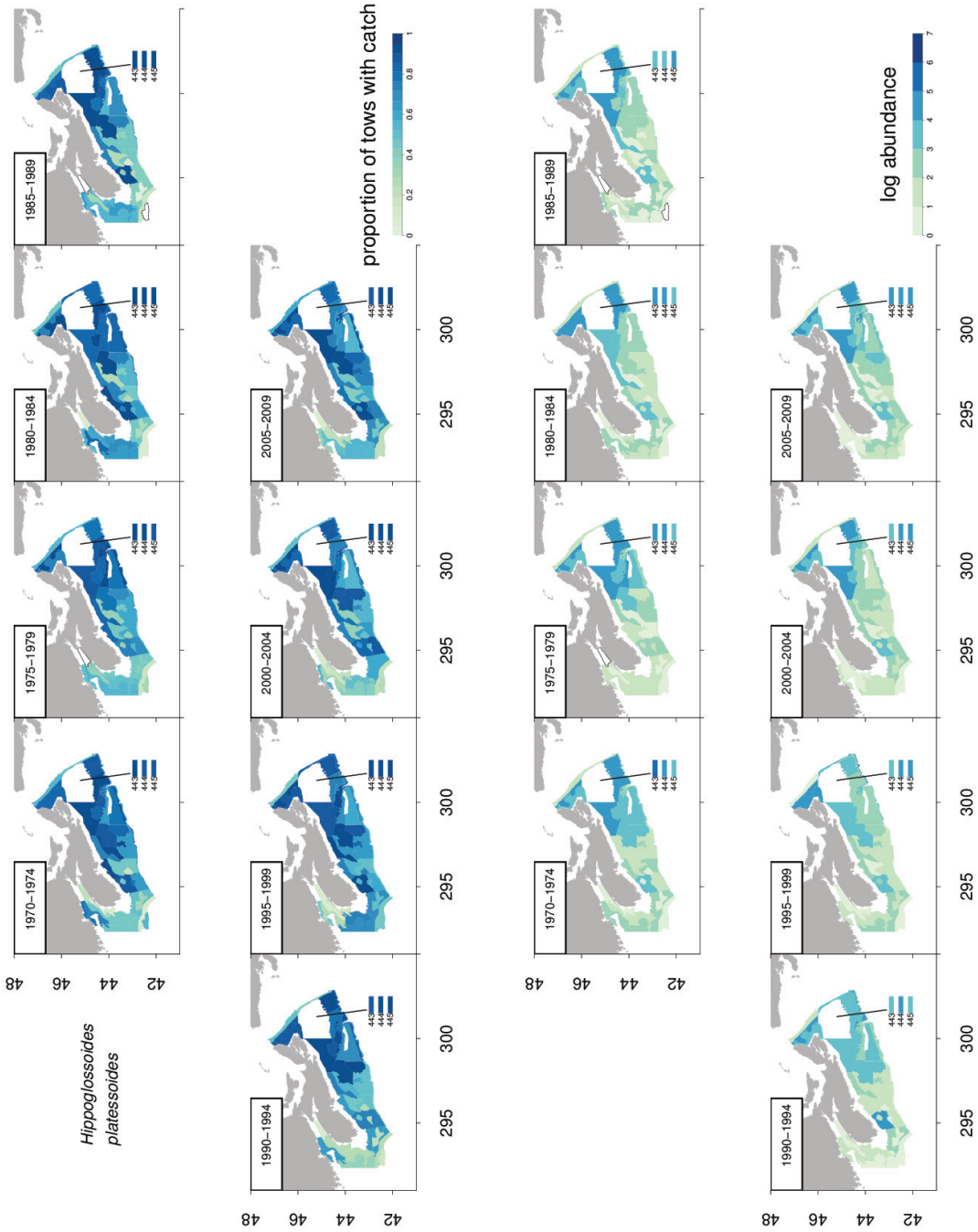


Figure A.21: Proportion of tows with catch and stratified random estimates of abundance for DFO American plaice (*Hippoglossoides platessoides*).

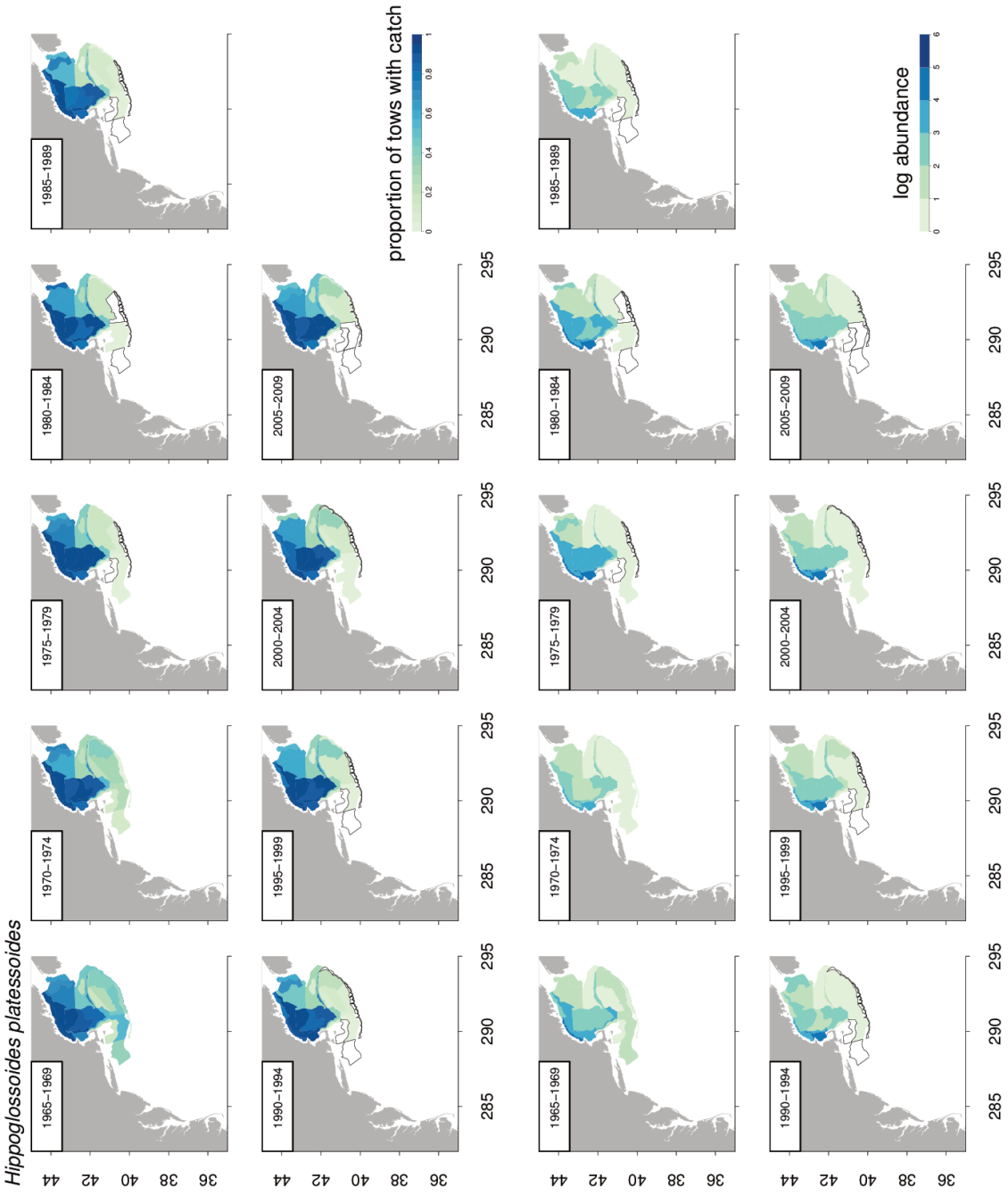


Figure A.22: Proportion of tows with catch and stratified random estimates of abundance for NMFS American plaice (*Hippoglossoides platessoides*).

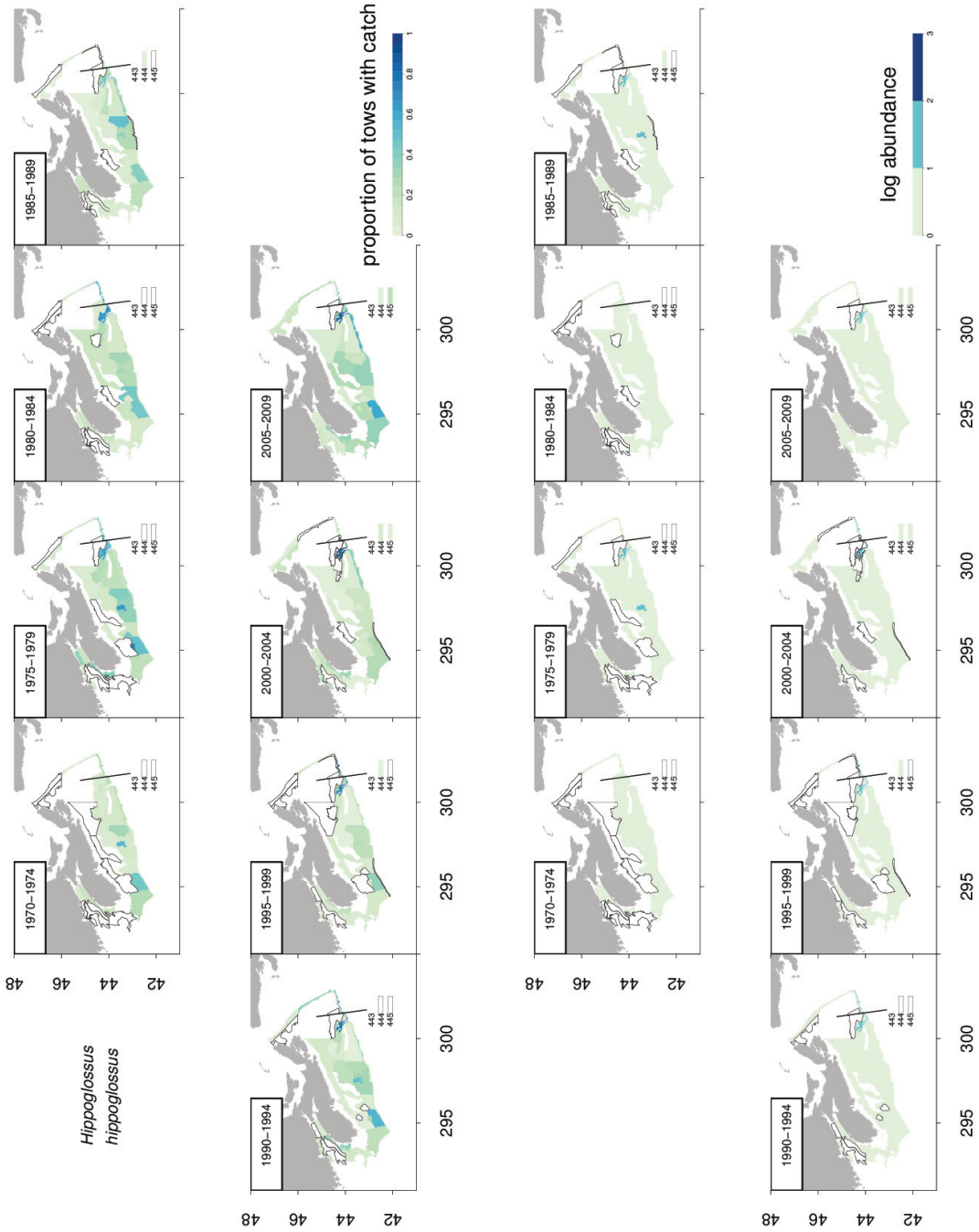


Figure A.23: Proportion of tows with catch and stratified random estimates of abundance for DFO halibut (*Hippoglossus hippoglossus*).

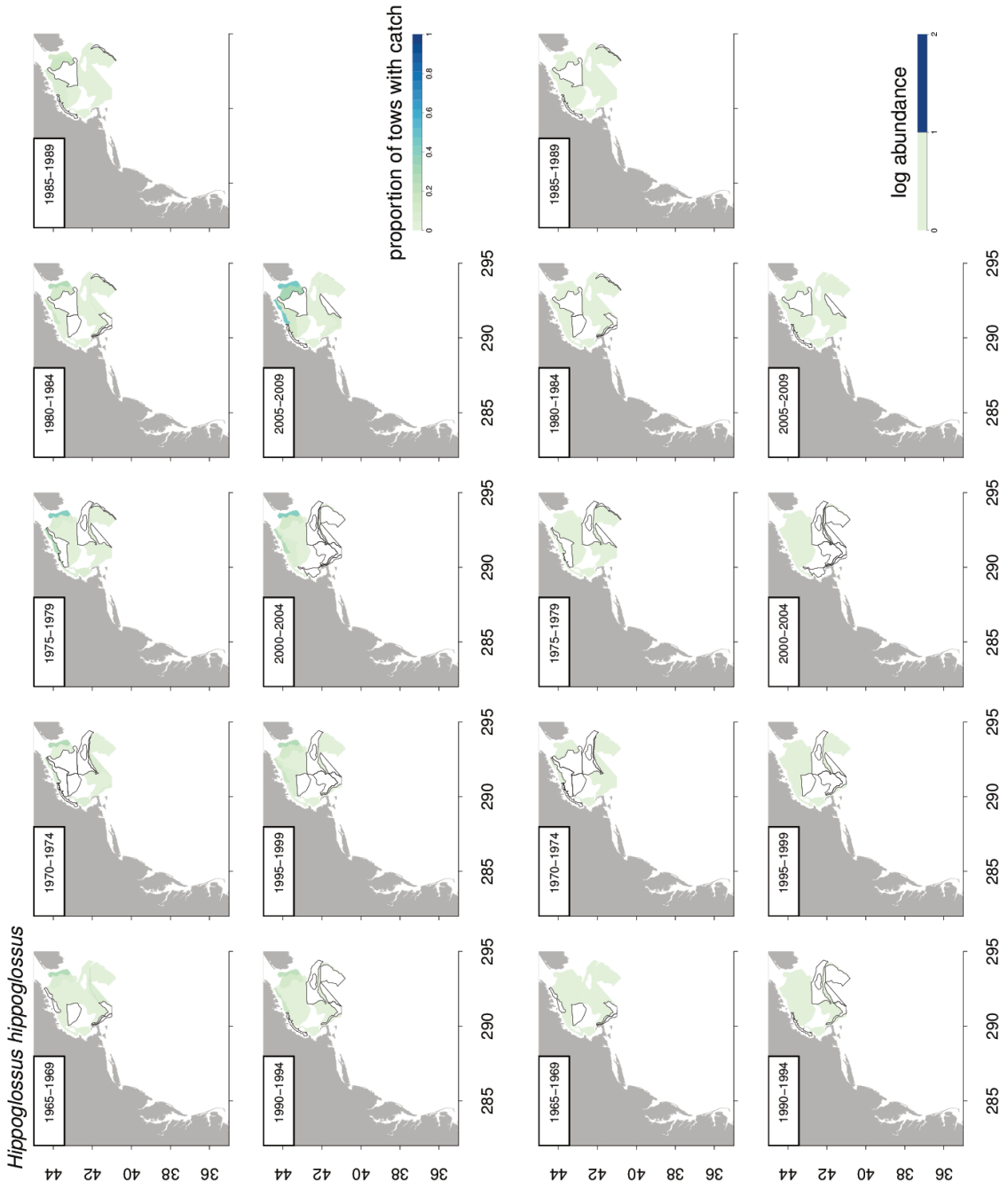


Figure A.24: Proportion of tows with catch and stratified random estimates of abundance for NMFS halibut (*Hippoglossus hippoglossus*).

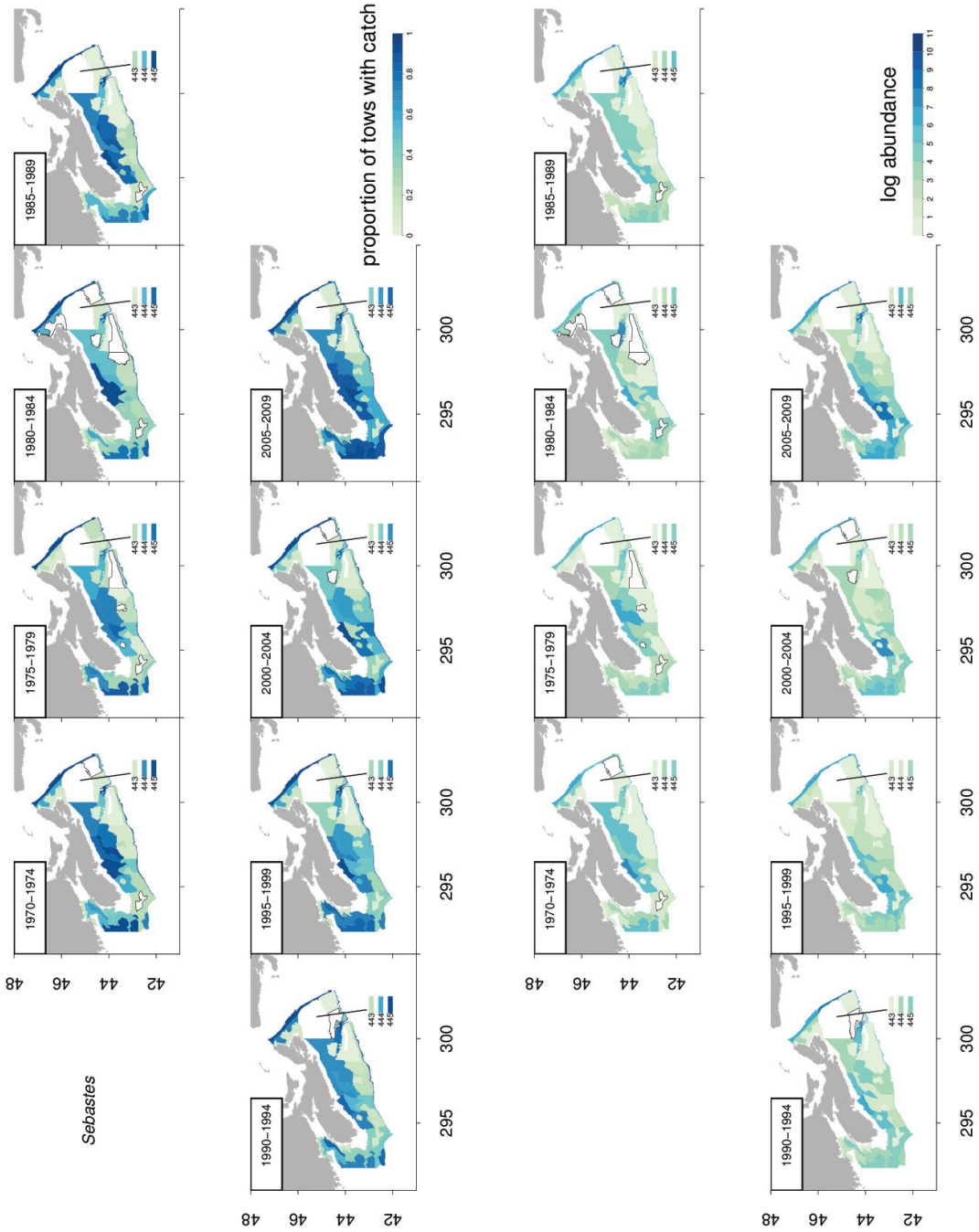


Figure A.25: Proportion of tows with catch and stratified random estimates of abundance for DFO redfish (*Sebastes*).

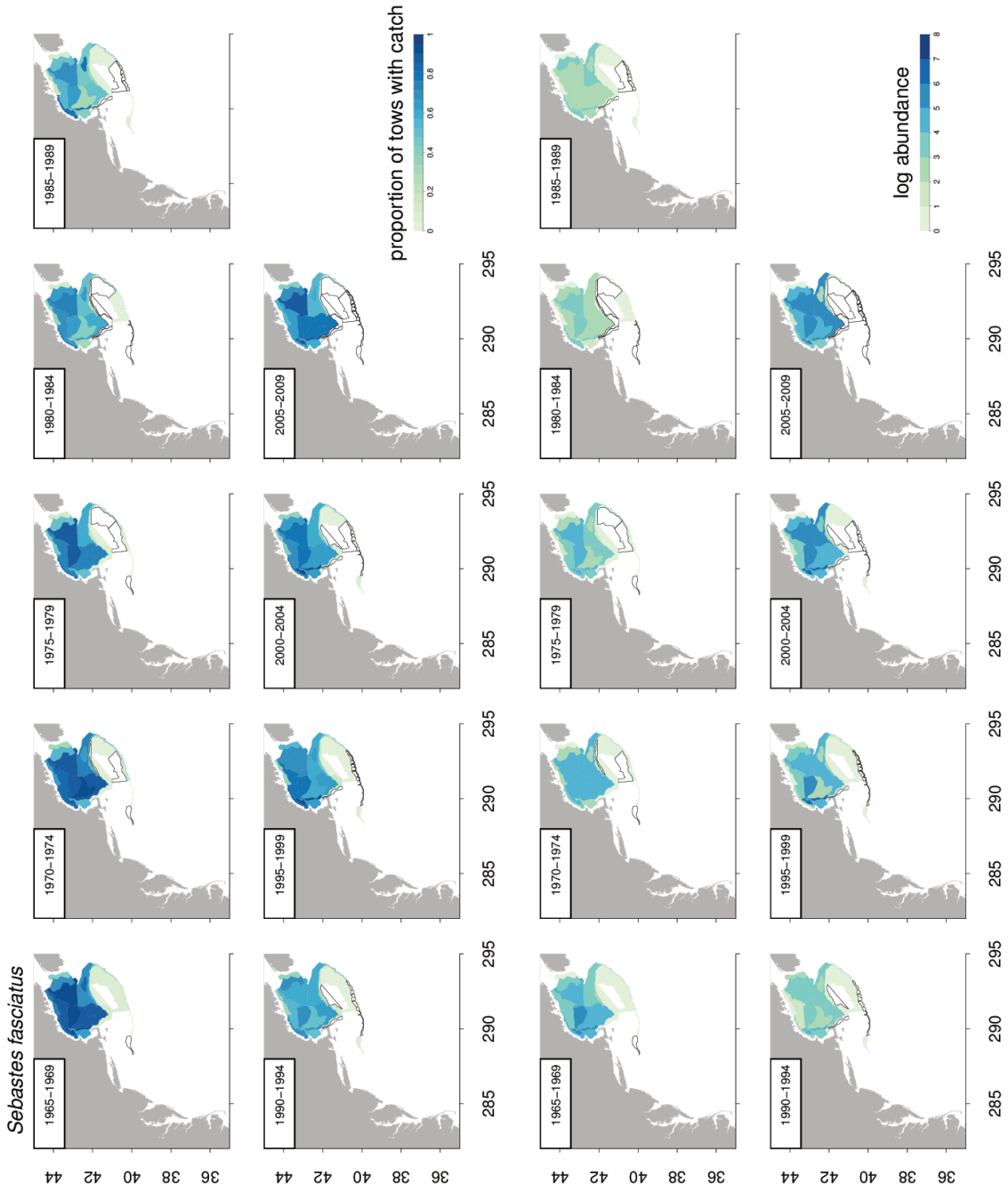


Figure A.26: Proportion of tows with catch and stratified random estimates of abundance for NMFS redfish (*Sebastes fasciatus*).

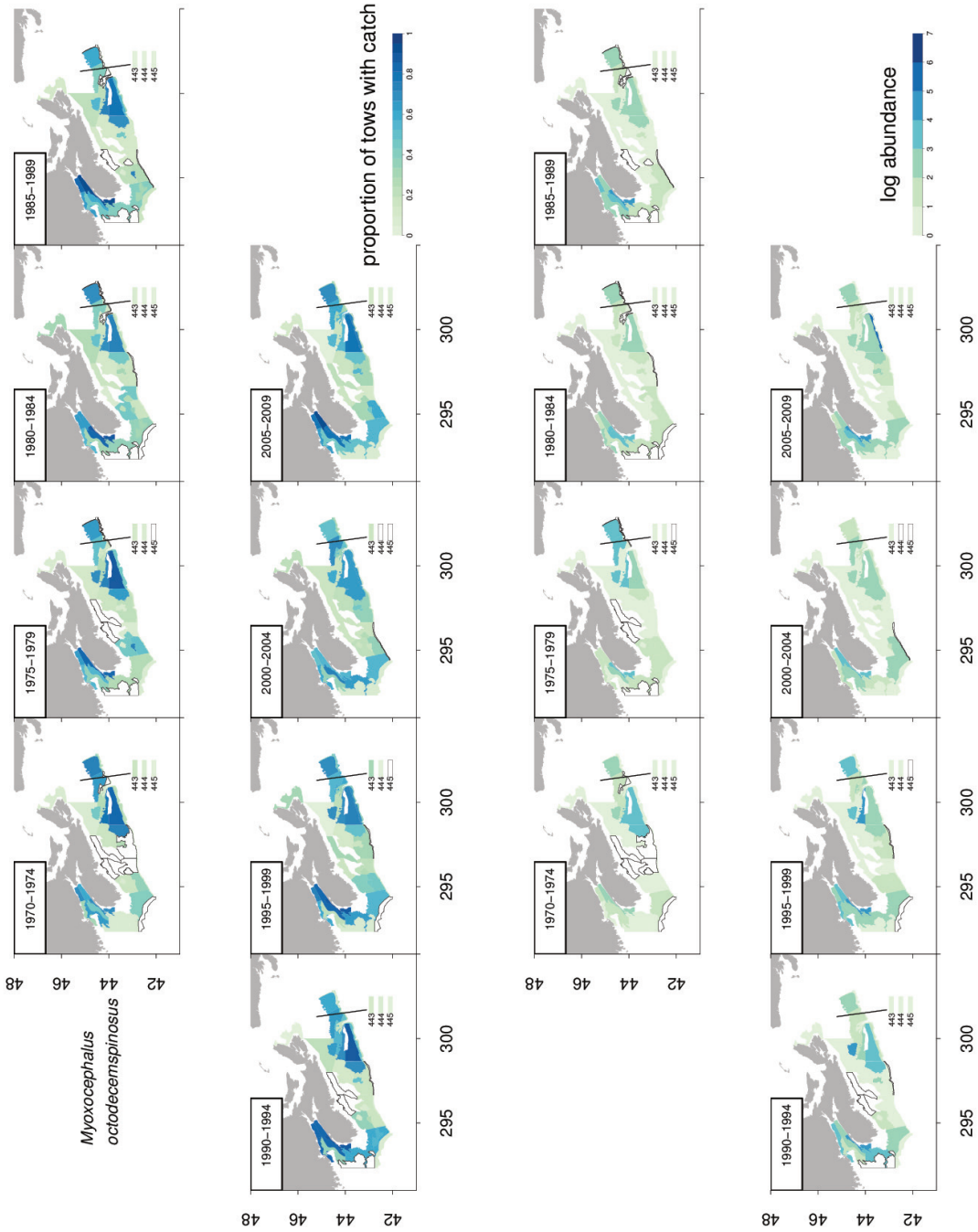


Figure A.27: Proportion of tows with catch and stratified random estimates of abundance for DFO longhorn sculpin (*Myoxocephalus octodecemspinosus*).

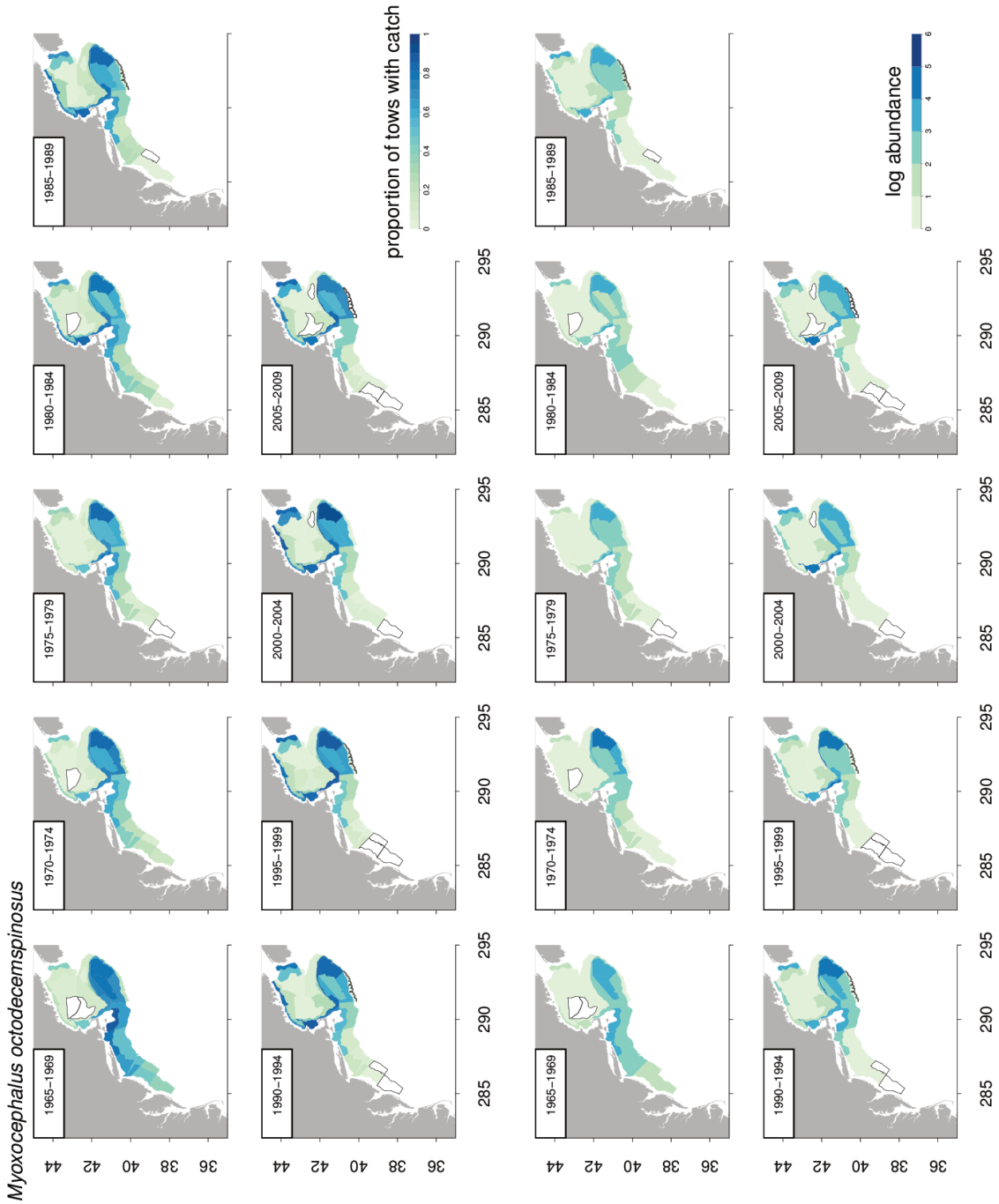


Figure A.28: Proportion of tows with catch and stratified random estimates of abundance for NMFS longhorn sculpin (*Myoxocephalus octodecemspinosus*).

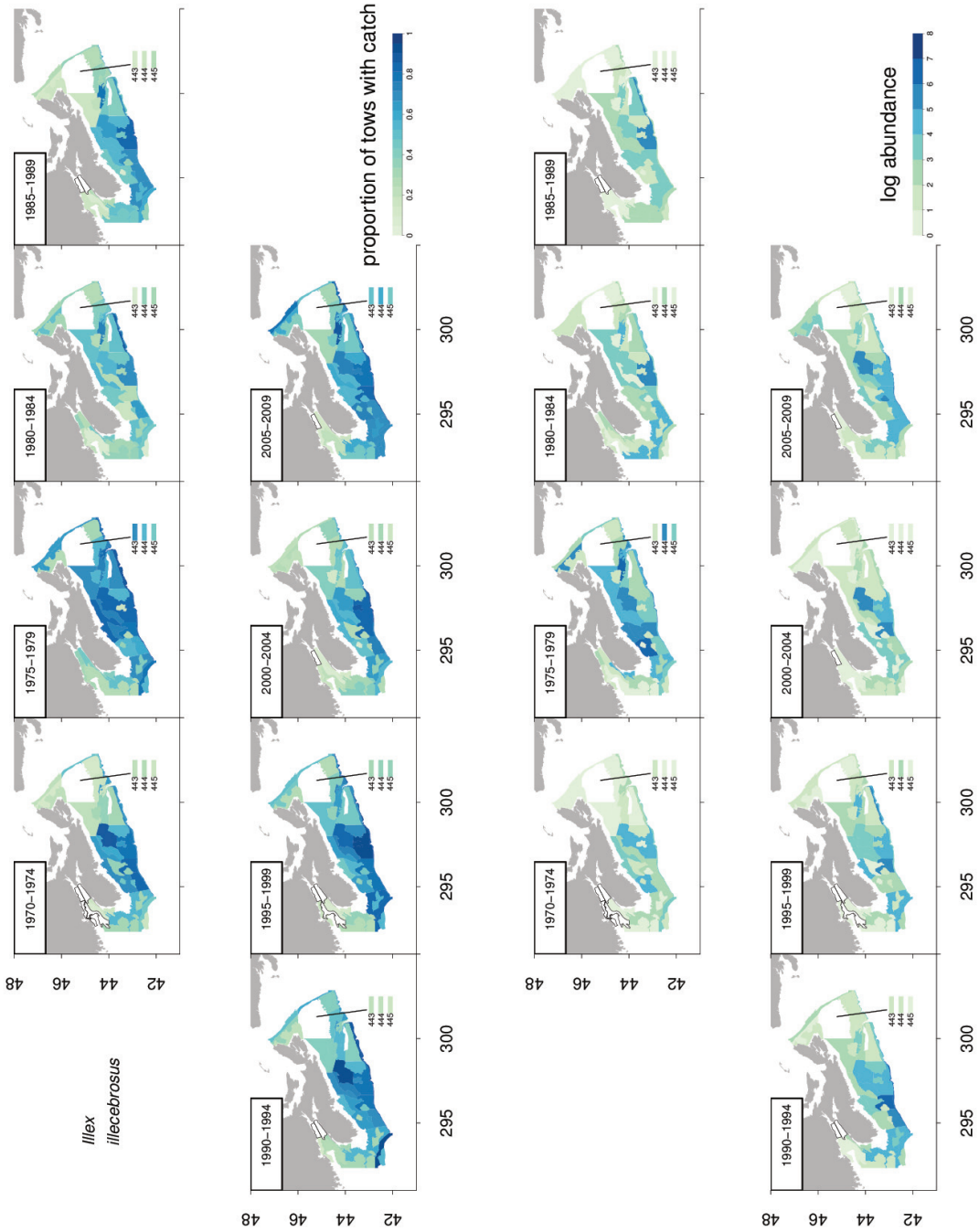


Figure A.29: Proportion of tows with catch and stratified random estimates of abundance for DFO shortfin squid (*Illex illecebrosus*).

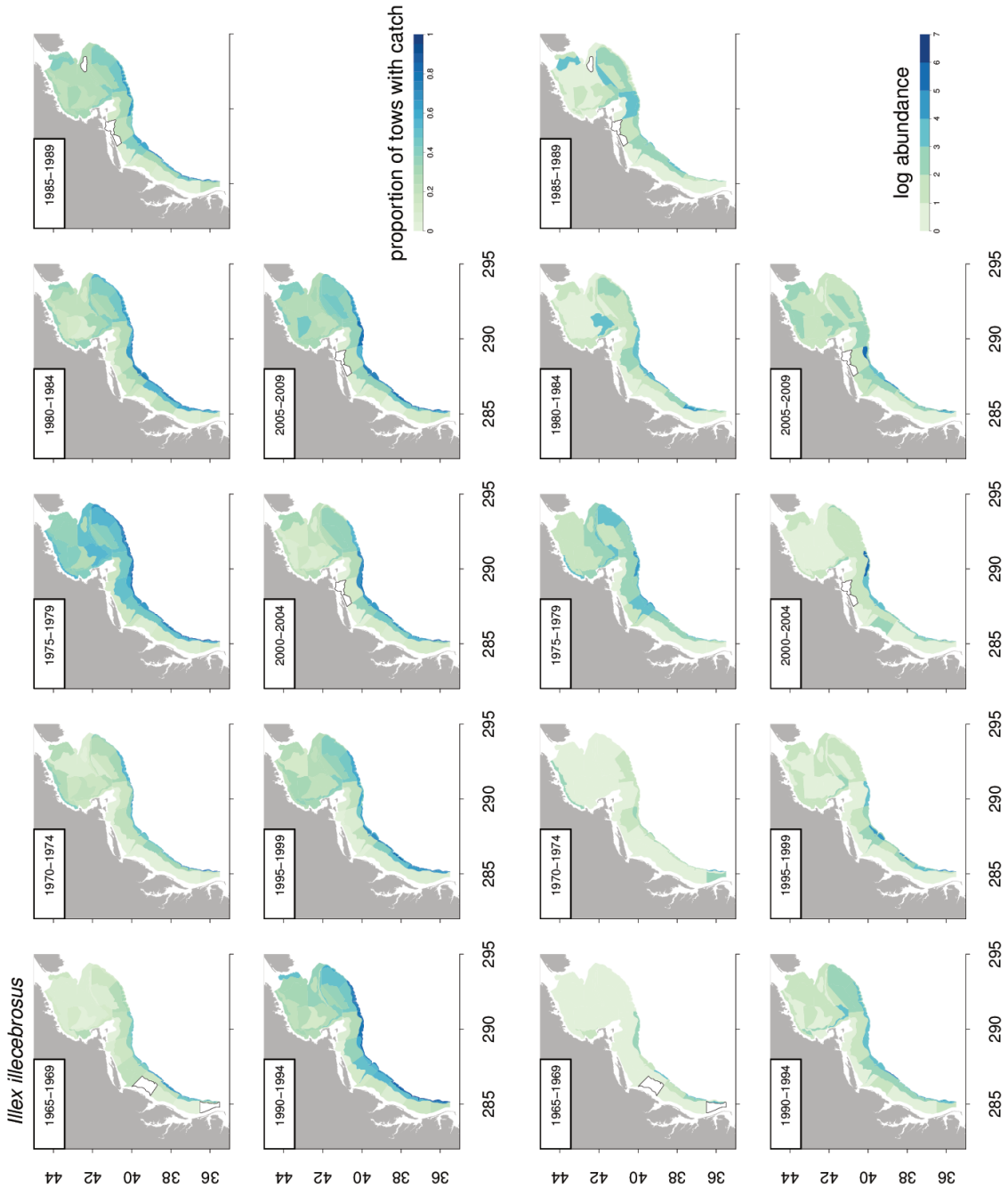


Figure A.30: Proportion of tows with catch and stratified random estimates of abundance for NMFS shortfin squid (*Illex illecebrosus*).

