

# STETSON BANK LONG-TERM MONITORING: 2015-2018 SYNTHESIS REPORT APPENDIX





Appendix 2. Bank crest repetitive photostation qualitative comparisons, 2015–2018.

Station	2015–2016	2016–2017	2017–2018
Pin01	Complete loss of 4 colonies of IrSt, Wasting of one colony of IrSt, Wasting of one colony of GeGi, Urchin count=1	Complete loss of 1 colony of GeGi, Expansion of 1 colony of ArCr, Increased Turf Algae, Urchin count=1, Sponge loss count=1	No apparent change, Urchin count=2, Sponge loss count=0
Pin04	Algal growth over one colony of IrSt, Wasting of one colony of IrSt, Loss of once colony of GeGi, Reduction in SpCu, Urchin count=3	Complete loss of 2 colonies of IrSt, Urchin count=2, Sponge loss count=2	AgCl overgrown with algae, Urchin count=3, Sponge loss count=0
Pin05	Expansion of one colony of NeNo, Urchin count=1	Complete loss of 2 colonies of IrFe, Expansion of one colony of NeNo, Urchin count=1, Sponge loss count=2	Expansion of NeNo 1 colony, IrFe 2 colonies overgrown by NeNo, GeGi 1 colony overgrown by NeNo, Urchin count=0, Sponge loss count=0
Pin08	Recovery of one colony of AgCl, Expansion in SpCu, Complete loss of one colony of IrFe, Urchin count=3	Expansion of SpCu, Increased Turf Algae, Urchin count=2, Sponge loss count=0	AgCl overgrown with algae, NeNo more robust 1 colony, Urchin count=1, Sponge loss count=0
Pin10	Complete loss of three colonies of IrSt, Less Dictyoda sp., Urchin count=0	Less Dictyoda sp., Urchin count=0, Sponge loss count=0	Complete Loss 1 colony AgCl, Complete Loss 1 colony NiEr, Expansion of 5 colonies NiEr, Urchin count=0, Sponge loss count=2
Pin13	Algal growth over one colony of IrSt, Complete loss of two colonies of IrFe, Urchin count=16	Increase in unk Encrusting sponge III, Increased Turf Algae, Urchin count=5, Sponge loss count=0	No Algae, Dictyota 1 clump absent, Urchin count=6, Sponge loss count=0
Pin15	Recovery of bleached MaDe colony, Expansion in MiAl, Reduction in SpCu, Urchin count=6	40% Reduction in MiAl, Increased Turf Algae, Algal overgrowth of 10% MaDe, Urchin count=1, Sponge loss count=0	Expansion 2 colonies IrFe, Urchin count=1, Sponge loss count=0
Pin16	Algal growth over one colony of IrSt, Recovery of wasting IrSt, Urchin count=4	Wasting of 2 colonies of IrSt, Complete loss of 1 colony of IrSt, Less Dictyoda sp., Urchin count=1, Sponge loss count=1	Expansion 2 colonies IrFe, Reduction 1 colony IrFe, Complete loss 1 recruit PsSt, Urchin count=6, Sponge loss count=0
Pin17	Expansion in MiAl, Urchin count=0	Less Dictyoda sp., Urchin count=0, Sponge loss count=0	Expansion 1 colony Sidastrea, Increased algae on 2 AgCl, Urchin count=0, Sponge loss count=0
Pin18	No apparent change, Urchin count=0	Increase in green turf algae, Urchin count=0, Sponge loss count=0	Decrease in turf algae, Complete Loss 2 SiRa, Urchin count=0, Sponge loss count=0
Pin19	Reduction of one colony of ArCr, Urchin count=1	Expansion of 1 colony of ArCr, Reduction of 1 colony of NeNo, Urchin count=2, Sponge loss count=0	Expansion of NeNo 2 colonies, Expansion of IrSt 2 colonies, Expansion of 2 colonies MaDe, Urchin count=0, Sponge loss count=0
Pin20	Expansion of two colonies of IrSt, Expansion of one colony of GeGi, Urchin count=8	Wasting of 1 colony of IrSt, Complete loss of 1 colony of IrSt, Complete loss of 1 colony of IrFe, Increased Turf Algae, Urchin count=0, Sponge loss count=2	Complete loss 1 colony IrSt, 50% Loss of encrusting red sponge, Complete loss 1 colony IrFe, Urchin count=2, Sponge loss count=2
Pin21	No apparent change, Urchin count=7	Complete loss of 1 colony of IrSt, Increased Turf Algae, Urchin count=3, Sponge loss count=1	Decrease in turf algae, Decrease in macroalgae, Reduction in algae covering IrSt, Decrease in red encrusting sponge, Urchin count=2, Sponge loss count=0
Pin22	Wasting of one colony of IrSt, Urchin count=4	Increased Turf Algae, Urchin count=7, Sponge loss count=0	Decrease in red encrusting sponge, Urchin count=6, Sponge loss count=0
Pin23	No apparent change, Urchin count=14	Expansion of 1 colony of IrFe, Urchin count=5, Sponge loss count=0	Reduction 2 colonies IrFe, Expansion of IrFe 3 colonies, Expansion of 1 colony IrSt, Urchin count=3, Sponge loss count=0
Pin24	No apparent change, Urchin count=2	Reduction in 1 colony of IrSt, Expansion of 1 colony of IrFe, Urchin count=5, Sponge loss count=0	Reduction in turf algae, Expansion of 3 colonies IrSt, Urchin count=1, Sponge loss count=0
Pin25	No apparent change, Urchin count=1	Expansion of 1 colony of IrFe, Urchin count=0, Sponge loss count=0	Reduction in 2 colonies MaDe, Expansion of 1 colony MaDe, Reduction in 1 colony IrFe, Complete Loss of 1 colony SiRa, Urchin count=2, Sponge loss count=0
Pin26	Expansion of two colonies of AgCl, Recovery of wasting AgCl, Urchin count=2	Complete loss of 1 colony of IrSt, Expansion of 1 colony of NeNo, Urchin count=3, Sponge loss count=1	Reduction in 3 colonies AgCl, Expansion of 2 colonies NeNo, Expansion of 2 colonies MaDe, Expansion 1 colony IrSt, Urchin count=5, Sponge loss count=0
Pin27	Complete loss of wasting IrSt, Urchin count=5	Wasting of 1 colony of IrSt, Urchin count=3, Sponge loss count=0	Reduction 2 colonies IrSt, Reduction 50% Red Encrusting Sponge, Urchin count=6, Sponge loss count=0
Pin28	Wasting of one colony of IrSt, Urchin count=3	Wasting of 1 colony of IrSt, Complete loss of 1 colony of IrSt, Increased Turf Algae, Urchin count=2, Sponge loss count=1	Reduction 1 colony MiAl, Urchin count=5, Sponge loss count=0
Pin31	Less Dictyoda sp., Complete loss of one colony of NiEr, Urchin count=3	25% Reduction of MiAl, Wasting of 1 colony of IrSt, Increased Turf Algae, Urchin count=0, Sponge loss count=0	Reduction 1 colony IrSt, Expansion 1 colony IrFe, Reduction 1 colony MiAl, Reduction 75% white encrusting sponge, Urchin count=9, Sponge loss count=0
Pin32	Wasting of one colony of IrSt, Urchin count=2	Complete loss 4 (all) colonies of IrSt, Complete loss of 2 colonies of IrFe, Urchin count=5, Sponge loss count=6	Expansion 3 colonies IrFe, Increased algae on 2 AgCl, Reduction 80% Red Encrusting Sponge, Urchin count=1, Sponge loss count=0
Pin33	No apparent change, Urchin count=10	Less Dictyoda sp., Wasting of 1 colony of IrSt, Increased Turf Algae, Urchin count=6, Sponge loss count=0	Decrease in turf algae, Urchin count=5, Sponge loss count=0
Pin34	No apparent change, Urchin count=5	Increase in green algae, Urchin count=0, Sponge loss count=0	Increase 1 colony NiEr, Increase 2 colonies IrSt, Urchin count=2, Sponge loss count=0
Pin35	No apparent change, Urchin count=0	Increase in green turf algae, Urchin count=1, Sponge loss count=0	Complete loss 2 colonies IrSp, Expansion 1 colony IrFe, Urchin count=0, Sponge loss count=2
Pin36	Expansion of one colony of NeNo, Urchin count=0	NC, Urchin count=0, Sponge loss count=0	Increase 2 colonies NeNo, Increase 4 colonies, Decrease 1 colony AgCl, Urchin count=0, Sponge loss count=0
Pin37	No apparent change, Urchin count=4	Increase in green turf algae, Urchin count=2, Sponge loss count=0	Decrease Turf Algae 90%, Decrease in macroalgae 100%, Urchin count=0, Sponge loss count=0
Pin39	Reduction of one colony of IrSt, Urchin count=0	Expansion in 1 colony of IrSt, Expansion in 1 colony of IrFe, Increased Turf Algae, Urchin count=0, Sponge loss count=0	Increase 3 colonies IrFe, Increase 2 colonies IrSt, Decrease 80% red encrusting sponge, Decrease 1 colony IrSt, Urchin count=0, Sponge loss count=0
Pin40	Wasting of one colony of IrSt, Expansion in MiAl, Urchin count=3	Increase in green turf algae, Reduction in 1 colony of MyLa, Urchin count=2, Sponge loss count=0	Increase 1 colony MiAl, Complete Loss 1 colony NiEr, Urchin count=2, Sponge loss count=1
Pin42	Reduction in on colony of IrFe, Urchin count=3	Expansion in 1 colony of IrFe, Increased Turf Algae, Urchin count=1, Sponge loss count=0	Increase 3 colonies IrFe, Complete Loss 1 colony IrSp, Complete Loss Clump of Dictyota, Urchin count=5, Sponge loss count=1
Pin45B	Pin location corrected, Urchin count=5	Complete loss of 6 (all) colonies of IrFe, Complete loss of 4 (all) colonies of IrSt, Increased Turf Algae, Urchin count=6, Sponge loss count=10	AgCl overgrown with algae, Urchin count=2, Sponge loss count=0
Pin48	Expansion of MiAl, Urchin count=2	Complete loss of 1 (all) colony of IrSt, 70% Reduction in MiAl, Increased Turf Algae, Urchin count=2, Sponge loss count=1	AgCl overgrown with algae, Recruitment 6 colonies Tubastrea, Urchin count=2, Sponge loss count=0
Pin49	Algal growth over one colony of IrSt, Expansion of one colony of NeNo, Reduction of one colony of NeNo, Urchin count=4	Expansion in 2 colonies of NeNo, Reduction in filamentous algae, Urchin count=5, Sponge loss count=0	Increase 4 colonies IrFe, Reduction 1 colony NiEr, Urchin count=1, Sponge loss count=0
Pin50	No apparent change, Urchin count=1	Wasting of 1 colony of NeNo, Urchin count=2, Sponge loss count=0	Increase in turf algae covering MaDe, Increase 1 colony IrFe, Urchin count=1, Sponge loss count=0
Pin51	Recovery of wasting colony of IrFe, Expansion of one colony of NiEr, Urchin count=0	Increase in green turf algae, Urchin count=0, Sponge loss count=0	No apparent change, Urchin count=0, Sponge loss count=0
Pin55	Expansion in MiAl, Urchin count=7	Reduction in MiAl, Increased Turf Algae, Urchin count=2, Sponge loss count=0	AgCl overgrown with algae, Reduction Peach Encrusting Sponge, Urchin count=6, Sponge loss count=0
Pin56	No apparent change, Urchin count=3	NC, Urchin count=3, Sponge loss count=0	AgCl overgrown with algae, Increase 1 colony IrFe, Urchin count=5, Sponge loss count=0
Pin60	No apparent change, Urchin count=3	NC, Urchin count=1, Sponge loss count=0	Expansion 2 colonies NeNo, Expansion 1 colony IrFe, Reduction orange encrusting sponge, Urchin count=0, Sponge loss count=0
Pin61	Reduction in SpCu, Urchin count=5	Complete loss of 6 colonies of IrSt, Wasting of 1 colony of IrSt, Complete loss of 1 colony of IrFe, Increased green turf algae, Urchin count=3, Sponge loss count=7	Expansion 1 colony IrSt, Expansion 2 colonies IrFe, Urchin count=1, Sponge loss count=0
Pin62	Less Dictyoda sp., Reduction of one colony of IrSt, Urchin count=0	Less Dictyoda sp., Urchin count=0, Sponge loss count=0	Expansion 4 colonies IrSt, Expansion 1 colony IrFe, Complete loss MyLa, Urchin count=2, Sponge loss count=0
Pin63	Recent mortality of ~ 20% one colony of MaDe, Urchin count=8	Partial recovery of bleached MaDe, Urchin count=4, Sponge loss count=0	Expansion 2 colony IrSt, Urchin count=2, Sponge loss count=0
Pin64	Recent mortality of ~ 5% MiAl, Urchin count=0	50% Reduction in MiAl, Complete loss of 1 colony of IrSt, Urchin count=1, Sponge loss count=1	Reduction 1 colony MiAl, Expansion 1 colony MiAl, Reduction orange encrusting sponge, Increased algae on AgCl, Urchin count=1, Sponge loss count=0
Pin67	Reduction of one colony of IrFe, Increased turf algal coverage, Urchin count=4	Expansion of 1 colony of IrSt, Increased Turf Algae, Urchin count=4, Sponge loss count=0	Expansion 2 colony IrSt, Expansion 1 colony TuCo, Urchin count=4, Sponge loss count=0
Pin68	Reduction of one colony of IrSt, Urchin count=1	Increase in green turf algae, Urchin count=3, Sponge loss count=0	Expansion 3 colonies IrFe, Reduction algal cover on IrSt, Urchin count=5, Sponge loss count=0
Pin69	Expansion of one colony of IrSt, Urchin count=3	Increased Turf Algae, Urchin count=2, Sponge loss count=0	Expansion 4 colonies IrFe, Urchin count=3, Sponge loss count=0
Pin70	Expansion of one colony of IrSt, Reduction of one colony of IrSt, Reduction of one colony of NiEr, Urchin count=3	Reduction in 1 colony of IrSt, Increase in green turf algae, Less Dictyoda sp., Urchin count=0, Sponge loss count=0	Expansion 2 colonies IrFe, Increase 1 patch of orange encrusting sponge, Urchin count=4, Sponge loss count=0
Pin71	No apparent change, Urchin count=11	Complete loss of 1 colony of IrFe, Less Dictyoda sp., Urchin count=5, Sponge loss count=1	Expansion 2 colonies IrFe, Urchin count=2, Sponge loss count=0
Pin72	Expansion in MiAl, Urchin count=1	5% Bleaching of 2 colonies of IrSt, Urchin count=4, Sponge loss count=0	Expansion 1 colony NeNo, Reduction 1 colony MiAl, MaDe appears healthier, Urchin count=6, Sponge loss count=0
Pin73	No apparent change, Urchin count=3	Increased Turf Algae, Expansion of 1 colony of NeNo, Urchin count=4, Sponge loss count=0	Expansion 2 colonies IrFe, Reduction in fine algae, Increase 1 colony MaDe, Urchin count=2, Sponge loss count=0
Pin74	Complete loss of one colony of IrFe, Complete loss of one colony of GeGi, Urchin count=6	Wasting of 1 colony of IrSt, Increased Turf Algae, Urchin count=1, Sponge loss count=0	Complete Loss 1 colony IrFe, Reduction 1 colony IrSt, Urchin count=2, Sponge loss count=1
Pin75	Expansion of one colony of IrFe, Expansion of one colony of NeNo, Urchin count=0	Complete loss of 2 colonies of IrFe, Expansion of one colony of NeNo, Less Dictyoda sp., Urchin count=0, Sponge loss count=2	Reduction in algal cover, Expansion 1 colony IrSt, Urchin count=4, Sponge loss count=0
Pin76	Less Dictyoda sp., Urchin count=0	Increase in green turf algae, Complete loss 1 colony GeGi, Urchin count=0, Sponge loss count=0	Expansion 1 colony IrSt, Complete Loss 1 colony IrSt, Expansion 1 colony IrFe, Urchin count=0, Sponge loss count=0
Pin78	Reduction of one colony of IrFe, Urchin count=2	Reduced turf algae, Urchin count=1, Sponge loss count=0	Complete loss 1 colony IrSt, Dictyota is absent, Expansion 1 colony ArCr, New colonies of blue encrusting sponge, Urchin count=2, Sponge loss count=1
Pin79	Expansion in MiAl, Urchin count=0	15% reduction in MiAl, Urchin count=0, Sponge loss count=0	Reduction 1 colony MiAl, Expansion 1 colony StIn, Expansion 1 colony MiAl, Urchin count=1, Sponge loss count=0
Pin80	No apparent change, Urchin count=4	Reduction in SpCu, Urchin count=2, Sponge loss count=0	Expansion 1 colony StIn, Expansion 1 colony SiRa, Increase in Dictyota, Urchin count=0, Sponge loss count=0
Pin81	Complete loss of one colony of unk sponge IV, Wasting of one colony of IrSt, Reduction in SpCu, Complete loss of one colony of IrSt, Urchin count=4	Complete loss of 2 colonies of IrSt, Reduction in 1 colony of AgCl, Increased Turf Algae, Urchin count=1, Sponge loss count=2	AgCl overgrown with algae, Expansion 1 colony SiRa, Increase in Turf Algae, Urchin count=1, Sponge loss count=0
Pin85	Expansion in MiAl, Urchin count=9	90% Reduction in MiAl, Complete loss of 1 (all) colony of IrSt, Increased Turf Algae, Urchin count=6, Sponge loss count=1	Expansion 1 colony MiAl, Expansion 1 colony MoCa, Urchin count=2, Sponge loss count=0
Pin UNK A	Expansion in MiAl, Urchin count=6	Complete loss of 2 colonies of IrSt, Reduction in turf algae, Urchin count=3, Sponge loss count=2	AgCl overgrown with algae, Expansion 1 colony IrSt, Urchin count=3, Sponge loss count=0
Pin UNK B	No apparent change, Urchin count=7	Increased Turf Algae, Complete loss 1 colony GeGi, Urchin count=0, Sponge loss count=1	Reduction 1 colony IrSt, Expansion 2 colonies IrFe, Urchin count=1, Sponge loss count=0

