

Objective	Indicator	Longer description/source	Primary Contact	Timing	Ongoing production planned?	Permission to use	Use
1	OFL, ABC, TACs (HCLs)	Time series of the sum of yield, OFL, ABC, TACs (HCLs) for both groundfish and crab	Jim Ianelli				
1	Species distribution shifts	Given fixed boundaries, species distribution shifts relative to environmental conditions could affect reference points for fisheries management	Jim Ianelli?	To be developed			
2	Area impacted by trawls	Fishery footprint (trawling areas) as potential impact on epifauna/infauna (may belong under 6 or 7?)	EBS ESR (Olson)				
2	Forage species composite	Forage species composite trends; include relative observation errors and availability.		To be developed			
2	Non-targets composite	Non-target species composite trends; include relative observation errors and availability.		To be developed			
2	Non-targets (eelpouts, poachers, seastars)	"Miscellaneous species" from bottom trawl survey	EBS ESR (Britt)				
2	Non-targets (jellies, epifauna, inverts)	Time trends of non-targets from groundfish fisheries	EBS ESR (Whitehouse)				
3	FSSI	Fish Stock Sustainability Index	EBS ESR (Whitehouse)				
3	BTS CPUE/biomass by guild	Bulk BTS CPUE/biomass by guild (could we use Mueter's ASP for now?)		To be developed			
3	Species richness	Species richness from BTS	EBS ESR (Mueter)				
3	Spatial distribution of groundfish stocks	Spatial distribution of groundfish stocks from BTS	EBS ESR (Mueter)				
3	Mean lifespan	Mean lifespan of the fish community from BTS	EBS ESR (Whitehouse)				
3	Stability of groundfish biomass	Stability of groundfish biomass $1/CV(\text{biomass})$ where CV is from (a minimum of 10 year) time series (from BTS)	EBS ESR (Whitehouse)				

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4	Mean length of groundfish	Length-weighted AFSC BTS	Andy Whitehouse	Annually October, for ESR	yes	Yes	Maintaining length-structure in the ecosystem ensures continuity of foraging relationships, especially if the removal of large fish pushes the system from piscivory to planktivory.
5	Mean lifespan of groundfish	Proxy for mean turnover rate of groundfish/ AFSC BTS	Andy Whitehouse	Annually October, for ESR	yes	Yes	
5	Stability of groundfish biomass	Measure of stability and resistance to perturbations/ AFSC BTS	Andy Whitehouse	Annually October, for ESR	yes	Yes	
5	Trophic guild biomass index	Ecosystem trophic structure/ AFSC BTS	Andy Whitehouse	Annually October, for ESR	yes	Yes	
5	Local species richness and diversity	Species richness and Shannon Index/ AFSC BTS	Franz Mueter	Annually October, for ESR			
5	Trophic level of the catch						

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6	fishing effects model	SASI model in conjunction with ESRs	EBS ESR (Olson)				
6	EFH 5-year review	update EFH maps with species distribution models of bottom trawl survey	NOAA	5 years			
6	Alaska EFH mapper	NMFS AKR Habitat Conservation Division resource	NOAA				
7	regional swept area ratio	regional swept area ratio of bottom trawling using VMS and logbooks, Swept Area Seabed Impacts Model SASI	NOAA	5 year cycle (?)			
7	changes in ice cover	NOAA climate program office, US National Ice Center, National Snow and Ice Data Center	NOAA	annual			
7	coral surveys	NOAA habitat Conservation Alaska deep-sea coral and sponge initiative	NOAA	2020-2023			
8	species vulnerability	number of seabird and marine mammal species that meet or exceed vulnerable status on IUCN	IUCN	annual	yes		yes
8	species trends over time, bycatch, mammals	NOAA marine mammal stock assessments	NOAA	annual	yes		yes
8	stranding rates, birds	beached birds surveys (other potential sources are seabird pop survey info from USFWS and fisheries bycatch information from NMFS which are already in the ESRs)	COASST	annual	yes		yes
8	stranding rates, mammals	marine mammal stranding networks	NOAA	annual	yes		yes
8	subsistence take, mammals	IWC annual counts of total subsistence take trends	IWC	annual	yes		yes

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15	Cumulative number of climate tipping points		TBD - new	Hopefully annual		
16	EBM/Climate MOUs	Number (or % of those reviewed) of collaborative/cooperative agreements (MOUs) that include EBM and/or climate change objectives, track the number of initiations or expirations over time.	TBD - new	Hopefully annual		