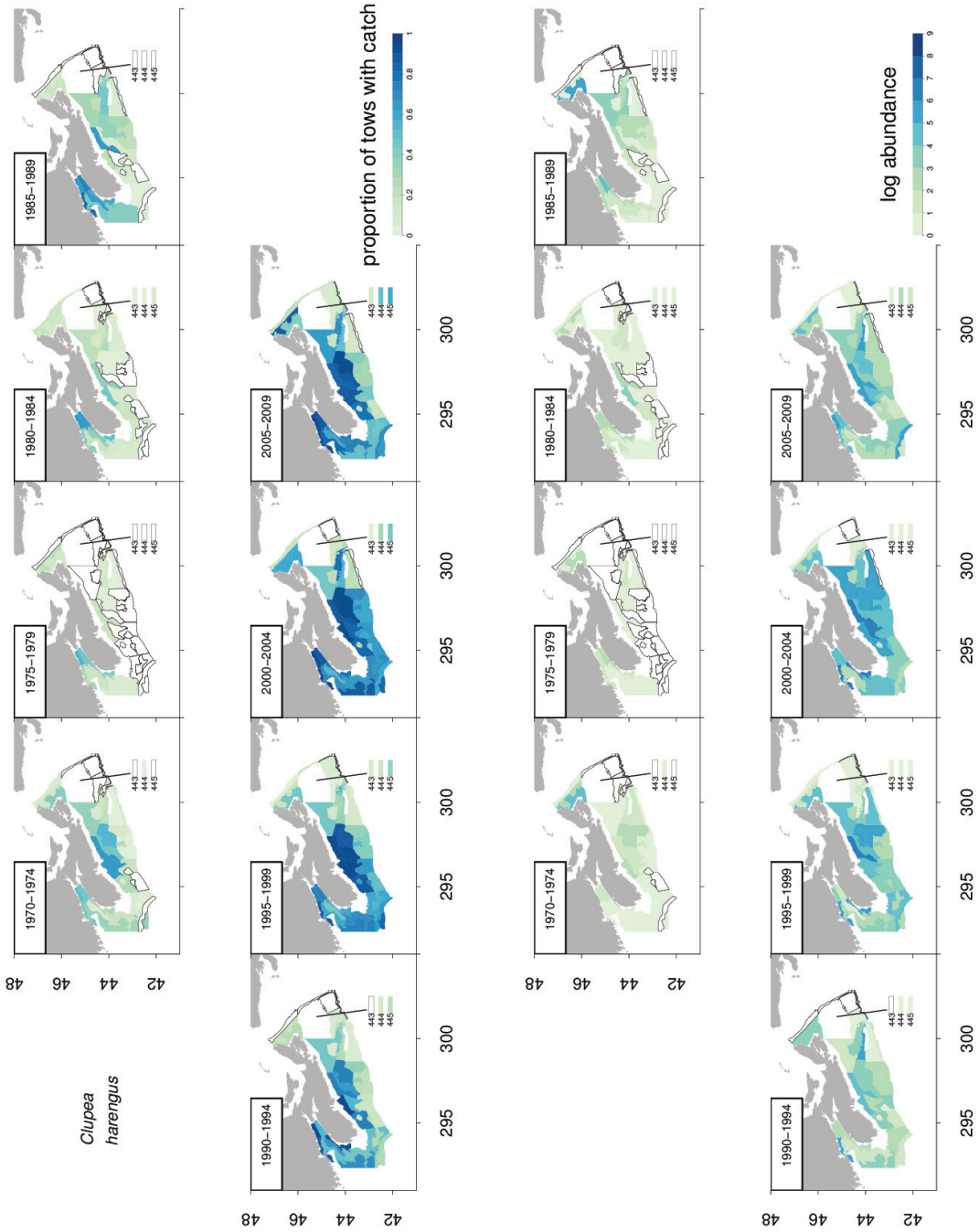


Figure A.31: Proportion of tows with catch and stratified random estimates of abundance for DFO herring (*Clupea harengus*).

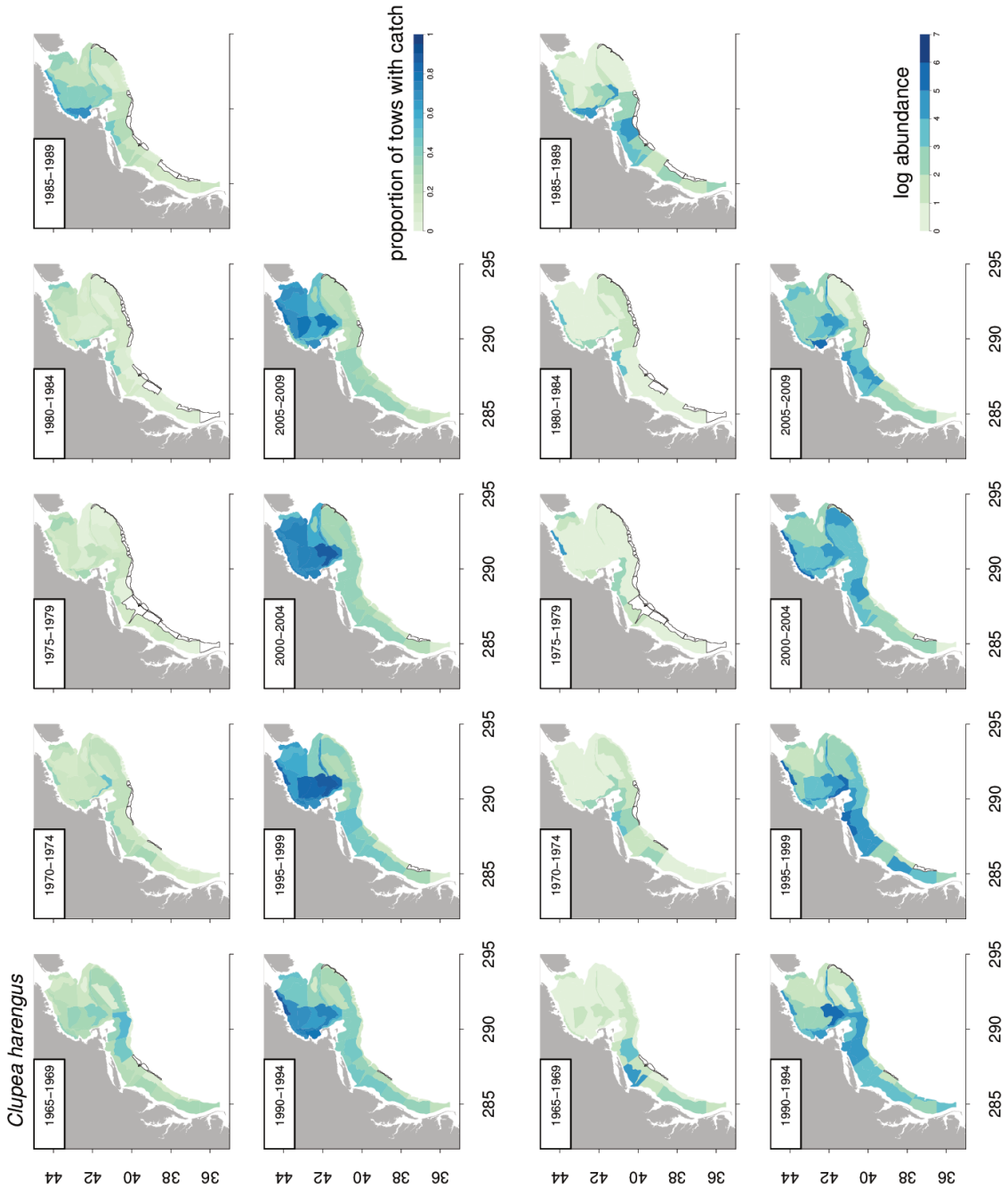


Figure A.32: Proportion of tows with catch and stratified random estimates of abundance for NMFS herring (*Clupea harengus*).

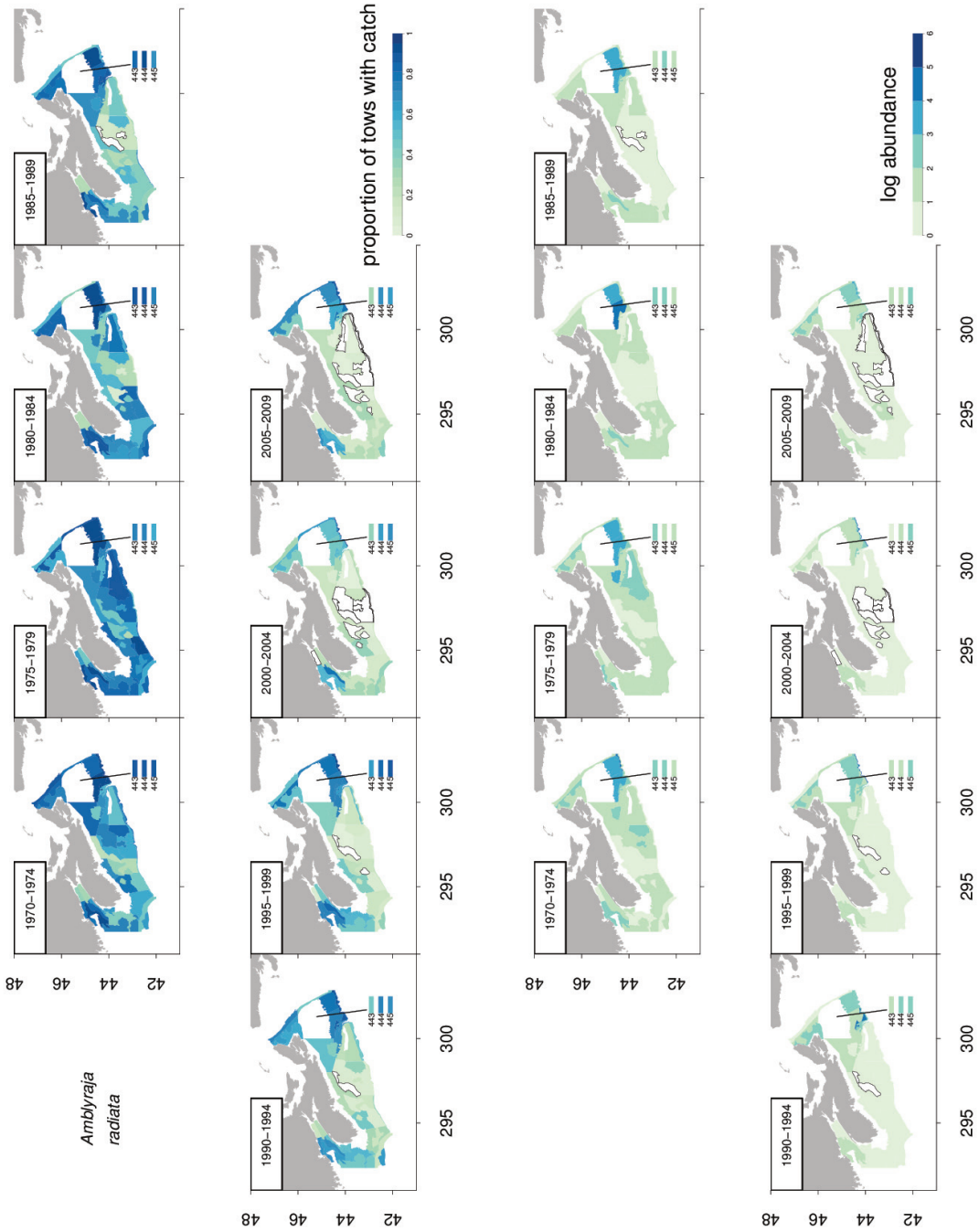


Figure A.33: Proportion of tows with catch and stratified random estimates of abundance for DFO thorny skate (*Amblyraja radiata*).

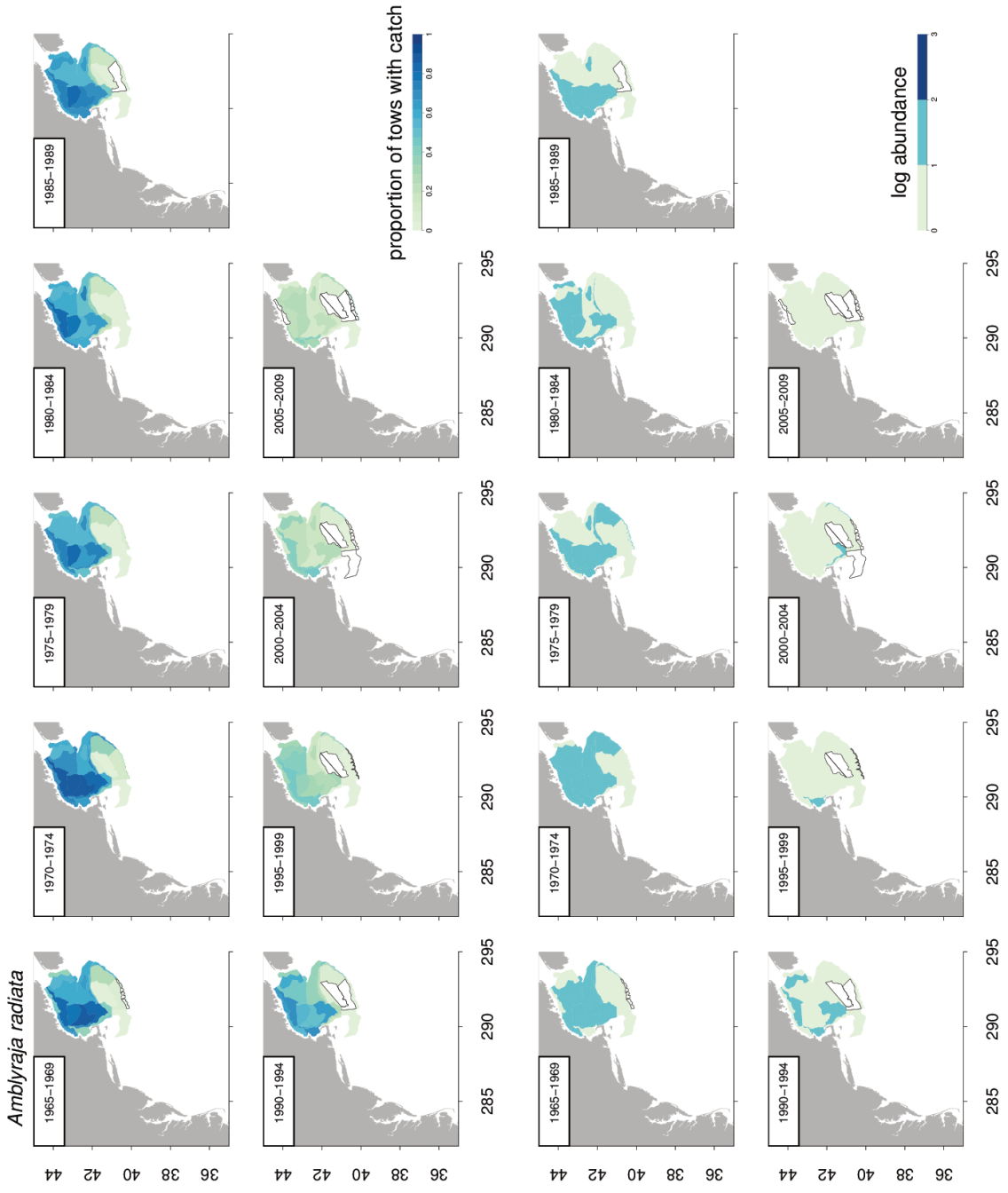


Figure A.34: Proportion of tows with catch and stratified random estimates of abundance for NMFS thorny skate (*Amblyraja radiata*).

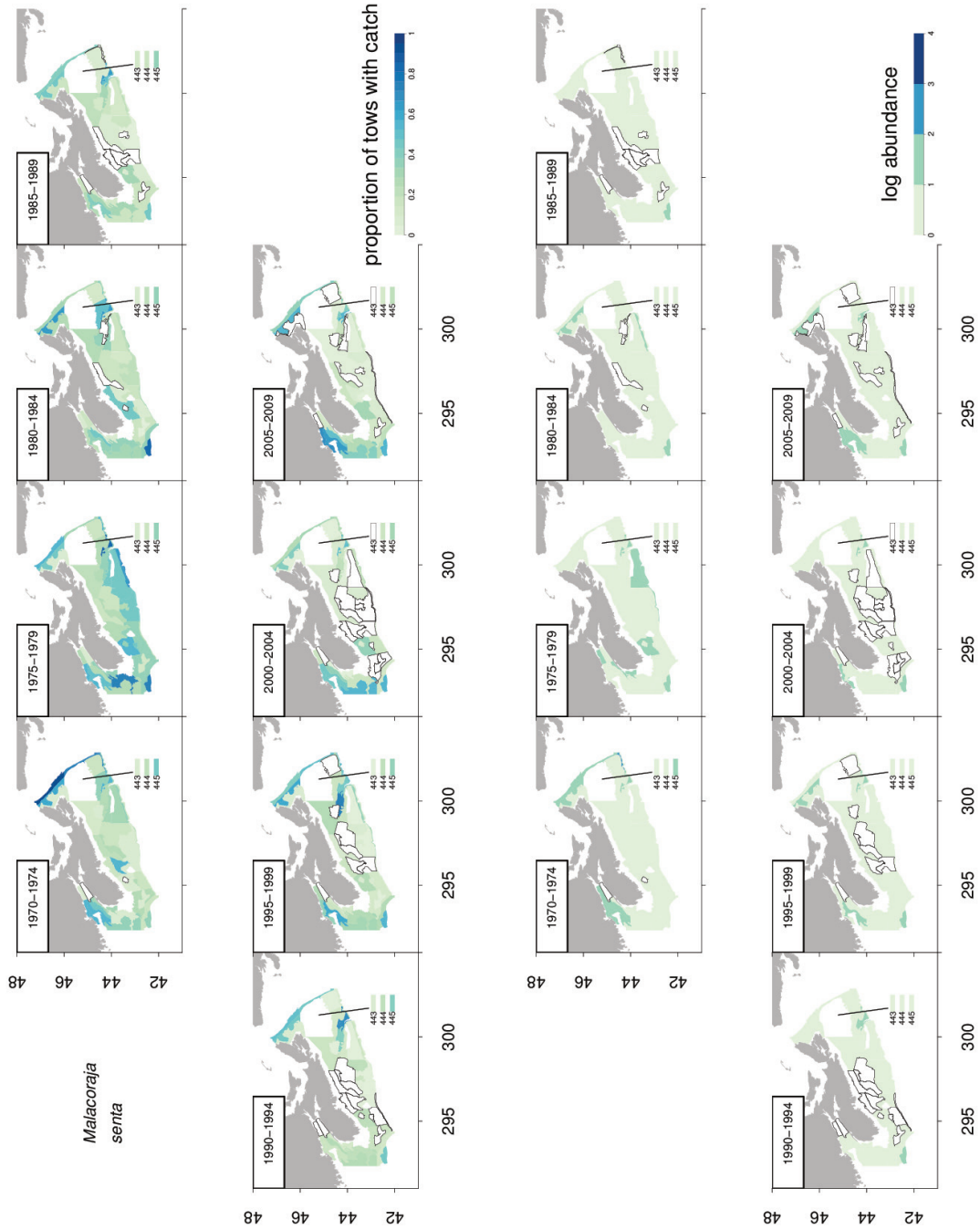


Figure A.35: Proportion of tows with catch and stratified random estimates of abundance for DFO smooth skate (*Malacoraja senta*).

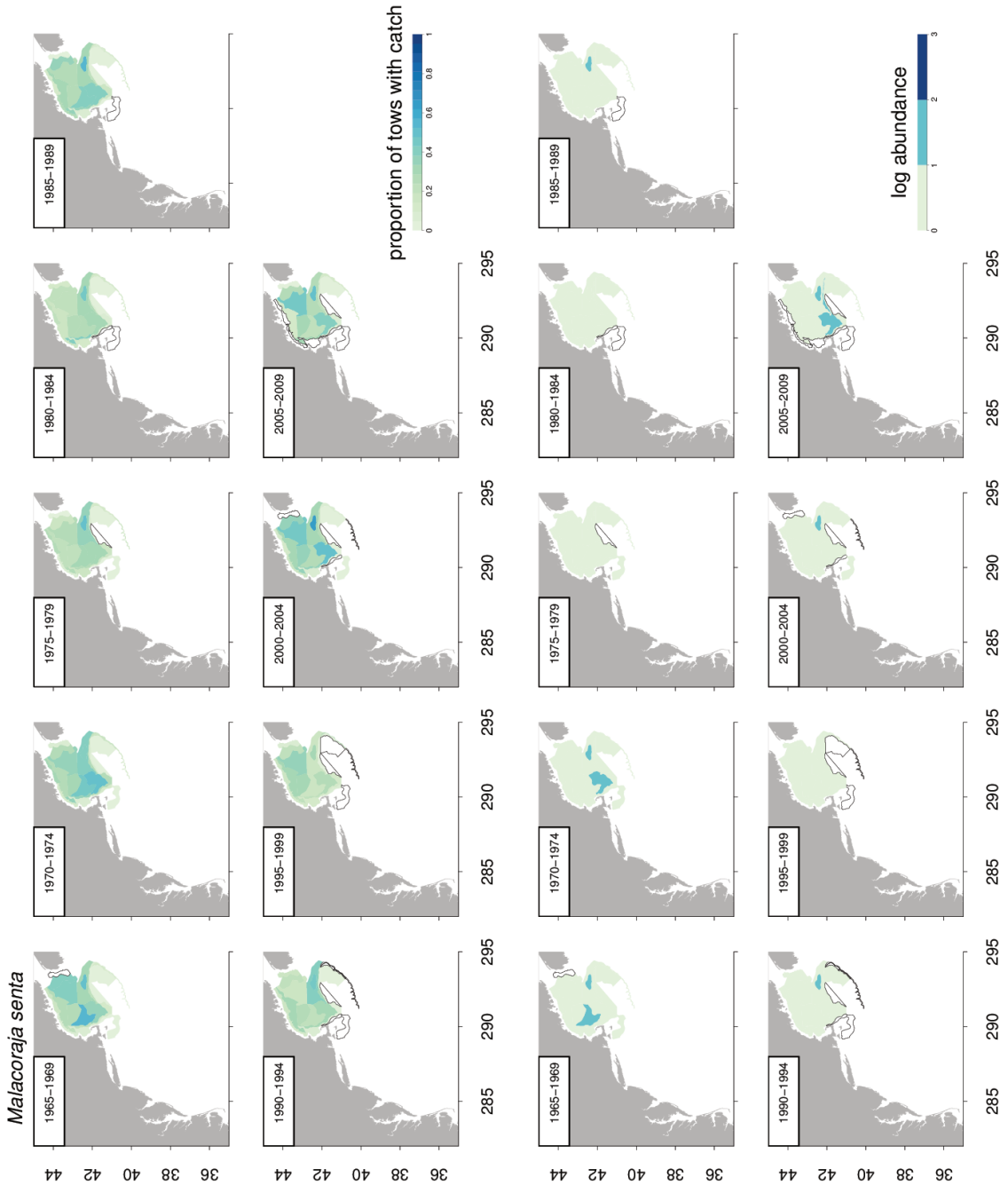


Figure A.36: Proportion of tows with catch and stratified random estimates of abundance for NMFS smooth skate (*Malacoraja senta*).

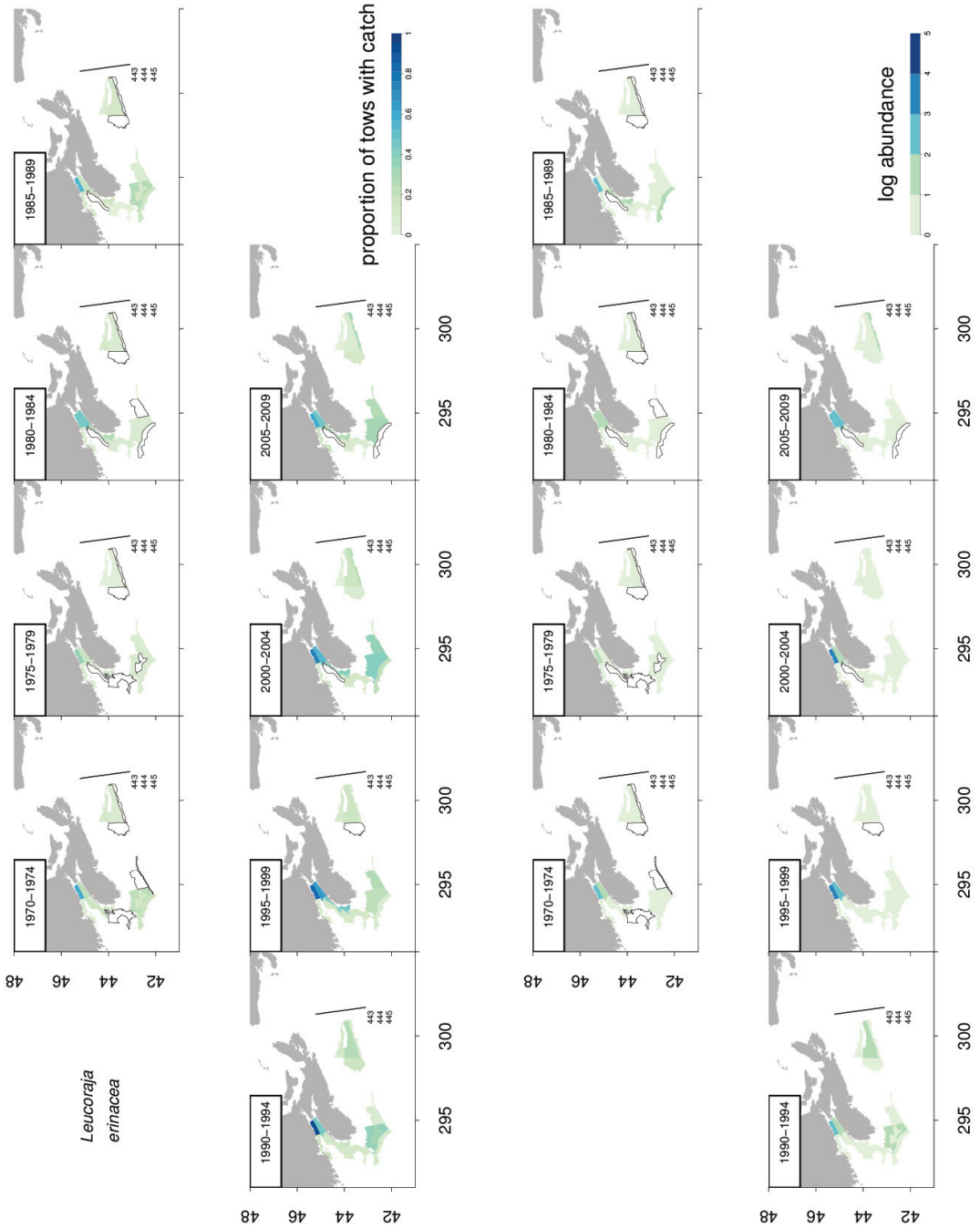


Figure A.37: Proportion of tows with catch and stratified random estimates of abundance for DFO little skate (*Leucoraja erinacea*).

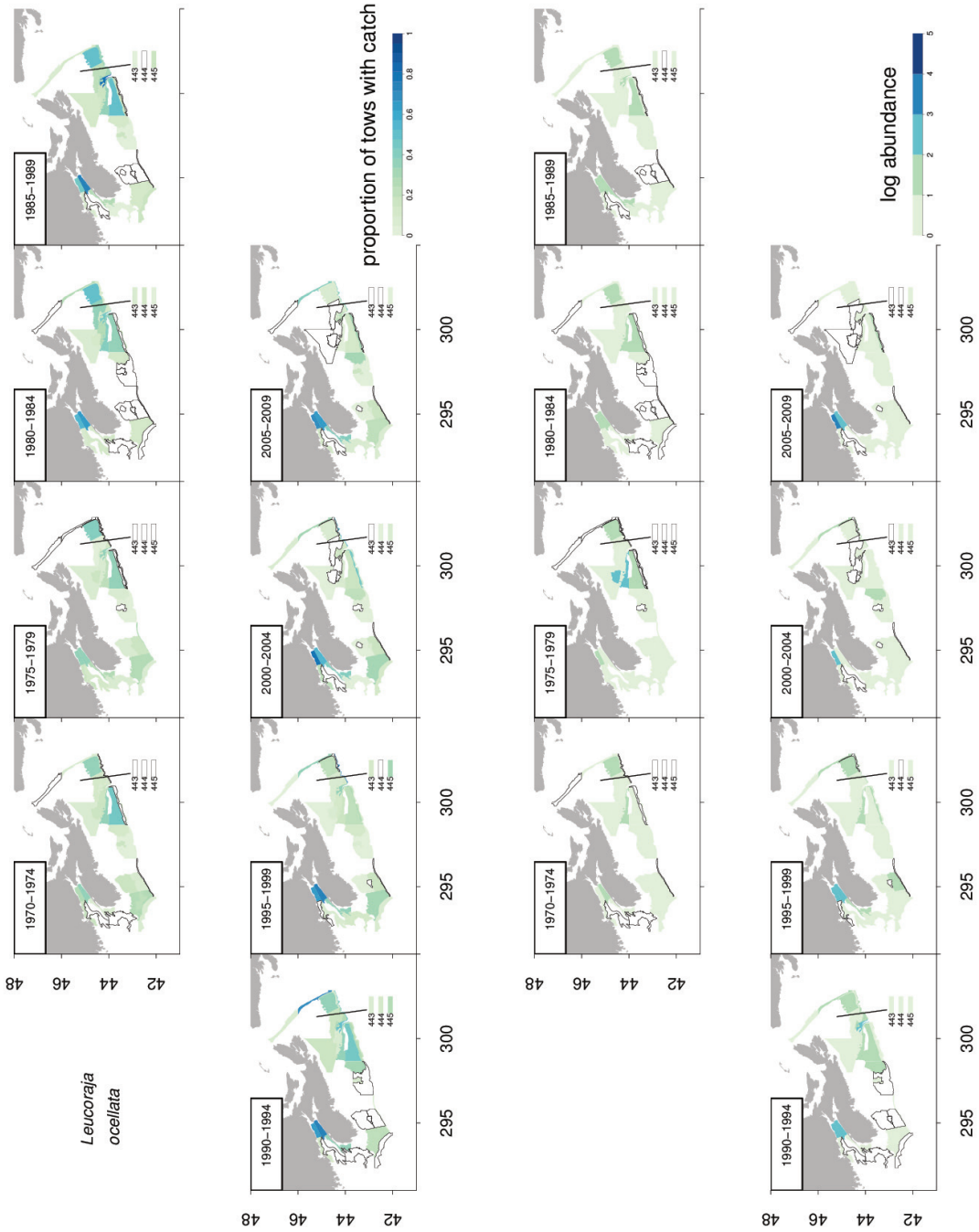


Figure A.38: Proportion of tows with catch and stratified random estimates of abundance for DFO winter skate (*Leucoraja ocellata*).

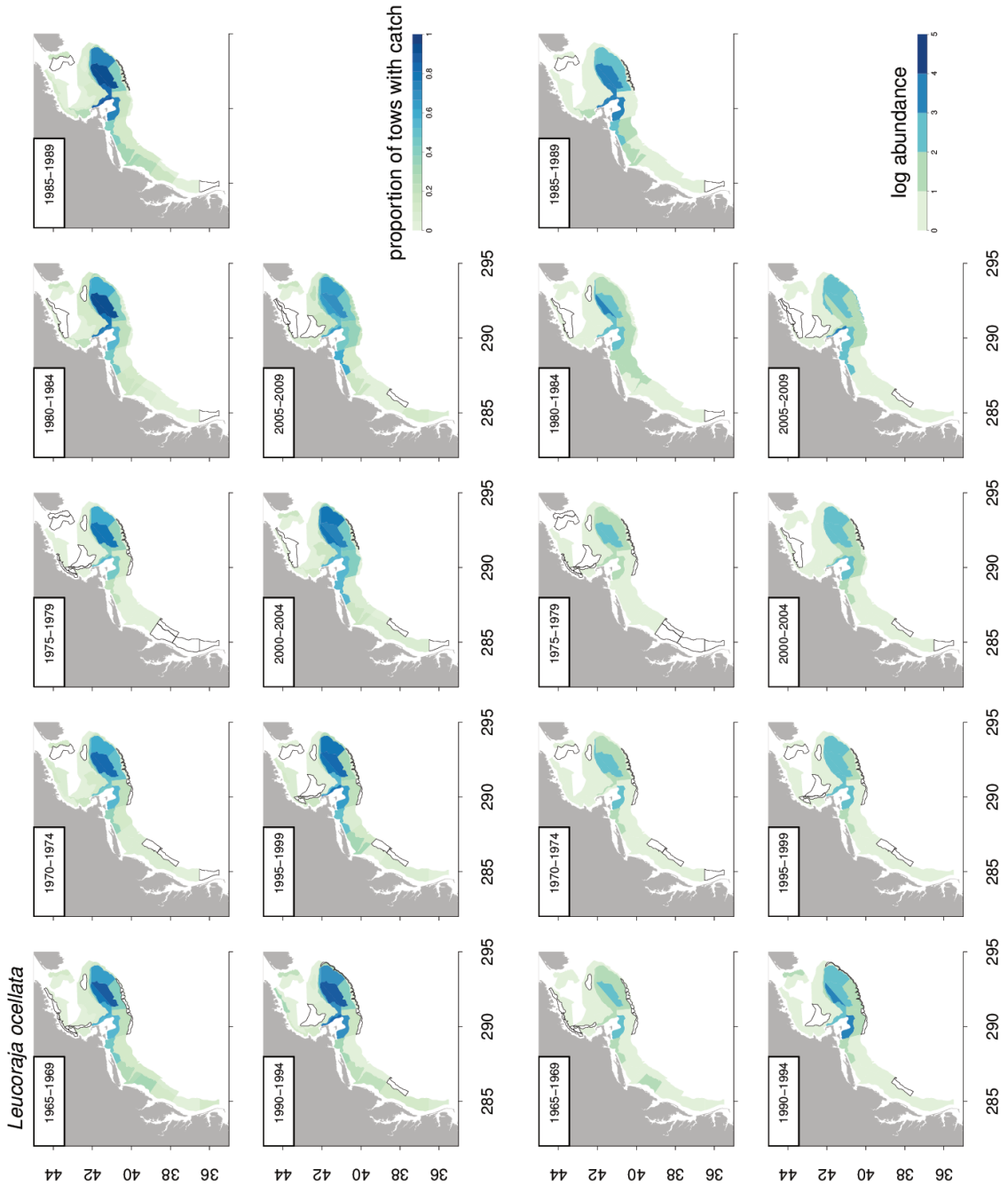


Figure A.39: Proportion of tows with catch and stratified random estimates of abundance for NMFS winter skate (*Leucoraja ocellata*).