Appendix 3. Mesophotic repetitive photostation qualitative comparisons, 2015–2018.

Station	Depth (m)	Site Description 2015	2015–2016 Comparison	2016–2017 Comparison	2017–2018 Comparison
M01	39.90	Coral (StIn_1-2) <i>Stephanocenia intersepta</i> : 1 50 x 30 x 12 cm and 2 25 x 10 cm. No bleaching present. Approximately 20% hardbottom covered in macroalgae and remaining consists of rubble.	No change apparent	No change apparent	Marker moved ~10cm, closer to StIn_2. No other change apparent
M02	54.70	Octocoral (HyW_1) white <i>Hypnorgia</i> sp.: 50 x 96 cm. Black coral (Stic_1-2) sea whips. Poor visibility. 100% hardbottom.	No change apparent	Low visibility. No change apparent	Low visibility. Growth of bryzoan. Other biota not photographed
M03	51.20	Sponges (IrW_1-4) white <i>Ircinia</i> sp.. (IrB_1-12) brown <i>Ircinia</i> sp., and (NiEr_1-4) <i>Niphates erecta</i> with gastropods. Black coral sea fans (BCSF_1): 20 x 3 cm (BCSF_2): 24 x 10 cm. Black coral sea whips. 100% cover of trawl net on hardbottom.	Marker appears to have moved, 10-15cm.	Complete loss of one colony of <i>Niphates erecta</i>	Expansion of IrB_4 and IrB_7
M04	52.40	Sponges (IrW_1) white <i>Ircinia</i> sp.: 25 x 7 x 8 cm, (IrW_2) white <i>Ircinia</i> sp.: 16 x 8 x 4 cm. (IrB_1-2), and brown <i>Ircinia</i> sp.. Black coral sea fan (BCSF_1). 100% hardbottom.	Marker appears to have moved, 30-35cm.	Not found	Compared to 2016. Marker moved ~5 cm. IrB heavily silted. Growth of a BCSF.
M05	53.60	Octocorals (HyW_1-2) white <i>Hypnorgia</i> sp.. (HyR_1) red <i>Hypnorgia</i> sp.: 28 cm in height. (HyG_1) gold <i>Hypnorgia</i> sp.. Black coral sea whip (Stic_1). 100% hardbottom.	No change apparent	Low visibility. No change apparent	HyW_1 broken branch 25 x 19 cm.
M06	49.10	Black coral (BCSF_1) sea fan: 25 x 29 cm and (Stic_1-3) sea whips. Sponges (NiEr_1-2) <i>Niphates erecta</i> and (ArC_1) <i>Arolochoira crassa</i> . 100% hardbottom	Sea frost growing on BCSF_1	Not found	Reduction of BCSF_1 (arial view: 18 x 12 cm). Growth of ArC_1
M08	35.80	Coral (StIn_1) <i>Stephanocenia intersepta</i> : 58.6 x 48.3 x 4 cm. No bleaching present. (StIn_2) <i>Stephanocenia intersepta</i> : 32.6 x 18.0 x 3 cm. Sponge <i>Neofibularia nolitangere</i> . 80% hardbottom covered in macroalgae and remaining consists of rubble.	StIn_1 unsilted edge. More <i>Dictyota</i> growth	Bleaching on margin of StIn_1, <1% of coral	Recovery of bleached margin on StIn_1







Appendix 7. *Diadema antillarum* density in bank crest repetitive photostations, 2015–2018.

