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<h2 style="margin: 0;">Ecological Condition Chapter</h2> <h3 style="margin: 0;">Section 1: Extent and Distribution of Ecological Systems</h3>

Forest Extent and Type

Reviewed by the Ecological Condition Group, both for inclusion in the Land chapter and for inclusion as a referenced indicator in the Ecological Condition chapter¹

Consensus Statements for the Indicator as a Land Indicator		
Overall recommendation	Include with modifications. (Rank: High)	
Critical modifications	The indicator needs to provide a better explanation of which forest lands are included, and provide examples of forest lands that are not included.	EPA included the indicator with modifications as detailed below. EPA has provided a detailed explanation of the types that were included and excluded explained in the text and figures.
Suggested modifications	Graphics are not displayed on a consistent temporal scale, although this may be due to the constraints of the FIA database. Standardization would facilitate comparison.	EPA has modified the display for consistency where the data were available to support them.
	If the data are adequate, extend Figure 4 to an earlier timeframe to provide longer-term trends.	Figure 4 (now figure 2) has been extended to 1953.
	In Figure 5, consider including 1907 data for comparison.	Figure 5, which addressed forest age classes, is no longer included. Age classes are now covered in the text.
Other comments	The species breakdown (e.g., Figure 4a) makes this a potentially useful indicator.	EPA has focused on the species breakdown in the revised indicator.

Consensus Statements for the Indicator as a Referenced Ecological Condition Indicator		
Overall recommendation	No consensus. (Rank: Medium)	

¹ The Ecological Condition reviewers ranked each indicator in terms of its importance to answering the question(s) it was proposed to answer. When ranking an indicator, the reviewers considered the indicator as it would be when revised according to the “critical” modifications listed in the “Consensus” table. The ranking is listed in the upper right-hand corner of the “Consensus” table. A “High” ranking represents the most important indicators. In cases where the reviewers recommended not including an indicator, they did not assign a rank, and these indicators are labeled NA.

Consensus Statements for the Indicator as a Referenced Ecological Condition Indicator		
	The reviewers disagree on the importance of this indicator as a descriptor of ecological condition. Several reviewers see the information as largely descriptive (e.g., a snapshot in time) and already incorporated within other indicators, and thus they feel the indicator should not be included in the ecological condition chapter. However, other comments emphasize the value of Figure 4 in disaggregating data by species/forest type.	EPA has revised the indicator to include more time trends and to put greater emphasis on forest type, which as the reviewers noted is more ecologically relevant.
Suggested modifications	Graphics are not displayed on a consistent temporal scale, although this may be due to the constraints of the FIA database. Standardization would facilitate comparison.	The intervals have been made consistent where the data were available to support them.
	If the data are adequate, extend Figure 4 to an earlier timeframe to provide longer-term trends.	Figure 4 (now figure 2) has been extended to 1953.
	In Figure 5, consider including 1907 data for comparison.	Figure 5, which addressed forest age classes, is no longer included. Age classes are now covered in the text.
Other comments	The species breakdown (e.g., Figure 4a) makes this a potentially useful indicator.	EPA has focused more attention on the species breakdown in the revised indicator.
	Aside from the species breakdown, the information in this indicator is already presented elsewhere in ROE. Other indicators use FIA data more effectively to project ecological function.	EPA has refocused the indicator on regional differences in forest extent and on trends in forest type and moved to the ecological condition chapter. The land indicators contain only overall forest extent based on land cover and land use class – a different approach than that used in this indicator.

Forest Pattern and Fragmentation

Reviewed by the Ecological Condition Group

Consensus Statements		EPA Response
Overall recommendation	Include with modifications. (Rank: High)	EPA included the indicator with modifications as detailed below.
Critical modifications	Display data by region. At the very least, use EPA regions, which are probably preferred for administrative reasons.	EPA considered this recommendation the data are now displayed by EPA Region

Consensus Statements		EPA Response
	The indicator would be strengthened by establishing a reference condition for forest fragmentation (by region). This reference condition may be historical/pre-settlement, or it may reflect another date for which we have methodological confidence. Note that several national maps of reference conditions have already been developed.	EPA considered this recommendation determined that other than potential natural vegetation, there do not appear to be any national baseline data for reference condition for this indicator. PNV may not reflect impacts of fires, blow-downs, and any pre-settlement management by Native Americans.
	To establish trends, future NLCD data will be required. The discussion of this indicator should emphasize the importance of continuing data collection, particularly the NLCD database. The reviewers encourage EPA and other federal government agencies to make every effort to guarantee future availability of the dataset. Assuming that EPA plans to use decadal development of NLCD, broad trends could develop through time, but would require many decades to develop robust trends.	EPA considered this recommendation and this has been noted in the indicator limitations.
Suggested modifications	It is also worthwhile to explore whether the data can be broken down by ecoregions.	EPA considered this recommendation determined that this may be valuable, and can be done, but in this version of the ROE, the smallest geographic division is EPA Regions.