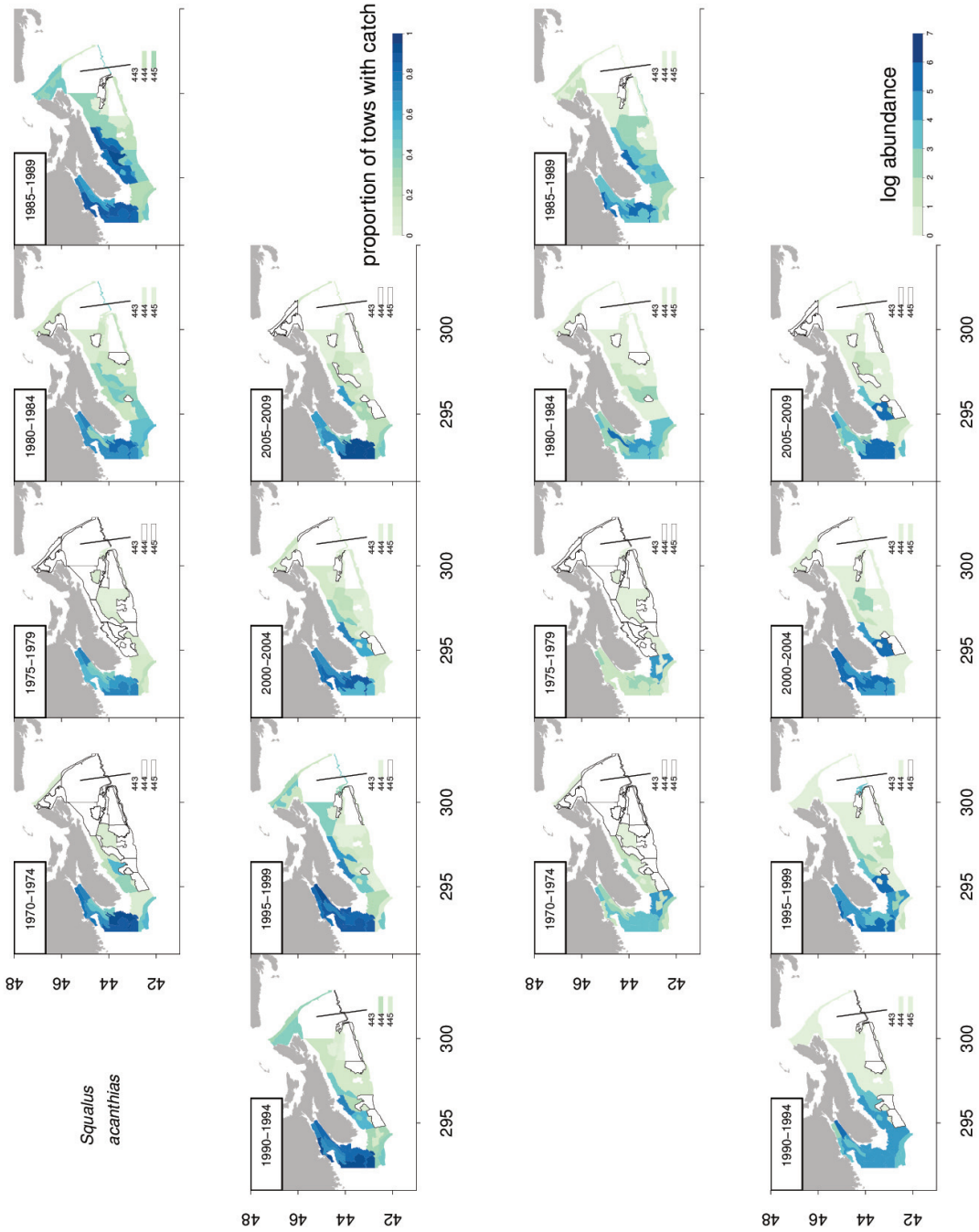


Figure A.40: Proportion of tows with catch and stratified random estimates of abundance for DFO dogfish (*Squalus acanthias*).

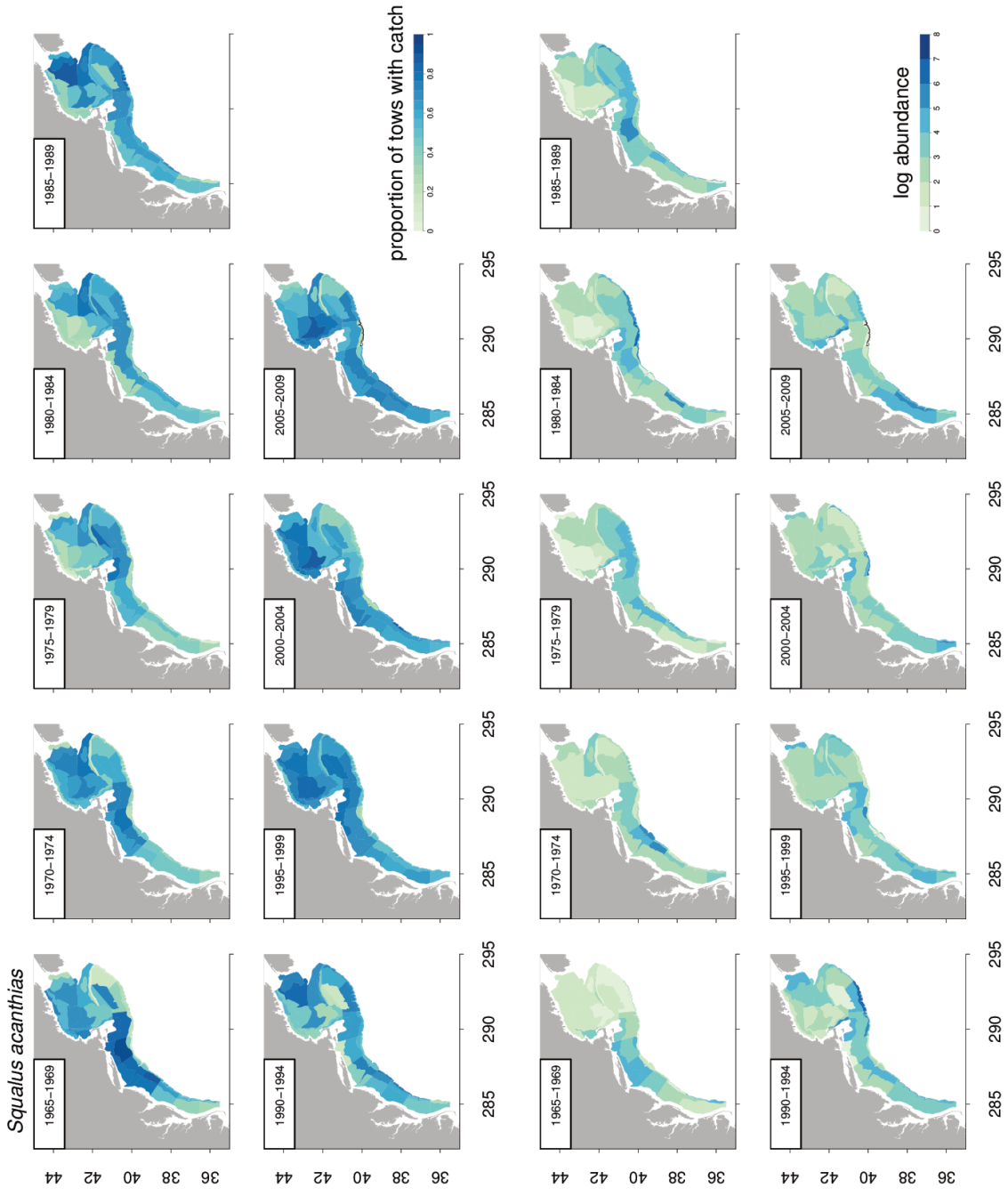


Figure A.41: Proportion of tows with catch and stratified random estimates of abundance for dogfish (*Squalus acanthias*).

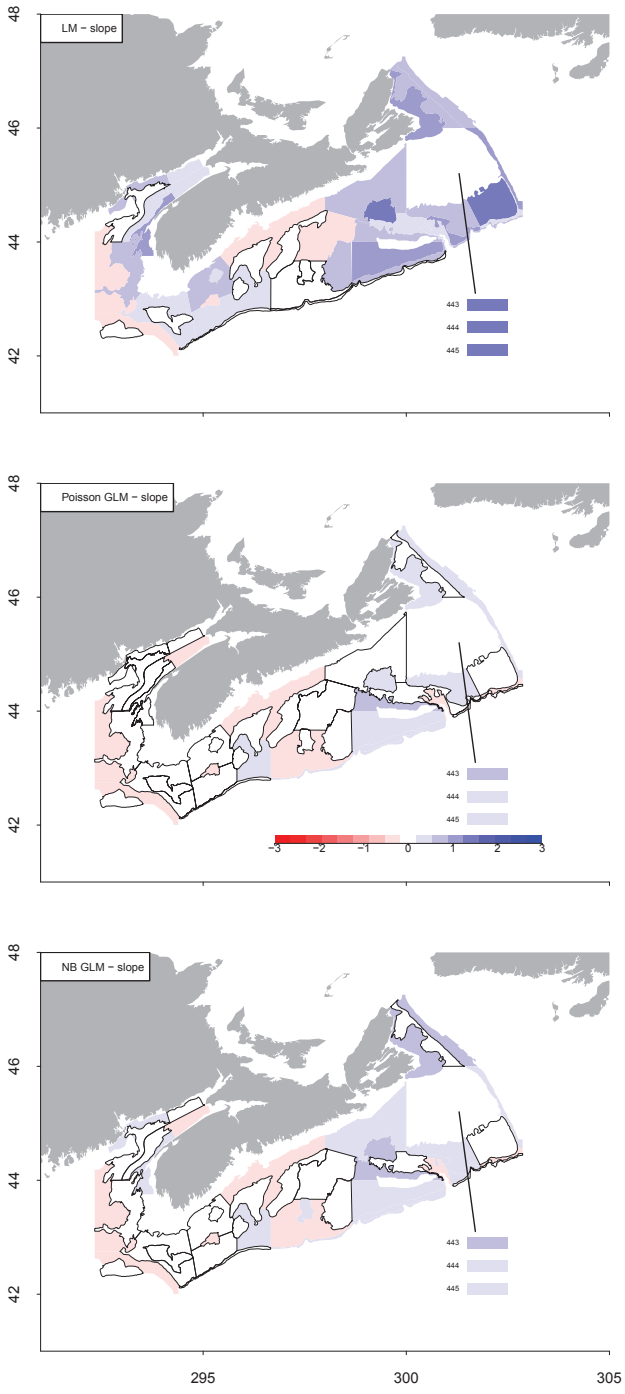


Figure A.42: Maps of slope estimates for the three models used for DFO Atlantic cod (*Gadus morhua*).

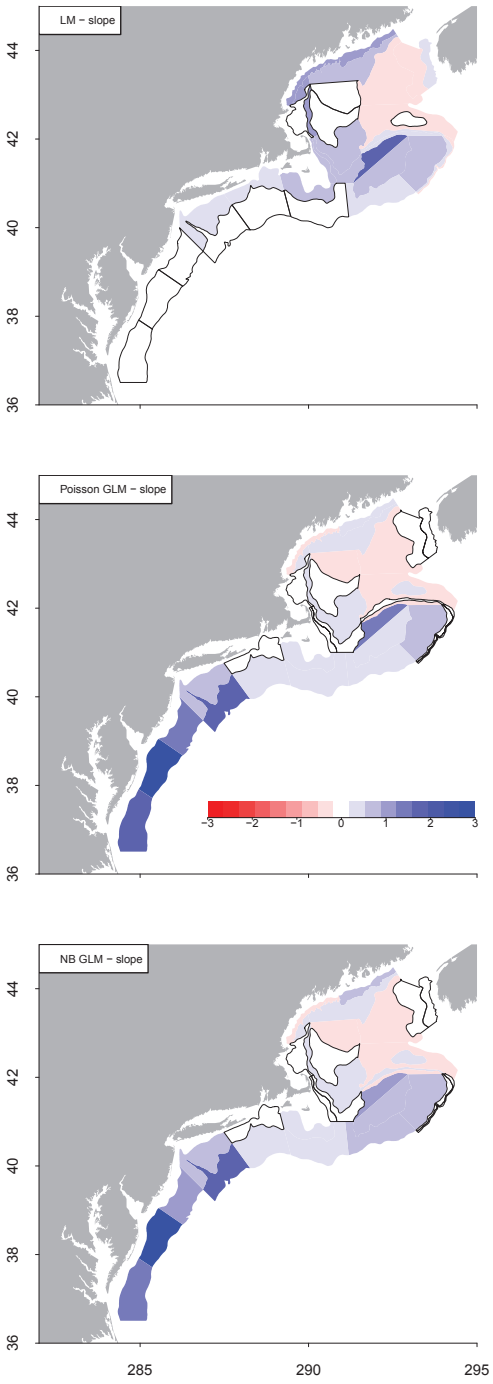


Figure A.43: Maps of slope estimates for the three models used for NMFS Atlantic cod (*Gadus morhua*).

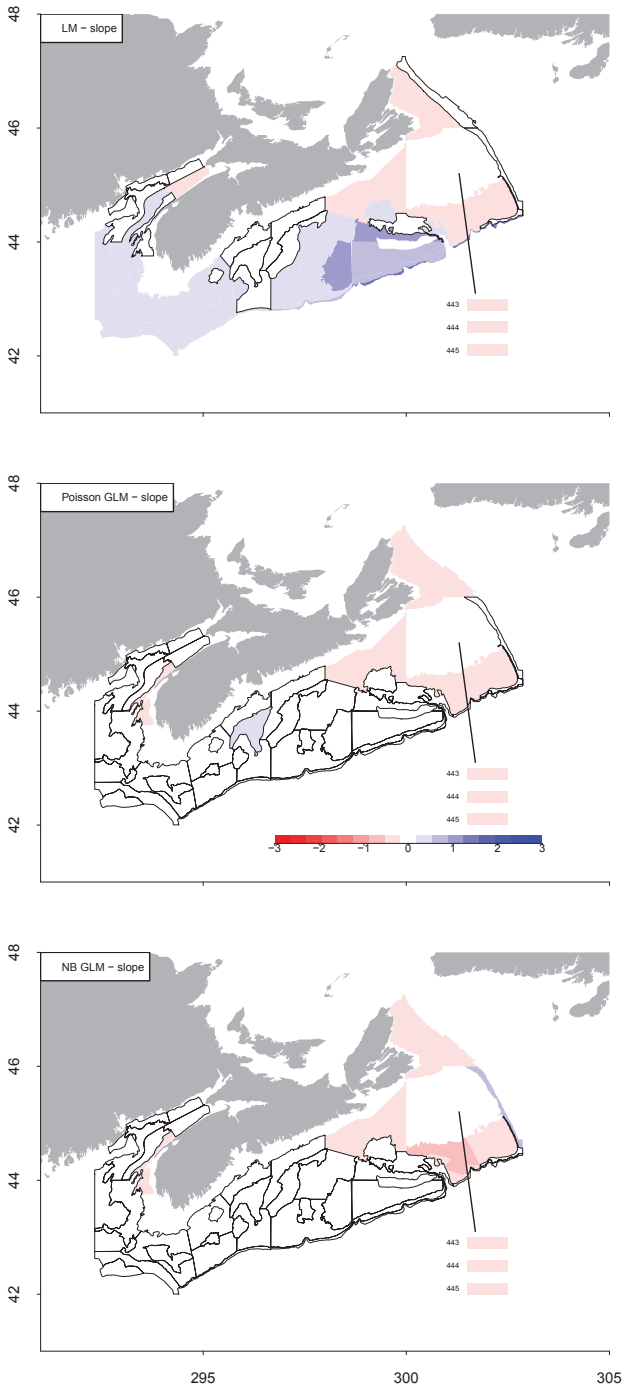


Figure A.44: Maps of slope estimates for the three models used for DFO haddock (*Melanogrammus aeglefinus*).

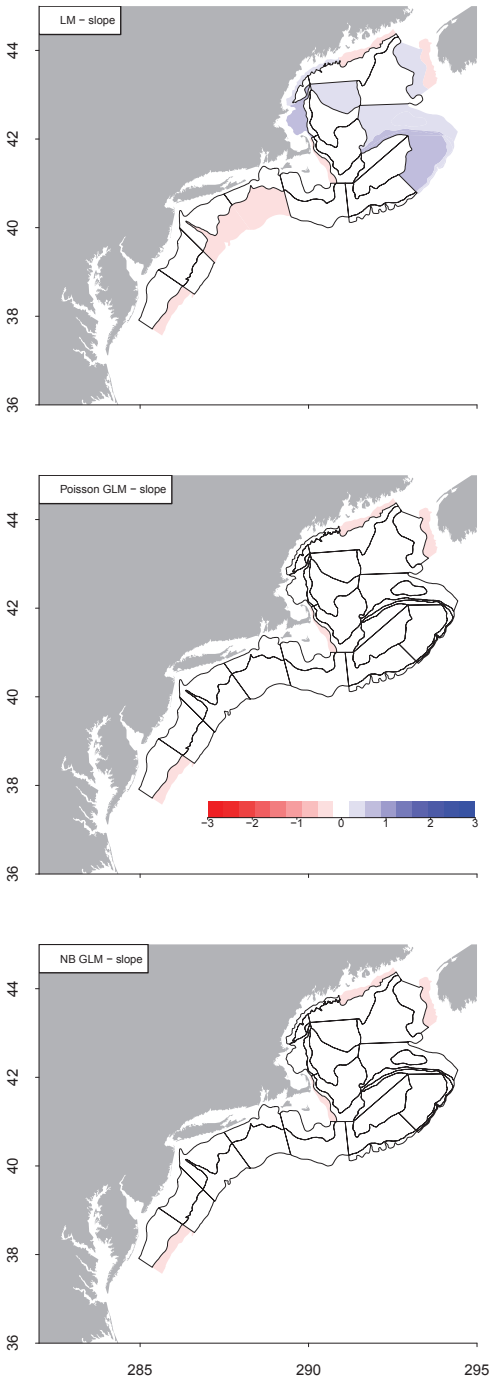


Figure A.45: Maps of slope estimates for the three models used for NMFS haddock (*Melanogrammus aeglefinus*).

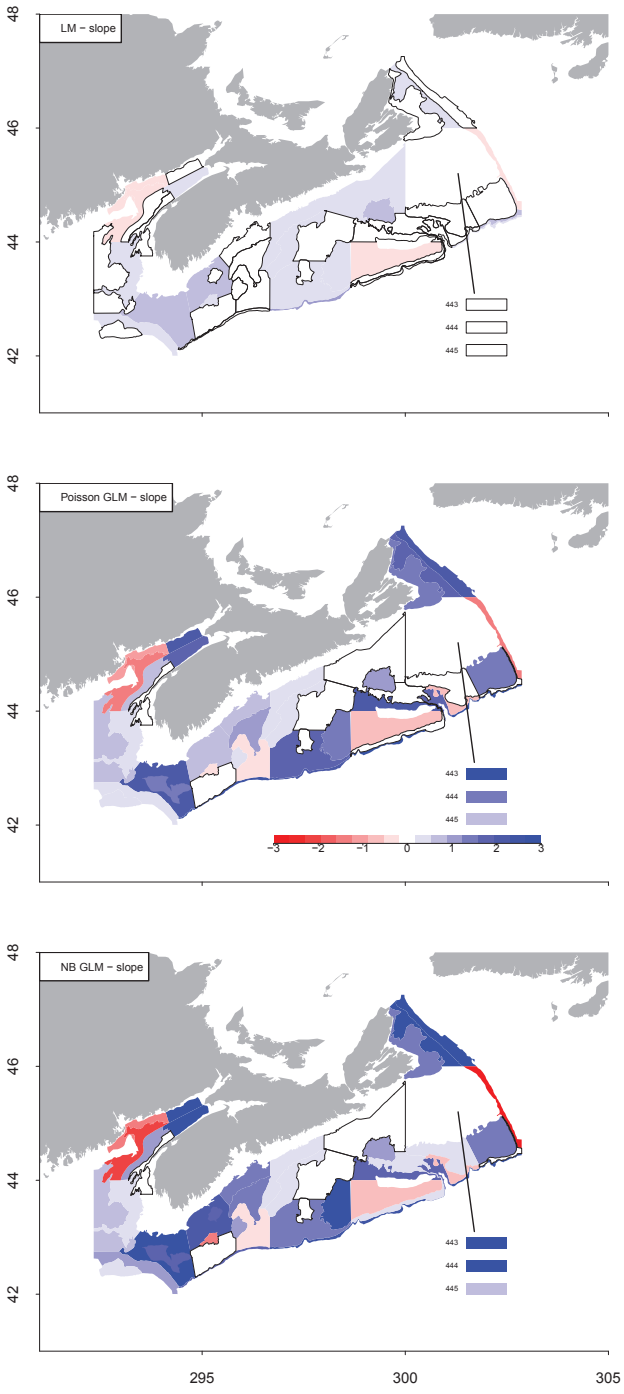


Figure A.46: Maps of slope estimates for the three models used for DFO pollock (*Pollachius virens*).

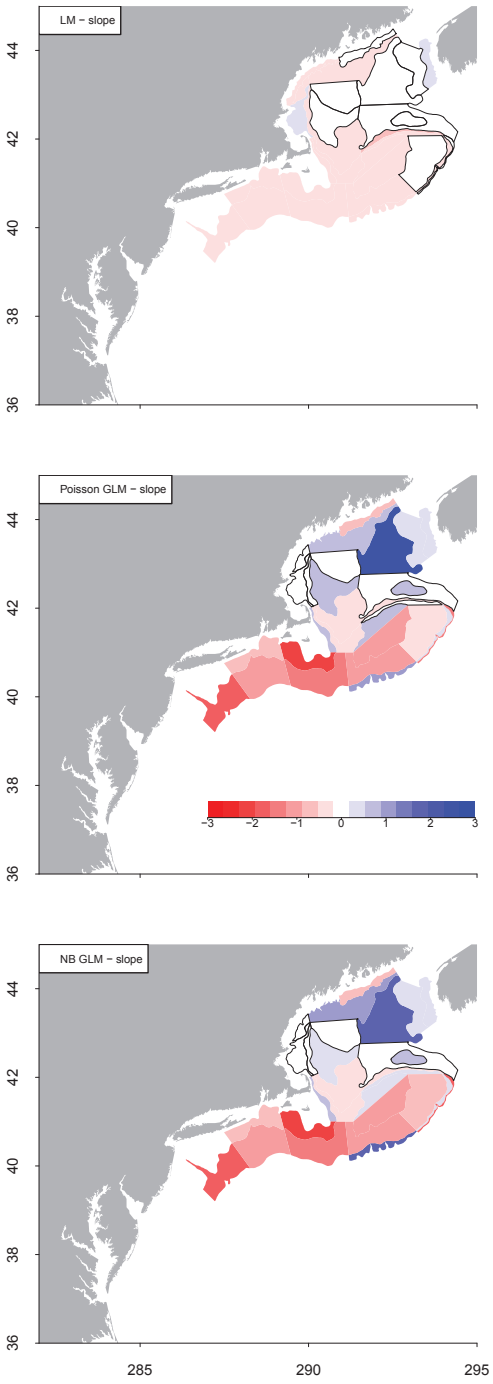


Figure A.47: Maps of slope estimates for the three models used for NMFS pollock (*Pollachius virens*).

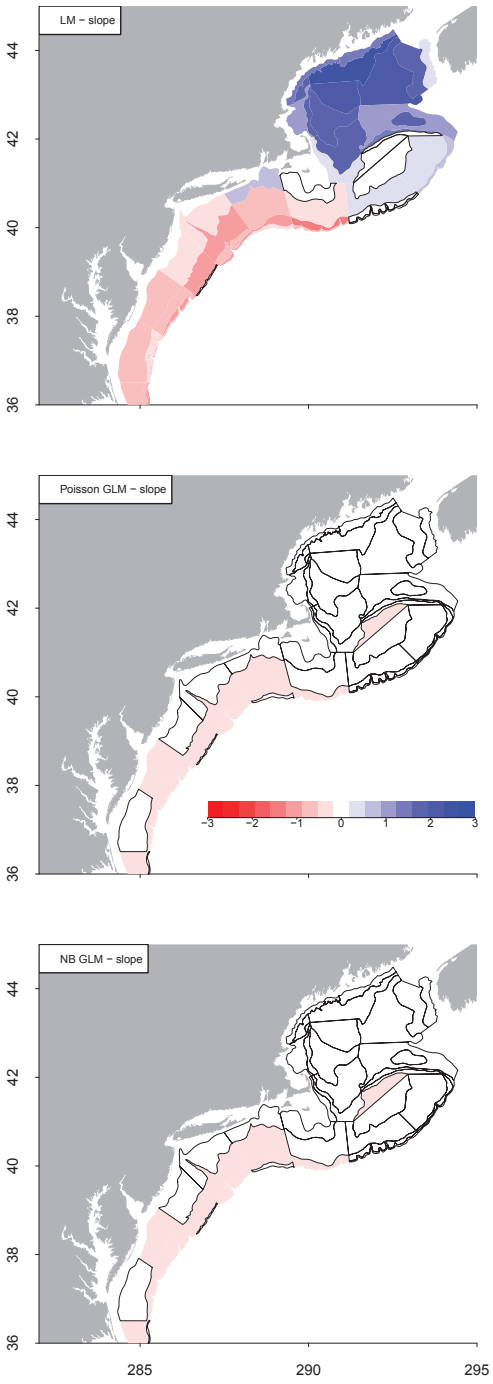


Figure A.48: Maps of slope estimates for the three models used for NMFS silver hake (*Merluccius bilinearis*).

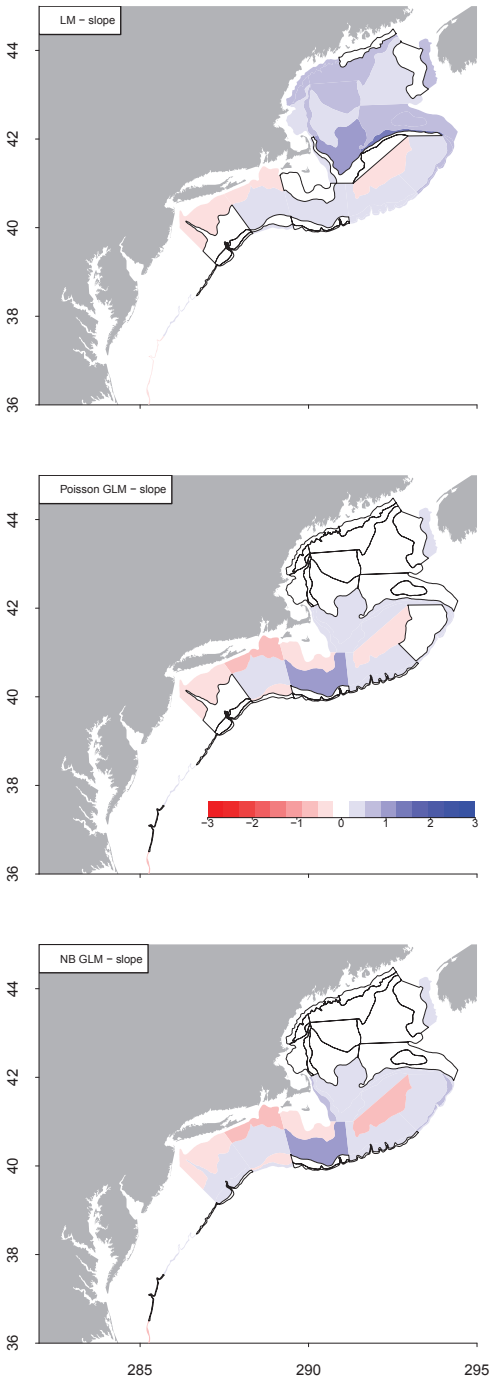


Figure A.49: Maps of slope estimates for the three models used for NMFS white hake (*Urophycis tenuis*).

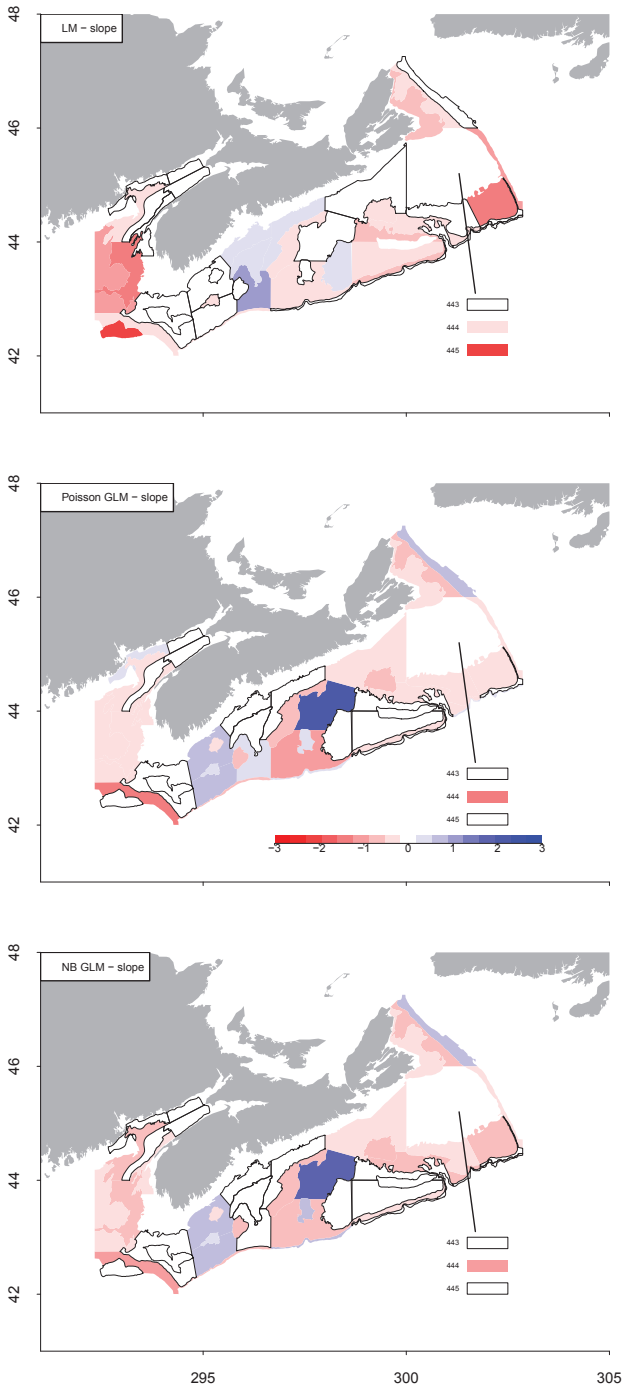


Figure A.50: Maps of slope estimates for the three models used for DFO yellowtail flounder (*Limanda ferruginea*).

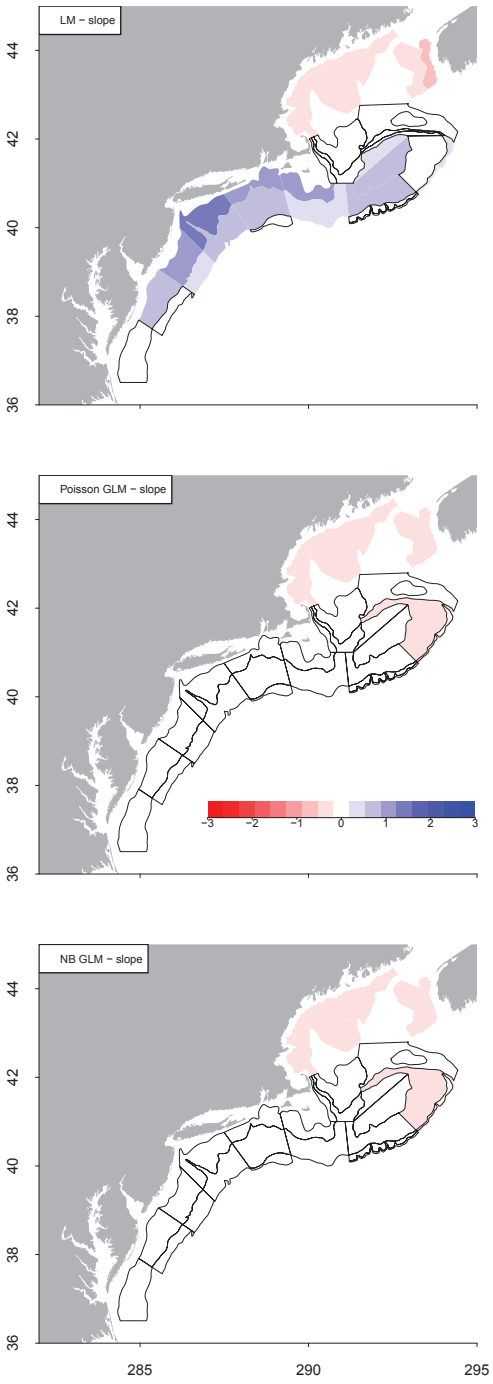


Figure A.51: Maps of slope estimates for the three models used for NMFS yellowtail flounder (*Limanda ferruginea*).

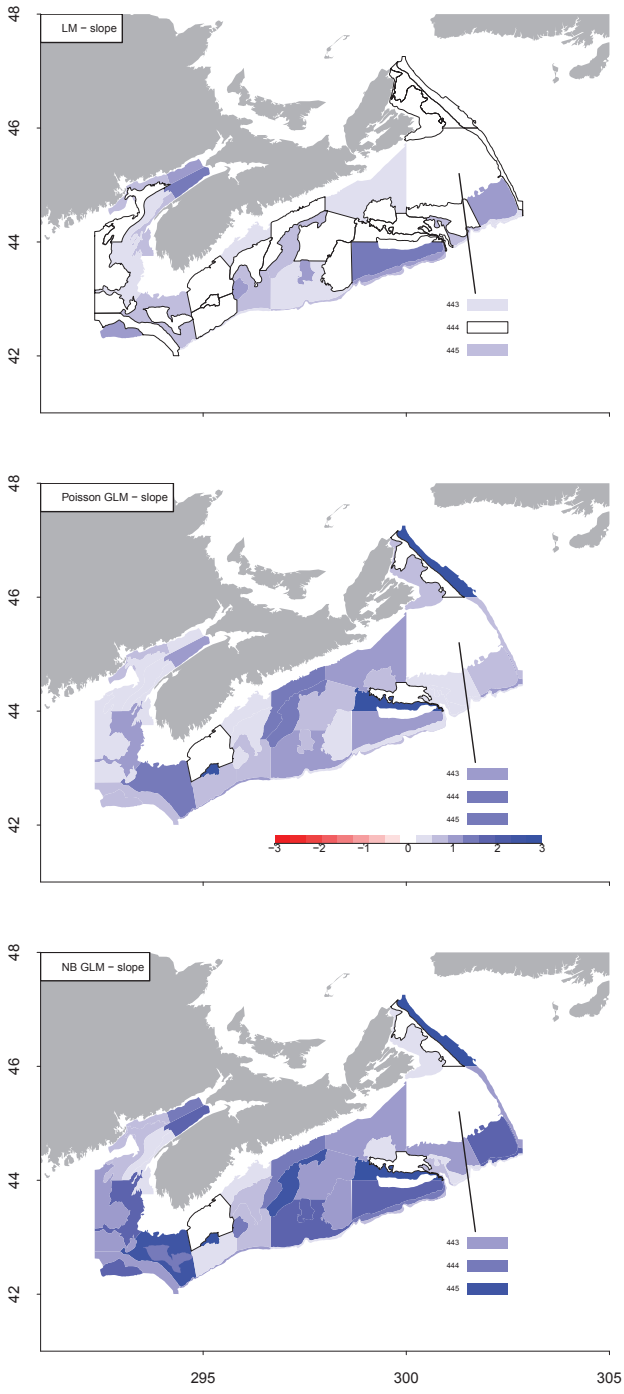


Figure A.52: Maps of slope estimates for the three models used for DFO winter flounder (*Pseudopleuronectes americanus*).

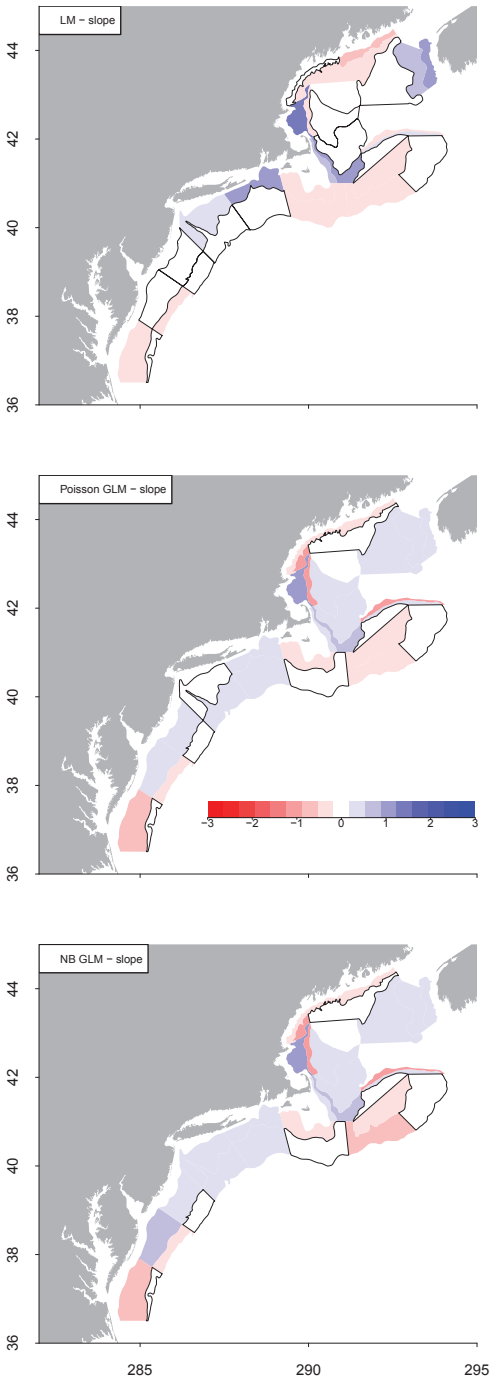


Figure A.53: Maps of slope estimates for the three models used for NMFS winter flounder (*Pseudopleuronectes americanus*).