PIN	Year	Density (m <sup>2</sup> )
Pin UNK A (136)	2015	5.63
Pin UNK B (9)	2015	1.88
Pin1	2015	2.50
Pin10	2015	0.00
Pin13	2015	11.88
Pin15	2015	3.13
Pin16	2015	3.75
Pin17	2015	0.00
Pin18	2015	0.00
Pin19	2015	1.25
Pin20	2015	1.88
Pin21	2015	6.25
Pin22	2015	0.00
Pin23	2015	6.88
Pin24	2015	0.00
Pin25	2015	0.00
Pin26	2015	3.13
Pin27	2015	2.50
Pin28	2015	1.88
Pin31	2015	0.63
Pin32	2015	1.25
Pin33	2015	7.50
Pin34	2015	3.75
Pin35	2015	0.00
Pin36	2015	0.00
Pin37	2015	0.00
Pin39	2015	0.00
Pin4	2015	3.75
Pin40	2015	4.38
Pin42	2015	2.50
Pin45B	2015	1.88
Pin48	2015	1.25
Pin49	2015	1.25
Pin5	2015	1.25
Pin50	2015	1.88
Pin51	2015	0.00
Pin55	2015	4.38
Pin56	2015	2.50
Pin60	2015	2.50
Pin61	2015	3.13
Pin62	2015	0.00
Pin63	2015	3.13
Pin64	2015	0.63
Pin67	2015	1.25
Pin68	2015	0.63
Pin69	2015	3.75
Pin70	2015	0.00
Pin71	2015	3.75
Pin72	2015	1.25
Pin73	2015	1.25
Pin74	2015	1.88
Pin75	2015	0.00
Pin76	2015	0.00
Pin78	2015	0.00
Pin79	2015	0.00
Pin8	2015	0.63
Pin80	2015	2.50
Pin81	2015	2.50
Pin85	2015	3.13
Pin1	2016	0.63
Pin4	2016	1.88
Pin5	2016	0.63
Pin8	2016	1.88
Pin10	2016	0.00
Pin13	2016	10.00
Pin15	2016	3.75
Pin16	2016	2.50
Pin17	2016	0.00
Pin18	2016	0.00
Pin19	2016	0.63
Pin20	2016	5.00
Pin21	2016	4.38
Pin22	2016	2.50
Pin23	2016	8.75
Pin24	2016	1.25
Pin25	2016	0.63
Pin26	2016	1.25
Pin27	2016	3.13
Pin28	2016	1.88
Pin31	2016	1.88
Pin32	2016	1.25
Pin33	2016	6.25
Pin34	2016	3.13
Pin35	2016	0.00
Pin36	2016	0.00
Pin37	2016	2.50
Pin39	2016	0.00
Pin40	2016	1.88
Pin42	2016	1.88
Pin45B	2016	3.13
Pin48	2016	1.25
Pin49	2016	2.50
Pin50	2016	0.63
Pin51	2016	0.00
Pin55	2016	4.38
Pin56	2016	1.88
Pin60	2016	1.88
Pin61	2016	3.13
Pin62	2016	0.00
Pin63	2016	5.00
Pin64	2016	0.00
Pin67	2016	2.50
Pin68	2016	0.63
Pin69	2016	1.88
Pin70	2016	1.88
Pin71	2016	6.88
Pin72	2016	0.63
Pin73	2016	1.88
Pin74	2016	3.75
Pin75	2016	0.00
Pin76	2016	0.00
Pin78	2016	1.25
Pin79	2016	0.00
Pin80	2016	2.50
Pin81	2016	2.50
Pin85	2016	5.63
Pin UNK A (136)	2016	3.75
Pin UNK B (9)	2016	4.38
Pin10	2017	0.00
Pin13	2017	3.13
Pin15	2017	0.63
Pin16	2017	0.63
Pin17	2017	0.00
Pin18	2017	0.00
Pin19	2017	1.25
Pin1	2017	0.63
Pin20	2017	0.00
Pin21	2017	1.88
Pin22	2017	4.38
Pin23	2017	3.13
Pin24	2017	3.13
Pin25	2017	0.00
Pin26	2017	1.88
Pin27	2017	1.88
Pin28	2017	1.25
Pin31	2017	0.00
Pin32	2017	3.13
Pin33	2017	3.75
Pin34	2017	0.00
Pin35	2017	0.63
Pin36	2017	0.00
Pin37	2017	1.25
Pin39	2017	0.00
Pin40	2017	1.25
Pin42	2017	0.63
Pin45	2017	3.75
Pin48	2017	1.25
Pin49	2017	3.13
Pin4	2017	1.25
Pin50	2017	1.25
Pin51	2017	0.00
Pin55	2017	1.25
Pin56	2017	1.88
Pin5	2017	0.63
Pin60	2017	0.63
Pin61	2017	1.88
Pin62	2017	0.00
Pin63	2017	2.50
Pin64	2017	0.63
Pin67	2017	2.50
Pin68	2017	1.88
Pin69	2017	1.25
Pin70	2017	0.00
Pin71	2017	3.13
Pin72	2017	2.50
Pin73	2017	2.50
Pin74	2017	0.63
Pin75	2017	0.00
Pin76	2017	0.00
Pin78	2017	0.63
Pin79	2017	0.00
Pin80	2017	1.25
Pin81	2017	0.63
Pin85	2017	3.75
Pin8	2017	1.25
Pin UNK A (136)	2017	1.88
Pin UNK B (9)	2017	0.00
PIN10	2018	0.00
PIN13	2018	3.75
PIN15	2018	0.63
PIN16	2018	3.75
PIN17	2018	0.00
PIN18	2018	0.00
PIN19	2018	0.00
PIN1	2018	1.25
PIN20b	2018	1.25
PIN21	2018	1.25
PIN22	2018	3.75
PIN23	2018	1.88
PIN24	2018	0.63
PIN25	2018	1.25
PIN26	2018	3.13
PIN27	2018	3.75
PIN28	2018	3.13
PIN31	2018	5.63
PIN32	2018	0.63
PIN33	2018	3.13
PIN34	2018	1.25
PIN35	2018	0.00
PIN36	2018	0.00
PIN37	2018	0.00
PIN39	2018	0.00
PIN40	2018	1.25
PIN42	2018	3.13
PIN45	2018	1.25
PIN48	2018	1.25
PIN49	2018	0.63
PIN4	2018	1.88
PIN50	2018	0.63
PIN51	2018	0.00
PIN55	2018	3.75
PIN56	2018	3.13
PIN5	2018	0.00
PIN60	2018	0.00
PIN61	2018	0.63
PIN62	2018	1.25
PIN63	2018	1.25
PIN64	2018	0.63
PIN67	2018	2.50
PIN68	2018	3.13
PIN69	2018	1.88
PIN70	2018	2.50
PIN71	2018	1.25
PIN72	2018	3.75
PIN73	2018	1.25
PIN74	2018	1.25
PIN75	2018	2.50
PIN76	2018	0.00
PIN78	2018	1.25
PIN79	2018	0.63
PIN80	2018	0.00
PIN81	2018	0.63
PIN85	2018	1.25
PIN8	2018	0.63
Pin UNK A (136)	2018	1.88
Pin UNK B (9)	2018	0.63

Appendix 8. *Diadema antillarum* density in bank crest random transects, 2015–2018.

Sample	Habitat	Year	Latitude	Longitude	Density (m2)
F21	Low Relief	2015	28.166110	-94.294480	2.33
F22	Low Relief	2015	28.165780	-94.295740	0.18
F24	Low Relief	2015	28.166620	-94.294760	1.35
F25	Low Relief	2015	28.166290	-94.293310	0.25
F26	Low Relief	2015	28.164270	-94.298730	1.90
F27	Low Relief	2015	28.166710	-94.292860	0.00
F28	Low Relief	2015	28.165410	-94.296160	0.12
F29	Low Relief	2015	28.165810	-94.297040	0.92
F30	Low Relief	2015	28.165870	-94.295000	0.37
F31	Low Relief	2015	28.166210	-94.294310	2.94
F32	Low Relief	2015	28.165840	-94.294650	1.78
F33	Low Relief	2015	28.166080	-94.296390	0.49
P22	High Relief	2015	28.164450	-94.298870	1.23
P13	High Relief	2015	28.164710	-94.298740	3.68
P14	High Relief	2015	28.166780	-94.295630	0.00
P15	High Relief	2015	28.166150	-94.296700	2.63
P16	High Relief	2015	28.164060	-94.298830	2.02
P17	High Relief	2015	28.166000	-94.297860	0.25
P18	High Relief	2015	28.165440	-94.298160	1.29
P21	High Relief	2015	28.166310	-94.296270	1.65
F41	Low Relief	2016	28.164360	-94.298590	0.00
F42	Low Relief	2016	28.164680	-94.298330	0.00
F43	Low Relief	2016	28.165680	-94.296640	0.00
F44	Low Relief	2016	28.165660	-94.296130	0.00
F45	Low Relief	2016	28.166260	-94.296090	0.00
F46	Low Relief	2016	28.165360	-94.297170	0.00
F47	Low Relief	2016	28.165080	-94.297980	0.49
F48	Low Relief	2016	28.166730	-94.293400	0.98
F49	Low Relief	2016	28.166970	-94.294740	0.00
F50	Low Relief	2016	28.166540	-94.293630	0.12
F52	Low Relief	2016	28.165240	-94.298120	0.12
F53	Low Relief	2016	28.165840	-94.294170	0.12
F54	Low Relief	2016	28.167250	-94.293330	0.00
F55	Low Relief	2016	28.166710	-94.294440	0.12
F56	Low Relief	2016	28.166980	-94.293290	0.12
F57	Low Relief	2016	28.166030	-94.294410	0.12
F58	Low Relief	2016	28.166670	-94.294120	0.00
F59	Low Relief	2016	28.165470	-94.296620	0.00
F60	Low Relief	2016	28.166040	-94.295390	0.25
F62	Low Relief	2016	28.164910	-94.297220	0.00
P30	Low Relief	2016	28.164700	-94.297210	0.00
P23	High Relief	2016	28.165770	-94.293820	0.00
P24	High Relief	2016	28.165810	-94.297800	1.59
P25	High Relief	2016	28.166700	-94.295620	1.96
P27	High Relief	2016	28.164270	-94.299190	0.37
P28	High Relief	2016	28.167310	-94.294350	1.72
P29	High Relief	2016	28.166040	-94.297200	1.23
P31	High Relief	2016	28.164990	-94.298580	0.00
P32	High Relief	2016	28.165970	-94.296720	2.94
P34	High Relief	2016	28.166220	-94.297400	1.10
P35	High Relief	2016	28.166310	-94.295460	0.86
F63	Low Relief	2017	28.165180	-94.297530	0.00
F64	Low Relief	2017	28.165170	-94.296400	0.12
F67	Low Relief	2017	28.165990	-94.296160	0.00
F68	Low Relief	2017	28.165570	-94.297570	0.00
F69B	Low Relief	2017	28.164790	-94.297860	0.61
F70	Low Relief	2017	28.165710	-94.295190	0.00
F71	Low Relief	2017	28.166540	-94.293820	0.00
F74	Low Relief	2017	28.167160	-94.293970	0.00
F75B	Low Relief	2017	28.165470	-94.296490	0.00
F79	Low Relief	2017	28.166580	-94.293180	0.00
F83	Low Relief	2017	28.167150	-94.293430	0.00
F84	Low Relief	2017	28.164600	-94.298670	0.00
P36	Low Relief	2017	28.166180	-94.295210	0.12
P37	Low Relief	2017	28.166430	-94.296280	0.00
P38	Low Relief	2017	28.166290	-94.297850	0.00
P39	High Relief	2017	28.166060	-94.297940	0.74
P40	High Relief	2017	28.165020	-94.298720	0.37
P41	High Relief	2017	28.166500	-94.295920	0.00
P42	High Relief	2017	28.167000	-94.294050	0.98
P43	High Relief	2017	28.166550	-94.296630	1.96
P44	High Relief	2017	28.164780	-94.297080	0.00
P45	High Relief	2017	28.166240	-94.296610	0.49
P48	High Relief	2017	28.166390	-94.295560	0.00
F96	Low Relief	2018	28.167010	-94.293950	0.00
F93	Low Relief	2018	28.165740	-94.297350	0.49
F89	Low Relief	2018	28.167390	-94.293430	0.00
F86	Low Relief	2018	28.164920	-94.297570	0.00
F85	Low Relief	2018	28.165280	-94.298030	0.00
F101	Low Relief	2018	28.165770	-94.296590	0.00
F100	Low Relief	2018	28.165210	-94.297000	0.00
F104	Low Relief	2018	28.166550	-94.293400	0.00
F91	Low Relief	2018	28.166490	-94.295150	0.00
F98	Low Relief	2018	28.165700	-94.295550	2.57
F88	Low Relief	2018	28.166260	-94.293860	0.00
F92	Low Relief	2018	28.166750	-94.295340	0.00
F97	Low Relief	2018	28.165990	-94.296600	0.00
P51	High Relief	2018	28.165690	-94.296020	0.25
P53	High Relief	2018	28.166350	-94.295740	3.55
P57	High Relief	2018	28.164690	-94.297290	0.00
P58	High Relief	2018	28.166630	-94.295960	2.21
P59	High Relief	2018	28.167320	-94.294670	2.21
P60	High Relief	2018	28.167030	-94.294590	0.61
P61	High Relief	2018	28.165950	-94.298140	0.74

Appendix 9. *Diadema antillarum* density in bank crest nocturnal surveys, 2015–2018.

