

Table S7. Summary of key specifications of the EOVs, and the main drivers and pressures they address from international conventions. Complementary variables that are also Essential Biodiversity variables or EBVs (sensu Pereira et al., 2012*) are in blue. Complete specifications for each EOV can be found at: www.goosocean.org/eov.

EOV	Questions	Complementary variables	Derived products	Main drivers and pressures addressed (from Figure 2)
Phytoplankton biomass and diversity	<ul style="list-style-type: none"> -What are the status and trends of phytoplankton biomass and diversity in the ocean? -Have there been biogeographical or ecological shifts in phytoplankton species or communities? -What is their role in nutrient transport and cycling? -What is their role in modulating carbon storage in the oceans? -How can we predict the occurrence of Harmful algal blooms (HABs)? -Has there been a change in frequency, duration, or location of HABs? -How do we relate allelic diversity to pigment concentration and changes in ocean color? 	<ul style="list-style-type: none"> •Taxonomic diversity •Species distribution •Population abundance •Allelic diversity •Primary productivity •Phenology (bloom timing) •Pigment concentration (chlorophyll a, b, HPLC pigments) •Spectral reflectance (remote sensing) 	<ul style="list-style-type: none"> •Diversity indices, species richness, species evenness •Phytoplankton functional types •Harmful or beneficial algal bloom events (indices) •Global biogeography / spatial distribution •Carbon and nutrient cycling, storage, and export 	<p>Drivers:</p> <ul style="list-style-type: none"> •Sustainable use of biodiversity <p>Pressures:</p> <ul style="list-style-type: none"> •Pollution and eutrophication •Climate change
Zooplankton biomass and diversity	<ul style="list-style-type: none"> -What are the status and trends of zooplankton biomass and diversity in the ocean? -Have there been biogeographical or ecological shifts in zooplankton species or communities in response to perturbations, including climate change? -Has there been a change in the zooplankton community that would affect the transfer of productivity to higher trophic levels? 	<ul style="list-style-type: none"> •Taxonomic diversity •Species distribution •Population abundance •Population size/age structure •Secondary productivity •Phenology (life history timing) 	<ul style="list-style-type: none"> •Diversity indices, species richness, species evenness •Zooplankton functional types •Global biogeography / spatial distribution •Community size structure 	<p>Drivers:</p> <ul style="list-style-type: none"> •Sustainable use of biodiversity <p>Pressures:</p> <ul style="list-style-type: none"> •Pollution and eutrophication •Climate change •Loss of resources (extraction of krill)
Fish abundance and distribution	<ul style="list-style-type: none"> -What are the status and trends of fish diversity, distribution and abundance in the ocean? 	<ul style="list-style-type: none"> •Taxonomic diversity •Species distribution 	<ul style="list-style-type: none"> •Diversity indices, species richness, species evenness •Fish functional types 	<p>Drivers:</p> <ul style="list-style-type: none"> •Ecosystem based management

	<ul style="list-style-type: none"> -Have there been changes in fish assemblage trophic properties? -Have there been biogeographical or ecological and/or spatial shifts in the fish community in response to perturbations, including climate change? -Have there been changes in species size and/or their functional roles? -Have there been changes in fish recruitment and/or stocks productivity? 	<ul style="list-style-type: none"> ·Population abundance (and/or density, biomass) ·Population size/age structure ·Phenology ·Demographic traits 	<ul style="list-style-type: none"> ·Global biogeography / spatial distribution ·Size-based indicators, including mean fish size, size spectra, and large fish indicators ·Food web indicators (including proportion of predatory fish) ·Fish production ·Fish habitat 	<ul style="list-style-type: none"> ·Sustainable use of biodiversity ·Biodiversity conservation <p>Pressures:</p> <ul style="list-style-type: none"> ·Loss of resources (extraction) ·Pollution and eutrophication ·Climate change
Sea turtle, seabird and marine mammal abundance and distribution	<ul style="list-style-type: none"> -What are the status and trends of sea turtle, seabird and marine mammal diversity, distribution and abundance in the ocean? -Have there been biogeographical or ecological shifts in these populations in response to perturbations, including climate change? -Have there been changes in population connectivity? 	<ul style="list-style-type: none"> ·Taxonomic diversity ·Species distribution ·Population abundance ·Population size/age structure ·Phenology ·Demographic traits ·Migratory behavior ·Repeated individual presence (tracking/resights) 	<ul style="list-style-type: none"> ·Diversity indices, species richness, species evenness ·Global biogeography / spatial distribution (hotspots, home range, utilization distribution relative to occupation of home range) ·Density (# individuals/area) ·Movement patterns ·Migration pathways ·Habitat maps ·Population status 	<p>Drivers:</p> <ul style="list-style-type: none"> ·Sustainable use of biodiversity ·Knowledge and data access <p>Pressures:</p> <ul style="list-style-type: none"> ·Pollution and eutrophication ·Climate change
Live coral	<ul style="list-style-type: none"> -What are the status and trends of live coral cover and coral (and its associated) diversity? -Are these declining and what are the causes of decline? -How are coral communities affected by severe events? -Can these recover, how much time would it take, and are there key enabling factors? -Are changes in coral extent and condition affecting fishes or other important species? -Has the incidence and diversity of coral disease and other conditions (e.g. bleaching) increased? 	<ul style="list-style-type: none"> ·Taxonomic diversity ·Species distribution ·Population abundance ·Population size/age structure ·Habitat physical structure ·Ecosystem extent and fragmentation ·Ecosystem composition by functional type ·Associated diversity (macroalgae, fishes and invertebrates) ·Coral condition (live, diseased, bleached, etc.) 	<ul style="list-style-type: none"> ·Global to local maps of coral distribution, cover and areal extent ·Inventories of coral diversity ·Coral condition ·Coral recruitment and size class distributions ·Coral reef habitat classifications, mapped layers ·Coral reef system health (with key fish, urchins, macroalgae) ·Maps and other indices of coral disease ·Convention indicators (Aichi Target 10, SDG 14.2/5, IPBES) 	<p>Drivers:</p> <ul style="list-style-type: none"> ·Sustainable use of biodiversity ·Threat prevention <p>Pressures:</p> <ul style="list-style-type: none"> ·Pollution and eutrophication ·Climate change ·Coastal development ·Loss of resources