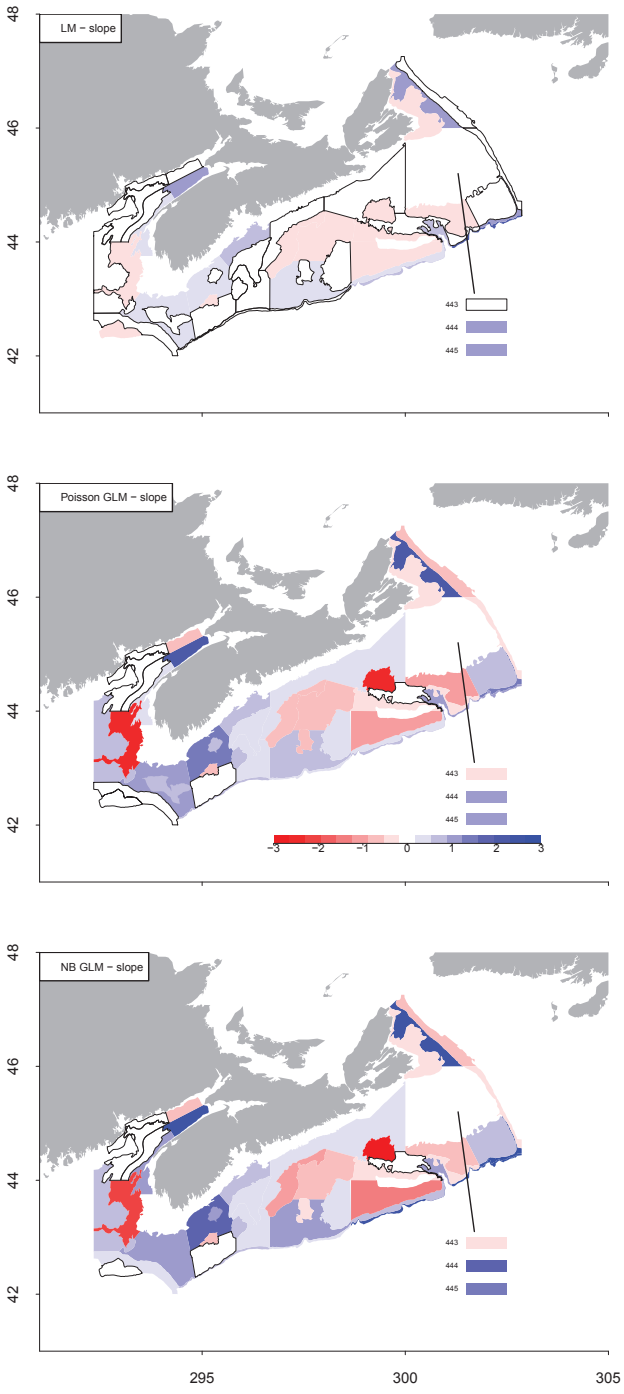


Figure A.54: Maps of slope estimates for the three models used for DFO witch flounder (*Glyptocephalus-cynoglossus*).

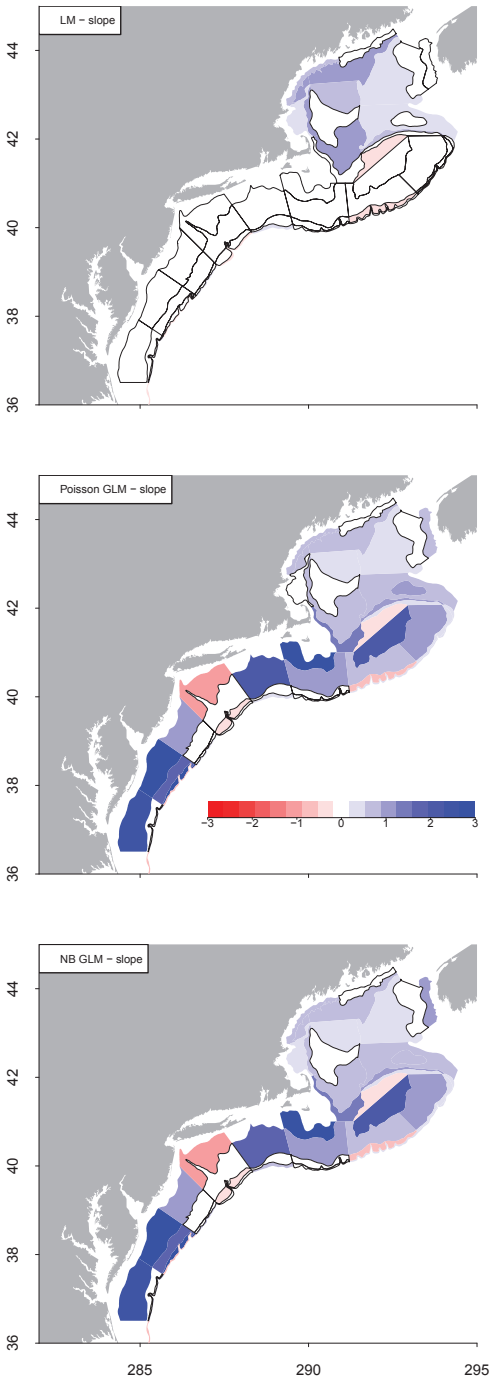


Figure A.55: Maps of slope estimates for the three models used for NMFS witch flounder (*Glyptocephalus-cynoglossus*).

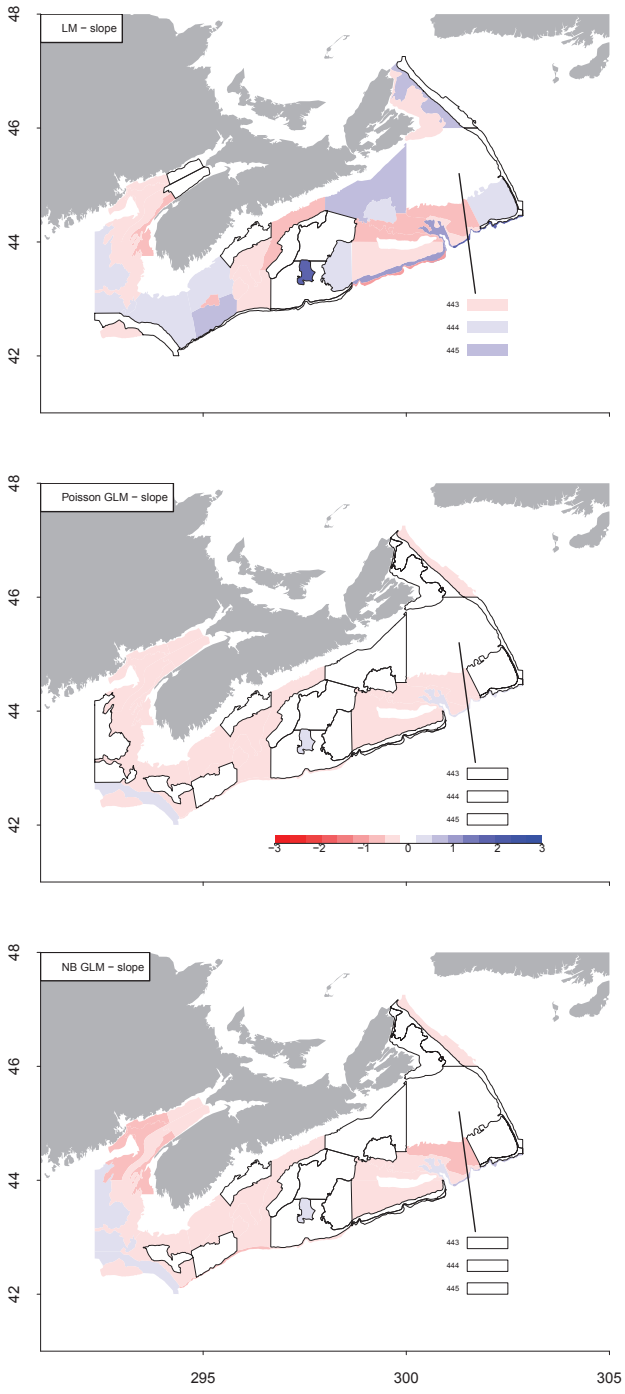


Figure A.56: Maps of slope estimates for the three models used for DFO American plaice (*Hippoglossoides platessoides*).

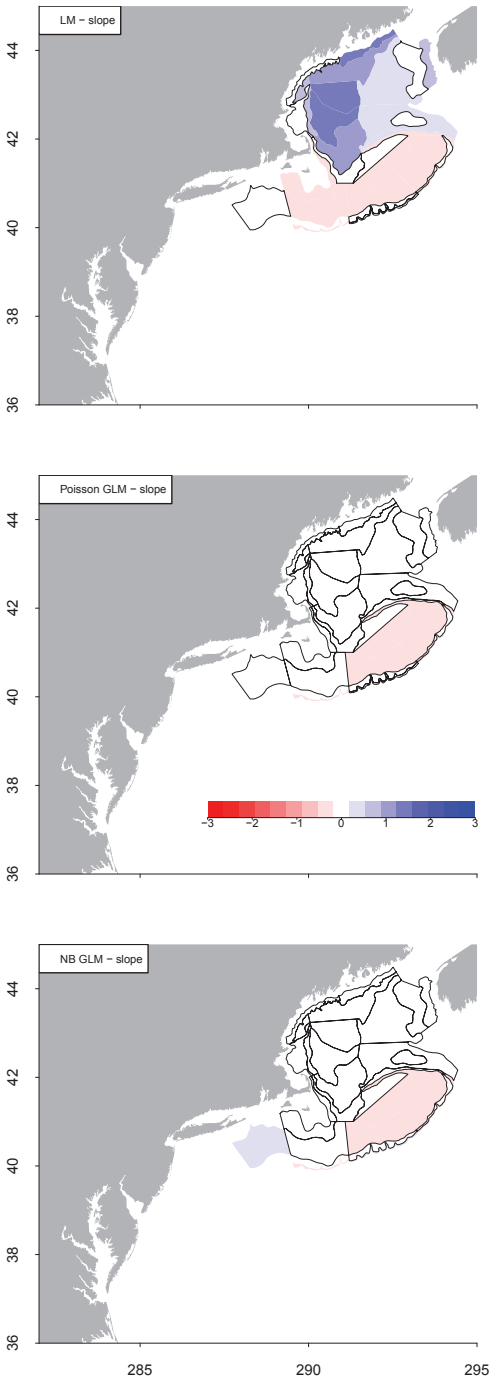


Figure A.57: Maps of slope estimates for the three models used for NMFS American plaice (*Hippoglossoides platessoides*).

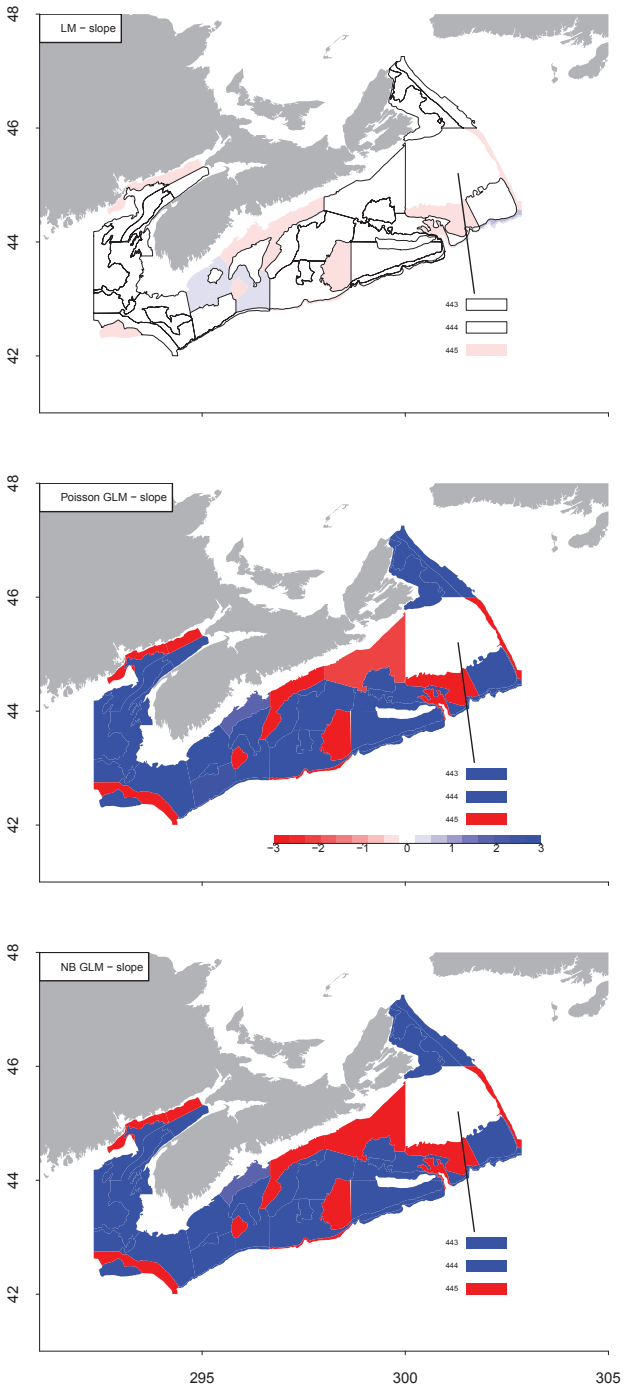


Figure A.58: Maps of slope estimates for the three models used for DFO halibut (*Hippoglossus hippoglossus*).

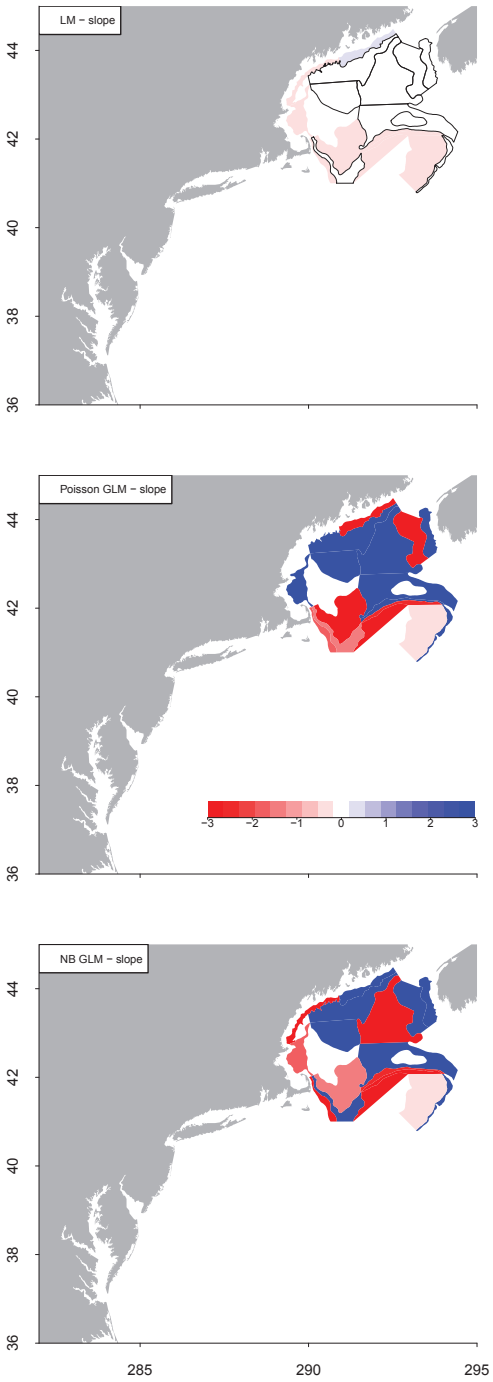


Figure A.59: Maps of slope estimates for the three models used for NMFS halibut (*Hippoglossus hippoglossus*).

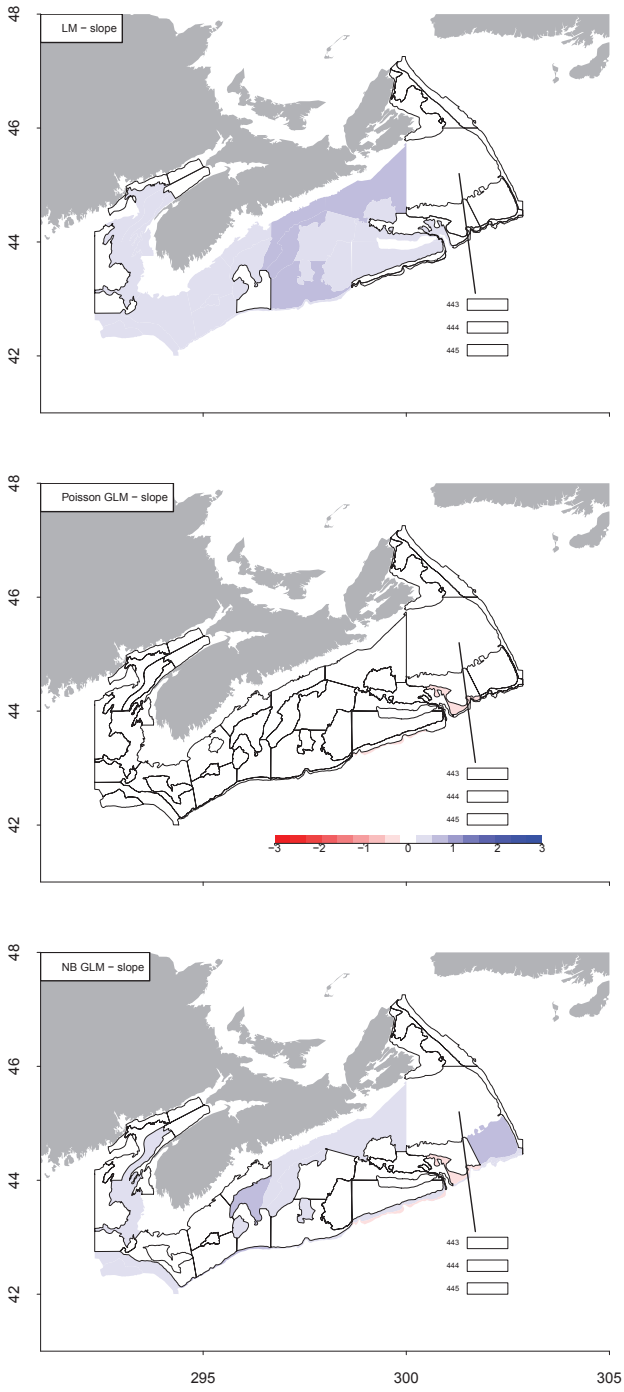


Figure A.60: Maps of slope estimates for the three models used for DFO herring (*Clupea harengus*).

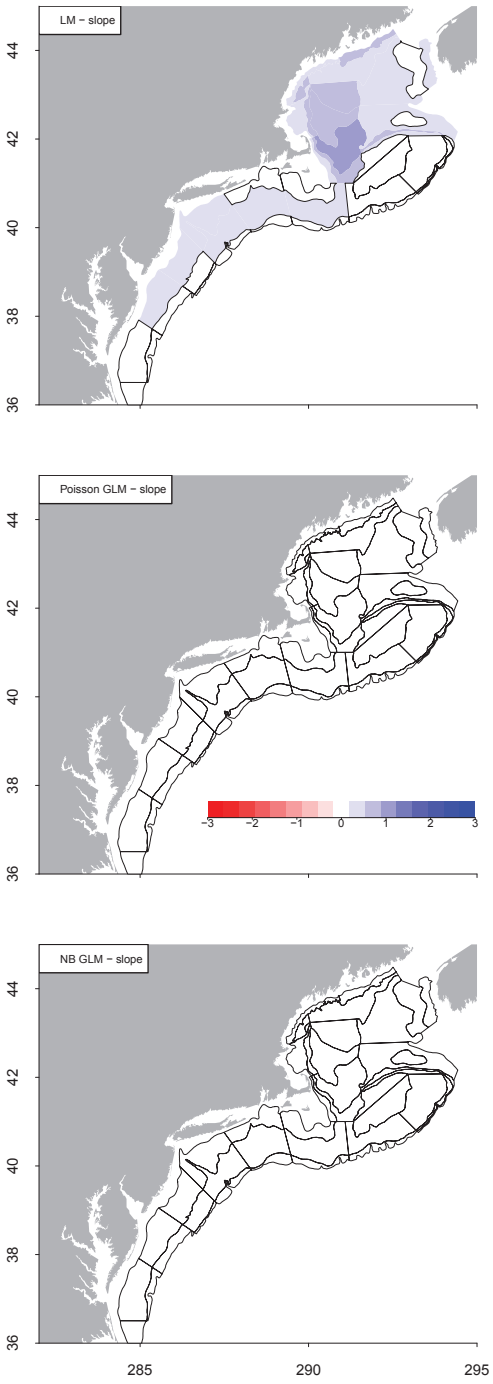


Figure A.61: Maps of slope estimates for the three models used for NMFS herring (*Clupea harengus*).

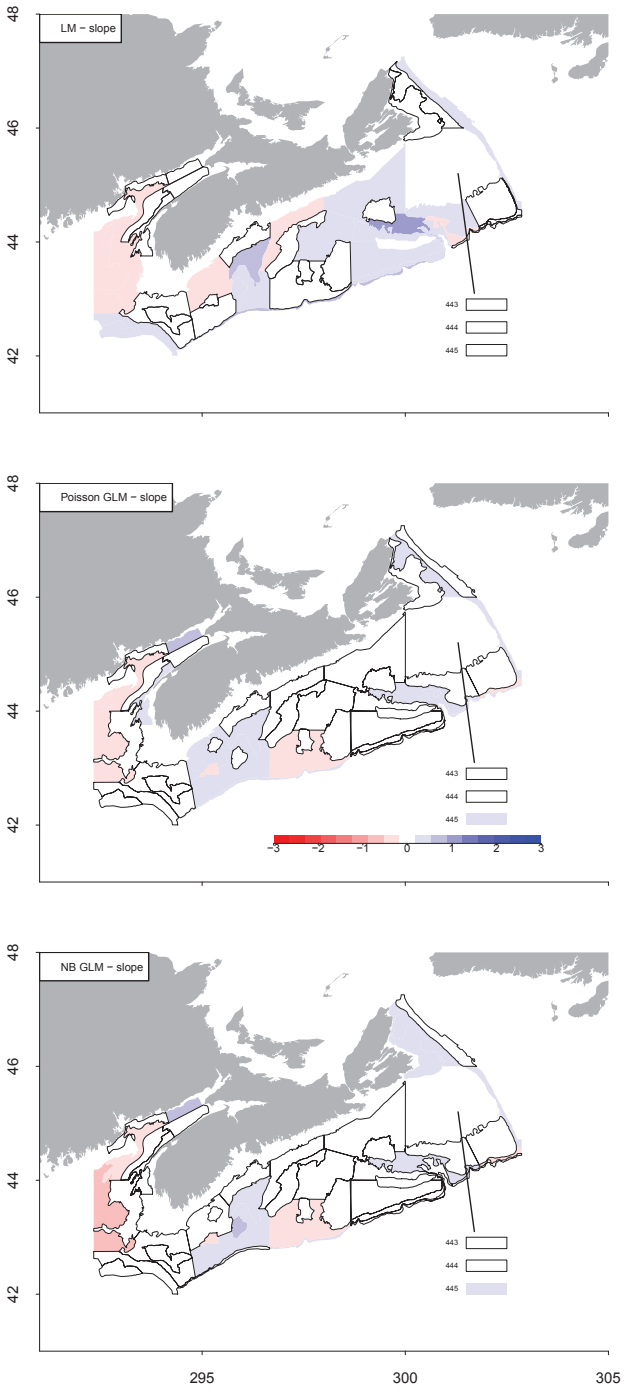


Figure A.62: Maps of slope estimates for the three models used for DFO shortfin squid (*Illex illecebrosus*).

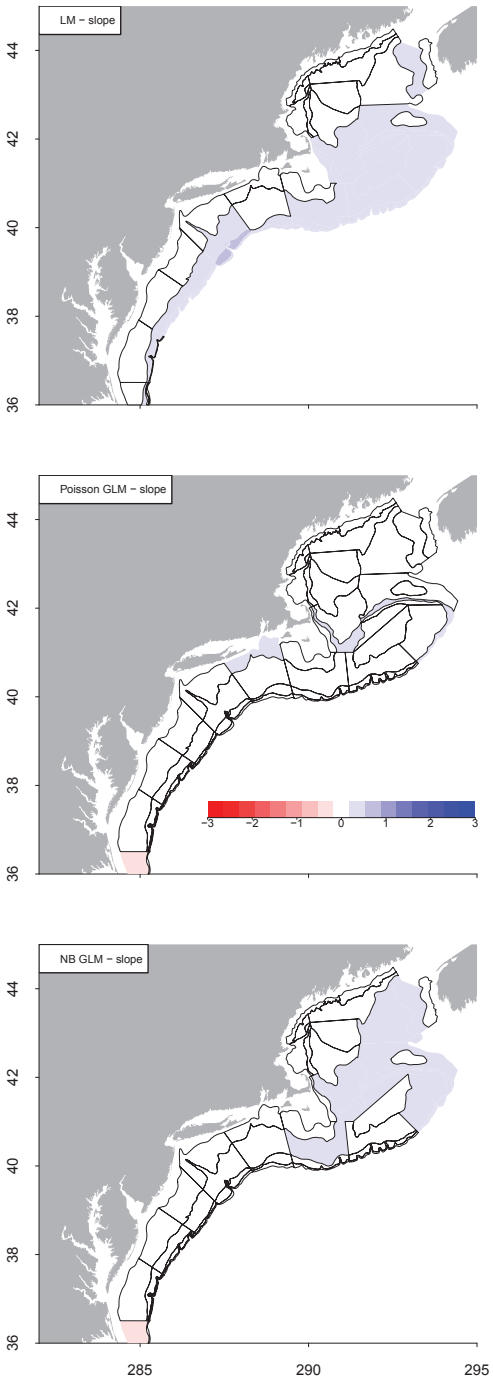


Figure A.63: Maps of slope estimates for the three models used for NMFS shortfin squid (*Illex illecebrosus*).

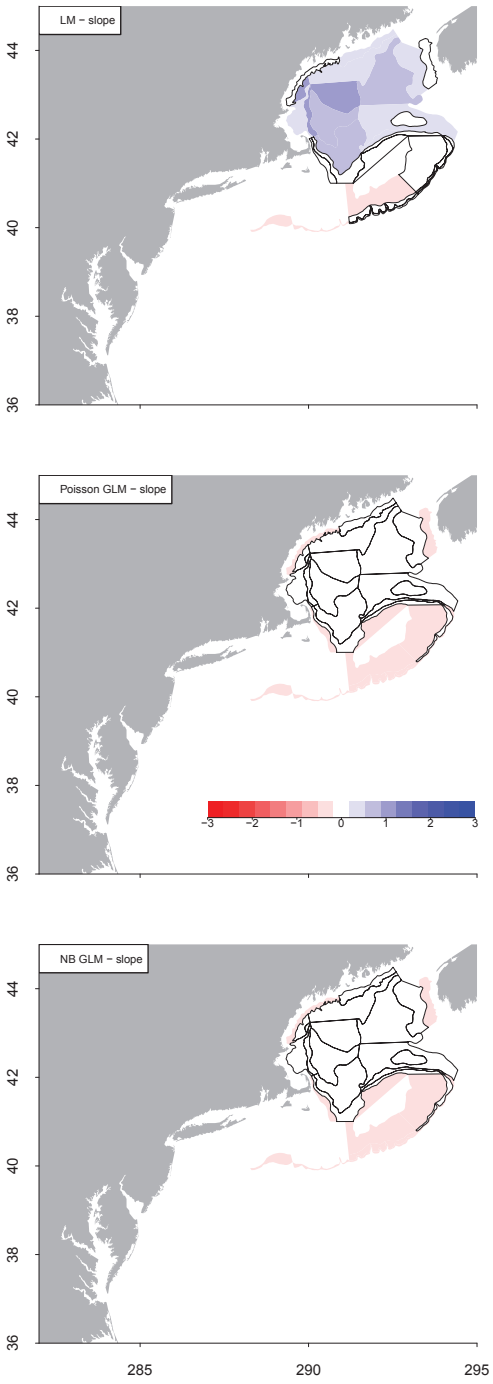


Figure A.64: Maps of slope estimates for the three models used for NMFS redfish (*Sebastes fasciatus*).

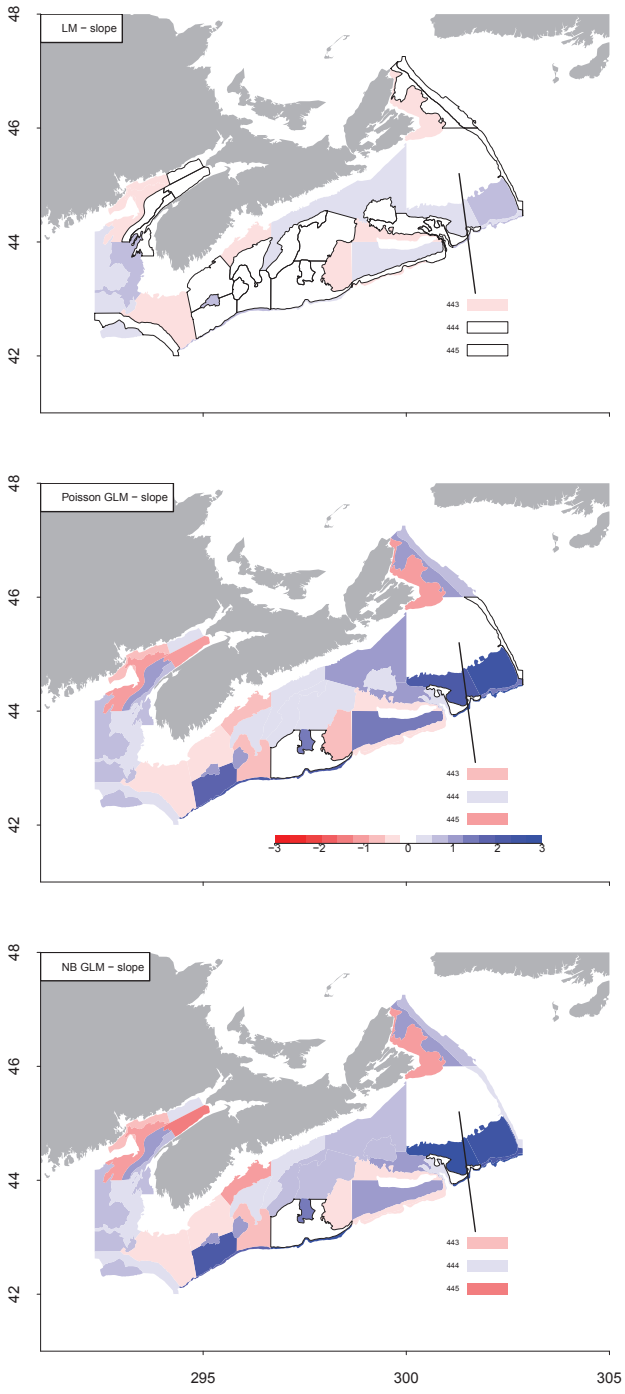


Figure A.65: Maps of slope estimates for the three models used for DFO DFO longhorn sculpin (*Myoxocephalus octodecemspinosus*).

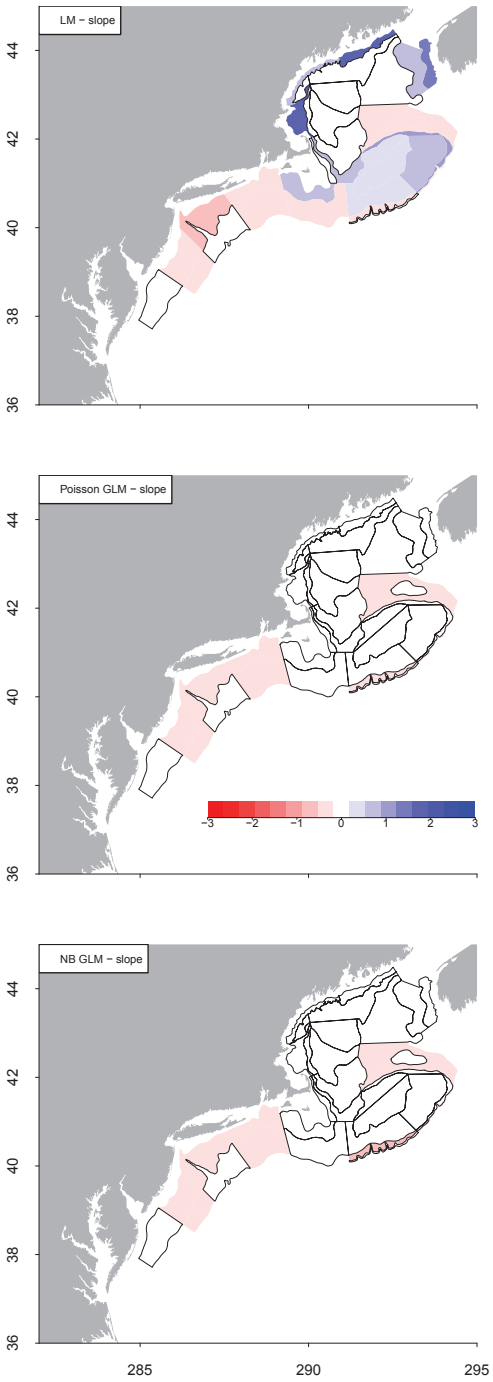


Figure A.66: Maps of slope estimates for the three models used for NMFS longhorn sculpin (*Myoxocephalus octodecemspinosus*).

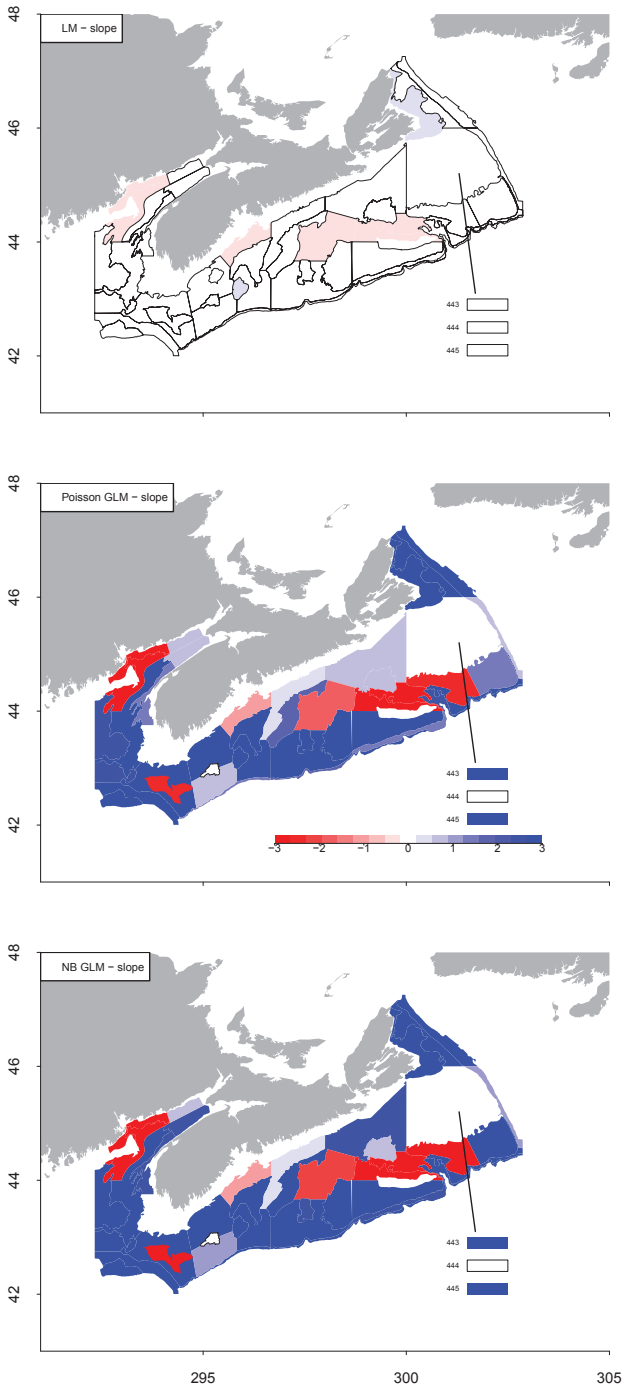


Figure A.67: Maps of slope estimates for the three models used for DFO moustache sculpin (*Triglops murrayi*).