<b>Sample</b>	<b>Year</b>	<b>Density (m2)</b>
B1-B2	2015	0.55
B2-B3	2015	1.11
B3-Pin 27	2015	0.83
B1-B2	2016	0.51
B2-B3	2016	1.54
B3-Pin 27	2016	0.85
B1-B2	2017	0.60
B2-B3	2017	1.19
B3-Pin 27	2017	0.76

**Proposal to Alter Data Collection of Shallow Fish Census**  
**Stetson Bank Long-Term Monitoring**  
**E14PG00052**

**Purpose**

This document proposes to alter the location of shallow reef fish surveys at Stetson Bank. The current interagency agreement between BSEE and FGBNMS identifies that twelve surveys are to be conducted from the permanent mooring buoys used to access repetitive photostations, in addition to the fifteen surveys that are conducted in conjunction with random transects in pre-defined habitats. Following two years of data collection, statistical analysis shows that surveys conducted from the permanent mooring buoys possess a similar community structure to surveys conducted in conjunction with random transects in high relief habitat. FGBNMS proposes discontinuing the twelve surveys that are from the permanent mooring buoys, and re-allocate these surveys to be conducted conjunction with random transects, maintaining sampling effort.

**Background**

Fish communities are considered indicators of ecosystem health (Sale 1991) and are therefore an important component in long-term monitoring programs. Monitoring fish communities over time will provide a baseline against which to measure change and evaluate community response to disturbance and change.

Fish census methods at Stetson Bank have varied over time. Since 2012, modified Bohnsack-Bannerot (1986) surveys have been conducted annually as part of long-term monitoring at Stetson Bank. However, these surveys, referred to as Buoy surveys henceforth, were initially conducted exclusively from permanent mooring buoys (#1, #2, and #3), where starting locations were determined using a random heading and kick cycle. Permanent mooring buoy U-bolts were selectively located in low relief habitat, near high relief features (Figure 1).

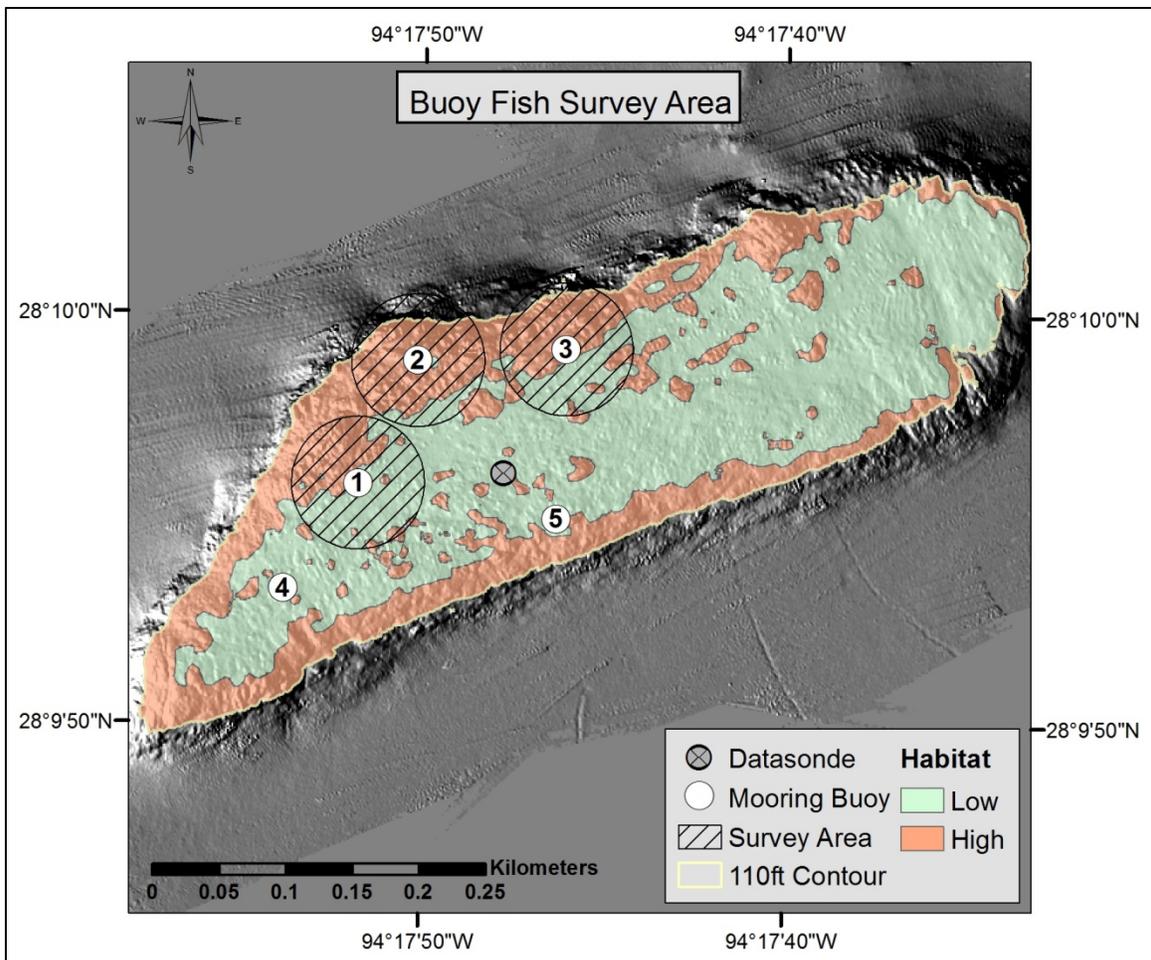


Figure A10.1. Potential area surveyed in fish surveys conducted from the permanent mooring buoys 2012–2015.

In 2014, additional modified Bohnsack-Bannerot (1986) surveys were added to the annual monitoring effort using a stratified random sampling design between multiple habitats. Two habitats were identified using 1 m<sup>2</sup> resolution bathymetric data: high and low relief. High relief habitat possess >1.1 m relief while low relief habitat possess <1 m. Surveys were proportionally distributed between available area in each habitat. These surveys were conducted over the entire reef crest, limited to depths shallower than 33.5 m.

Sampling methods for shallow fish census in the interagency agreement were designed to continue to improve the data quality and applicability of the data to the entire reef, while maintaining old methods to allow for sufficient data collection to test the need for all three areas to be sampled.

Two datasets, comprised of 106 samples each (Table 1), were analyzed: density and presence. Density data was dispersion weighted and square root transformed and presence data was generated by transforming density to presence and absence. Bray-Curtis (1957) resemblance matrices were generated for each dataset. The effect of Sample Area (Buoy, High Relief, and Low Relief) and Year (2012–2015) were tested on the resemblance matrices using non-parametric two-way PERMANOVA (Anderson et al. 2008) in PRIMER V7 (Clarke and Gorley 2015).

No significant dissimilarities were found in the interaction of Year and Sample Area. However, both Year and Sample Area were found to be significantly different for density (pseudo-F=5.8013, p=0.001; pseudo-F=2.9953, p=0.001, respectively) and presence (pseudo-F=5.8494, p=0.001; pseudo-F= 3.3036, p=0.001, respectively) data. Pairwise analysis of Sample Area revealed that significantly different fish communities occurred between High Relief and Low Relief in both density (t=1.74, p=0.001) and presence (t= 1.8096, p=0.001) data, and between Buoy and Low Relief in both density (t=2.1348, p=0.001) and presence (t= 2.2677, p=0.001) data. No significant difference was found between Buoy and High Relief in both density and presence data. Results from this analysis indicate that historical Buoy surveys do not possess a unique fish community and can be combined with High Relief surveys for future analysis.

Table A10.1. Number of surveys conducted by year and survey area.

Area	Year			
	2012	2013	2014	2015
Buoy	17	15	19	18
Low Relief	-	-	11	13
High Relief	-	-	5	8

The re-allocation of these surveys to increase the number of surveys proportionally distributed between high and low relief habitat, randomly distributed over the reef crest, will allow for maintained sampling effort with minimal effect on field time. As the current the interagency agreement calls for 30 random transects to be conducted annually, matching the number of fish surveys to the random transects they are performed alongside would be sensible and require minimal additional effort (the addition of 3 surveys).

### **Problem Summary**

The current method for collecting shallow fish census data in the interagency agreement samples multiple locations (buoy, high relief, and low relief) which do not all possess unique fish communities.

### **Proposed Resolution**

Discontinuation of the twelve surveys conducted from permanent mooring buoys used to access repetitive photostations, and re-allocation of these surveys to be conducted in conjunction with random transects, maintaining sampling effort, will result in an annual minimum of 30 fish census surveys, proportionally distributed between high and low relief habitat, randomly distributed over the reef crest. Historical surveys conducted from permanent mooring buoys can be used in long-term analyses as high relief surveys.

## **References**

Anderson MJ, Gorley RN, Clarke KR (2008) PERMANOVA+ for PRIMER: guide to software and statistical methods. PRIMER-E Ltd.

Bohnsack JA, Bannerot SP (1986) A stationary visual census technique for quantitatively assessing community structure of coral reef fishes. NOAA Technical Report NMFS 41. 15pp.

Bray JR, Curtis JT (1957) An ordination of upland forest communities of southern Wisconsin. Ecological Monographs 27:325–349.

Clarke KR, Gorley RN (2015) PRIMER v7: User Manual/Tutorial. PRIMER-E Ltd. 296pp.

Sale PF (1991) The ecology of fishes on coral reefs. Academic Press, Inc. 754 pp.

Table with columns for Latin Name, Common Name, and Throat Group. Lists various bird species and their associated throat groups.

Main data table with columns: Latin Name, Common Name, Throat Group, and a grid of values for years 2015-2018 across different metrics (High, Low, Buy, etc.).

Header table for the main data grid, detailing the structure of the columns for years and metrics.

Appendix 12. Mesophotic fish density, 2015-2016. Table with columns: Latin Name, Common Name, Trophic Guild, Family, and 28 density columns (e.g., 2015-Stetson Bank-Ryan Eckert, etc.).