Ecological Framework (Ecological Connectivity in EPA Region 4)

Reviewed by the Ecological Condition Group

Consensus Statements		EPA Response
Overall recommendation	Include with modifications. (Rank: High)	EPA included the indicator with modifications as detailed below.
Critical modifications	Clarify the overall purpose of the indicator. The indicator title is vague, and should be refined.	EPA has changed the title of the indicator (to Ecological Connectivity), and the importance and purpose clarified in the text.
	EPA should look critically at the “potential land-use change” component of the indicator. If it does not meet the criteria for an ROE indicator, this component should not be included.	On review, it does not meet the ROE criteria and that part of the indicator has been removed.

Consensus Statements		EPA Response
	The indicator should clarify what the “hubs and connections” metric is measuring (i.e., define these terms).	EPA has defined the terms have in the text.
	The indicator should explicitly define other ecological terms.	Other terms have been defined, and the ROE will have a glossary. The terms ecological integrity and ecological health have been omitted.
	The indicator should identify reference conditions – particularly a temporal reference point. This reference condition may be historical/pre-settlement, or it may reflect another date for which we have methodological confidence.	EPA was unable to find any such baselines that meet the ROE criteria.
	The indicator should clarify which data layers are included in each analysis, and identify any redundancies between layers.	EPA has demonstrated this in the write-up.
	To establish trends, future NLCD data will be required. The discussion of this indicator should emphasize the importance of continuing data collection, particularly the NLCD database. The reviewers encourage EPA and other federal government agencies to make every effort to guarantee future availability of the dataset. Assuming that EPA plans to use decadal development of NLCD, broad trends could develop through time, but would require many decades to develop robust trends.	The dependence on future NLCD data has been noted as a limitation of the indicator.

Relative Ecological Condition of Undeveloped Land

Reviewed by the Ecological Condition Group

Consensus Statements		EPA Response
Overall recommendation	Include with modifications. (Rank: High)	EPA included the indicator with modifications as detailed below.
Critical modifications	Display primary results from the three separate models for rarity, diversity, and self-sustainability (3 maps), unless EPA can develop a functional basis for creating a composite index.	The indicator now shows the three separate models, and no composite index.

Consensus Statements		EPA Response
	To establish trends, future NLCD data will be required. The discussion of this indicator should emphasize the importance of continuing data collection, particularly the NLCD database. The reviewers encourage EPA and other federal government agencies to make every effort to guarantee future availability of the dataset. Assuming that EPA plans to use decadal development of NLCD, broad trends could develop through time, but would require many decades to develop robust trends.	The appropriate text has been added to the limitations.
Suggested modifications	In the future, consider applying this analysis to built lands and agricultural lands.	EPA will consider doing so in a future edition of the ROE
	Identify appropriate spatial scale/resolution. Regardless of computational considerations, conduct a sensitivity analysis to determine the effects of choosing a particular pixel size. What is the influence of pixel size on results?	EPA will consider doing so in a future edition of the ROE

Section 2: Diversity and Biological Balance

Bird Populations

Reviewed by the Ecological Condition Group

Consensus Statements		EPA Response
Overall recommendation	Include with modifications. (Rank: High)	EPA included the indicator with modifications as detailed below.
Critical modifications	Be sure to clarify that the indicator is looking at the number of species with an increase in observations (index of abundance), not a change in the number of species.	EPA has clarified this in the text.
	In “What the Data Show,” be consistent with the graphic in terms of the use of percentages and/or numbers. If statistics are presented as percentages in text, actual numbers could be included in parentheses.	EPA has cited the percentages included in parentheses.
	When describing changes in population, use the term “substantial” rather than “significant” to avoid confusion with statistical significance (indicator uses 2/3 change as operational measure).	The term has been clarified in the text that the term does not necessarily imply statistical significance.

