















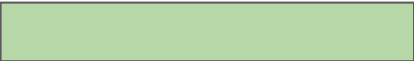









Indicator		Long term	Short term	Summary
1	Sea Surface Temperature			<ul style="list-style-type: none"> Surface temperature is increasing in all seasons with the largest rate of increase during the summer.
2	Marine Heatwaves*			<ul style="list-style-type: none"> Surface: mhw days increase following 2010. Bottom: mhw days show increase since 1990's.
3	Bottom Temperature			<ul style="list-style-type: none"> Bottom temperature has been increasing steadily since the 1970's.
4	Cold Pool^			<ul style="list-style-type: none"> Cold pool volume has been decreasing. Last decade shows dissipation before October.
5	Bottom Dissolved Oxygen*	N/A		<ul style="list-style-type: none"> Bottom DO highest during winter with decreases through spring and summer to lows during autumn.
6	Ocean Acidification Risk*	N/A		<ul style="list-style-type: none"> Aragonite saturation state varies seasonally and may impede development of longfin squid larvae.
7	Mean Wind Speed*			<ul style="list-style-type: none"> During Autumn wind speed has been increasing offshore but decreasing closer to shore
8	Stratification			<ul style="list-style-type: none"> Stratification anomaly shows no clear trend
9	Hudson River^			<ul style="list-style-type: none"> Hudson River flow shows a significant increasing linear trend since the 1950's
10	Salinity^			<ul style="list-style-type: none"> No significant trends in salinity
11	Global CO ₂			<ul style="list-style-type: none"> CO₂ has been increasing rapidly since the late 1800's
12	Surface 20C			<ul style="list-style-type: none"> Surface 20°C isotherm moving northward in summer and autumn bringing warmer waters into NYB.
13	Lobster Thermal Habitat			<ul style="list-style-type: none"> Greater than 95% of the NYB area provides hospitable lobster thermal habitat.

Indicator		Long term	Short term	Summary
14	Surface Chlorophyll ^a			<ul style="list-style-type: none"> Surface chlorophyll is on average lower in the summer months when the maximum is subsurface
15	Calanus finmarchicus			<ul style="list-style-type: none"> Calanus finmarchicus abundance has been increasing over the last three years.
16	Small/Large Copepod			<ul style="list-style-type: none"> Driven by the recent increase in C. finmarchicus the small/large copepod ratio has decreased
17	American Lobster			<ul style="list-style-type: none"> During the fall American Lobster has decreased in the long term but increased in the last three years
18	Jonah Crab			<ul style="list-style-type: none"> Jonah crab has decreased during the spring over the long term
19	Longfin Squid			<ul style="list-style-type: none"> Longfin squid has decreased during the spring but increased during the fall
20	Shortfin Squid			<ul style="list-style-type: none"> No significant trends in shortfin squid biomass
21	Forage Species			<ul style="list-style-type: none"> Forage species biomass has increased in the last three years during the fall
22	Aggregate Feeding Groups			<ul style="list-style-type: none"> Benthos have increased during the fall while piscivores have decreased during the fall
23	Total Trawl Biomass			<ul style="list-style-type: none"> Total trawl biomass has decreased during the fall
24	Black Sea Bass			<ul style="list-style-type: none"> Black sea bass biomass has increased, especially since 2010
25	Summer Flounder			<ul style="list-style-type: none"> Summer flounder have increased in both the spring and fall, especially since 2000
26	Northern to Southern Ratio			<ul style="list-style-type: none"> Northern to southern species ratio has decreased during the fall
27	Benthic to Pelagic Ratio			<ul style="list-style-type: none"> Benthic to Pelagic ratio has decreased during the fall
28	Fish Species Richness			<ul style="list-style-type: none"> Fish species richness has increased in both spring and fall in both the long and short term
29	Average Trophic Level			<ul style="list-style-type: none"> The average trophic level of the fish community has decreased during the fall
30	Temperature Preference			<ul style="list-style-type: none"> Temperature preference has increased several degrees in both spring and fall

Indicator		Long term	Short term	Summary
31	Commercial Harvest (KG)			<ul style="list-style-type: none"> From a high in the early 1960s the commercial harvest has been on a decline
32	Commercial Harvest (USD)			<ul style="list-style-type: none"> The commercial landings value has increased since the 1950s, but decreased in the last three years
33	Recreational Harvest			<ul style="list-style-type: none"> The recreational harvest has decreased, and the percent released increased, since 1980s
34	Recreational Effort*			<ul style="list-style-type: none"> Recreational effort shows a linear increase, with a decrease in recent years.
35	Vessel Density*			<ul style="list-style-type: none"> Fishing vessels peaked in 2016 and 2017. Most vessel types show longer track length in summer.
36	Human Population			<ul style="list-style-type: none"> Population has been on the rise since the 1980s.
37	Sea Level Rise Risk			<ul style="list-style-type: none"> Long island communities are at risk from sea level rise and storm surge.

Indicator		Summary of Ongoing Development
2	Marine Heatwaves	<ul style="list-style-type: none"> Bottom marine heatwaves have been added using the GLORYS12 dataset
4	Cold Pool	<ul style="list-style-type: none"> Continuing effort to better incorporate glider data for more immediate cold pool analysis
5	Bottom Dissolved Oxygen	<ul style="list-style-type: none"> Bottom DO is now summarized by the mean value for each cruise
6	Ocean Acidification Risk	<ul style="list-style-type: none"> Percent area under aragonite saturation thresholds more directly links acidification with biological implications
9	Hudson River	<ul style="list-style-type: none"> Examining salinity and winds in the NYB may better constrain this freshwater input
10	Salinity	<ul style="list-style-type: none"> We aim to focus in on continuous observational campaigns such as Seawolf, and glider
14	Surface Chlorophyll	<ul style="list-style-type: none"> Glider and Seawolf data will be used to identify the subsurface chlorophyll missed by surface measurements
	Whale Body Condition	<ul style="list-style-type: none"> Drone measurements estimate whale body volume to describe health, resource availability, and stressors.
	Odontocete Strandings	<ul style="list-style-type: none"> Increase (decrease) in the proportion of strandings by warm (cold) water species
34	Recreational Effort	<ul style="list-style-type: none"> Recreational Effort Indicator is new for this report.
35	Vessel Density	<ul style="list-style-type: none"> Vessel Density Indicator is new for this report

	Winter
	Spring
	Summer
	Fall

Transect 6		Transect 7
	1.7	
	1.5	
	1.1	

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