Table with columns: Latin Name, Common Name, Trophic Group, Family, and a grid of data points (high/low) for years 2011-2016. The table lists numerous species and their corresponding data values across the years.

















Appendix 22. Temperature (oC) profiles at Stetson Bank, 2015–2018.

Depth (m)	Feb-15	May-15	Sep-15	Oct-15	Nov-15	Feb-16	May-16	Aug-16	Nov-16	Feb-17	May-17	Aug-17	Oct-17	Apr-18	Aug-18	Oct-18
1.00	19.58	23.97	29.25	27.42	25.72	20.65	26.36	30.81	26.39	20.06	24.28	30.60	26.19	Niskin	30.45	27.18
1.50	19.58	23.96	29.25	27.42	25.71	20.65	26.35	30.80	26.39	20.06	24.28	30.60	26.22	Niskin	30.43	27.18
2.00	19.58	23.89	29.25	27.42	25.71	20.65	26.32	30.80	26.39	20.08	24.28	30.60	26.20	Niskin	29.93	27.19
2.50	19.57	23.80	29.26	27.42	25.72	20.64	26.30	30.80	26.39	20.17	24.28	30.60	26.20	Niskin	29.61	27.19
3.00	19.57	23.66	29.26	27.42	25.72	20.64	26.27	30.80	26.39	20.15	24.28	30.60	26.21	Niskin	29.56	27.19
3.50	19.58	23.50	29.25	27.42	25.72	20.64	26.24	30.80	26.38	20.13	24.28	30.60	26.22	Niskin	29.54	27.20
4.00	19.57	23.41	29.26	27.42	25.72	20.64	26.22	30.80	26.38	20.12	24.28	30.59	26.24	Niskin	29.53	27.20
4.50	19.57	23.36	29.26	27.42	25.72	20.64	26.19	30.80	26.38	20.14	24.28	30.57	26.24	Niskin	29.51	27.20
5.00	19.57	23.34	29.25	27.43	25.72	20.64	26.13	30.80	26.38	20.18	24.28	30.56	26.24	Niskin	29.49	27.20
5.50	19.57	23.33	29.25	27.45	25.72	20.64	26.08	30.80	26.38	20.22	24.28	30.56	26.24	Niskin	29.49	27.20
6.00	19.57	23.32	29.25	27.45	25.72	20.64	26.05	30.80	26.38	20.27	24.28	30.52	26.24	Niskin	29.49	27.19
6.50	19.57	23.32	29.26	27.46	25.72	20.64	25.97	30.80	26.38	20.32	24.28	30.47	26.24	Niskin	29.48	27.19
7.00	19.57	23.31	29.27	27.47	25.72	20.63	25.91	30.80	26.38	20.43	24.28	30.45	26.24	Niskin	29.47	27.19
7.50	19.57	23.30	29.27	27.48	25.72	20.63	25.89	30.80	26.38	20.55	24.28	30.41	26.24	Niskin	29.47	27.19
8.00	19.57	23.29	29.27	27.49	25.72	20.63	25.88	30.79	26.38	20.57	24.28	30.38	26.24	Niskin	29.46	27.19
8.50	19.57	23.27	29.28	27.49	25.72	20.63	26.03	30.78	26.38	20.55	24.28	30.30	26.24	Niskin	29.46	27.19
9.00	19.57	23.26	29.27	27.49	25.72	20.62	26.07	30.77	26.38	20.52	24.28	30.26	26.24	Niskin	29.45	27.19
9.50	19.56	23.25	29.29	27.49	25.72	20.61	25.83	30.77	26.38	20.51	24.28	30.24	26.23	Niskin	29.44	27.19
10.00	19.55	23.25	29.32	27.49	25.72	20.59	25.87	30.76	26.38	20.50	24.28	30.33	26.23	Niskin	29.41	27.19
10.50	19.55	23.24	29.40	27.49	25.72	20.59	25.80	30.76	26.38	20.51	24.28	30.38	26.23	Niskin	29.41	27.19
11.00	19.55	23.24	29.42	27.48	25.72	20.56	25.70	30.75	26.38	20.52	24.28	30.34	26.23	Niskin	29.41	27.19
11.50	19.56	23.23	29.43	27.48	25.72	20.55	25.59	30.74	26.38	20.51	24.28	30.30	26.22	Niskin	29.30	27.19
12.00	19.56	23.23	29.45	27.48	25.72	20.53	25.53	30.75	26.38	20.50	24.28	30.24	26.22	Niskin	29.27	27.19
12.50	19.56	23.22	29.46	27.48	25.73	20.52	25.49	30.74	26.38	20.49	24.28	30.21	26.21	Niskin	29.27	27.19
13.00	19.55	23.22	29.47	27.48	25.73	20.51	25.46	30.71	26.38	20.49	24.28	30.19	26.20	Niskin	29.25	27.19
13.50	19.54	23.21	29.49	27.48	25.73	20.49	25.44	30.68	26.38	20.49	24.27	30.19	26.20	Niskin	29.24	27.19
14.00	19.54	23.20	29.50	27.48	25.73	20.47	25.37	30.66	26.38	20.47	24.27	30.16	26.20	Niskin	29.22	27.19
14.50	19.53	23.19	29.50	27.49	25.73	20.45	25.28	30.64	26.38	20.45	24.28	30.09	26.19	Niskin	29.20	27.20
15.00	19.52	23.19	29.51	27.49	25.73	20.44	25.17	30.63	26.38	20.40	24.28	30.07	26.18	Niskin	29.20	27.20
15.50	19.50	23.18	29.52	27.49	25.73	20.44	25.04	30.60	26.38	20.36	24.29	30.05	26.18	Niskin	29.20	27.20
16.00	19.48	23.17	29.54	27.49	25.73	20.43	24.93	30.51	26.38	20.38	24.29	30.03	26.19	Niskin	29.19	27.19
16.50	19.45	23.18	29.54	27.49	25.73	20.42	24.80	30.44	26.38	20.39	24.28	30.00	26.21	Niskin	29.18	27.19
17.00	19.43	23.19	29.54	27.49	25.73	20.42	24.72	30.40	26.38	20.39	24.28	29.98	26.20	Niskin	29.18	27.19
17.50	19.43	23.18	29.54	27.50	25.73	20.41	24.67	30.37	26.38	20.39	24.29	29.96	26.19	Niskin	29.12	27.19
18.00	19.42	23.18	29.55	27.53	25.73	20.41	24.65	30.34		20.38	24.29	29.93	26.18	Niskin	29.02	27.19
18.50		23.18	29.54	27.53		20.41	24.60	30.30		20.37	24.28	29.90	26.18	Niskin	28.92	27.19
19.00		23.20	29.53			20.41	24.56	30.26		20.36	24.29	29.88	26.19	Niskin	28.80	27.19
19.50		23.21	29.53			20.41	24.41	30.22		20.34	24.29	29.82	26.18	Niskin	28.80	27.19
20.00						20.40	24.31	30.17		20.34	24.28	29.69	26.19	Niskin	28.80	27.19

Appendix 23. Salinity (psu) profiles at Stetson Bank, 2015–2018.

Depth (m)	Feb-15	May-15	Sep-15	Oct-15	Nov-15	Feb-16	May-16	Aug-16	Nov-16	Feb-17	May-17	Aug-17	Oct-17	Apr-18	Aug-18	Oct-18
1.00	36.47	36.17	34.61	35.66	36.07	36.46	33.89	33.63	36.12	35.82	35.55	36.20	36.29	Niskin	36.49	35.82
1.50	36.47	36.18	34.74	35.66	36.07	36.47	33.91	33.67	36.13	35.82	35.55	36.20	36.25	Niskin	36.49	35.82
2.00	36.47	36.18	34.78	35.66	36.07	36.47	33.97	33.91	36.13	35.84	35.55	36.20	36.25	Niskin	36.55	35.83
2.50	36.47	36.18	34.77	35.66	36.07	36.47	34.00	33.91	36.13	35.92	35.55	36.20	36.21	Niskin	36.50	35.87
3.00	36.47	36.19	34.75	35.66	36.07	36.47	34.05	33.92	36.13	35.91	35.55	36.20	36.15	Niskin	36.49	35.88
3.50	36.47	36.19	34.77	35.66	36.07	36.47	34.10	33.92	36.13	35.89	35.55	36.20	36.21	Niskin	36.48	35.88
4.00	36.47	36.19	34.79	35.66	36.07	36.47	34.14	33.92	36.13	35.88	35.55	36.21	36.32	Niskin	36.48	35.88
4.50	36.47	36.19	34.79	35.66	36.07	36.47	34.19	33.92	36.13	35.89	35.55	36.21	36.33	Niskin	36.48	35.88
5.00	36.47	36.19	34.78	35.67	36.07	36.47	34.24	33.92	36.13	35.94	35.55	36.22	36.33	Niskin	36.48	35.88
5.50	36.47	36.19	34.78	35.69	36.07	36.47	34.35	33.92	36.13	35.97	35.55	36.22	36.33	Niskin	36.48	35.88
6.00	36.47	36.19	34.78	35.70	36.07	36.47	34.47	33.92	36.13	36.04	35.55	36.25	36.33	Niskin	36.48	35.88
6.50	36.47	36.19	34.79	35.72	36.07	36.47	34.52	33.92	36.13	36.09	35.55	36.26	36.33	Niskin	36.48	35.88
7.00	36.47	36.19	34.80	35.73	36.07	36.47	34.70	33.92	36.13	36.15	35.55	36.27	36.33	Niskin	36.48	35.88
7.50	36.47	36.19	34.80	35.76	36.07	36.47	34.83	33.92	36.13	36.24	35.55	36.27	36.33	Niskin	36.48	35.88
8.00	36.47	36.19	34.81	35.79	36.07	36.47	34.88	33.92	36.13	36.25	35.55	36.29	36.33	Niskin	36.48	35.88
8.50	36.47	36.18	34.81	35.79	36.07	36.47	34.90	33.92	36.13	36.26	35.55	36.31	36.33	Niskin	36.48	35.88
9.00	36.47	36.18	34.81	35.79	36.07	36.47	34.57	33.93	36.13	36.26	35.55	36.33	36.33	Niskin	36.48	35.88
9.50	36.47	36.17	34.82	35.79	36.07	36.47	34.49	33.94	36.13	36.25	35.55	36.34	36.33	Niskin	36.49	35.88
10.00	36.47	36.17	34.86	35.79	36.07	36.47	34.97	33.95	36.13	36.25	35.55	36.31	36.33	Niskin	36.49	35.88
10.50	36.47	36.17	34.97	35.79	36.07	36.47	34.88	33.96	36.13	36.25	35.55	36.29	36.32	Niskin	36.48	35.88
11.00	36.47	36.17	34.99	35.79	36.07	36.47	35.01	33.98	36.13	36.25	35.55	36.30	36.33	Niskin	36.49	35.88
11.50	36.47	36.17	35.03	35.79	36.07	36.47	35.16	34.02	36.13	36.25	35.55	36.31	36.33	Niskin	36.50	35.88
12.00	36.47	36.17	35.12	35.79	36.07	36.47	35.31	34.39	36.13	36.25	35.55	36.34	36.31	Niskin	36.48	35.88
12.50	36.47	36.17	35.17	35.79	36.08	36.47	35.40	34.45	36.13	36.25	35.55	36.35	36.32	Niskin	36.48	35.88
13.00	36.47	36.17	35.23	35.79	36.08	36.47	35.45	34.42	36.13	36.24	35.55	36.36	36.32	Niskin	36.48	35.88
13.50	36.47	36.16	35.35	35.80	36.08	36.47	35.47	34.52	36.13	36.24	35.55	36.36	36.33	Niskin	36.48	35.88
14.00	36.47	36.16	35.47	35.80	36.08	36.47	35.49	34.67	36.13	36.24	35.56	36.37	36.32	Niskin	36.48	35.88
14.50	36.47	36.16	35.52	35.80	36.08	36.47	35.56	34.75	36.13	36.24	35.58	36.38	36.32	Niskin	36.48	35.88
15.00	36.47	36.16	35.56	35.80	36.08	36.47	35.65	34.81	36.13	36.22	35.58	36.39	36.33	Niskin	36.47	35.88
15.50	36.47	36.15	35.73	35.81	36.08	36.47	35.72	34.85	36.13	36.21	35.60	36.40	36.33	Niskin	36.47	35.88
16.00	36.47	36.15	35.84	35.81	36.08	36.46	35.75	34.90	36.13	36.23	35.61	36.41	36.33	Niskin	36.47	35.88
16.50	36.47	36.16	35.86	35.81	36.08	36.46	35.80	34.97	36.13	36.24	35.61	36.41	36.33	Niskin	36.47	35.88
17.00	36.47	36.17	35.87	35.82	36.08	36.46	35.80	35.03	36.13	36.24	35.61	36.41	36.33	Niskin	36.47	35.88
17.50	36.47	36.16	35.87	35.84	36.08	36.46	35.79	35.07	36.13	36.24	35.60	36.41	36.33	Niskin	36.49	35.88
18.00	36.47	36.16	35.89	35.93	36.08	36.46	35.79	35.11	36.13	36.24	35.61	36.42	36.33	Niskin	36.47	35.88
18.50		36.15	35.91	35.98		36.46	35.78	35.15		36.24	35.62	36.42	36.33	Niskin	36.50	35.88
19.00		36.15	35.95			36.46	35.79	35.20		36.24	35.62	36.42	36.32	Niskin	36.48	35.88
19.50		36.14	35.99			36.46	35.78	35.24		36.24	35.62	36.42	36.33	Niskin	36.47	35.88
20.00						36.46	35.77	35.28		36.24	35.62	36.44	36.33	Niskin	36.47	35.88