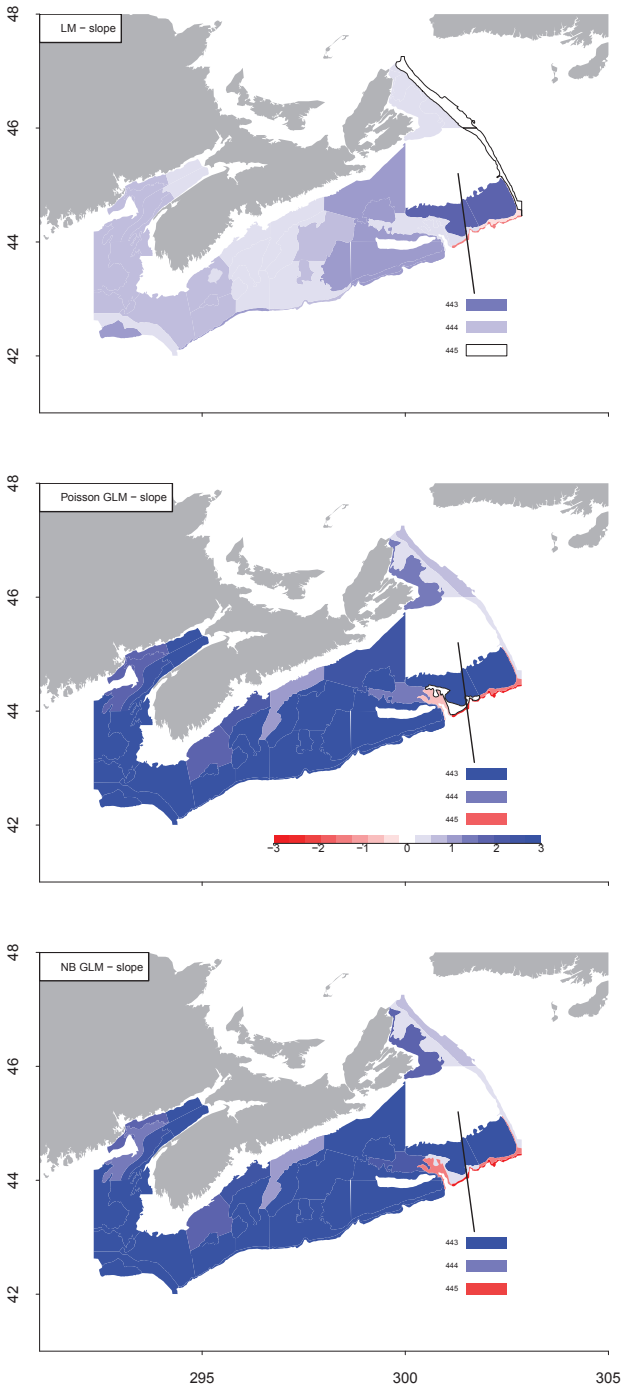


Figure A.68: Maps of slope estimates for the three models used for DFO thorny skate (*Amblyraja radiata*).

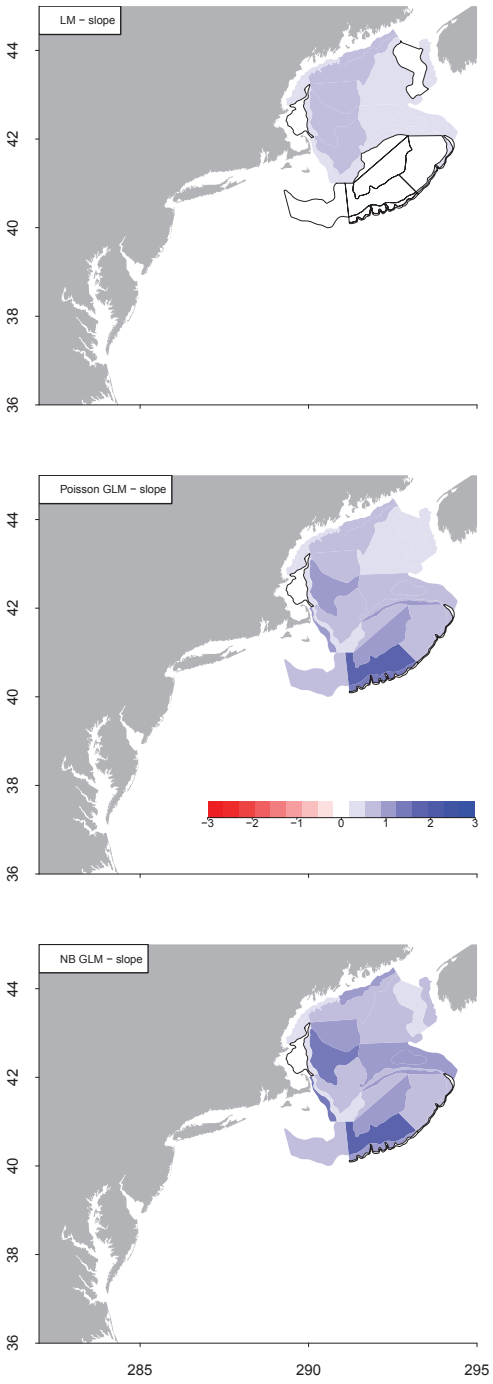


Figure A.69: Maps of slope estimates for the three models used for NMFS thorny skate (*Amblyraja radiata*).

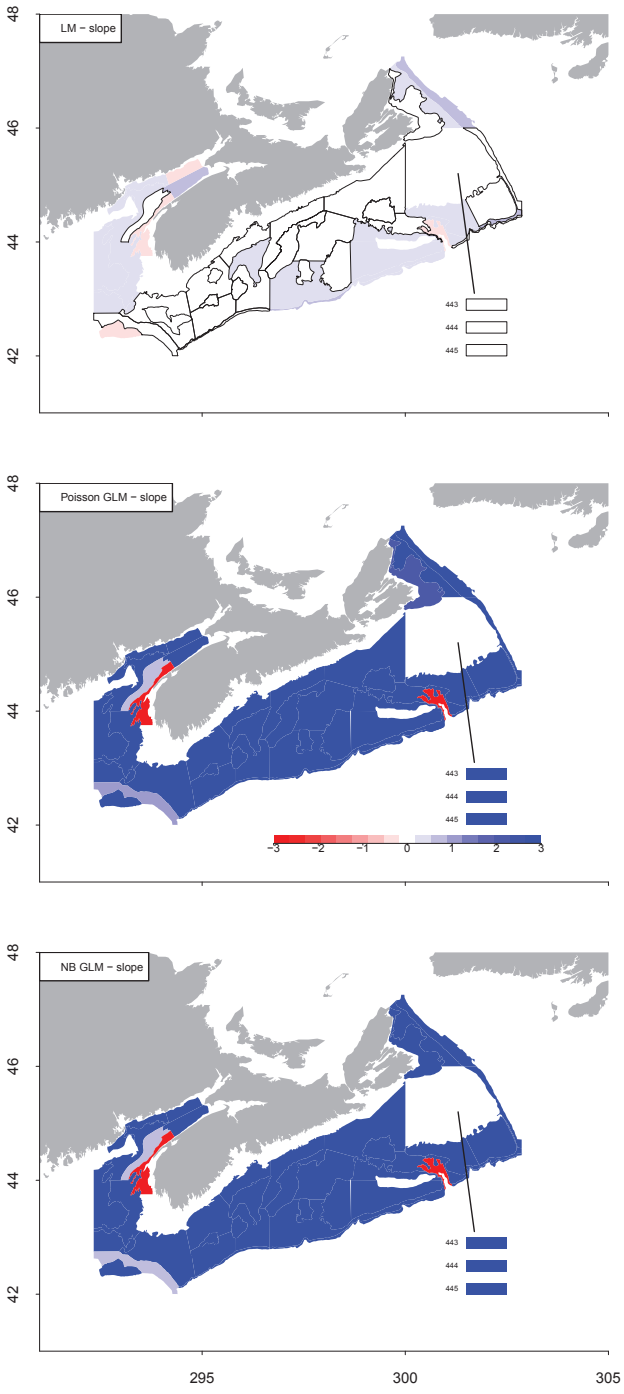


Figure A.70: Maps of slope estimates for the three models used for DFO smooth skate (*Malacoraja senta*).

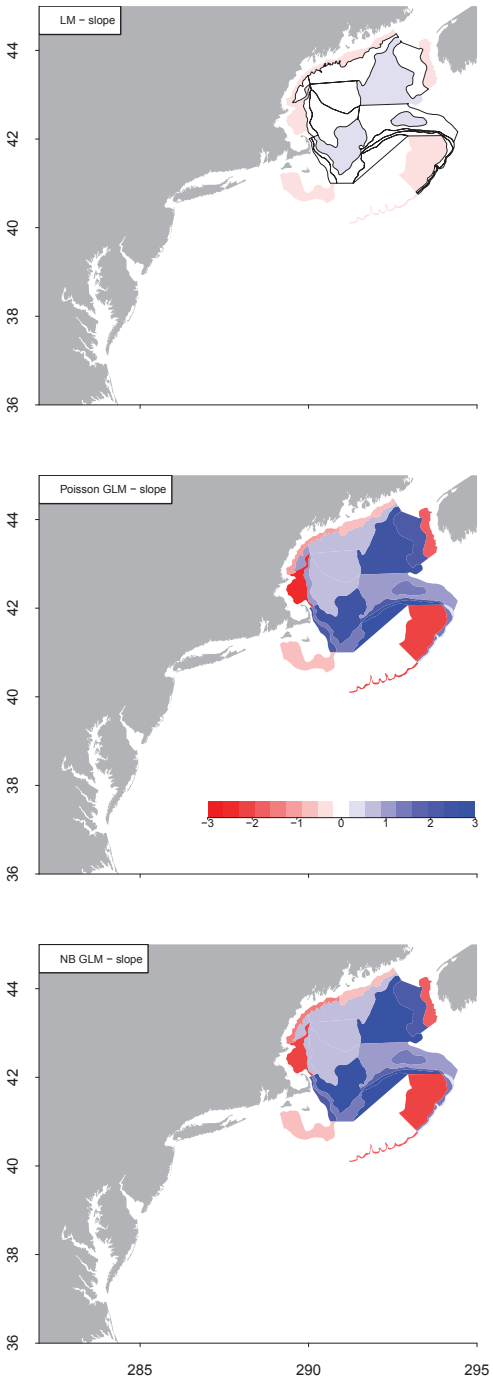


Figure A.71: Maps of slope estimates for the three models used for NMFS smooth skate (*Malacoraja senta*).

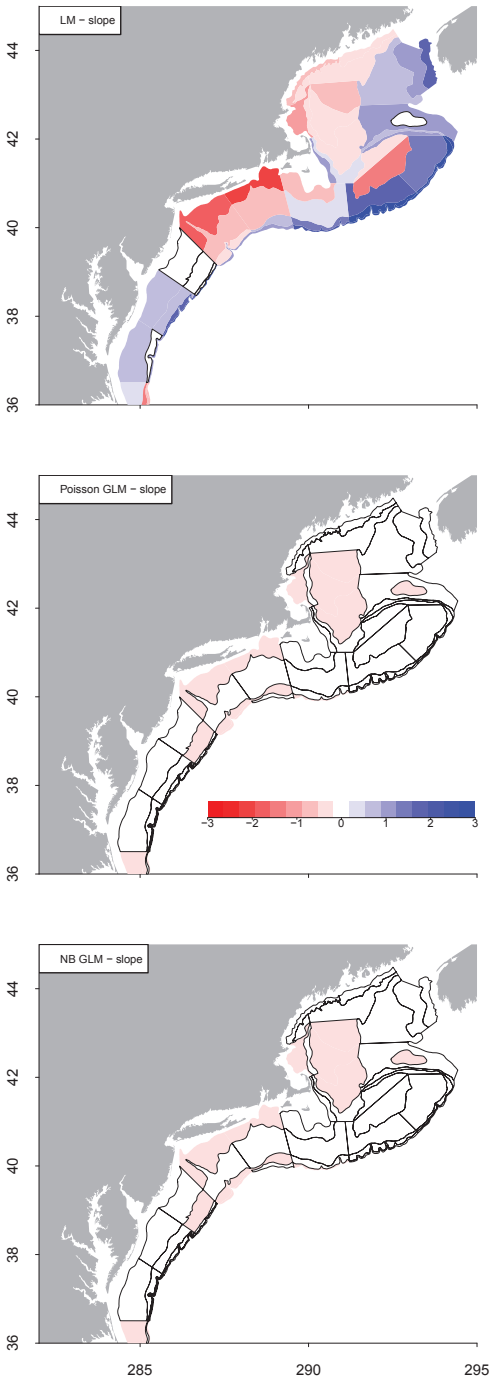


Figure A.72: Maps of slope estimates for the three models used for NMFS dogfish (*Squalus acanthias*).

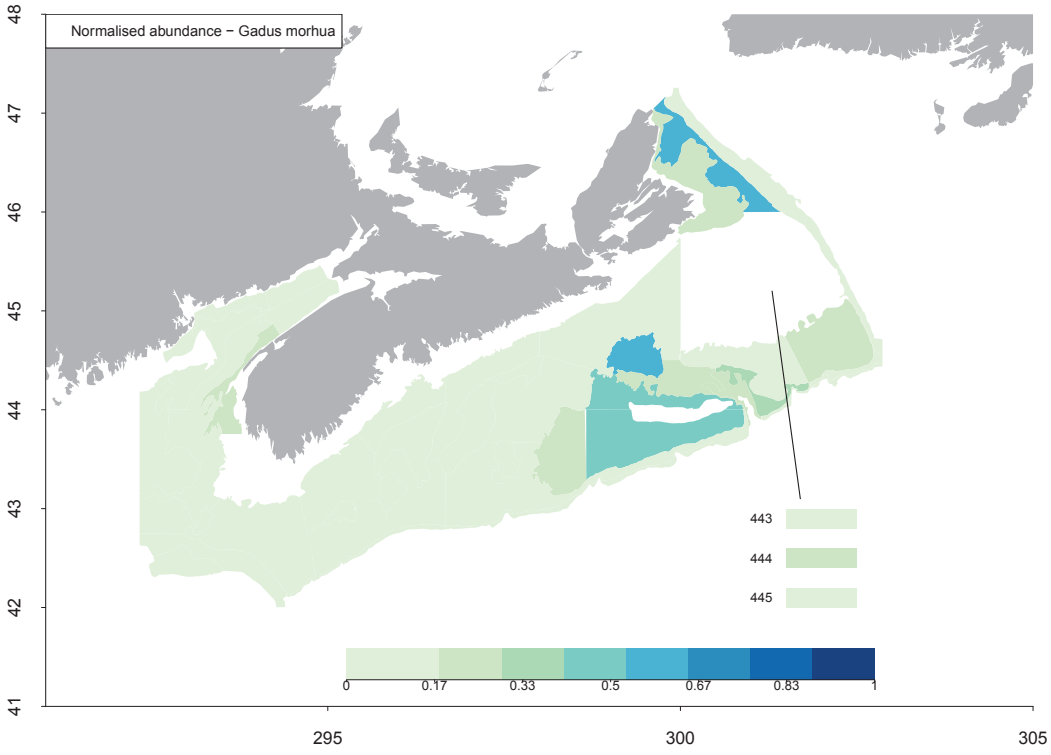


Figure A.73: Maps of normalised abundance for DFO Atlantic cod (*Gadus morhua*).

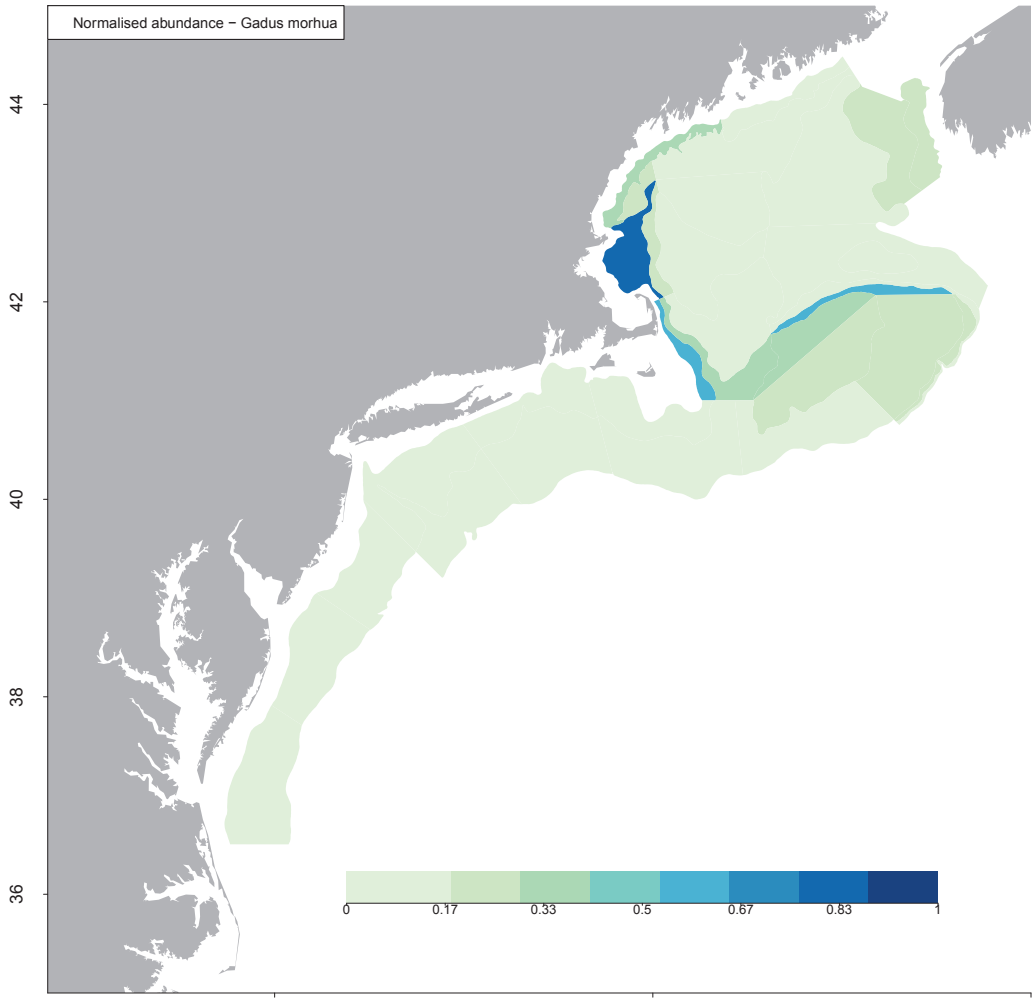


Figure A.74: Maps of normalised abundance for NMFS Atlantic cod (*Gadus morhua*).

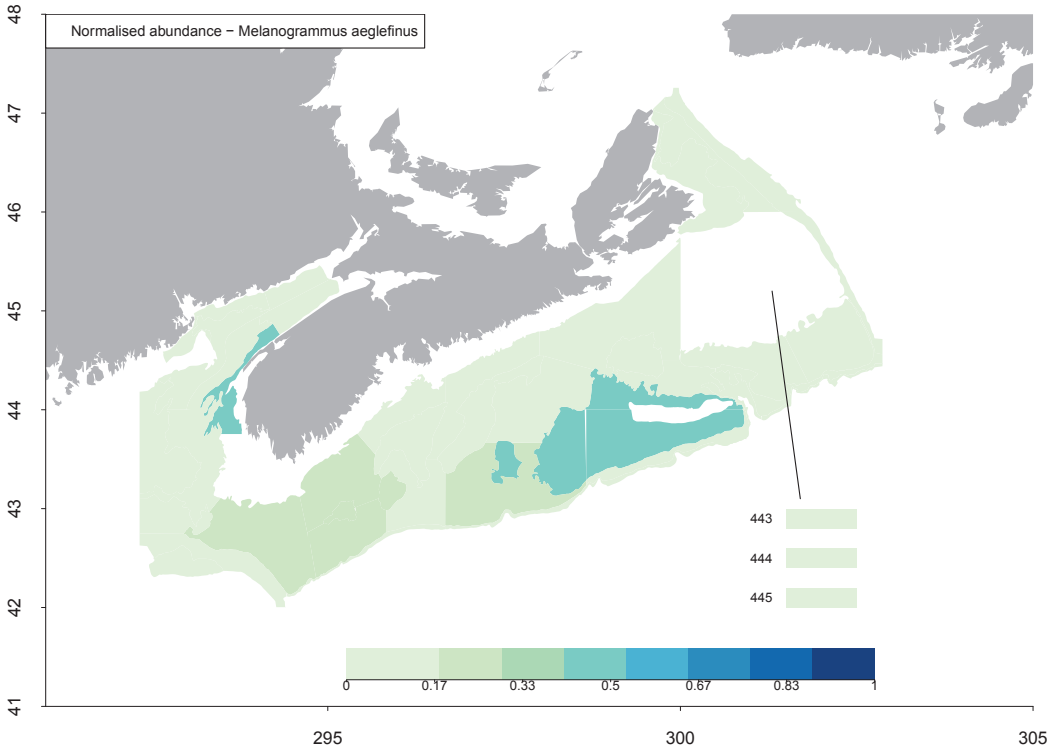


Figure A.75: Maps of normalised abundance for DFO haddock (*Melanogrammus aeglefinus*).

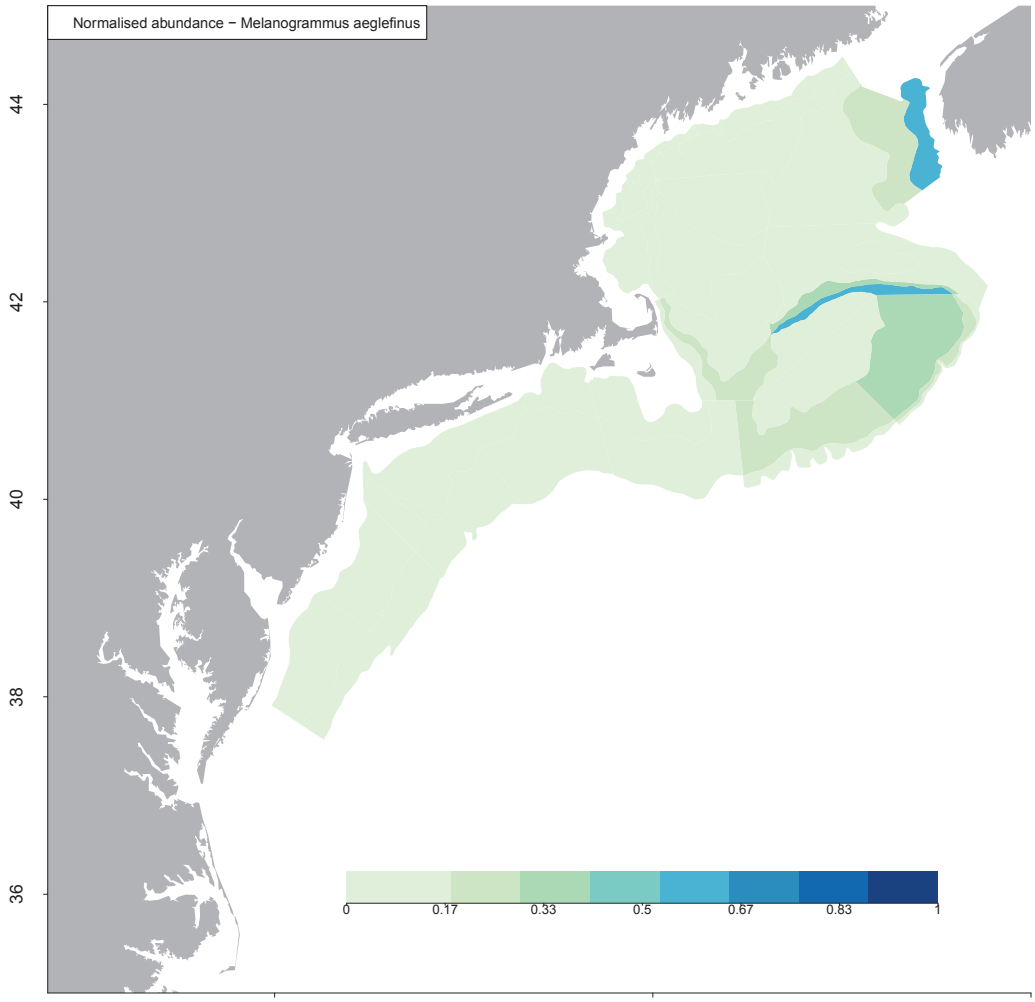


Figure A.76: Maps of normalised abundance for NMFS haddock (*Melanogrammus aeglefinus*).

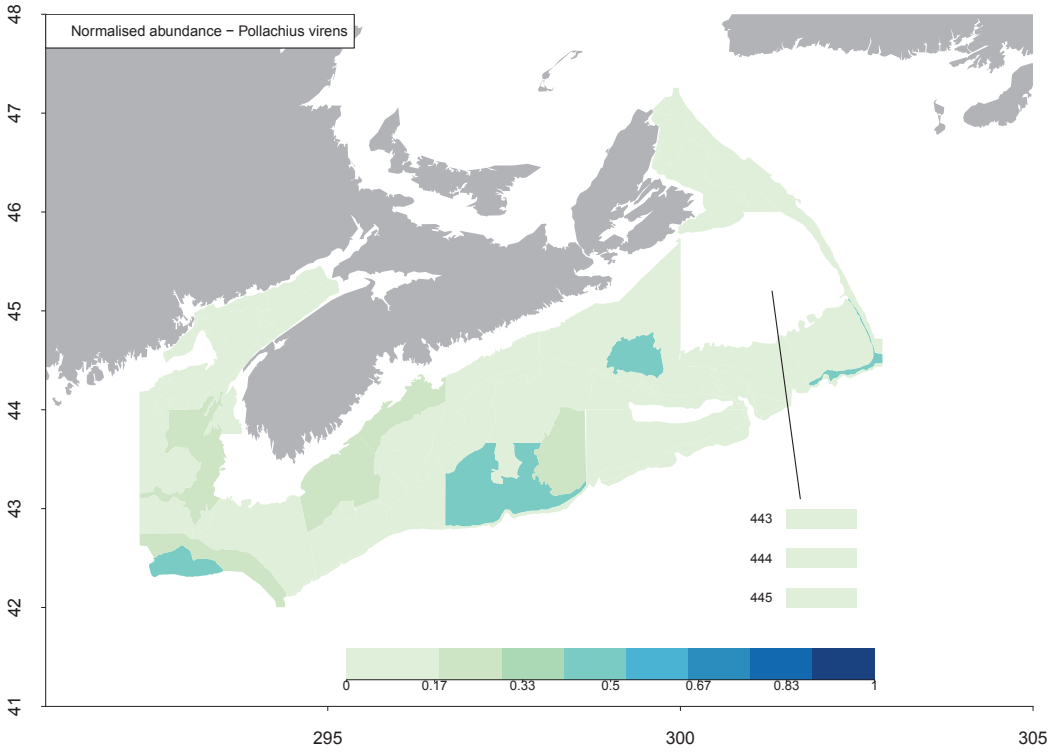


Figure A.77: Maps of normalised abundance for DFO pollock (*Pollachius virens*).

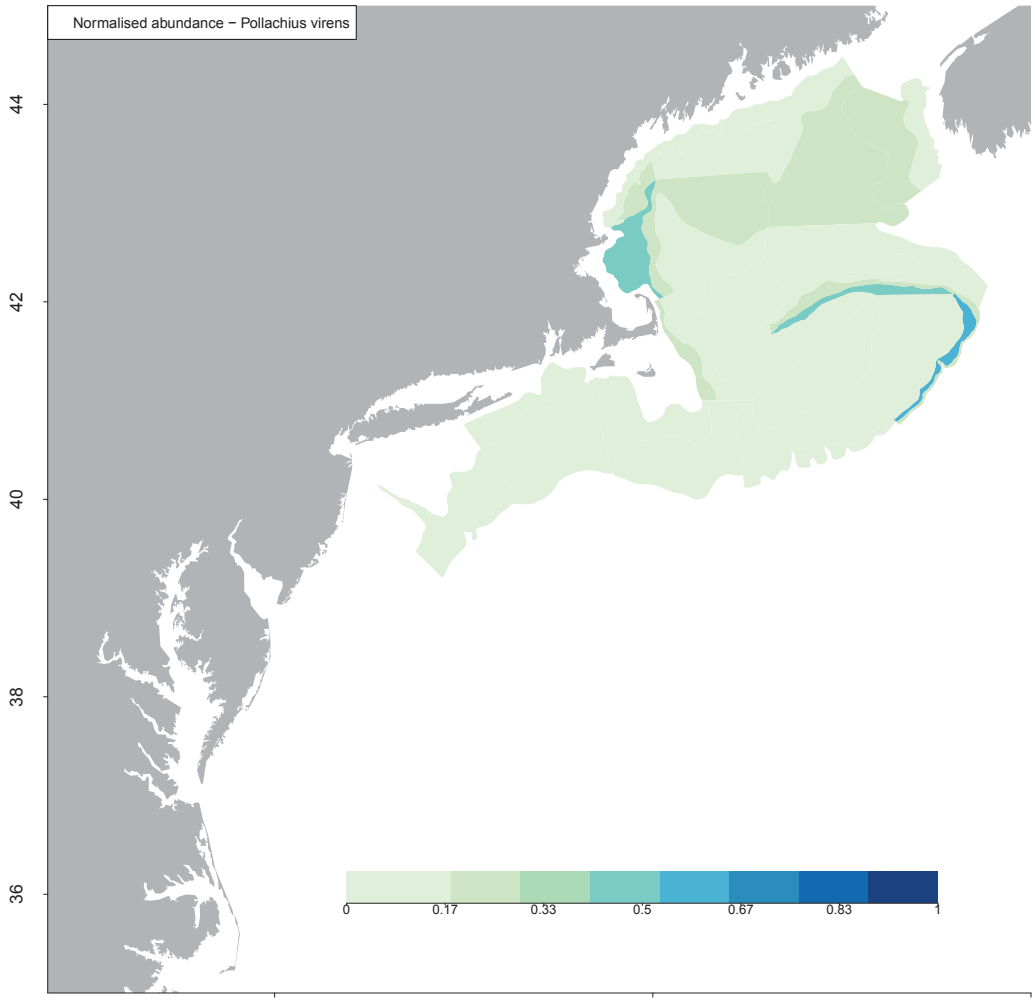


Figure A.78: Maps of normalised abundance for NMFS pollock (*Pollachius virens*).

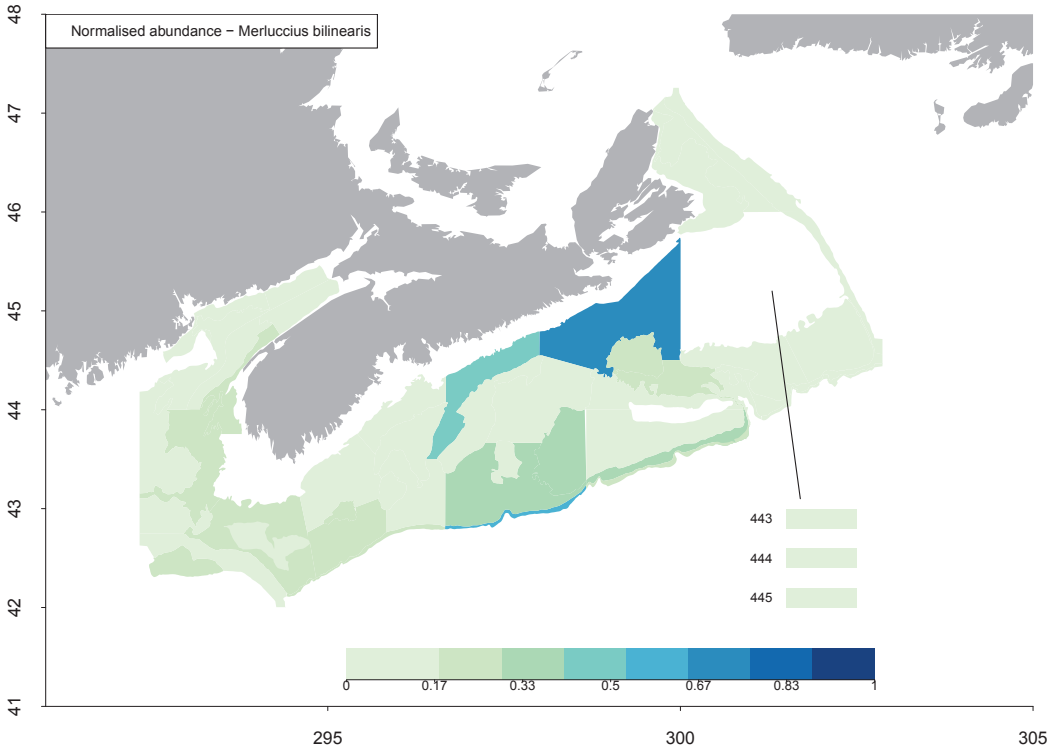


Figure A.79: Maps of normalised abundance for DFO silver hake (*Merluccius bilinearis*).

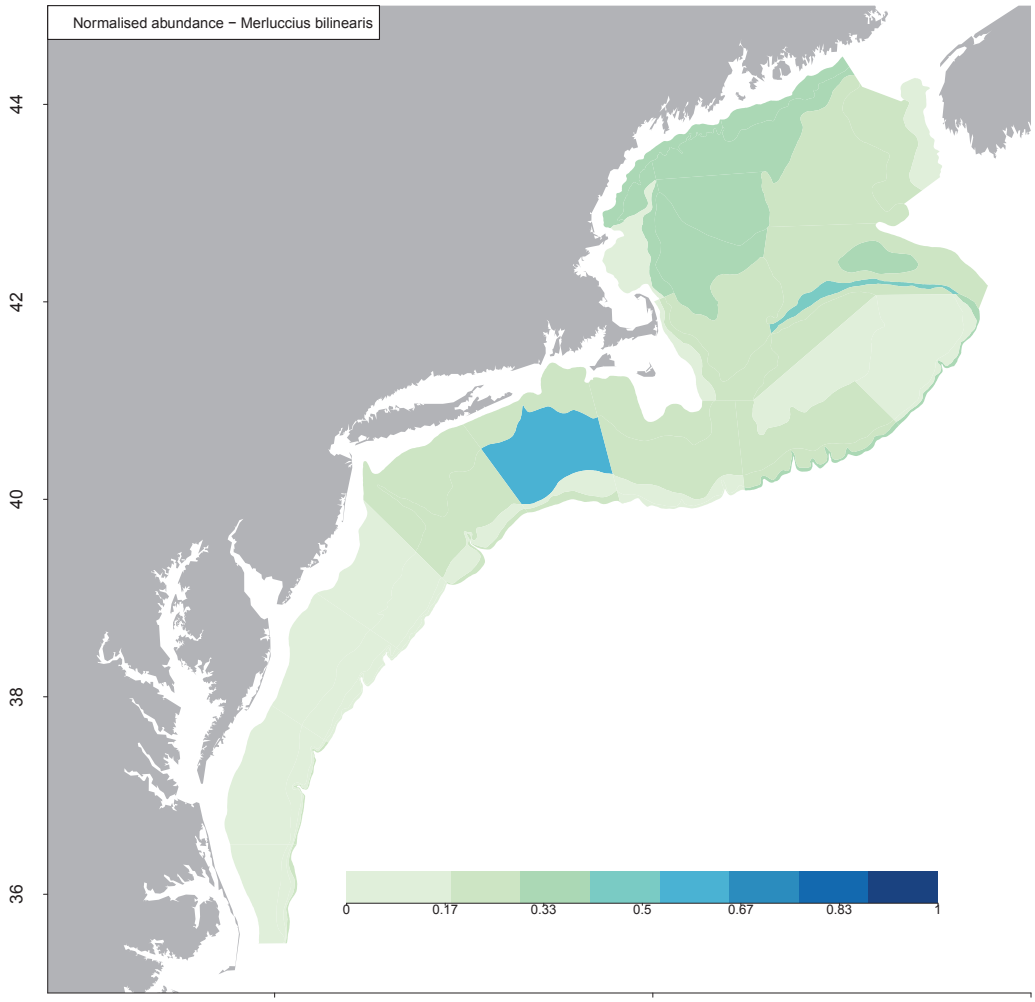


Figure A.80: Maps of normalised abundance for NMFS silver hake (*Merluccius bilinearis*).