<p>Macroalgal canopy cover</p>	<p>-What are the status and trends of macroalgal canopy cover and its associated diversity? -Have there been biogeographical and/or ecological shifts in these communities in response to climate change? -How are macroalgal communities affected by severe events? -Are changes in macroalgal extent and condition affecting fishes or other important species?</p>	<ul style="list-style-type: none"> •Taxonomic diversity •Species distribution •Population abundance •Population size/age structure •Primary productivity •Habitat physical structure (canopy height, stem density) •Ecosystem extent and fragmentation •Ecosystem composition by functional type •Associated diversity (fishes and invertebrates) •Plant condition (necrosis, fouling, grazing) 	<ul style="list-style-type: none"> •Global to local maps of macroalgal distribution, cover and areal (habitat) extent •Primary production •Contributions to “blue carbon” storage •Canopy health indices •Essential fish habitat extent 	<p>Drivers:</p> <ul style="list-style-type: none"> •Sustainable use of biodiversity •Ecosystem based management <p>Pressures:</p> <ul style="list-style-type: none"> •Climate change •Invasive species •Loss of resources
<p>Seagrass cover</p>	<p>-What are the status and trends of seagrass cover and its associated diversity? -Have there been biogeographical or ecological shifts in seagrass cover in response to perturbations, including climate change? -How are seagrass communities affected by severe events? -Are changes in seagrass extent and condition affecting fishes or other important species? -How does sequestered carbon in seagrass ecosystems respond to disturbance? -Are changes in seagrass extent and condition affecting shoreline stability?</p>	<ul style="list-style-type: none"> •Taxonomic diversity •Species distribution •Population abundance •Primary productivity •Habitat physical structure (canopy height, shoot density) •Ecosystem extent and fragmentation •Ecosystem composition by functional type •Associated diversity (macroalgae, fishes, and invertebrates) 	<ul style="list-style-type: none"> •Global to local maps of seagrass distribution, cover and areal extent •Primary and secondary production •Contributions to “blue carbon” storage •Essential fish habitat extent •Seagrass habitat fragmentation 	<p>Drivers:</p> <ul style="list-style-type: none"> •Food security •Ecosystem based management •Capacity building <p>Pressures:</p> <ul style="list-style-type: none"> •Climate change •Invasive species •Loss of resources •Pollution and eutrophication
<p>Mangrove cover</p>	<p>-What are the status and trends of mangrove cover and its associated diversity? -Have there been biogeographical or ecological shifts in mangrove cover in response to perturbations, including climate change?</p>	<ul style="list-style-type: none"> •Taxonomic diversity •Species distribution •Population abundance •Population size/age structure (trunk and seedling density by species) 	<ul style="list-style-type: none"> •Global to local maps of mangrove distribution, cover and areal extent •Above- and below-ground biomass 	<p>Drivers:</p> <ul style="list-style-type: none"> •Sustainable use of biodiversity •Sustainable development

	<ul style="list-style-type: none"> -Are changes in mangrove extent and condition affecting fishes or other important species? -How does sequestered carbon in mangrove ecosystems respond to disturbance? 	<ul style="list-style-type: none"> ·Habitat physical structure (canopy height, stem density, trunk girth) ·Ecosystem extent and fragmentation ·Ecosystem composition by functional type ·Associated diversity (fishes and invertebrates) 	<ul style="list-style-type: none"> ·Contributions to “blue carbon” storage ·Ecosystem gross and net primary production ·Carbon sequestration rate ·Fish and invertebrate productivity 	<p>Pressures:</p> <ul style="list-style-type: none"> ·Climate change ·Loss of resources ·Pollution and eutrophication
--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------

* Pereira HM, Ferrier S, Walters M et al. (2013b) Essential biodiversity variables. *Science*, **339**, 277–278.