Appendix 24. Dissolved oxygen (ml/L) profiles at Stetson Bank, 2015–2018.

Depth (m)	Feb-15	May-15	Sep-15	Oct-15	Nov-15	Feb-16	May-16	Aug-16	Nov-16	Feb-17	May-17	Aug-17	Oct-17	Apr-18	Aug-18	Oct-18
1.00	No data	No data	4.31	4.53	4.57	4.74	4.46	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.43	4.79	Niskin	4.99	4.51
1.50	No data	No data	4.37	4.54	4.57	4.89	4.51	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.43	4.50	Niskin	4.99	4.51
2.00	No data	No data	4.37	4.53	4.57	4.91	4.48	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.43	3.94	Niskin	5.01	4.54
2.50	No data	No data	4.36	4.54	4.57	4.90	4.47	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.43	4.06	Niskin	5.02	4.50
3.00	No data	No data	4.37	4.54	4.57	4.91	4.48	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.43	4.14	Niskin	5.01	4.49
3.50	No data	No data	4.40	4.55	4.58	4.93	4.48	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.43	4.20	Niskin	5.03	4.47
4.00	No data	No data	4.39	4.54	4.57	4.92	4.47	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.43	4.41	Niskin	5.02	4.47
4.50	No data	No data	4.37	4.54	4.57	4.92	4.46	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.43	4.43	Niskin	5.01	4.48
5.00	No data	No data	4.35	4.54	4.58	4.93	4.49	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.43	4.45	Niskin	5.02	4.47
5.50	No data	No data	4.34	4.54	4.58	4.93	4.50	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.43	4.42	Niskin	5.02	4.48
6.00	No data	No data	4.35	4.54	4.58	4.92	4.48	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.42	4.41	Niskin	5.02	4.47
6.50	No data	No data	4.37	4.55	4.57	4.92	4.48	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.42	4.41	Niskin	5.04	4.48
7.00	No data	No data	4.37	4.55	4.57	4.91	4.51	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.42	4.42	Niskin	5.04	4.47
7.50	No data	No data	4.35	4.54	4.57	4.92	4.50	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.43	4.38	Niskin	5.03	4.48
8.00	No data	No data	4.34	4.54	4.57	4.92	4.50	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.44	4.39	Niskin	5.02	4.48
8.50	No data	No data	4.33	4.55	4.57	4.93	4.50	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.46	4.39	Niskin	5.03	4.47
9.00	No data	No data	4.34	4.54	4.57	4.93	4.49	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.44	4.40	Niskin	5.03	4.47
9.50	No data	No data	4.34	4.54	4.57	4.93	4.48	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.46	4.37	Niskin	5.02	4.48
10.00	No data	No data	4.34	4.54	4.57	4.92	4.50	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.45	4.37	Niskin	5.04	4.49
10.50	No data	No data	4.33	4.55	4.56	4.92	4.49	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.44	4.38	Niskin	5.04	4.48
11.00	No data	No data	4.33	4.54	4.57	4.92	4.51	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.44	4.38	Niskin	5.03	4.47
11.50	No data	No data	4.33	4.55	4.57	4.92	4.52	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.45	4.38	Niskin	5.05	4.49
12.00	No data	No data	4.32	4.54	4.57	4.93	4.53	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.45	4.38	Niskin	5.06	4.48
12.50	No data	No data	4.32	4.53	4.55	4.92	4.52	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.46	4.38	Niskin	5.05	4.49
13.00	No data	No data	4.32	4.53	4.54	4.93	4.53	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.46	4.38	Niskin	5.07	4.48
13.50	No data	No data	4.32	4.53	4.53	4.93	4.53	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.45	4.36	Niskin	5.06	4.48
14.00	No data	No data	4.32	4.54	4.55	4.92	4.53	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.46	4.38	Niskin	5.06	4.49
14.50	No data	No data	4.32	4.55	4.54	4.93	4.54	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.47	4.38	Niskin	5.05	4.48
15.00	No data	No data	4.32	4.54	4.53	4.93	4.52	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.48	4.37	Niskin	5.06	4.48
15.50	No data	No data	4.31	4.55	4.53	4.93	4.53	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.46	4.36	Niskin	5.05	4.48
16.00	No data	No data	4.32	4.55	4.53	4.93	4.57	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.47	4.37	Niskin	5.07	4.48
16.50	No data	No data	4.32	4.54	4.52	4.94	4.58	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.48	4.36	Niskin	5.06	4.48
17.00	No data	No data	4.32	4.55	4.52	4.94	4.57	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.48	4.36	Niskin	5.05	4.49
17.50	No data	No data	4.32	4.55	4.51	4.93	4.57	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.48	4.36	Niskin	5.07	4.49
18.00	No data	No data	4.32	4.56	4.51	4.93	4.60	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.50	4.35	Niskin	5.08	4.48
18.50	No data	No data	4.32	4.57		4.93	4.59	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.49	4.35	Niskin	5.14	4.49
19.00	No data	No data	4.32			4.93	4.60	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.50	4.36	Niskin	5.15	4.49
19.50	No data	No data	4.32			4.93	4.59	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.51	4.35	Niskin	5.14	4.48
20.00	No data	No data	4.32			4.92	4.60	Bad sensor	Bad sensor	Bad sensor	Bad sensor	4.53	4.36	Niskin	5.14	4.48

Appendix 25. pH (eu) profiles at Stetson Bank, 2015–2018.

Depth (m)	Feb-15	May-15	Sep-15	Oct-15	Nov-15	Feb-16	May-16	Aug-16	Nov-16	Feb-17	May-17	Aug-17	Oct-17	Apr-18	Aug-18	Oct-18
1.00	No data	No data	8.17	8.17	8.11	8.13	8.15	8.07	8.17	7.95	8.04	8.03	7.67	Niskin	8.35	Bad sensor
1.50	No data	No data	8.17	8.17	8.11	8.13	8.15	8.06	8.16	7.94	8.04	8.03	7.75	Niskin	8.35	Bad sensor
2.00	No data	No data	8.17	8.17	8.11	8.12	8.15	8.05	8.16	7.94	8.03	8.03	7.79	Niskin	8.35	Bad sensor
2.50	No data	No data	8.17	8.17	8.11	8.12	8.15	8.05	8.16	7.93	8.03	8.03	7.90	Niskin	8.36	Bad sensor
3.00	No data	No data	8.17	8.17	8.11	8.12	8.15	8.05	8.16	7.93	8.02	8.02	7.90	Niskin	8.36	Bad sensor
3.50	No data	No data	8.17	8.17	8.11	8.12	8.15	8.05	8.16	7.93	8.02	8.02	7.91	Niskin	8.36	Bad sensor
4.00	No data	No data	8.17	8.17	8.11	8.12	8.15	8.05	8.16	7.93	8.02	8.02	7.96	Niskin	8.36	Bad sensor
4.50	No data	No data	8.17	8.17	8.11	8.12	8.15	8.05	8.16	7.93	8.02	8.02	7.96	Niskin	8.36	Bad sensor
5.00	No data	No data	8.17	8.17	8.11	8.12	8.15	8.05	8.16	7.92	8.02	8.02	7.96	Niskin	8.36	Bad sensor
5.50	No data	No data	8.17	8.17	8.11	8.12	8.15	8.05	8.16	7.92	8.02	8.02	7.96	Niskin	8.36	Bad sensor
6.00	No data	No data	8.17	8.17	8.11	8.12	8.15	8.04	8.16	7.92	8.02	8.02	7.96	Niskin	8.36	Bad sensor
6.50	No data	No data	8.17	8.17	8.11	8.12	8.15	8.04	8.16	7.92	8.02	8.02	7.96	Niskin	8.36	Bad sensor
7.00	No data	No data	8.17	8.17	8.11	8.12	8.15	8.04	8.16	7.91	8.01	8.02	7.97	Niskin	8.35	Bad sensor
7.50	No data	No data	8.17	8.17	8.11	8.12	8.15	8.04	8.16	7.91	8.01	8.02	7.97	Niskin	8.36	Bad sensor
8.00	No data	No data	8.17	8.17	8.11	8.12	8.15	8.04	8.16	7.90	8.01	8.02	7.96	Niskin	8.35	Bad sensor
8.50	No data	No data	8.17	8.17	8.11	8.12	8.15	8.04	8.16	7.90	8.01	8.02	7.97	Niskin	8.35	Bad sensor
9.00	No data	No data	8.17	8.17	8.11	8.12	8.14	8.04	8.16	7.90	8.01	8.02	7.97	Niskin	8.35	Bad sensor
9.50	No data	No data	8.17	8.16	8.11	8.12	8.14	8.04	8.16	7.90	8.01	8.02	7.97	Niskin	8.35	Bad sensor
10.00	No data	No data	8.16	8.16	8.11	8.12	8.14	8.03	8.16	7.89	8.00	8.01	7.97	Niskin	8.35	Bad sensor
10.50	No data	No data	8.16	8.16	8.11	8.12	8.13	8.03	8.15	7.88	8.00	8.01	7.97	Niskin	8.35	Bad sensor
11.00	No data	No data	8.16	8.16	8.11	8.11	8.13	8.03	8.15	7.88	7.99	8.00	7.97	Niskin	8.35	Bad sensor
11.50	No data	No data	8.16	8.16	8.11	8.11	8.13	8.02	8.15	7.87	7.99	8.00	7.97	Niskin	8.35	Bad sensor
12.00	No data	No data	8.16	8.16	8.11	8.10	8.13	8.00	8.15	7.86	7.99	8.00	7.97	Niskin	8.35	Bad sensor
12.50	No data	No data	8.16	8.16	8.11	8.11	8.13	8.00	8.15	7.86	7.98	8.00	7.97	Niskin	8.35	Bad sensor
13.00	No data	No data	8.16	8.16	8.11	8.11	8.13	8.00	8.15	7.85	7.98	8.00	7.97	Niskin	8.35	Bad sensor
13.50	No data	No data	8.16	8.16	8.11	8.11	8.13	8.00	8.15	7.85	7.98	8.00	7.97	Niskin	8.36	Bad sensor
14.00	No data	No data	8.16	8.16	8.11	8.11	8.13	7.99	8.15	7.85	7.98	8.00	7.97	Niskin	8.35	Bad sensor
14.50	No data	No data	8.15	8.16	8.11	8.11	8.13	7.99	8.15	7.85	7.98	8.00	7.97	Niskin	8.36	Bad sensor
15.00	No data	No data	8.15	8.16	8.11	8.11	8.13	7.99	8.15	7.84	7.98	8.00	7.97	Niskin	8.35	Bad sensor
15.50	No data	No data	8.15	8.16	8.11	8.10	8.13	7.99	8.15	7.84	7.97	8.00	7.97	Niskin	8.36	Bad sensor
16.00	No data	No data	8.15	8.16	8.11	8.11	8.13	7.99	8.15	7.83	7.97	8.00	7.98	Niskin	8.35	Bad sensor
16.50	No data	No data	8.15	8.16	8.11	8.10	8.13	7.99	8.15	7.83	7.97	8.00	8.00	Niskin	8.36	Bad sensor
17.00	No data	No data	8.15	8.16	8.11	8.10	8.13	7.98	8.15	7.82	7.97	8.00	8.00	Niskin	8.36	Bad sensor
17.50	No data	No data	8.15	8.16	8.11	8.10	8.13	7.98	8.15	7.81	7.96	8.00	8.00	Niskin	8.35	Bad sensor
18.00	No data	No data	8.15	8.15	8.11	8.11	8.13	7.98	8.15	7.81	7.96	8.00	7.99	Niskin	8.35	Bad sensor
18.50	No data	No data	8.15	8.15		8.10	8.13	7.98		7.80	7.96	8.00	8.00	Niskin	8.35	Bad sensor
19.00	No data	No data	8.15			8.10	8.13	7.98		7.79	7.95	8.00	8.00	Niskin	8.35	Bad sensor
19.50	No data	No data	8.15			8.11	8.13	7.98		7.79	7.94	8.00	7.98	Niskin	8.35	Bad sensor
20.00	No data	No data	8.15			8.10	8.13	7.98		7.78	7.94	8.00	8.00	Niskin	8.35	Bad sensor