Fish Faunal Intactness

Reviewed by the Ecological Condition Group

Consensus Statements		EPA Response
Overall recommendation	Include with modifications. (Rank: High)	EPA included the indicator with modifications as detailed below.
Critical modifications	In addition to the present map, provide graphical representation of absolute numbers of extirpated species within a hydrologic unit code (HUC).	EPA added a second graphic to show the total numbers of native species originally present, which allows extirpated species to be determined by difference.
	<u>If</u> the source database includes alien species, provide a graphical representation of these numbers as well.	Although data on alien or invasive species are available, this would require a separate ROE indicator.

Non-Indigenous Species in the Estuaries of Oregon and Washington

Reviewed by the Ecological Condition Group

Consensus Statements		EPA Response
Overall recommendation	Include with modifications. (Rank: Medium)	EPA included the indicator with modifications as detailed below.
Critical modifications	The indicator needs a better definition of “exposed/minimally exposed.” Consider the extent to which the second graphic (which uses these terms) is really an important addition to the indicator.	EPA modified the text and Fig 249-2 legend to clearly define “exposed” and “minimally exposed.”
	For both figures, clarify how and why these particular bins were chosen.	EPA clarified the “how” and; the “why” required additional text. EPA has explained the reasoning in the references.

Consensus Statements		EPA Response
	<p>Explain several important limitations:</p> <ul style="list-style-type: none"> o It is important to make clear in the text that the experimental design is designed to represent the region, and representation of smaller spatial extents (e.g., estuaries) is limited. Note that the coastal EMAP survey <i>is</i> designed to allow data to be broken down by state. o Note that the annual EMAP survey is insensitive to seasonal variations. o Note the limitations of using a proportional index as an indicator. It might be beneficial to indicate the regional differences in the numbers of non-indigenous and indigenous species that went into the calculation of the index. 	<ul style="list-style-type: none"> o This has been made clear, but the write-up never refers to specific estuaries, only classes of estuaries. o The insensitivity to other seasons has been noted in the limitations. o The differences in ecological interpretation of absolute vs. proportional indices was discussed in Lee et al (2003) but cannot be addressed due to space limitations. There are no “regional” differences - all the data were from the Columbian Biogeographic Province.
	Consider other ways to display data, e.g., a frequency distribution, a cumulative frequency distribution, bins with numbers displayed, etc.	The numbers associated with the bins in the graphic will be available in the electronic version of the report.
	Use a less ambiguous term than “grab sampling,” which may be misunderstood by the public.	The term is used, but has been explicitly defined.
	Provide improved documentation to support this indicator (e.g., Henry Lee’s paper).	The paper will be available via a link to the indicator.

Section 3: Ecological Processes

Carbon Storage in Forests

Reviewed by the Ecological Condition Group

Consensus Statements		EPA Response
Overall recommendation	Include with modifications. (Rank: Medium)	EPA included the indicator with the modifications as detailed below.
Critical modifications	In the text, provide an indication of the importance of the forest carbon sink with respect to the overall U.S. carbon flux and carbon budget.	EPA has added context for the U.S. carbon flux.

Consensus Statements		EPA Response
	Clarify the extent to which “timberland” is representative of forest land as a whole.	EPA has added the extent of timberland as opposed to forested land.
Suggested modifications	To be more representative of the national carbon budget, expand the indicator to other land cover/land use types (e.g., agricultural, grasslands, urban) and other forest lands not covered by the current indicator or its data source (the FIA survey).	The data for ecosystems other than timberland still do not meet the ROE indicator criteria for comparability and representativeness.

Section 4: Critical Physical and Chemical Attributes

U.S. and Global Mean Temperature and Precipitation
Reviewed by the Ecological Condition Group and the Air Group

Ecological Condition Group Review

Consensus Statements		EPA Response
Overall recommendation	Include with modifications. (Rank: High)	EPA included the indicator with modifications as detailed below.
Critical modifications	Explain what the lighter lines on the graphics represent.	EPA included an explanation in the revised graphics.
	Provide an indication of whether the numerical trends in the graphics are statistically significant (i.e., are the slopes significantly different from zero?).	Trends that are not significant at the 95% confidence interval now are marked with an asterisk.
Suggested modifications	Consider whether there are ways to add information about annual maximum/minimum temperatures, which can be ecologically significant.	This would be useful, but there was insufficient time to make this modification to the indicator.

Air Group Review

Consensus Statements		EPA Response
Overall recommendation	Include with minor revisions.	EPA included the indicator with modifications as detailed below.
Critical modifications	None.	