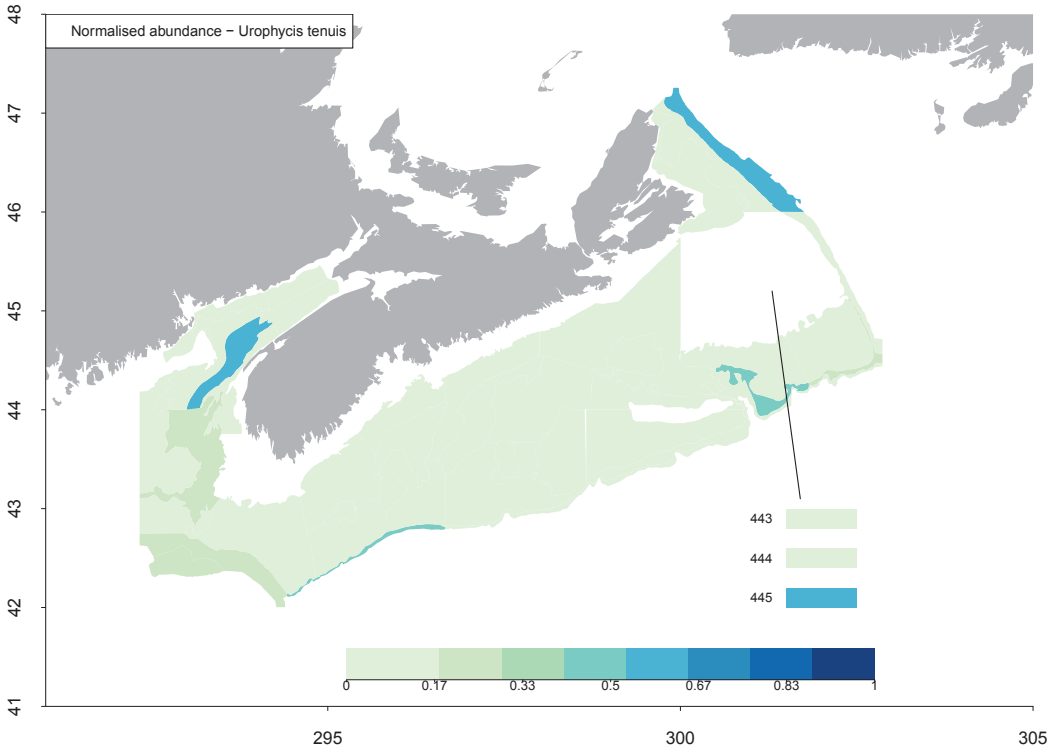


Figure A.81: Maps of normalised abundance for DFO white hake (*Urophycis tenuis*).

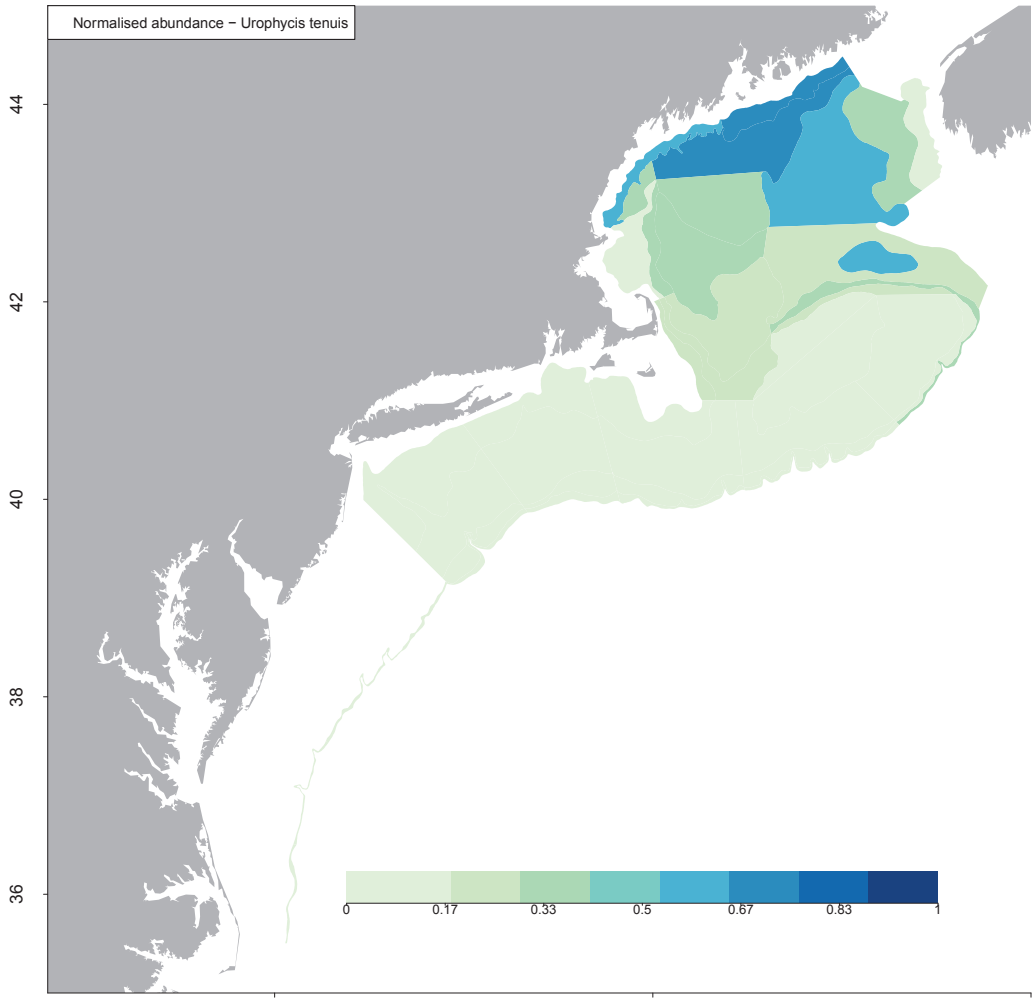


Figure A.82: Maps of normalised abundance for NMFS white hake (*Urophycis tenuis*).

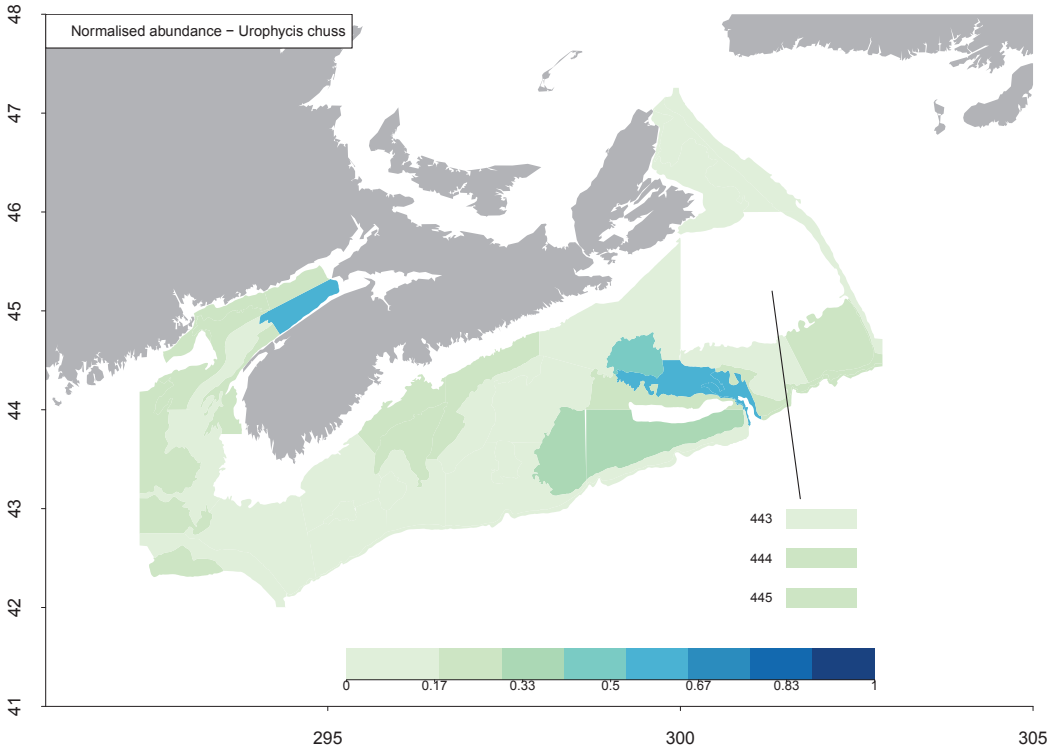


Figure A.83: Maps of normalised abundance for DFO red hake (*Urophycis chuss*).

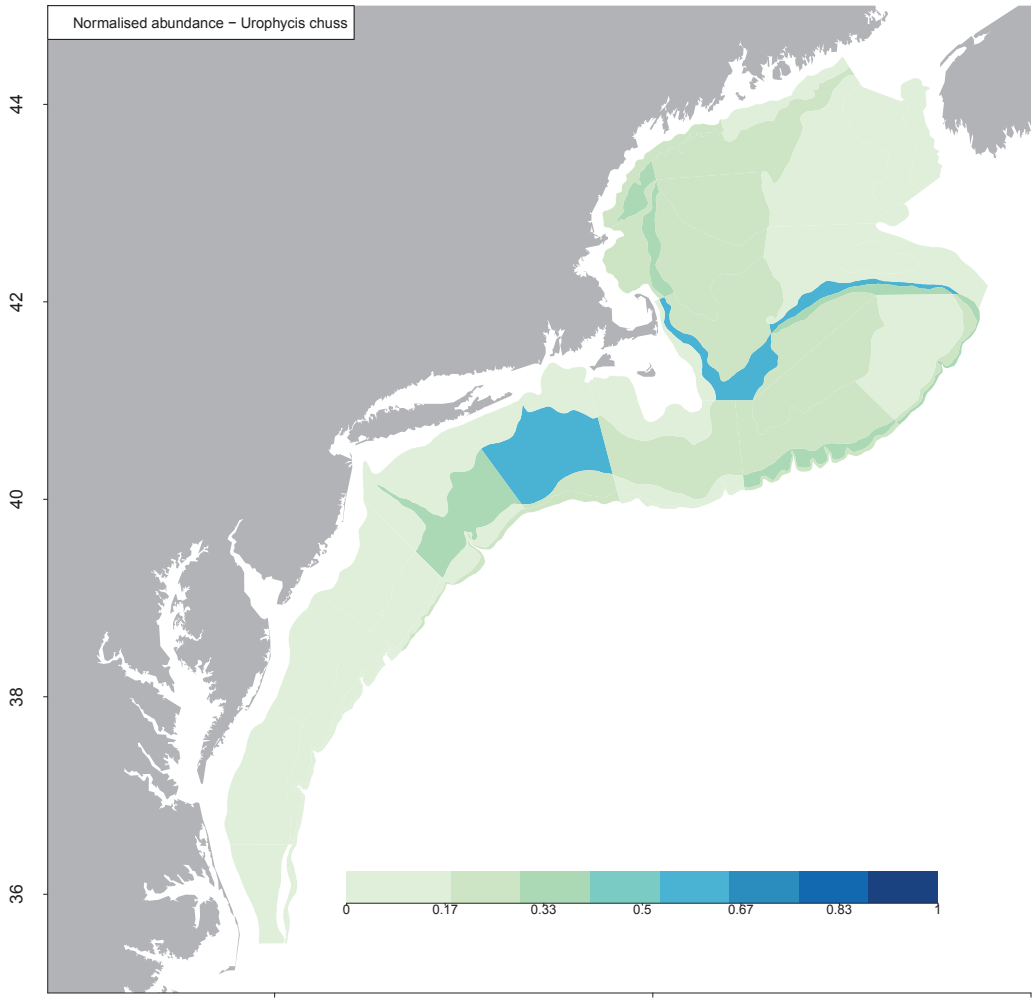


Figure A.84: Maps of normalised abundance for NMFS red hake (*Urophycis chuss*).

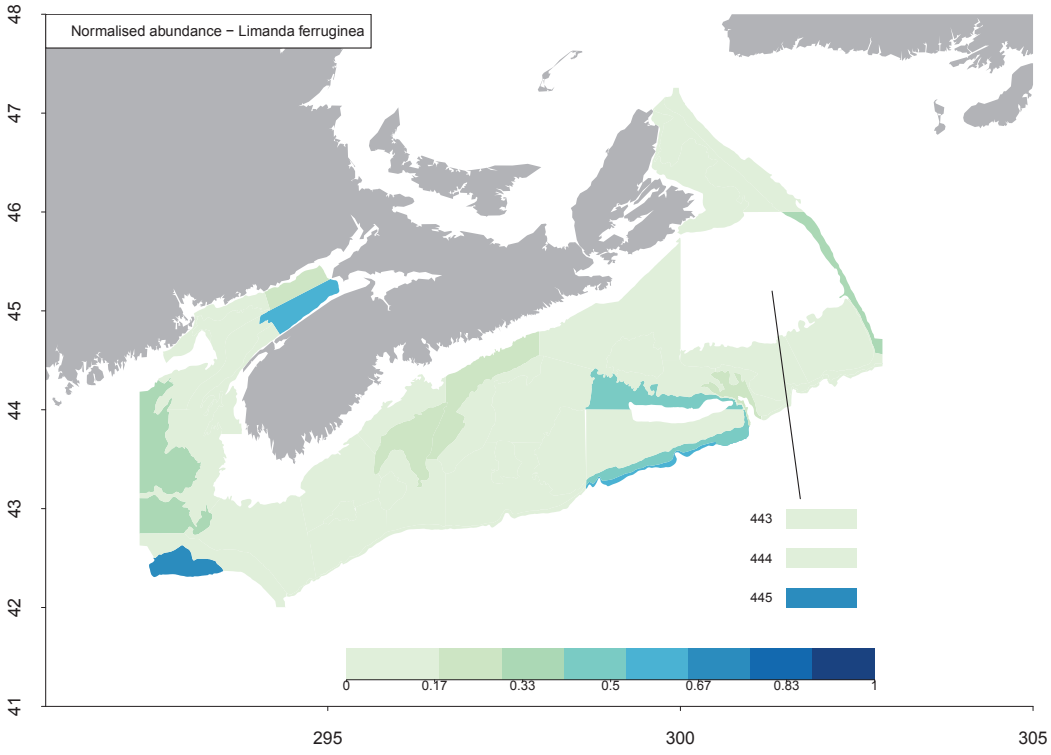


Figure A.85: Maps of normalised abundance for DFO yellowtail flounder (*Limanda ferruginea*).

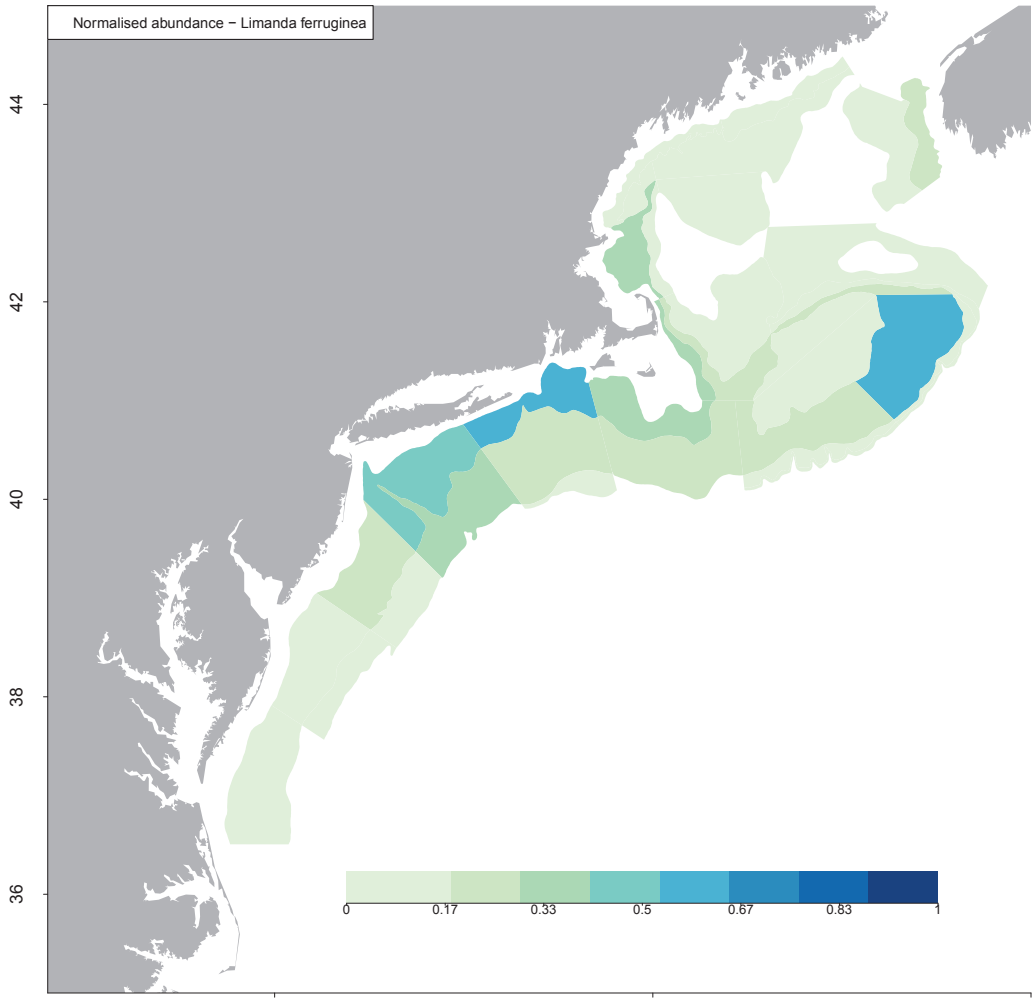


Figure A.86: Maps of normalised abundance for NMFS yellowtail flounder (*Limanda ferruginea*).

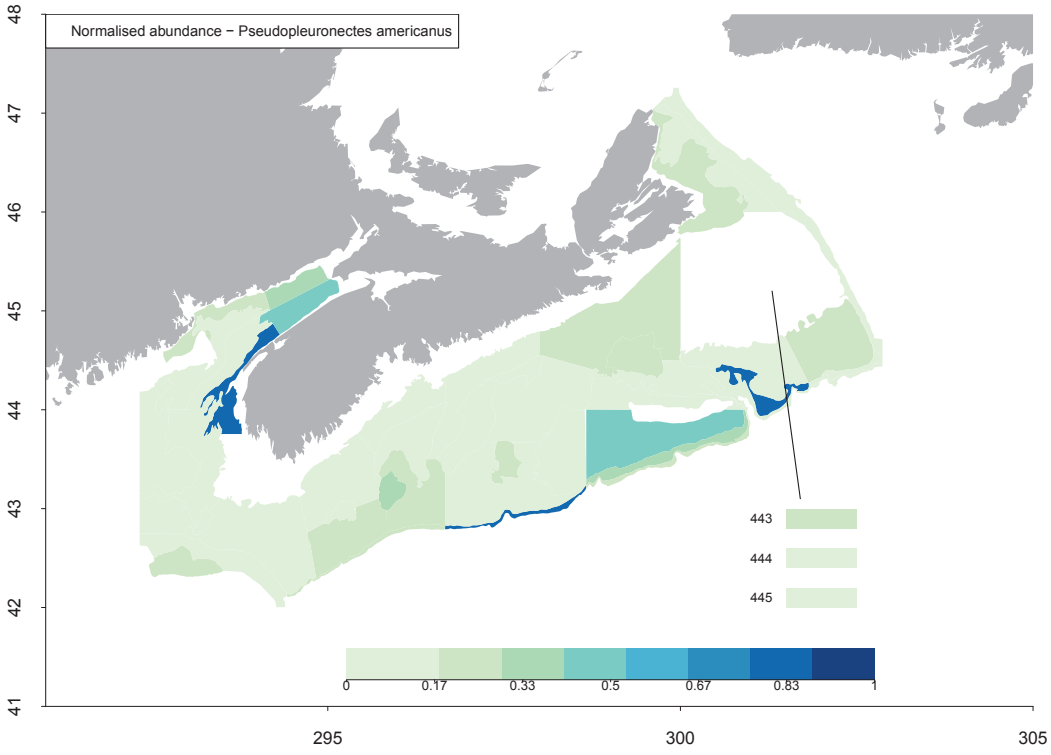


Figure A.87: Maps of normalised abundance for DFO winter flounder (*Pseudopleuronectes americanus*).

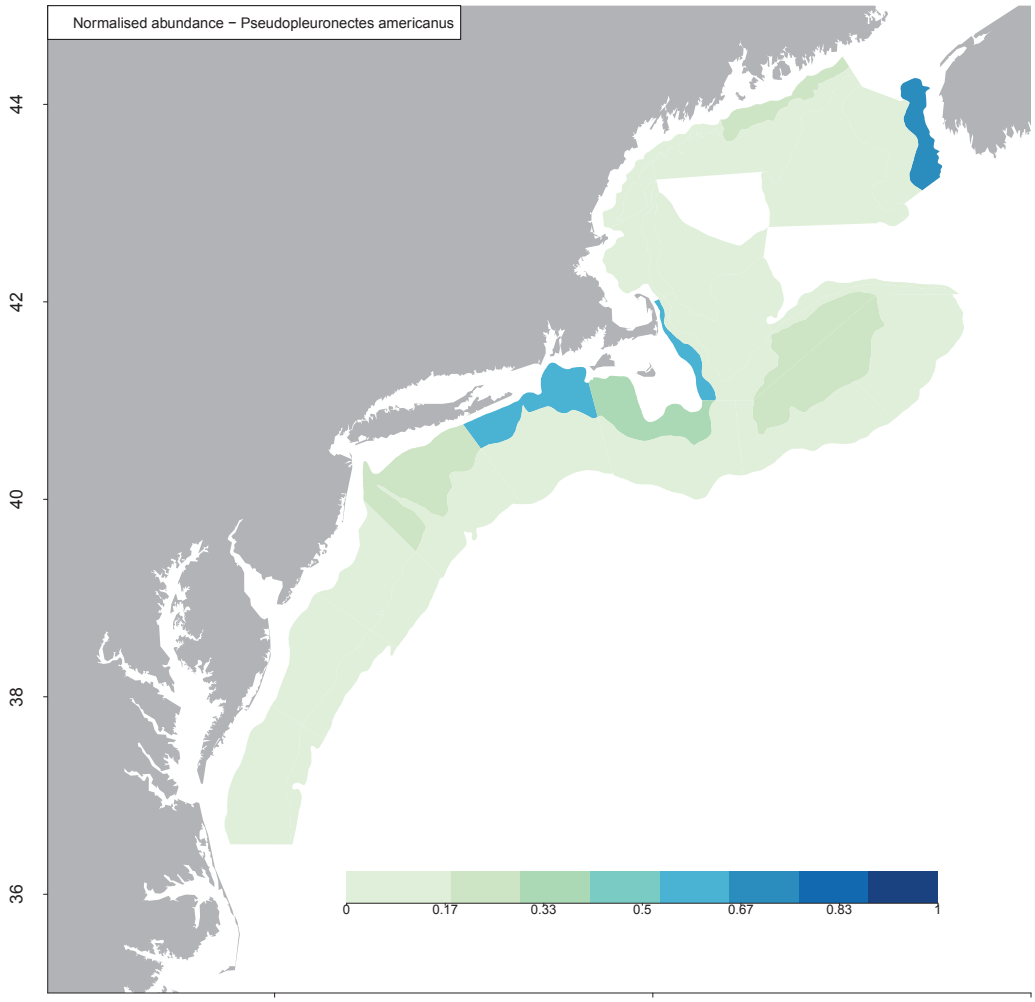


Figure A.88: Maps of normalised abundance for NMFS winter flounder (*Pseudopleuronectes americanus*).

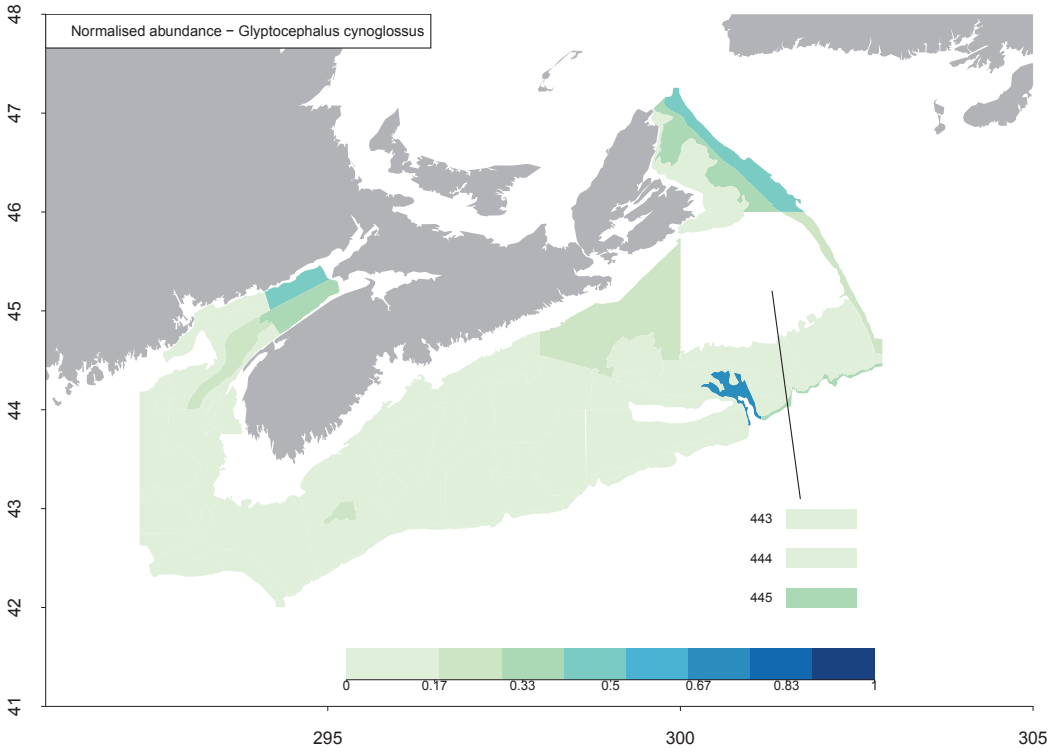


Figure A.89: Maps of normalised abundance for DFO witch flounder (*Glyptocephalus cynoglossus*).

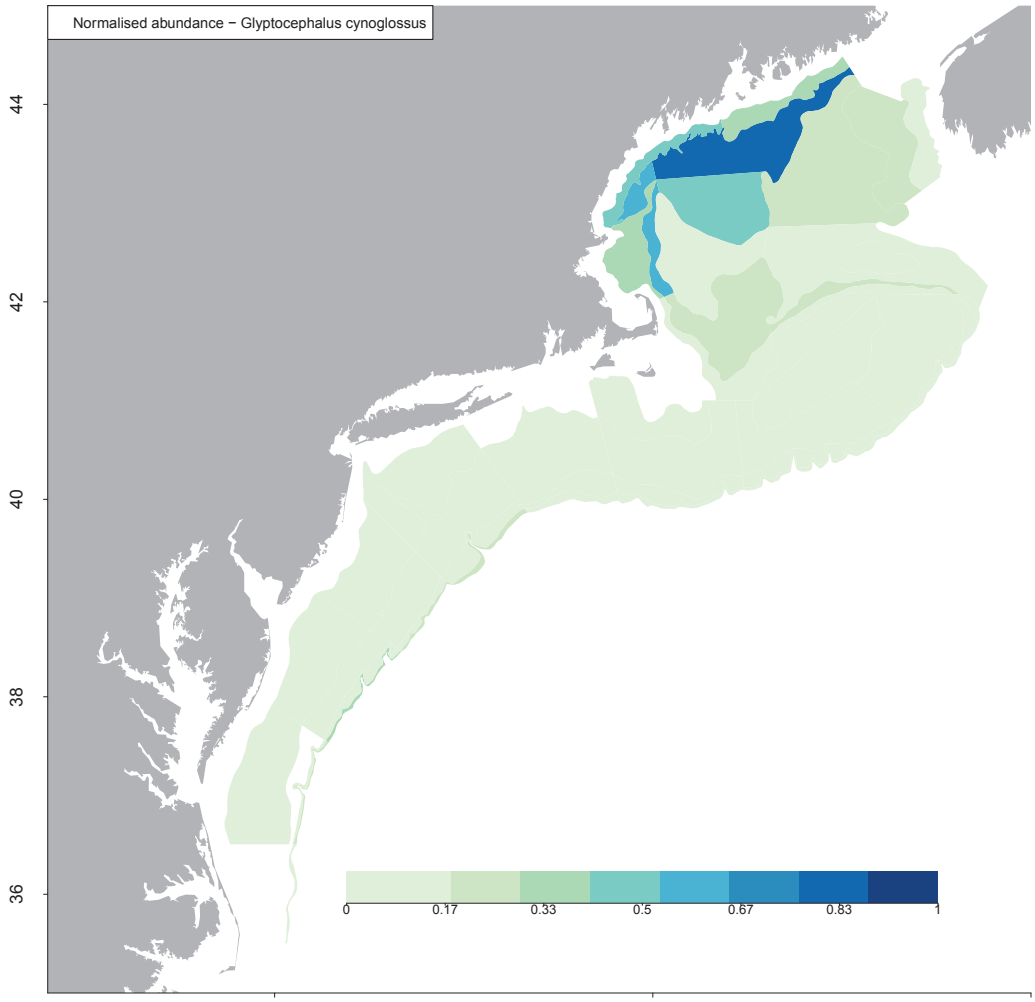


Figure A.90: Maps of normalised abundance for NMFS witch flounder (*Glyptocephalus cynoglossus*).

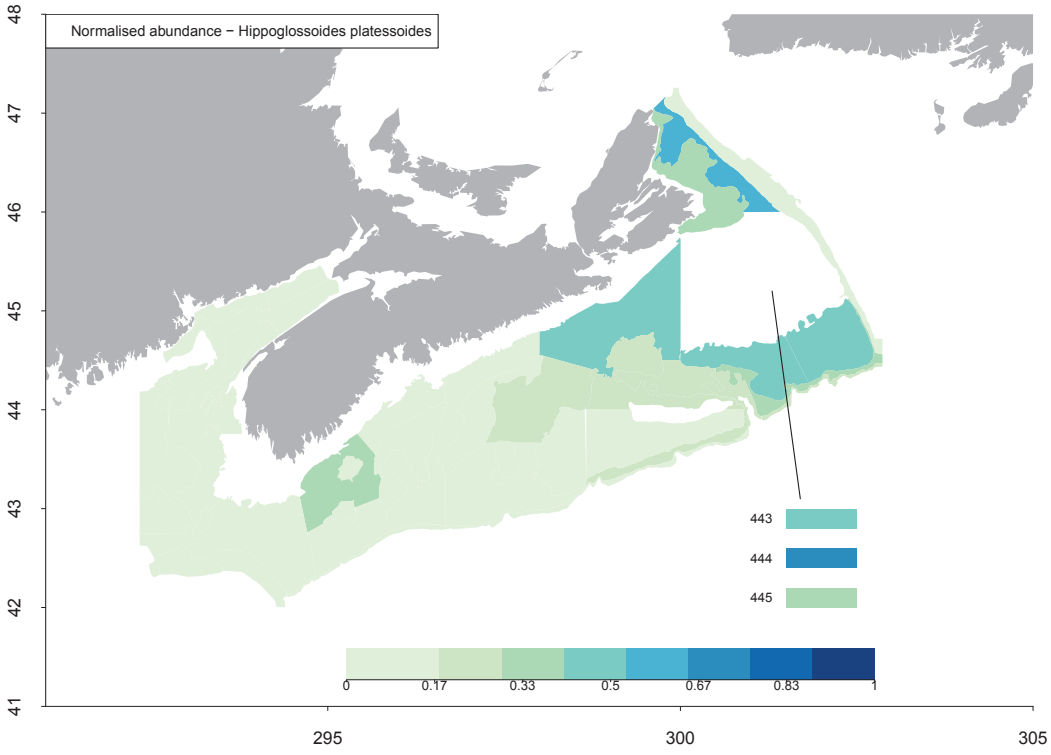


Figure A.91: Maps of normalised abundance for DFO American plaice (*Hippoglossoides platessoides*).

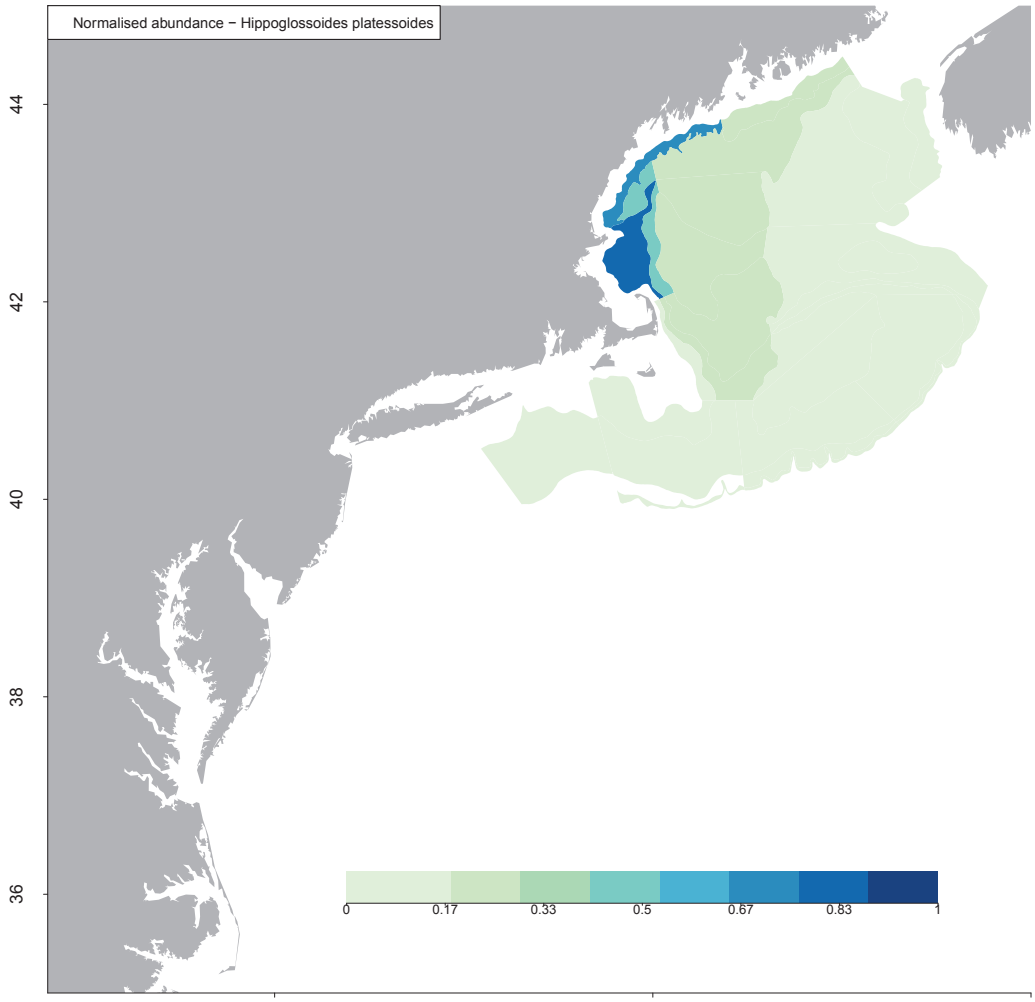


Figure A.92: Maps of normalised abundance for NMFS American plaice (*Hippoglossoides platessoides*).

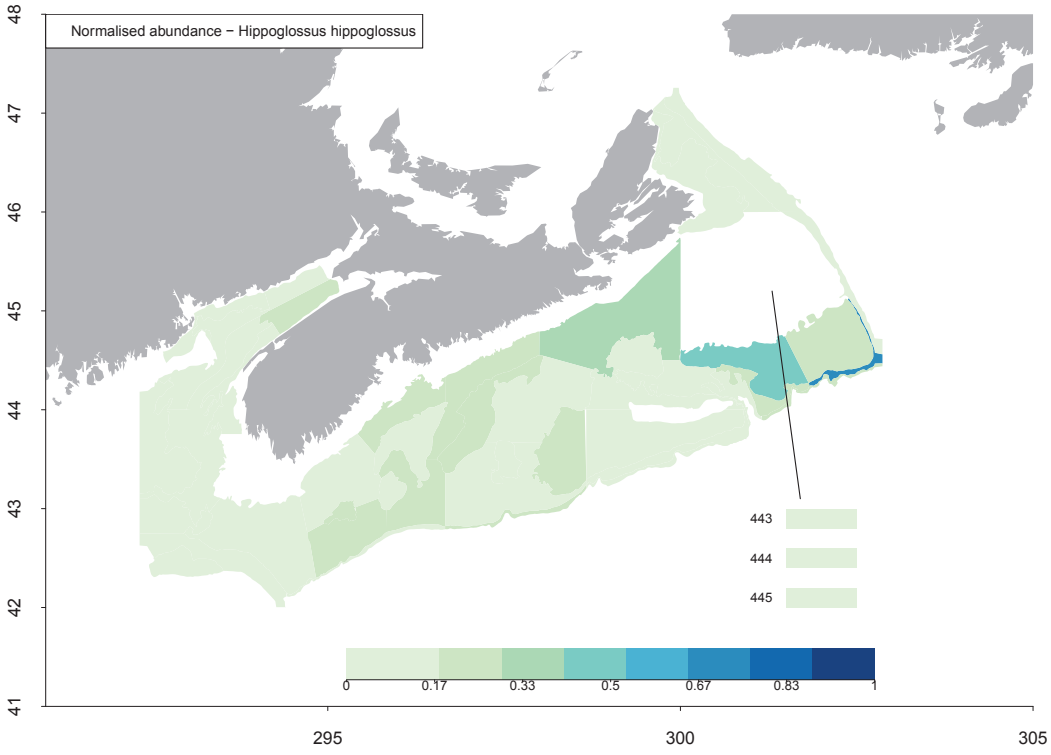


Figure A.93: Maps of normalised abundance for DFO halibut (*Hippoglossus hippoglossus*).