Appendix 26. Turbidity (ntu) profiles at Stetson Bank, 2015–2018.

Depth (m)	Feb-15	May-15	Sep-15	Oct-15	Nov-15	Feb-16	May-16	Aug-16	Nov-16	Feb-17	May-17	Aug-17	Oct-17	Apr-18	Aug-18	Oct-18
1.00	No data	No data	0.21	-0.12	-0.12	-0.12	0.12	0.02	-0.11	0.83	0.63	0.09	0.79	Niskin	0.72	0.64
1.50	No data	No data	-0.02	-0.12	-0.12	-0.12	0.05	-0.02	-0.11	0.85	0.66	0.08	0.79	Niskin	0.71	0.66
2.00	No data	No data	-0.08	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.84	0.66	0.08	0.79	Niskin	0.70	0.81
2.50	No data	No data	-0.08	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.83	0.63	0.08	0.95	Niskin	0.71	0.82
3.00	No data	No data	-0.07	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.83	0.63	0.09	1.03	Niskin	0.70	0.83
3.50	No data	No data	-0.10	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.83	0.63	0.09	1.04	Niskin	0.71	0.79
4.00	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.83	0.63	0.10	0.94	Niskin	0.73	0.79
4.50	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.83	0.63	0.08	1.08	Niskin	0.71	0.80
5.00	No data	No data	-0.11	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.83	0.63	0.09	1.12	Niskin	0.70	0.81
5.50	No data	No data	-0.10	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.83	0.63	0.09	0.95	Niskin	0.70	0.83
6.00	No data	No data	-0.10	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.83	0.63	0.10	0.83	Niskin	0.70	0.79
6.50	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.82	0.63	0.11	0.82	Niskin	0.70	0.80
7.00	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.80	0.63	0.09	0.81	Niskin	0.70	0.80
7.50	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.78	0.63	0.09	0.76	Niskin	0.69	0.82
8.00	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.78	0.63	0.09	0.76	Niskin	0.69	0.81
8.50	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.77	0.63	0.10	0.74	Niskin	0.69	0.80
9.00	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.78	0.62	0.09	0.74	Niskin	0.69	0.79
9.50	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.77	0.63	0.09	0.72	Niskin	0.69	0.80
10.00	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.77	0.63	0.10	0.72	Niskin	0.69	0.82
10.50	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.77	0.63	0.10	0.70	Niskin	0.69	0.84
11.00	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.11	0.77	0.63	0.10	0.70	Niskin	0.70	0.88
11.50	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.78	0.65	0.09	0.71	Niskin	0.70	0.82
12.00	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.77	0.64	0.09	0.70	Niskin	0.69	0.82
12.50	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.11	0.77	0.63	0.09	0.70	Niskin	0.69	0.82
13.00	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.76	0.63	0.09	0.71	Niskin	0.70	0.81
13.50	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.76	0.63	0.09	0.71	Niskin	0.69	0.81
14.00	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.76	0.63	0.09	0.72	Niskin	0.69	0.81
14.50	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.77	0.62	0.09	0.72	Niskin	0.69	0.81
15.00	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.11	0.76	0.63	0.09	0.73	Niskin	0.69	0.80
15.50	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.11	0.77	0.64	0.10	0.73	Niskin	0.69	0.82
16.00	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.11	0.79	0.64	0.10	0.72	Niskin	0.69	0.82
16.50	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.80	0.63	0.11	0.75	Niskin	0.69	0.80
17.00	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.82	0.63	0.11	0.71	Niskin	0.69	0.80
17.50	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	0.80	0.63	0.12	0.73	Niskin	0.70	0.79
18.00	No data	No data	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.11	0.82	0.63	0.12	0.73	Niskin	0.69	0.81
18.50	No data	No data	-0.12	-0.12		-0.12	-0.12	-0.12		0.88	0.63	0.11	0.72	Niskin	0.69	0.81
19.00	No data	No data	-0.12			-0.12	-0.12	-0.12		0.86	0.63	0.12	0.72	Niskin	0.69	0.80
19.50	No data	No data	-0.12			-0.12	-0.12	-0.12		0.90	0.63	0.13	0.73	Niskin	0.69	0.79
20.00	No data	No data	-0.12			-0.12	-0.12	-0.12		0.94	0.63	0.12	0.73	Niskin	0.70	0.79

Appendix 27. Fluorescence (mg/m<sup>3</sup>) profiles at Stetson Bank, 2015–2018.

Depth (m)	Feb-15	May-15	Sep-15	Oct-15	Nov-15	Feb-16	May-16	Aug-16	Nov-16	Feb-17	May-17	Aug-17	Oct-17	Apr-18	Aug-18	Oct-18
1.00	No data	No data	0.21	0.14	0.38	0.25	0.17	0.22	0.42	0.66	0.06	0.66	0.79	Niskin	0.12	5.01
1.50	No data	No data	0.20	0.16	0.37	0.22	0.17	0.10	0.43	0.67	0.04	0.66	0.79	Niskin	0.12	5.36
2.00	No data	No data	0.21	0.15	0.39	0.24	0.17	0.10	0.46	0.68	0.04	0.69	0.79	Niskin	0.13	2.52
2.50	No data	No data	0.21	0.16	0.38	0.25	0.16	0.10	0.47	0.61	0.04	0.66	0.79	Niskin	0.14	1.17
3.00	No data	No data	0.24	0.16	0.38	0.26	0.16	0.11	0.46	0.62	0.05	0.66	0.79	Niskin	0.14	0.94
3.50	No data	No data	0.29	0.16	0.37	0.25	0.17	0.11	0.49	0.63	0.05	0.65	0.79	Niskin	0.14	0.83
4.00	No data	No data	0.28	0.16	0.38	0.25	0.16	0.11	0.49	0.65	0.04	0.64	0.79	Niskin	0.13	0.84
4.50	No data	No data	0.28	0.17	0.41	0.28	0.16	0.10	0.49	0.62	0.04	0.64	0.79	Niskin	0.13	0.83
5.00	No data	No data	0.28	0.16	0.38	0.29	0.16	0.10	0.50	0.62	0.05	0.63	0.79	Niskin	0.13	0.83
5.50	No data	No data	0.28	0.17	0.37	0.29	0.16	0.10	0.49	0.59	0.05	0.63	0.79	Niskin	0.13	0.87
6.00	No data	No data	0.28	0.18	0.37	0.29	0.15	0.10	0.49	0.54	0.06	0.64	0.79	Niskin	0.14	0.84
6.50	No data	No data	0.27	0.18	0.37	0.29	0.16	0.11	0.50	0.51	0.05	0.64	0.79	Niskin	0.13	0.85
7.00	No data	No data	0.27	0.18	0.36	0.30	0.15	0.12	0.51	0.46	0.05	0.64	0.79	Niskin	0.13	0.83
7.50	No data	No data	0.27	0.19	0.36	0.32	0.14	0.10	0.51	0.38	0.06	0.63	0.79	Niskin	0.14	0.82
8.00	No data	No data	0.28	0.19	0.37	0.32	0.15	0.10	0.52	0.39	0.06	0.64	0.79	Niskin	0.13	0.83
8.50	No data	No data	0.28	0.20	0.37	0.33	0.14	0.12	0.51	0.42	0.05	0.64	0.79	Niskin	0.14	0.83
9.00	No data	No data	0.28	0.19	0.37	0.33	0.15	0.13	0.51	0.45	0.05	0.64	0.79	Niskin	0.13	0.83
9.50	No data	No data	0.28	0.21	0.37	0.33	0.15	0.13	0.52	0.44	0.05	0.64	0.79	Niskin	0.14	0.84
10.00	No data	No data	0.28	0.21	0.37	0.36	0.15	0.14	0.50	0.43	0.06	0.64	0.79	Niskin	0.14	0.82
10.50	No data	No data	0.28	0.19	0.36	0.37	0.14	0.14	0.51	0.46	0.06	0.64	0.79	Niskin	0.14	0.83
11.00	No data	No data	0.28	0.19	0.37	0.37	0.14	0.14	0.51	0.45	0.05	0.63	0.79	Niskin	0.14	0.85
11.50	No data	No data	0.28	0.21	0.37	0.39	0.13	0.14	0.49	0.43	0.06	0.64	0.79	Niskin	0.14	0.84
12.00	No data	No data	0.28	0.19	0.37	0.39	0.13	0.17	0.49	0.42	0.05	0.63	0.79	Niskin	0.15	0.83
12.50	No data	No data	0.29	0.20	0.37	0.42	0.13	0.18	0.52	0.42	0.06	0.63	0.79	Niskin	0.15	0.82
13.00	No data	No data	0.30	0.21	0.36	0.41	0.13	0.18	0.51	0.40	0.06	0.63	0.79	Niskin	0.13	0.82
13.50	No data	No data	0.29	0.21	0.36	0.41	0.13	0.19	0.49	0.40	0.06	0.64	0.79	Niskin	0.15	0.83
14.00	No data	No data	0.29	0.21	0.39	0.40	0.13	0.20	0.48	0.41	0.06	0.63	0.79	Niskin	0.14	0.82
14.50	No data	No data	0.28	0.22	0.40	0.42	0.13	0.20	0.50	0.40	0.08	0.63	0.79	Niskin	0.15	0.82
15.00	No data	No data	0.28	0.23	0.40	0.42	0.12	0.20	0.48	0.42	0.08	0.63	0.79	Niskin	0.15	0.83
15.50	No data	No data	0.28	0.23	0.40	0.42	0.12	0.20	0.45	0.42	0.09	0.64	0.79	Niskin	0.15	0.83
16.00	No data	No data	0.28	0.23	0.40	0.43	0.12	0.20	0.45	0.41	0.09	0.63	0.79	Niskin	0.15	0.83
16.50	No data	No data	0.28	0.22	0.40	0.45	0.12	0.22	0.46	0.42	0.10	0.63	0.79	Niskin	0.15	0.83
17.00	No data	No data	0.28	0.22	0.39	0.45	0.12	0.22	0.46	0.46	0.10	0.63	0.79	Niskin	0.15	0.82
17.50	No data	No data	0.28	0.23	0.40	0.44	0.12	0.23	0.44	0.43	0.09	0.63	0.79	Niskin	0.15	0.82
18.00	No data	No data	0.27	0.25	0.39	0.45	0.12	0.23	0.45	0.42	0.09	0.64	0.79	Niskin	0.16	0.83
18.50	No data	No data	0.28	0.26		0.47	0.13	0.24		0.43	0.09	0.63	0.79	Niskin	0.16	0.83
19.00	No data	No data	0.27			0.48	0.12	0.26		0.42	0.09	0.64	0.79	Niskin	0.16	0.83
19.50	No data	No data	0.27			0.48	0.13	0.27		0.41	0.09	0.64	0.79	Niskin	0.16	0.84
20.00	No data	No data	0.27			0.48	0.13	0.24		0.41	0.09	0.65	0.79	Niskin	0.16	0.83