Consensus Statements		EPA Response
Suggested modifications	As described in more detail below, the indicator write-up should provide a more detailed account of the underlying data and how trends in temperature and precipitation relate to the much larger issue of global climate change.	EPA has incorporated most of the suggestions and significant trends noted.
	The reviewers suggested that EPA make minor revisions to the figures and, where feasible, interpret the variability in trends observed across the different climatic regions.	
Other comments	For a more complete account of climate change issues, the reviewers recommended that EPA include additional indicators in ROE to track sea level rise and sea surface temperature.	Indicators for Sea Level and Sea Surface Temperature have been added to the ROE

Peer Review Comments on the Additional context on climate change

The peer reviewers agreed that the indicator write-up, by itself, provides a fairly incomplete account of how changes in temperature and precipitation fit into the bigger picture of climate change. For instance, the indicator text does not describe natural fluctuations in climate and anthropogenic pressures suspected of contributing to climate change. Further, the text provides no insights on the human health and environmental effects (both beneficial and detrimental) associated with climate change. The reviewers listed several potential effects that could be acknowledged, such as increased sea surface temperature, increased severity and frequency of storms, altered ozone formation processes, and increased vector-borne disease due to growing mosquito populations.

Peer Review Comments on Questions regarding the underlying data

The peer reviewers suggested several revisions to the indicator write-up to provide further insights on the underlying data set. First, some reviewers suggested that the write-up describe how monitoring stations were selected and explain why data on temperature and precipitation are presented for different time frames. Second, peer reviewers recommended that EPA elaborate upon (in the “Indicator Limitations” section) the significance of any biases introduced by changes in instrumentation (e.g., Is it possible that these changes account for most of the trends depicted in Figure 351-1 and Figure 351-2?). Finally, one peer reviewer wondered if the data trends for certain monitoring locations might be influenced by urbanization: some monitoring locations might have originally been sited in rural settings, but are now currently in populated areas due to urbanization. The indicator should explain if data were adjusted to account for urbanization or should acknowledge the uncertainties introduced by this possibility.

EPA Response

Additional context materials including many examples of direct and indirect effects of changes in temperature and precipitation have been included in the introduction to the indicator, and indicators of Sea Level and Sea Surface Temperature have been added to the ROE.

The indicator has been revised accepting many of the reviewers’ suggestions. Details surrounding the selection of monitoring sites and instrumentation are beyond the scope of the indicator, but more detail is provided in the associated QA form and references cited therein. In particular, the temperature datasets used have undergone quality control measures to correct for the effects of urbanization and other possible biases affecting the monitoring sites and/or the instrumentation.

Sea Level

Consensus Statements		
Decision	Include with modifications.	EPA included the indicator with modifications as detailed below.
Critical modifications	Relate this indicator to ecological effects (e.g., wetland loss, impacts on coastal communities). Include examples in the write-up of areas affected by sea level changes, perhaps by using case studies.	EPA has completed the citations. Case studies are not included in the ROE so that comment was not accepted.
	Discuss the appropriate time scales over which sea level trends can be justifiably interpreted. Emphasize that although the satellite data are more accurate, they are not as useful as the tidal gauge data for distinguishing between true climatic variability and episodic events because the satellite data have been collected for only a short time period.	The indicator states that temporal scale is an important factor in interpreting sea level trends.
	Consider whether Figure 353.2 adds value to the indicator discussion. If it is included in the ROE 2007, the write-up should explain the data shown (and explain apparent discrepancies between the data in Figures 353.1 and 353.2) and how it should be interpreted.	Figure 353.2 has been retained because it provides important spatial distribution information that is not intuitive to most readers. Explanation has been added to the text for the uneven spatial distribution over multi-decadal periods or longer.
	Include a more detailed description of the interaction between absolute sea level rise and subsidence to provide additional context for this indicator.	EPA attempted to clarify, though detail couldn't be added due to space limitations.
Suggested modifications	<i>Sea Level</i> should be viewed as an ambient condition indicator (affecting coastal communities and ecosystems).	The hierarchy level is not expressed explicitly anywhere in the indicators.
	Create a graphic depicting major cities or locations at risk and their respective rates of relative sea level rise (refer to a report that NOAA has compiled).	EPA could not accommodate the space required to adopt this suggestion.
Other comments	Rates of present and projected sea level rise could be plotted against measured vertical accretion rates for a number of wetlands to show the range of rates of sea level rise that can be sustained by different coastal wetlands.	EPA could not accommodate this suggestion. The ROE does not include projections. Also, national data on accretion rates are not available.