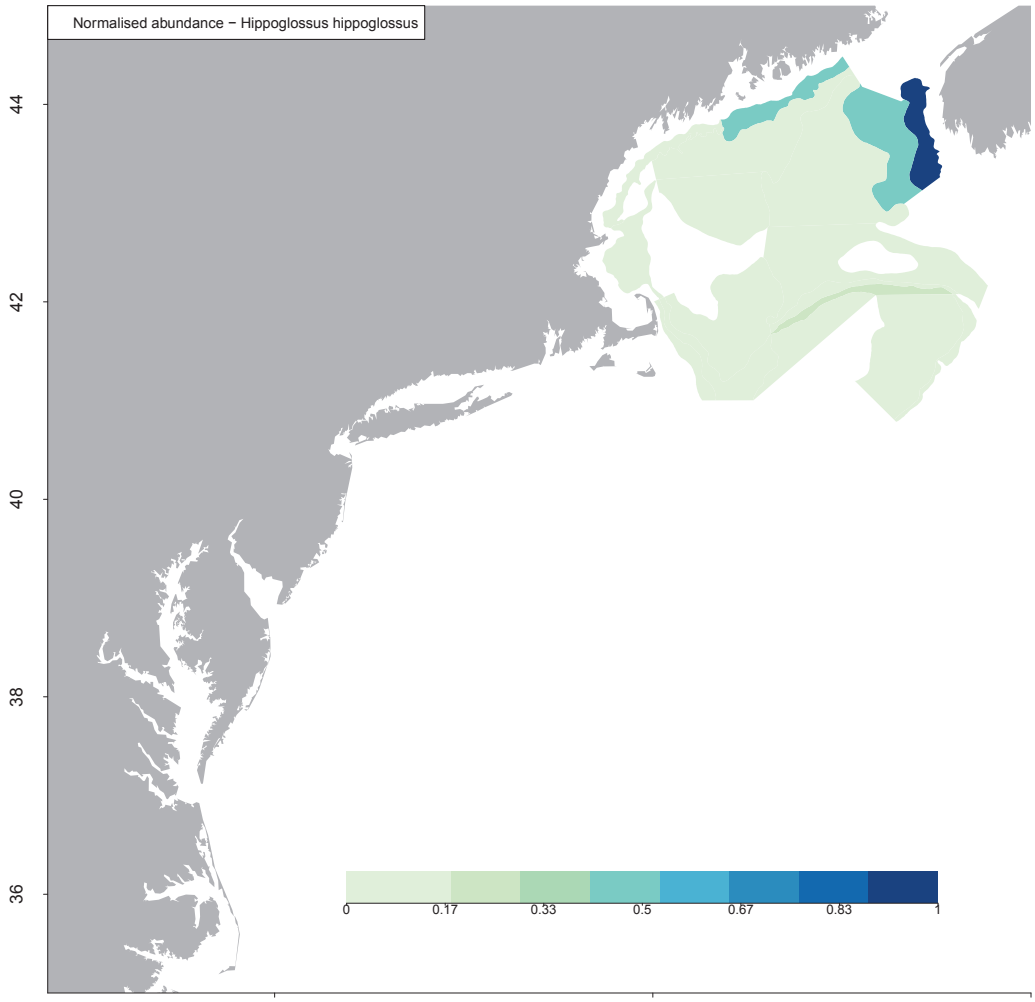


Figure A.94: Maps of normalised abundance for NMFS halibut (*Hippoglossus hippoglossus*).

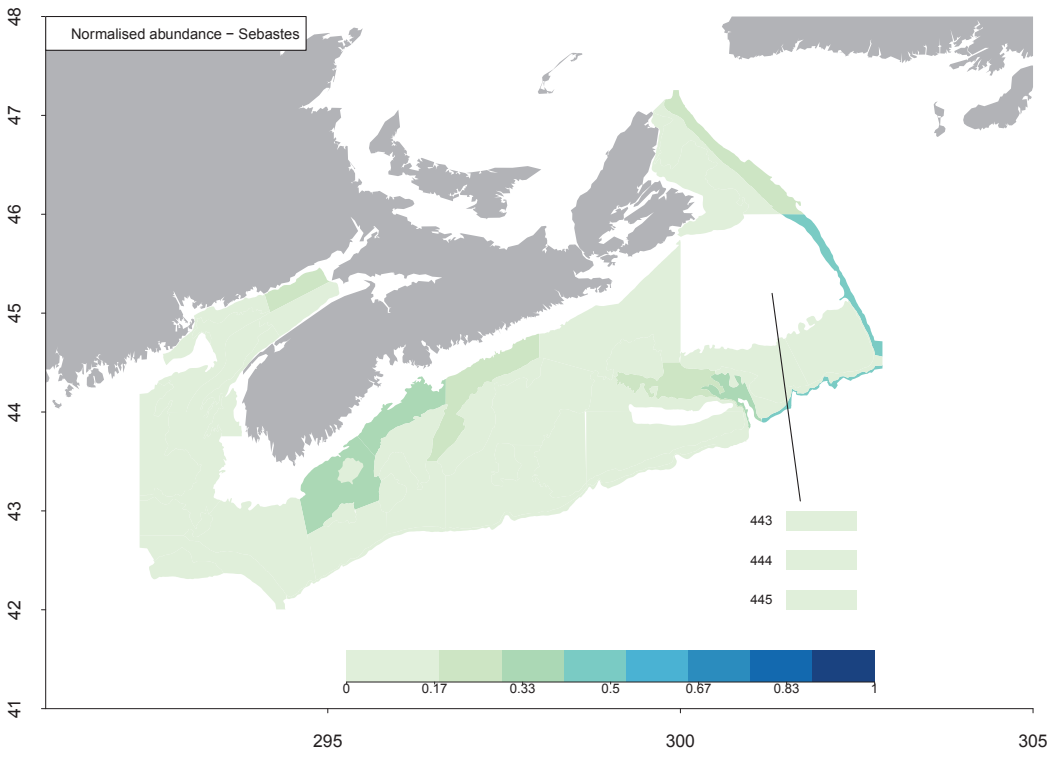


Figure A.95: Maps of normalised abundance for DFO redfish (*Sebastes*).

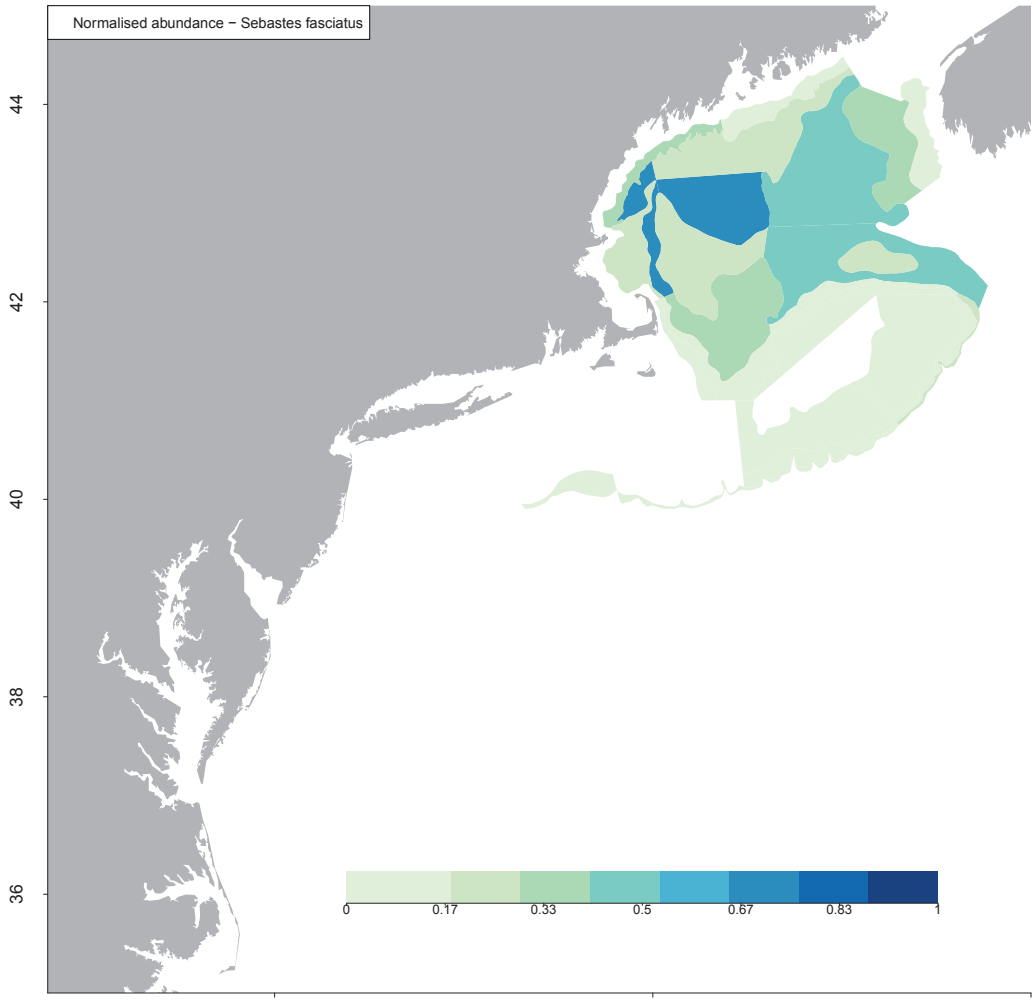


Figure A.96: Maps of normalised abundance for NMFS redfish (*Sebastes fasciatus*).

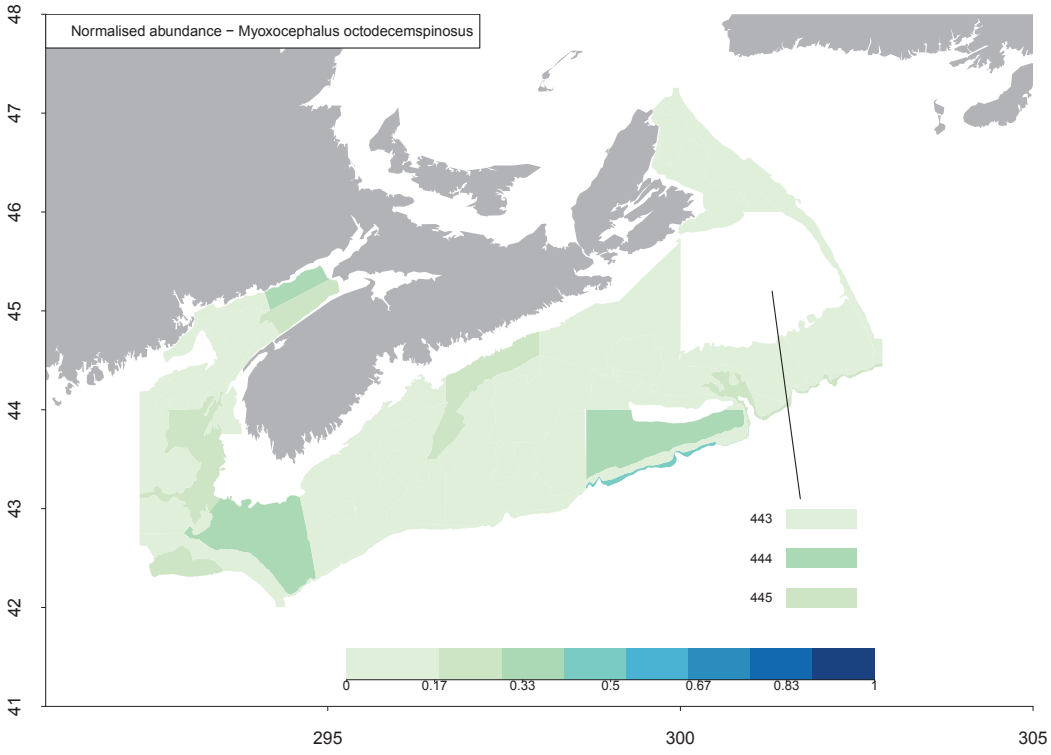


Figure A.97: Maps of normalised abundance for DFO longhorn sculpin (*Myoxocephalus octodecemspinosus*).

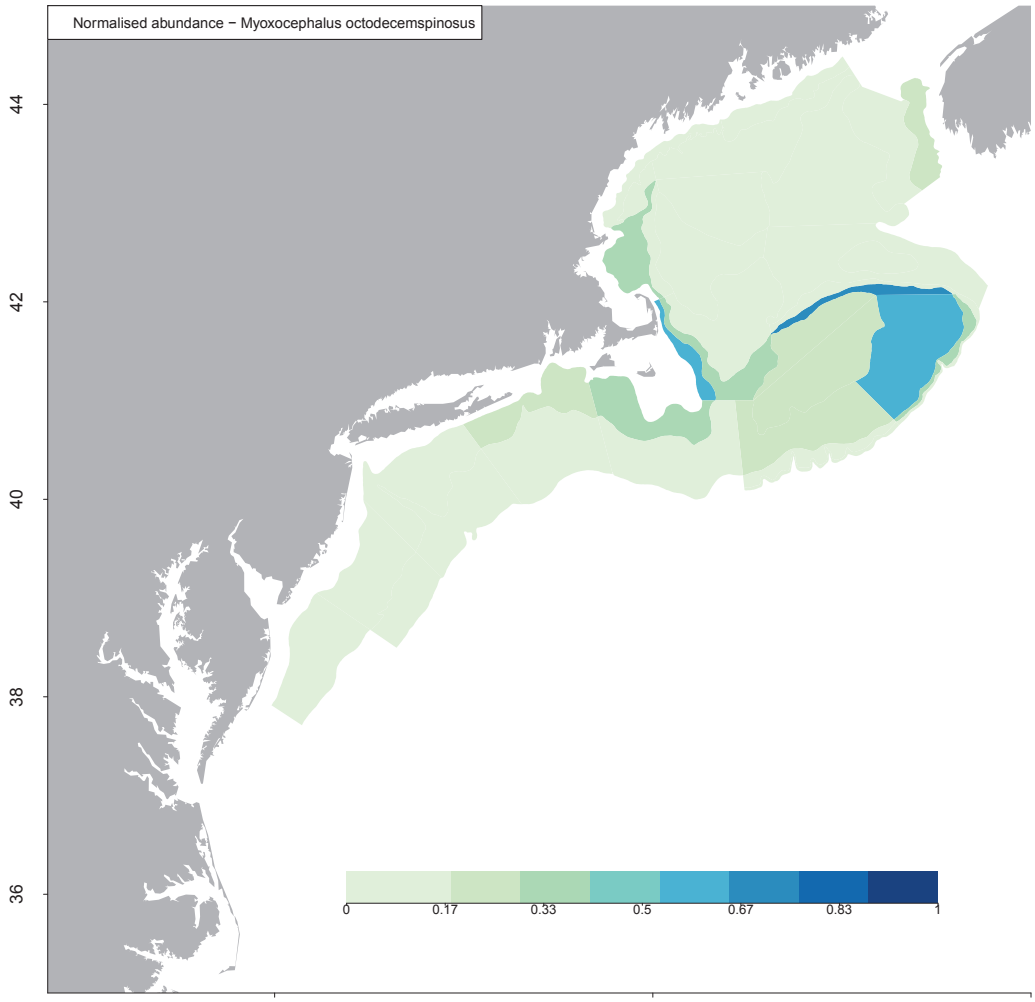


Figure A.98: Maps of normalised abundance for NMFS longhorn sculpin (*Myoxocephalus octodecemspinosus*).

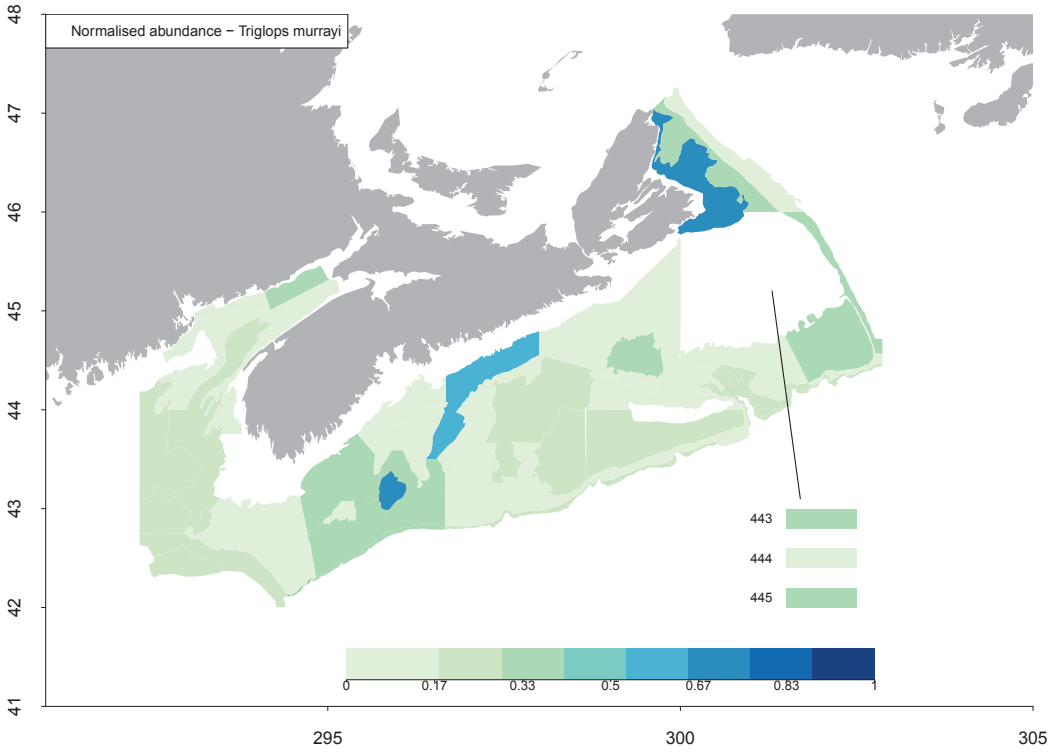


Figure A.99: Maps of normalised abundance for DFO moustache sculpin (*Triglops murrayi*).

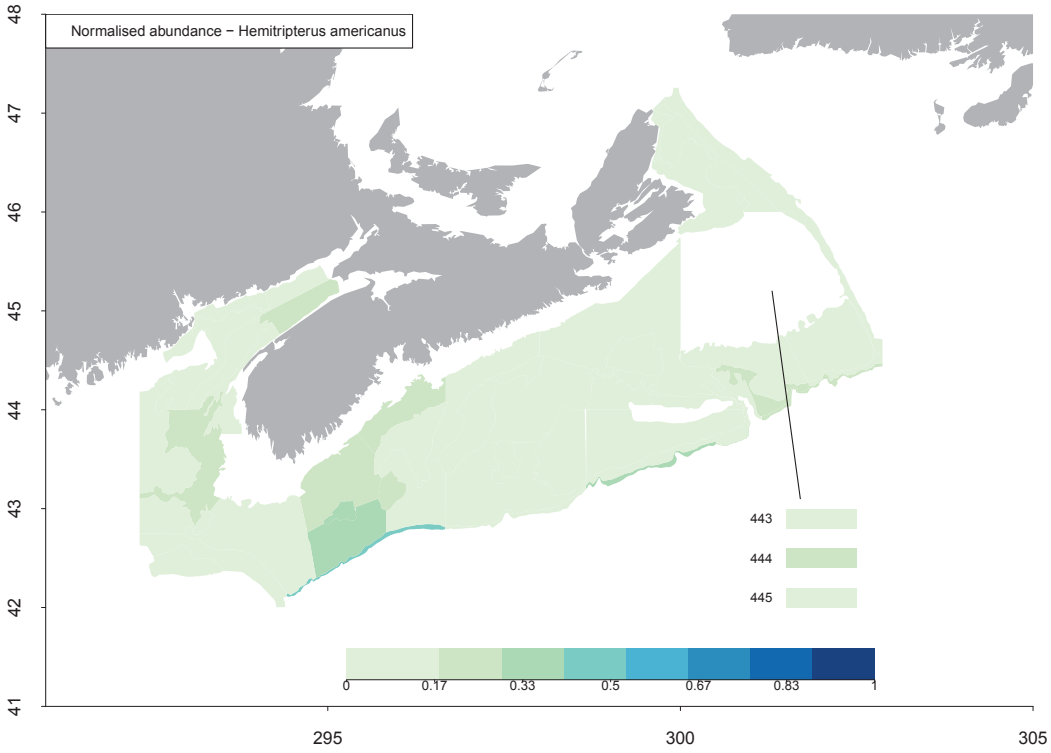


Figure A.100: Maps of normalised abundance for DFO sea raven (*Hemitripterus americanus*).

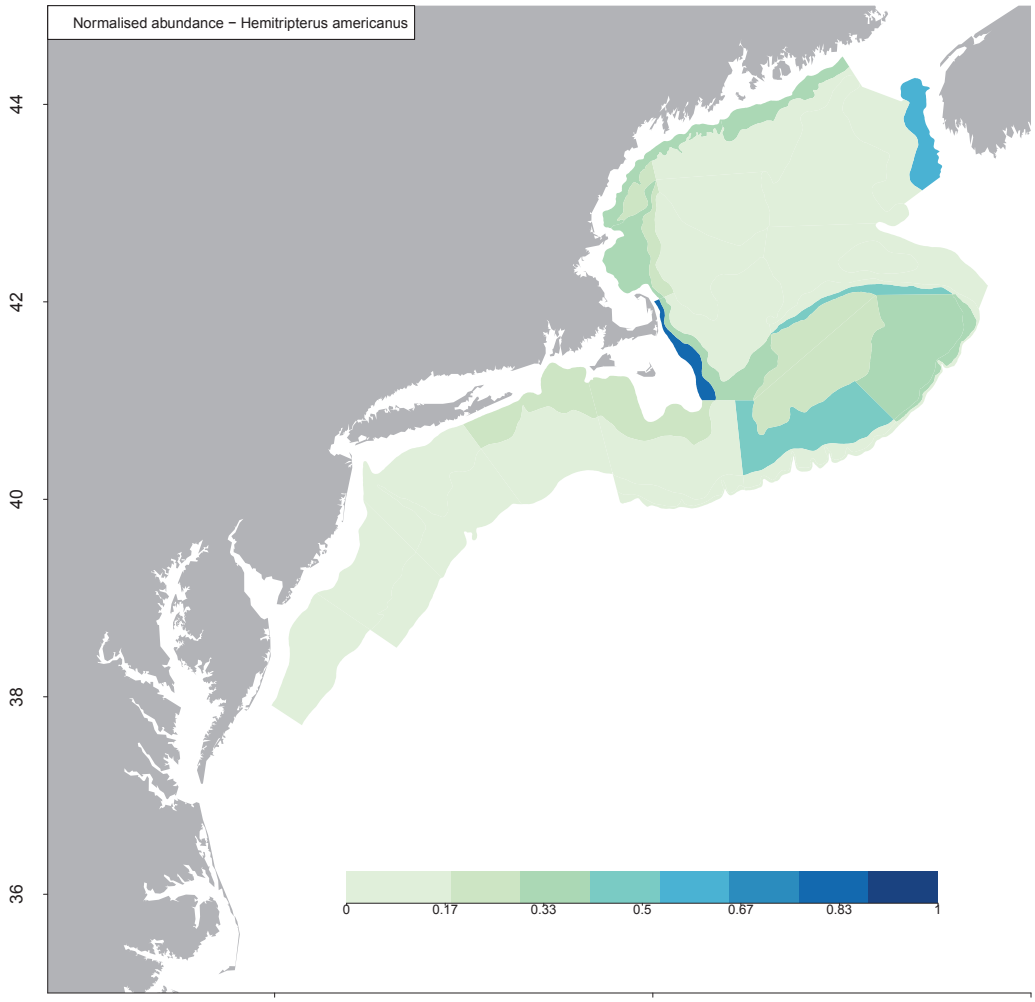


Figure A.101: Maps of normalised abundance for NMFS sea raven (*Hemitripterus americanus*).

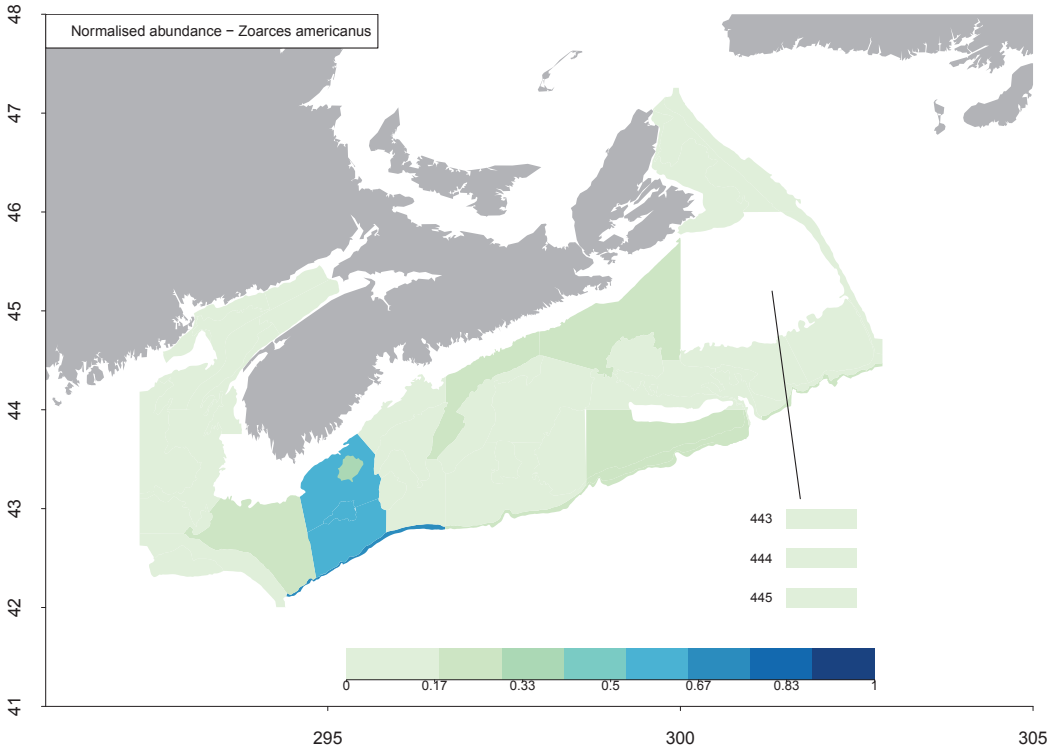


Figure A.102: Maps of normalised abundance for DFO ocean pout (*Zoarces americanus*).

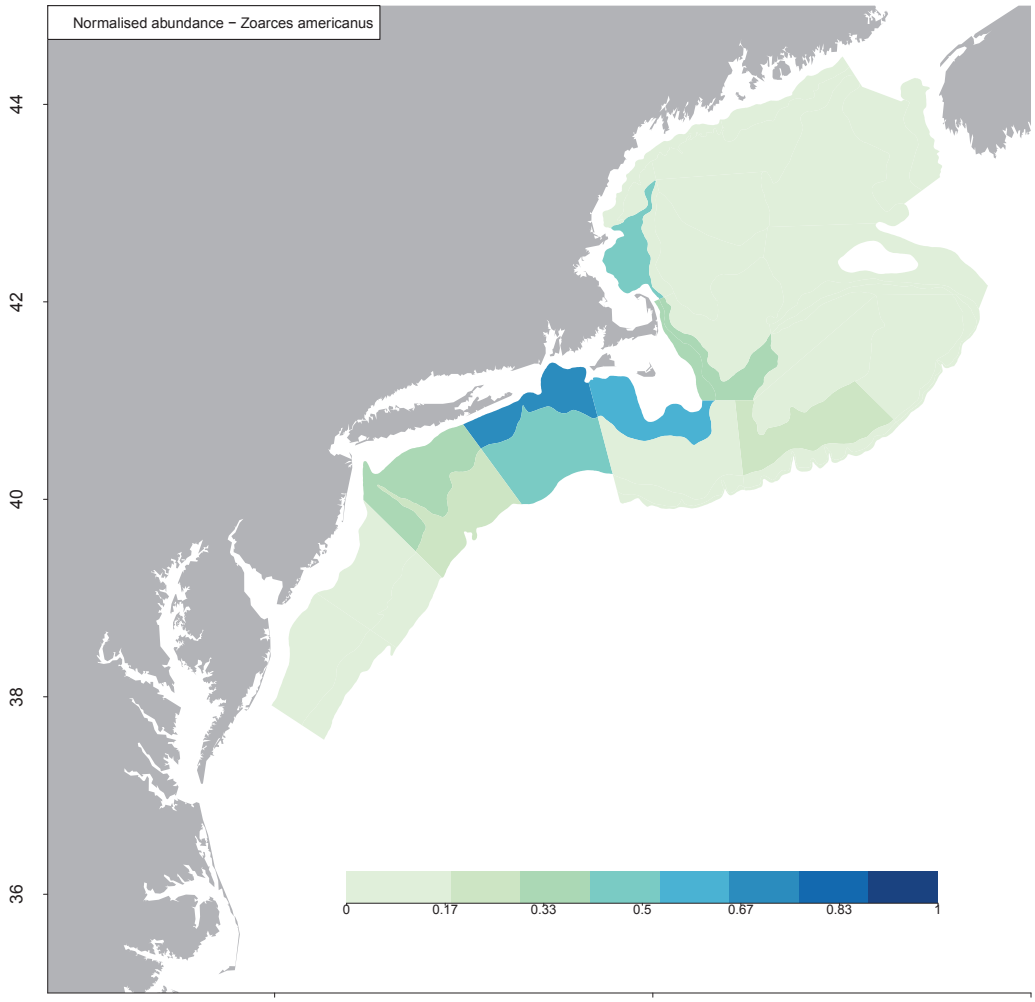


Figure A.103: Maps of normalised abundance for NMFS ocean pout (*Zoarces americanus*).

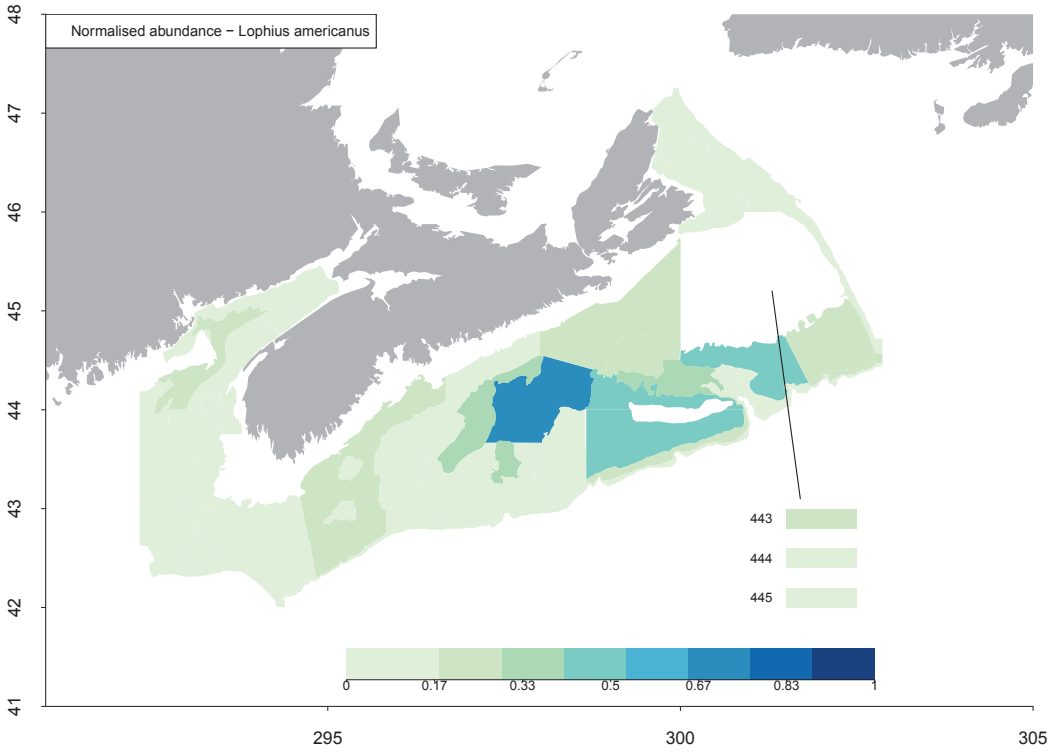


Figure A.104: Maps of normalised abundance for DFO monkfish (*Lophius americanus*).

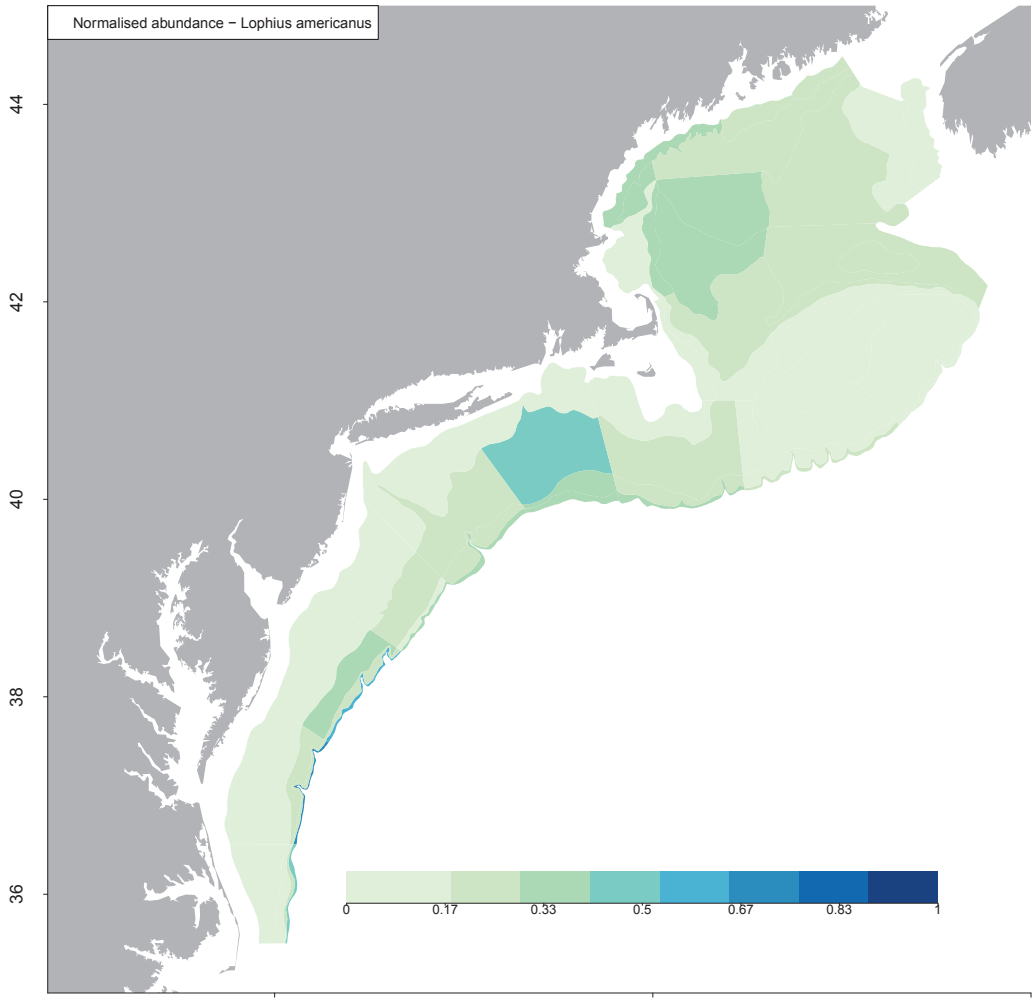


Figure A.105: Maps of normalised abundance for NMFS monkfish (*Lophius americanus*).