Appendix 28. Nutrient results at Stetson Bank, 2015–2018. ND = no detect.

Sample	Date	Depth (m)	Ammonia (mg/L)	Chlorophyll-a (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Phosphorus (mg/L)	Nitrogen (mg/L)
SB Surface A	2/11/2015	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	2/11/2015	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	2/11/2015	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	2/11/2015	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	2/11/2015	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	2/11/2015	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	5/1/2015	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	5/1/2015	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	5/1/2015	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	5/1/2015	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	5/1/2015	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	5/1/2015	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	9/1/2015	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	9/1/2015	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	9/1/2015	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	9/1/2015	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	9/1/2015	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	9/1/2015	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	11/4/2015	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	11/4/2015	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	11/4/2015	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	11/4/2015	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	11/4/2015	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	11/4/2015	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	2/18/2016	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	2/18/2016	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	2/18/2016	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	2/18/2016	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	2/18/2016	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	2/18/2016	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	5/19/2016	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	5/19/2016	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	5/19/2016	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	5/19/2016	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	5/19/2016	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	5/19/2016	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	8/12/2016	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	8/12/2016	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	8/12/2016	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	8/12/2016	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	8/12/2016	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	8/12/2016	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	11/15/2016	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	11/15/2016	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	11/15/2016	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	11/15/2016	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	11/15/2016	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	11/15/2016	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	2/1/2017	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	2/1/2017	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	2/1/2017	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	2/1/2017	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	2/1/2017	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	2/1/2017	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	5/8/2017	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	5/8/2017	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	5/8/2017	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	5/8/2017	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	5/8/2017	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	5/8/2017	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	8/23/2017	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	8/23/2017	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	8/23/2017	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	8/23/2017	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	8/23/2017	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	8/23/2017	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	10/31/2017	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	10/31/2017	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	10/31/2017	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	4/24/2018	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	4/24/2018	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	4/24/2018	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	4/24/2018	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	4/24/2018	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	4/24/2018	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	8/17/2018	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	8/17/2018	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	8/17/2018	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	8/17/2018	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	8/17/2018	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	8/17/2018	19.00	ND	ND	ND	ND	ND	ND
SB Surface A	10/30/2018	1.00	ND	ND	ND	ND	ND	ND
SB Surface B	10/30/2018	1.00	ND	ND	ND	ND	ND	ND
SB Mid-Water A	10/30/2018	10.00	ND	ND	ND	ND	ND	ND
SB Mid-Water B	10/30/2018	10.00	ND	ND	ND	ND	ND	ND
SB Reef Cap A	10/30/2018	19.00	ND	ND	ND	ND	ND	ND
SB Reef Cap B	10/30/2018	19.00	ND	ND	ND	ND	ND	ND

Appendix 29. Carbonate results at Stetson Bank, 2015–2018.

Date	Depth (m)	Salinity (psu)	Temp (oC)	pH_Total	Alkalinity ( $\mu\text{mol/kg}$ )	DIC ( $\mu\text{mol/kg}$ )	pH in situ	$\Omega$ aragonite	pCO <sub>2</sub> ( $\mu\text{atm}$ )	$\delta^{13}\text{C}$ (‰)
2/11/2015	9.00	36.64	19.56	8.04	2400.27	2082.08	8.12	3.44	334.23	
2/11/2015	4.50	36.65	19.57	8.06	2402.52	2079.93	8.14	3.58	317.61	
2/11/2015	1.00	36.65	19.59	8.03	2401.35	2083.46	8.11	3.42	338.59	
5/1/2015	19.63	36.16	23.17	8.04	2396.10	2077.68	8.07	3.53	381.28	
5/1/2015	10.00	36.17	23.29	8.04	2396.87	2078.74	8.07	3.53	383.72	
5/1/2015	1.00	35.95	23.85	8.04	2398.70	2077.75	8.06	3.52	393.63	
10/8/2015	18.93	35.93	27.54	8.07	2392.17	2050.90	8.03	3.76	419.64	
10/8/2015	9.05	35.79	27.49	8.07	2393.39	2053.46	8.03	3.74	421.60	
10/8/2015	1.01	35.66	27.42	8.08	2388.77	2051.80	8.05	3.86	403.21	
11/4/2015	17.88	36.08	25.73	8.06	2379.35	2052.12	8.05	3.66	399.92	
11/4/2015	9.01	36.07	25.72	8.06	2381.60	2053.48	8.05	3.69	395.78	
11/4/2015	1.36	36.07	25.73	8.07	2381.36	2050.27	8.06	3.70	393.55	
2/18/2016	20.31	36.46	20.40	8.04	2396.89	2090.62	8.11	3.47	347.10	
2/18/2016	10.25	36.47	20.59	8.04	2398.29	2089.08	8.11	3.47	349.80	
2/18/2016	1.29	36.47	20.65	8.04	2396.94	2087.81	8.10	3.47	351.50	
5/19/2016	18.76	35.78	24.61	8.04	2391.71	2068.76	8.04	3.48	408.60	0.26
5/19/2016	8.99	34.79	25.93	8.06	2363.39	2052.12	8.04	3.56	411.60	0.06
5/19/2016	1.55	33.95	26.37	8.06	2339.67	2035.27	8.04	3.52	414.85	-0.04
8/12/2016	21.05	35.36	30.13	8.07	2380.54	2037.50	8.00	3.77	462.00	
8/12/2016	11.14	33.98	30.76	8.09	2353.62	2024.56	8.00	3.84	453.30	
8/12/2016	1.38	33.43	30.81	8.09	2355.89	2026.56	8.01	3.83	454.60	
11/15/2016	17.65	36.13	26.39	8.07	2411.53	2058.59	8.04	3.70	408.28	
11/15/2016	9.29	36.13	26.38	8.08	2413.23	2057.51	8.06	3.84	389.27	
11/15/2016	1.28	35.84	26.40	8.09	2415.32	2047.37	8.07	3.86	381.19	
2/2/2017	20.95	36.26	20.32	8.05	2401.64	2086.07	8.12	3.53	335.95	0.82
2/2/2017	11.00	36.27	20.53	8.06	2403.91	2082.34	8.12	3.57	334.08	0.82
2/2/2017	2.05	35.86	20.09	8.06	2403.35	2082.06	8.14	3.60	322.93	0.68
5/8/2017	20.10	35.66	24.27	8.05	2409.48	2090.77	8.07	3.62	392.09	
5/8/2017	10.75	35.56	24.28	8.06	2408.64	2090.05	8.07	3.63	390.36	
5/8/2017	2.16	35.56	24.29	8.06	2412.01	2087.64	8.07	3.64	389.20	
8/23/2017	20.97	36.44	29.75	8.08	2403.02	2067.11	8.01	3.96	445.84	1.11
8/23/2017	10.61	36.27	30.42	8.09	2409.67	2068.81	8.01	4.02	452.57	1.11
8/23/2017	3.63	36.20	30.59	8.09	2410.19	2064.16	8.01	4.03	453.43	0.98
10/31/2017	22.08	36.33	26.18	8.08	2408.62	2066.70	8.06	3.87	387.83	
10/31/2017	11.66	36.32	26.18	8.09	2408.00	2062.97	8.07	3.89	384.34	
10/31/2017	3.26	36.32	26.24	8.09	2406.45	2063.27	8.07	3.91	383.03	
4/24/2018	20.00	36.74	21.80	8.03	2414.42	2104.12	8.08	3.44	378.49	
4/24/2018	10.00	36.74	21.80	8.03	2416.03	2101.94	8.08	3.45	376.19	
4/24/2018	2.00	36.73	21.90	8.03	2414.66	2104.59	8.08	3.44	381.27	
8/17/2018	1.44	36.49	30.44	8.07	2412.43	2072.50	7.99	3.90	473.71	1.07
8/17/2018	10.54	36.49	29.43	8.07	2415.52	2076.07	8.00	3.87	457.28	1.03
8/17/2018	20.93	36.47	28.79	8.07	2414.48	2069.19	8.01	3.84	444.21	1.17
10/30/2018	1.53	35.70	27.18	8.07	2396.57	2062.32	8.04	3.82	411.98	0.90
10/30/2018	10.00	35.88	27.19	8.08	2394.14	2062.70	8.04	3.83	410.58	0.92
10/30/2018	22.32	35.88	27.19	8.08	2394.43	2059.66	8.04	3.82	409.80	0.89