Peer Review Comments

The peer reviewers agreed that this indicator should be included in ROE 2007 if the critical changes are made. They felt that the indicator was useful in depicting the long-term effects of global climate change but emphasized that the effects of sea level rise are location-specific.

Much of their discussion focused on the need for EPA to link the indicator with these effects along with the causes for changes in sea level. The reviewers suggested that including a description of the full range of potential effects of

sea level change as well as regional examples would provide context for the indicator; areas such as the Florida Everglades, the California Bay-Delta, or the Mississippi Delta could be presented as case studies. These regional examples should rely on past data rather than modeled, forecasted data.

In addition, the reviewers stressed the need for EPA to distinguish between the time scales of the satellite data and tidal gauge data and to differentiate between the two datasets' ability to detect trends over these time scales.

Finally, the reviewers recommended that EPA reexamine Figure 353.2 and determine whether it adds value to the explanation of this indicator.

EPA Response

The EPA agrees with the recommendations, but is not able to accommodate them fully because of space limitations in the ROE. Figure 353.2 is retained in this indicator because it provides potentially important insights into the uneven spatial distribution of sea level heights over a multi-decadal period. Explanation of why this occurs has been added to the text.

Sea Surface Temperature

Consensus Statements		
Decision	Include with modifications.	EPA included the indicator with modifications as detailed below.
Critical modifications	Add a long-term dataset to this indicator, and explain that satellite data are more accurate, but they are available for too short a period of time to detect true trends in sea level temperature changes.	EPA substituted a long-term dataset. Satellite data were not used for this indicator, although a comparison of the data sets for the recent period shows very close correspondence between the in situ and satellite results.
	Include post-1998 NOAA/NASA data (Heinz Center) data when available. Extend the data from NOAA/NASA (Heinz Center depiction) in Figure 344-1, and place this figure after the figure based on long-term data to ensure it plays a less prominent role.	EPA adjusted the figure to show data from 1880 to 2005.
	Include examples of the ecological effects of sea surface temperature changes (e.g., mangrove community changes, northern movement of marine fishes, effects on upwelling and declines of Pacific salmon, coral reef expansion).	EPA added examples to the introduction section.
Suggested modifications	Complete a similar analysis for the coolest season of the year to determine whether seasonal minimums have increased. (If this analysis cannot be included in the ROE 2007, EPA should definitely include it in the subsequent ROE.)	EPA changed the analysis to display annual SST anomalies compared to average 1961-1990 climate.
	<i>Sea Surface Temperature</i> should be an ambient condition indicator, rather than an effects indicator.	The hierarchy level is not expressed explicitly anywhere in the indicators as the diagram will not be used in the ROE.

Consensus Statements		
Other comments	The satellite data will become more useful if they span a decade or more. Even then, however, this time scale is within the temporal scale of natural variability.	EPA agrees with the comment. This contributed to the use of a long-term data set, which provides more information on inter-decadal variability.
	The number of references/citations seems sparse, especially compared to those provided for <i>Sea Level</i> .	Additional references were included.

Peer Review Comments

The peer reviewers agreed that this indicator should be included in ROE 2007 if the critical modifications are made. The largest criticism of this indicator related to the short-term nature of the dataset; in a dataset of this length, temperature trends could be blurred by episodic events such as El Niño. Therefore, the most substantial modification offered by the reviewers was to include a long-term dataset in this indicator. While less accurate than the satellite data, the long-term data would allow for a better trend analysis. The reviewers suggested that EPA exclude Figure 344-1 from the ROE 2007 and include a graphic depicting the long-term temperature data instead. One reviewer stated that, although this indicator should be included in the report, it is not a good ecological indicator for the time period for which the data are available.

The reviewers advised EPA to continue using the satellite data, especially as the record length increases. Furthermore, the Agency should add the post-1998 Heinz Center data to the report. One reviewer suggested that EPA complete a similar analysis on the coolest season of the year to discern whether seasonal minimums, which can have dramatic effects on ecosystems, have increased. The reviewers also felt that EPA could provide additional context for this indicator by including examples of observed ecological effects, such as the effects of sea surface temperature on fish populations. Finally, in nearly all of the pre-meeting comments, the reviewers noted that the size of the graphs presented for this indicator prevented the reader from easily interpreting the scale and comparing the results across regions.