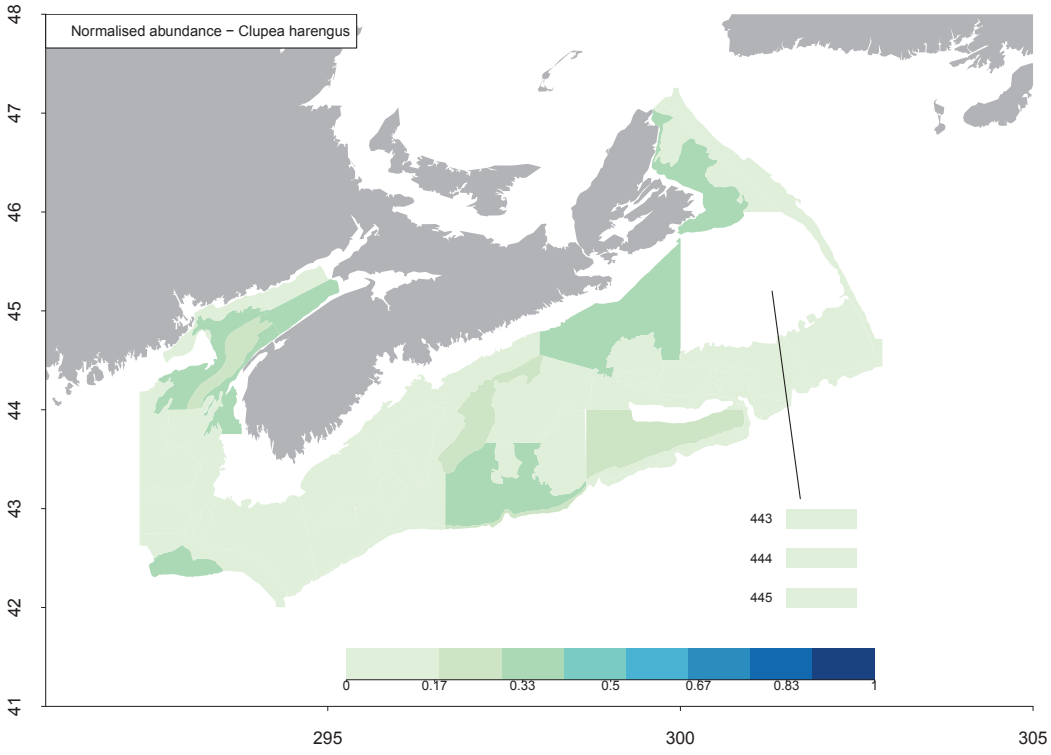


Figure A.106: Maps of normalised abundance for DFO herring (*Clupea harengus*).

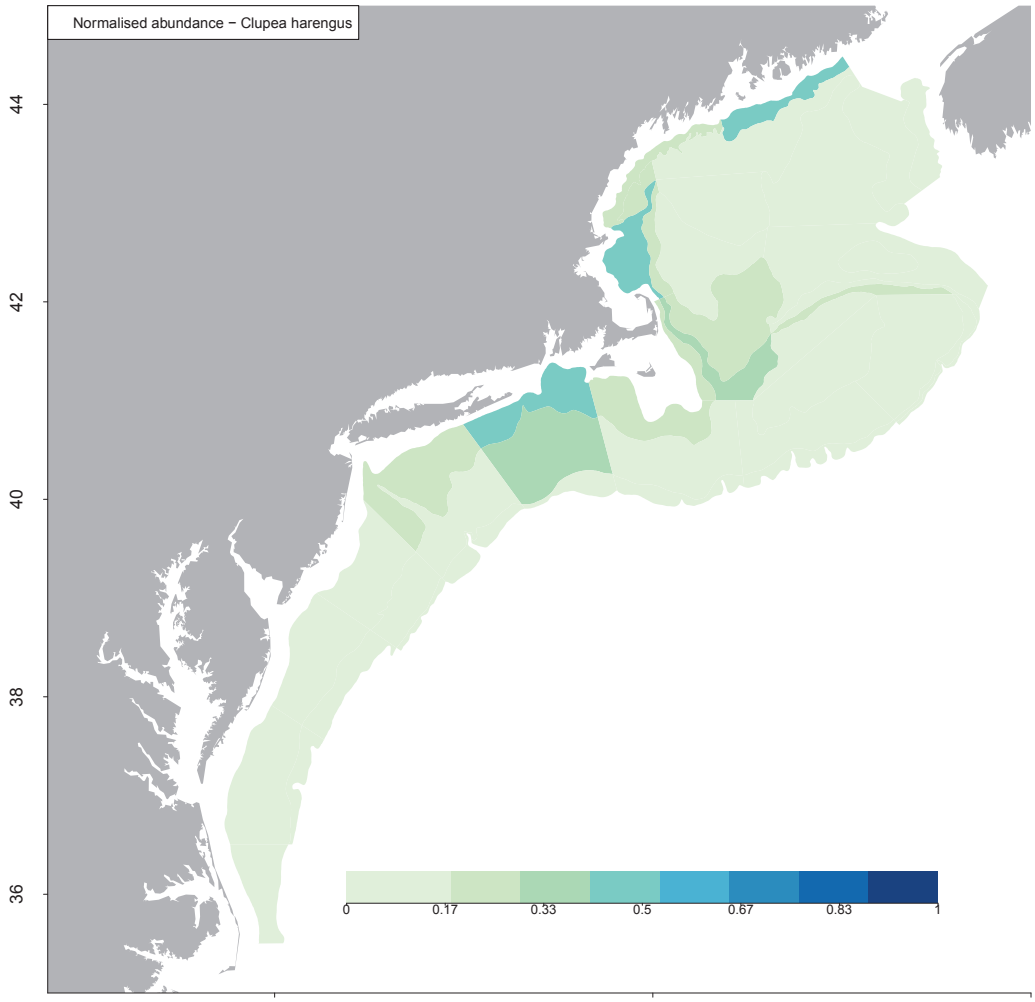


Figure A.107: Maps of normalised abundance for NMFS herring (*Clupea harengus*).

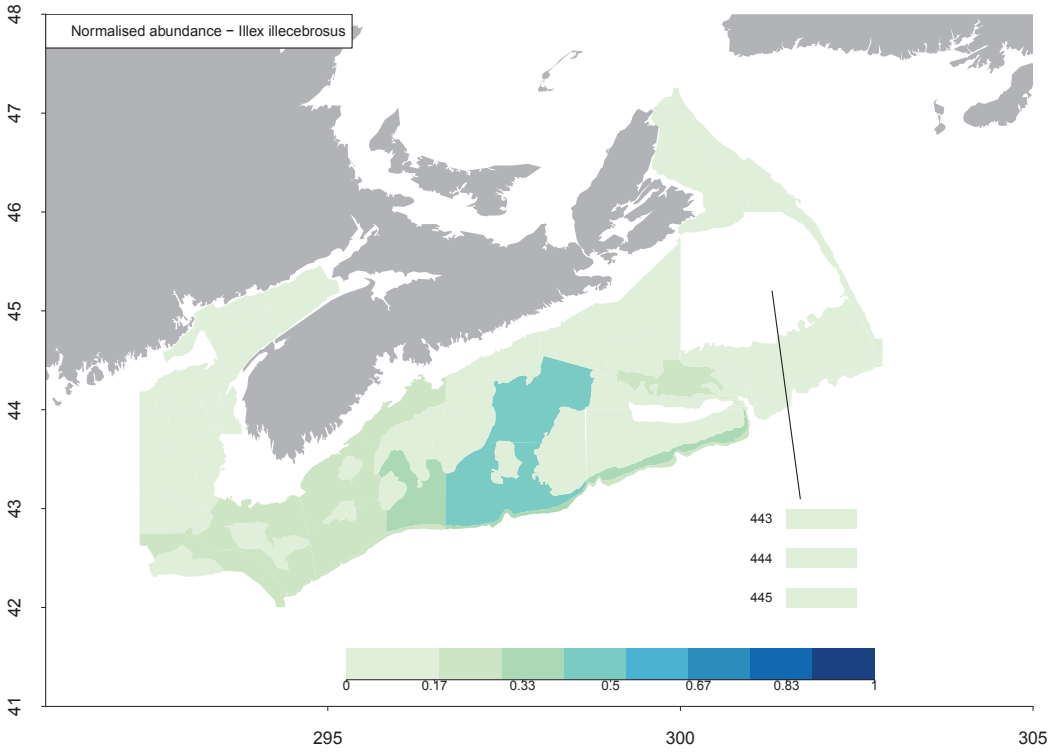


Figure A.108: Maps of normalised abundance for DFO shortfin squid (*Illex illecebrosus*).

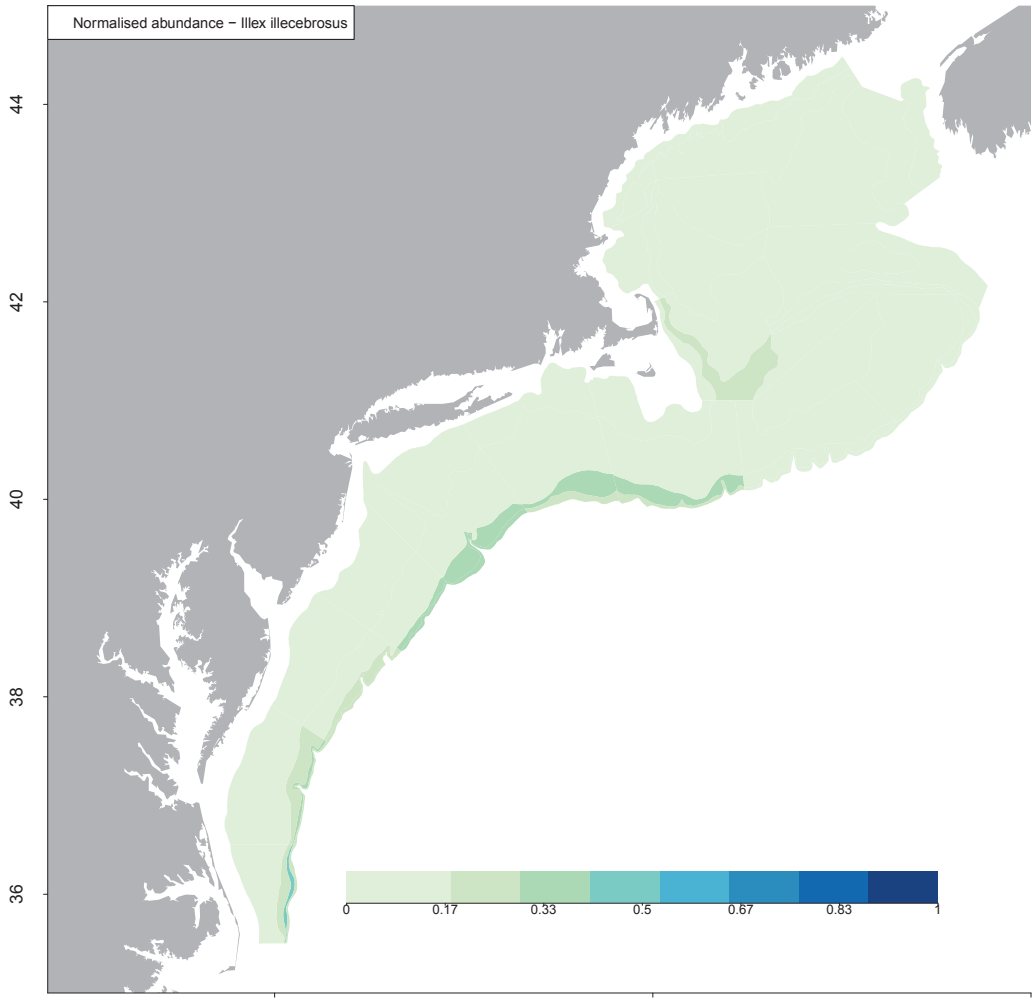


Figure A.109: Maps of normalised abundance for NMFS shortfin squid (*Illex illecebrosus*).

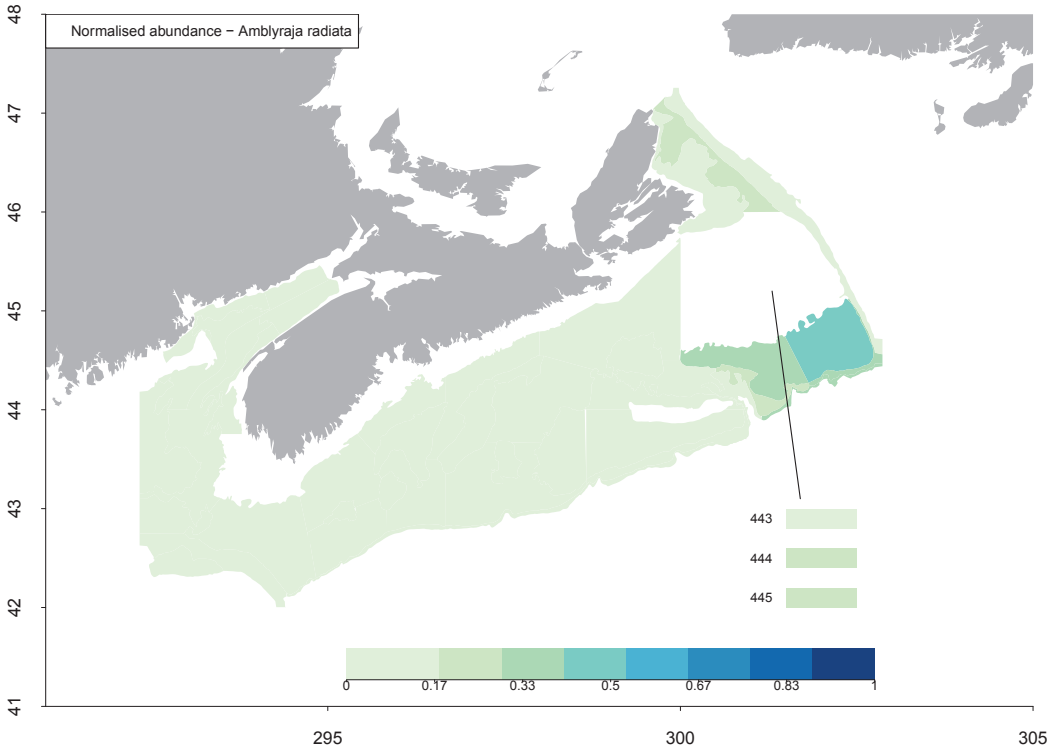


Figure A.110: Maps of normalised abundance for DFO thornyskate (*Amblyraja radiata*).

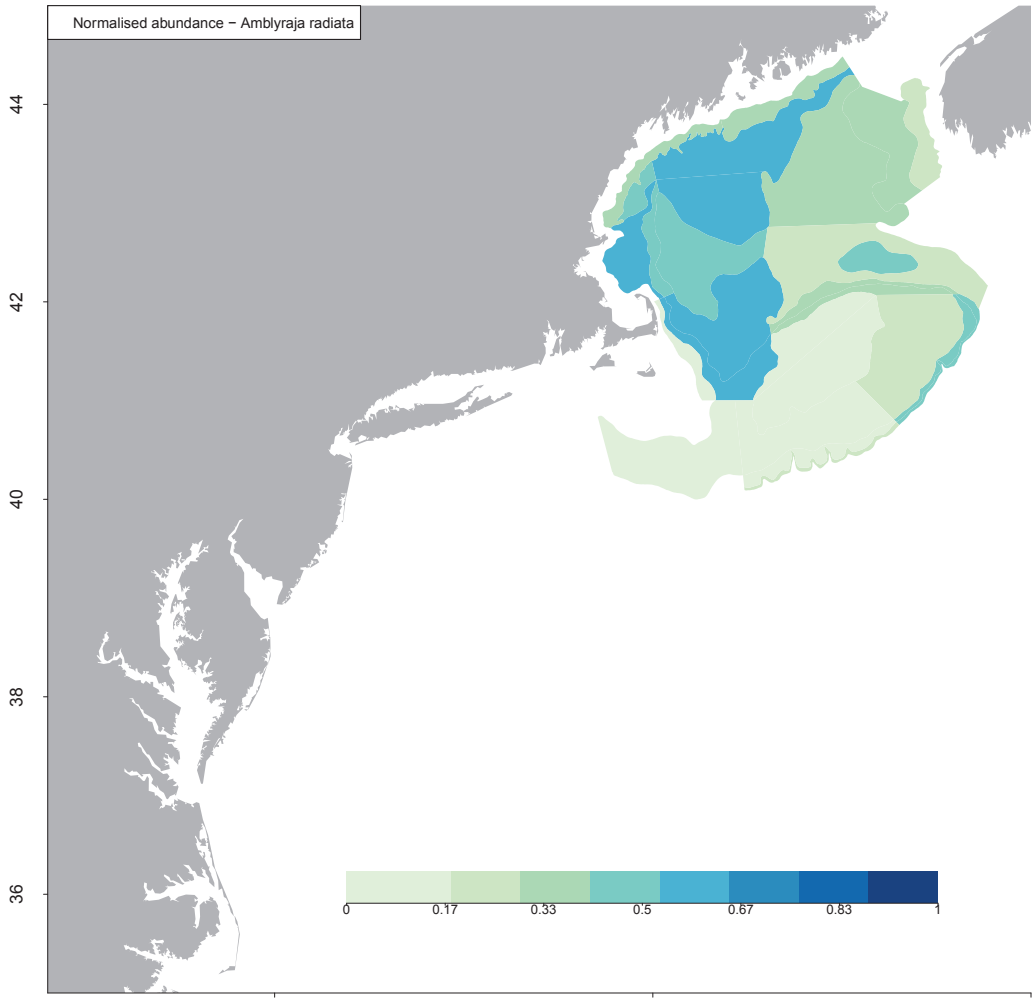


Figure A.111: Maps of normalised abundance for NMFS thornyskate (*Amblyraja radiata*).

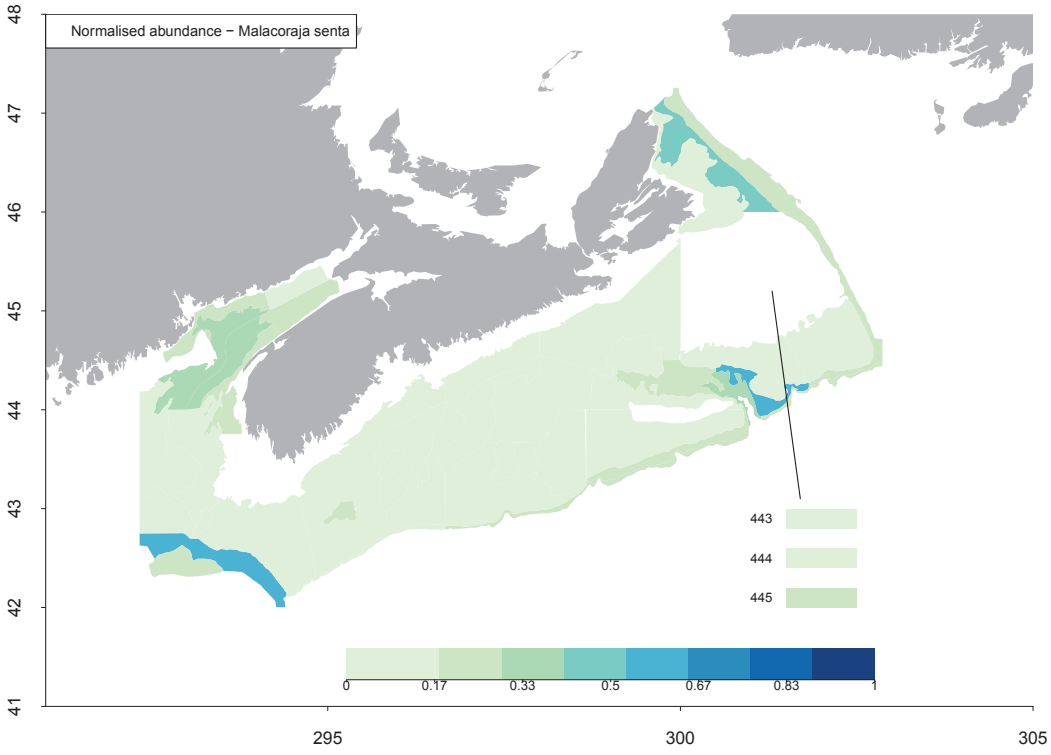


Figure A.112: Maps of normalised abundance for DFO smooth skate (*Malacoraja senta*).

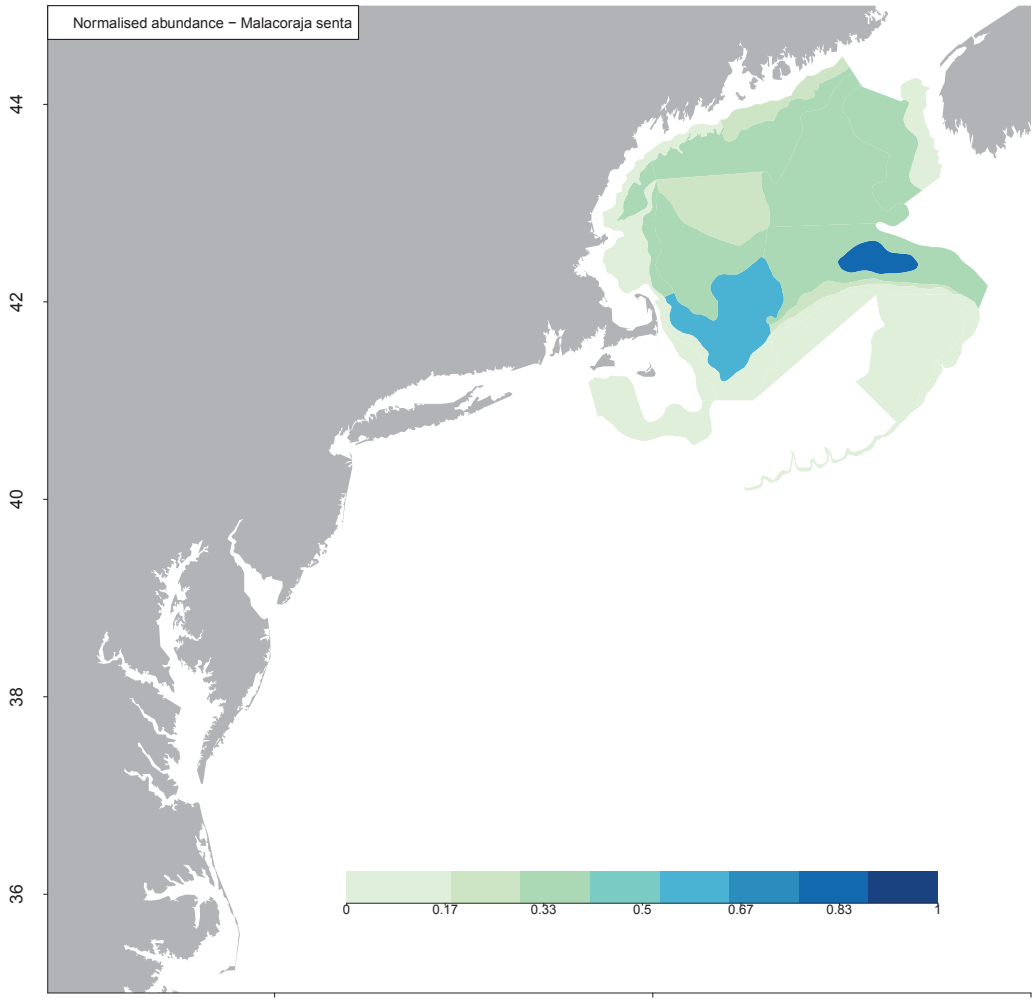


Figure A.113: Maps of normalised abundance for NMFS smooth skate (*Malacoraja senta*).

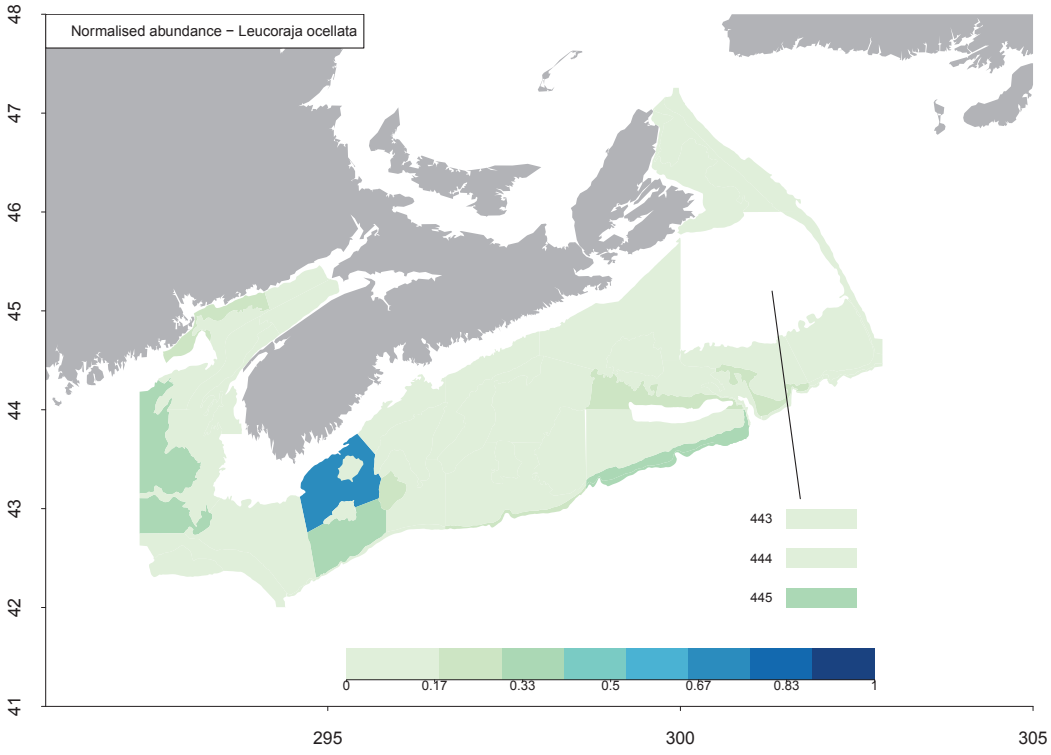


Figure A.114: Maps of normalised abundance for DFO winter skate (*Leucoraja ocellata*).

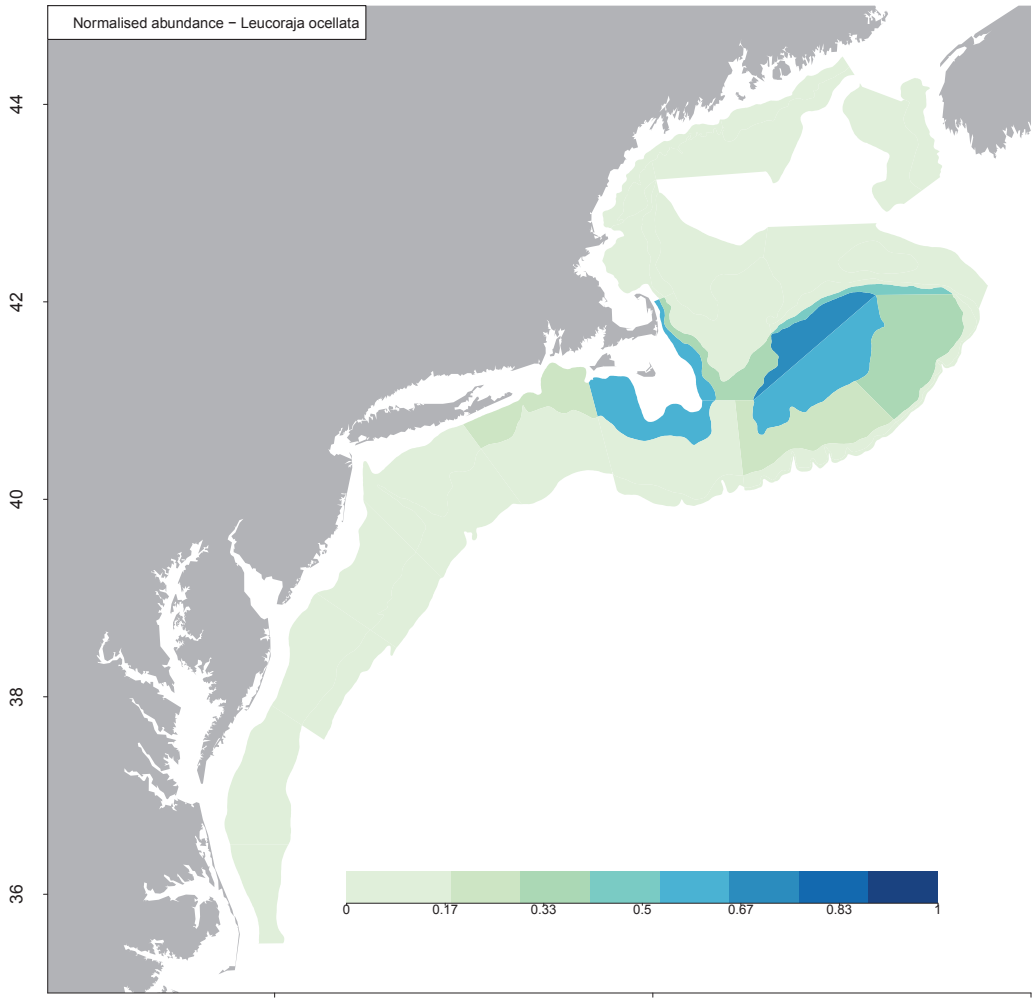


Figure A.115: Maps of normalised abundance for NMFS winter skate (*Leucoraja ocellata*).

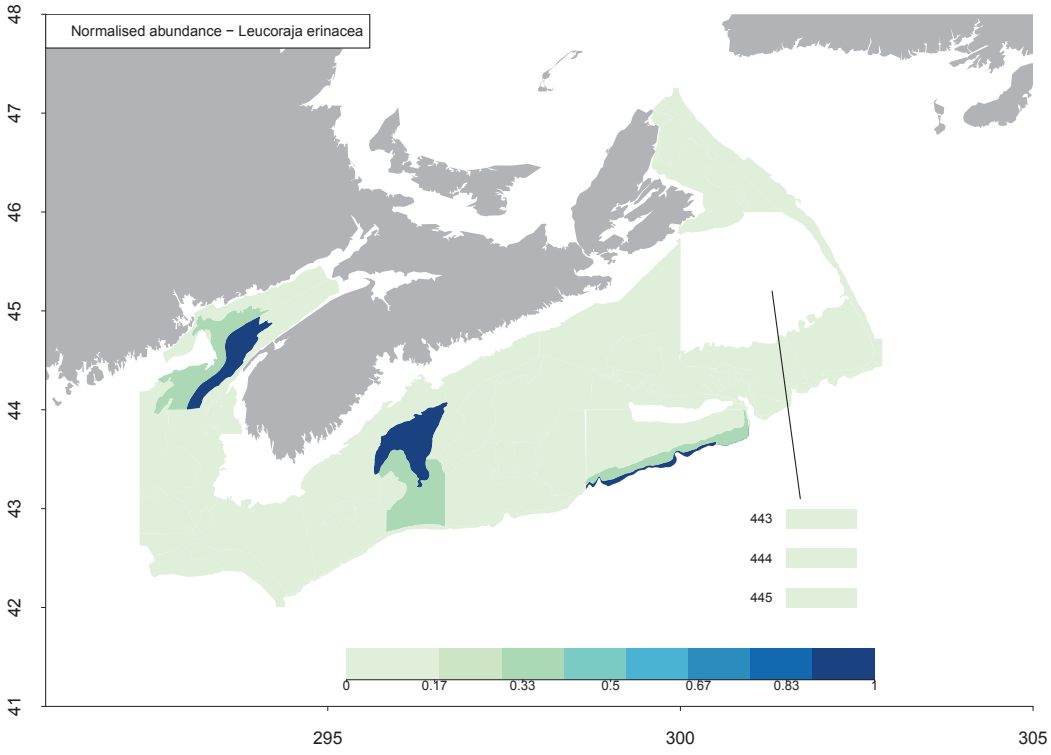


Figure A.116: Maps of normalised abundance for DFO little skate (*Leucoraja erinacea*).

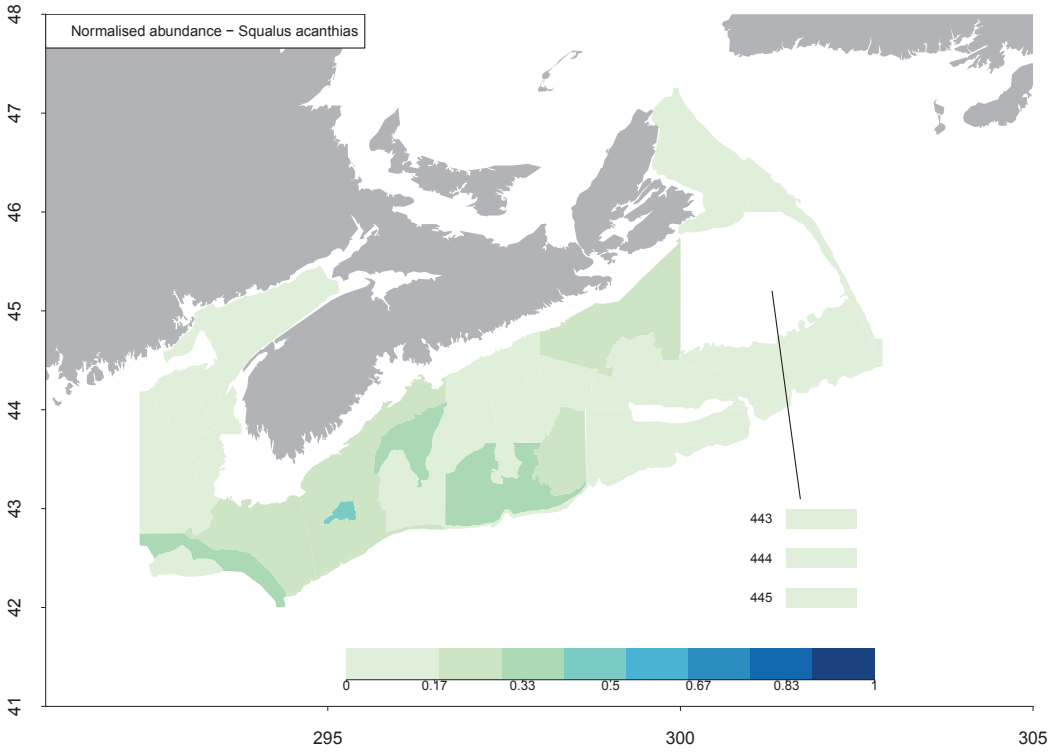


Figure A.117: Maps of normalised abundance for DFO dogfish (*Squalus acanthias*).

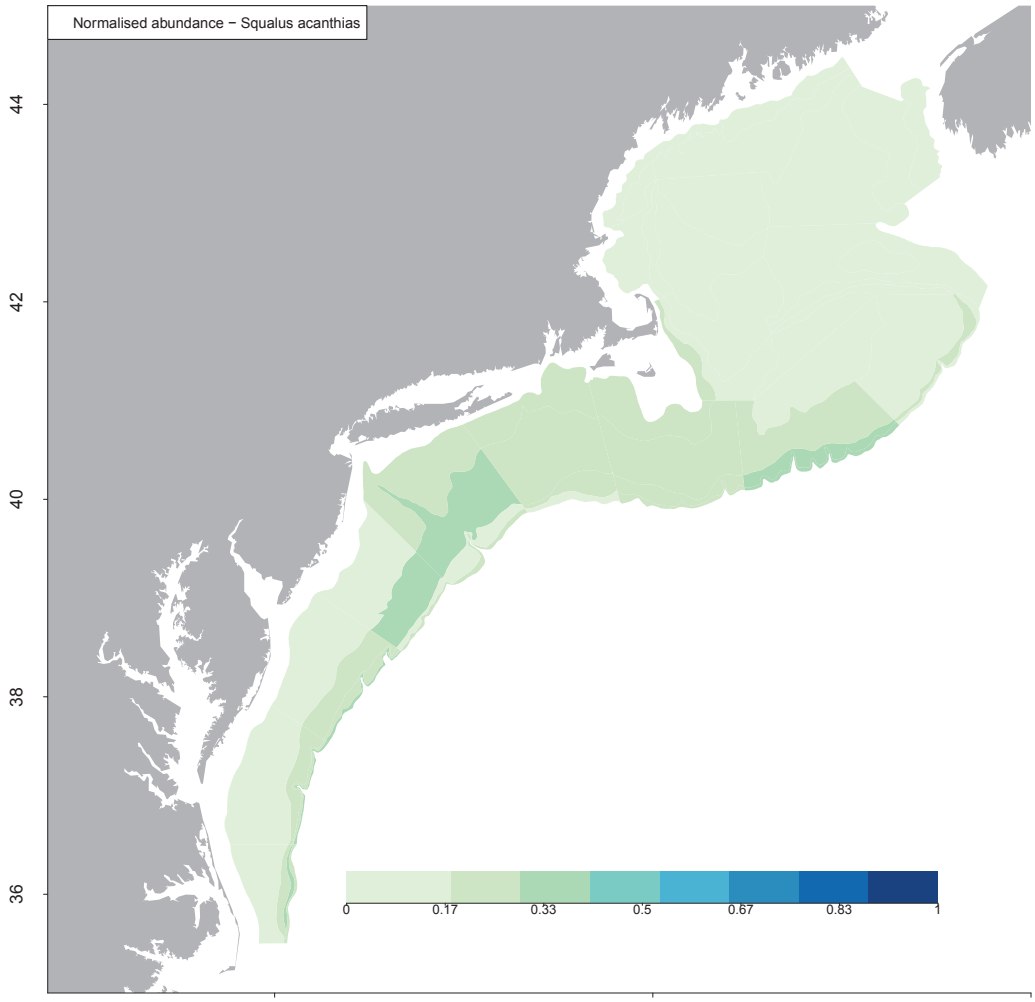


Figure A.118: Maps of normalised abundance for NMFS dogfish (*Squalus acanthias*).