EPA Response

The EPA generally agrees and has, consequently, substituted a long-term data set that is highly consistent with the satellite data. In fact, for the past decade, the data set used for this indicator is used to calibrate the satellite measurements. The correspondence between the satellite data and those in this indicator is very high. The other changes in the indicator (i.e. using annual anomalies and global data) have allowed the indicator to be extended through 2005. Also, ecological effects have been identified in the introductory paragraph. The graphics will be improved to be more readable in preparation for publication.

Terrestrial Plant Growth Index

Reviewed by the Ecological Condition Group

Consensus Statements		EPA Response
Overall recommendation	Do not include. (Rank: NA)	Indicator will not be included

<p>Reasons for exclusion</p>	<ul style="list-style-type: none"> • The results are too ambiguous and not explained or, perhaps, unexplainable. If you cannot interpret the trends in the indicator with logical scientific process explanations, then it is a valid scientific question, but not a public environmental indicator. • NDVI is a crude measure of growth. Chlorophyll is only a correlate of productivity and not an actual measure of gross primary productivity. • High variance of the 13-year record makes interpretation questionable. The relative deviation of the Plant Growth Index (20-40%) without explanation during the period of analysis suggests that the indicator might lack the precision needed to assess national trends in productivity. Note that in the acid rain program, effects on NPP purported to occur in the range of 1% or less were presented as strong indications of major impacts. Similarly, projections of likely consequences of global climate change are based on annual changes of ~1%. Can an indicator that fluctuates some 40% ever help to understand consequences of such subtle annual shifts? Are there any efforts to ground-truth the remotely sensed projections? Clearly, this is not ready to be used to characterize trends in plant growth. • Conceptually this should be a good measure of chlorophyll and related processes such as biomass production and carbon dioxide uptake. The use of band rationing into the NDVI has a long record of effective use of satellite data linked to the biological production and carbon processing across diverse terrain and land covers. However, features of the indicator graphic, such as the extreme high in 1993 for grassland and the lower index for all covers in 1995–2000, then a sharp rise in 2001 and decline in 2002, do not show trends that are useful as an indicator of any of the ecological conditions in the ROE. • It is unclear why the indicator was calculated using political boundaries (counties) instead of a more science-based delineation of the landscape. • Methodological problems are numerous and largely unanswered. For example, there is some uncertainty concerning the meaning of the data given shifts in satellite orbit and chances of satellite failure. • The data are pre-processed with little or no access to the original data to develop an independent judgment of QA. • The Normalized Difference Vegetation Index is not clearly explained. • Continuity of use of NDVI is uncertain as there may be more suitable indices available.
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Threatened and Endangered Species

Reviewed by the Ecological Condition Group

Consensus Statements		EPA Response
Overall recommendation	Do not include. (Rank: NA)	Indicator will not be included
Reasons for exclusion	<ul style="list-style-type: none"> This is a Level 1 indicator (administrative). Thus it should not be included in ROE 06. The indicator reflects both administrative capacity and the listing process, but says little about the actual numbers of threatened or endangered species. Administrative, legal and political effects on the listing process make it difficult to sort out the adequacy of the indicator, and whether the trends, especially in the 1999-2002 period, are a true reflection of trends in biodiversity. The proposed indicator is very likely to suggest false interpretations. 	
Suggested alternatives	<ul style="list-style-type: none"> Discuss the absence of this indicator in the chapter text (e.g., as a data gap). 	

Forest Disturbance

Reviewed by the Ecological Condition Group

Consensus Statements		EPA Response
Overall recommendation	Do not include. (Rank: NA)	This indicator will not be included
Reasons for exclusion	<ul style="list-style-type: none"> As discussed extensively in the pre-meeting comments, the indicator is limited in many aspects of its coverage: temporally, spatially, and in types of disturbances. Ecological interpretation of disturbance patterns is difficult. In some cases, the lack of disturbance events (e.g., fires) may be ecologically detrimental. 	

Extent of Coral Reef Cover

Reviewed by the Ecological Condition Group

Consensus Statements		EPA Response
Overall recommendation	Do not include. (Rank: NA)	This indicator will not be included.
Reasons for exclusion	<ul style="list-style-type: none">• The indicator lacks calibration between methods and cannot adjust for methodological differences (quadrat versus transect).• The indicator does not identify data points collected with different methods (e.g., with different types of points on the graphic).• The indicator does not explain how sites were selected for sampling.• The indicator lacks a consistent analytical framework for adjusting for bias in geographic distribution and sampling method.	
Suggested alternatives	<ul style="list-style-type: none">• Indicate that this is an important area where EPA should work with other federal agencies to develop an appropriate indicator in the future.	