

Cumulative Impact Assessment for Marine Fisheries Actions

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What is required in a cumulative effects analysis?

- **National Environmental Policy Act (NEPA) Council on Environmental Quality implementing regulations:**
 - **“Cumulative impact” is the impact on the environment which results from the incremental impact of the action, when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (CEQ Reg 1508.7)**



Categories of Cumulative Effects

- **Go back to issues identified in NEPA project scoping**
- **CEQ 1500.4(c) Discussing only briefly issues other than significant ones**
- **CEQ 1502.2(b) Impacts shall be discussed in proportion to their significance. ...**



Effects Determinations

- **E+**

Effect beneficial

0

No Effect

- **E-**

Effect adverse



Effects Determination

<ul style="list-style-type: none">• E+	Effect beneficial
<ul style="list-style-type: none">• E-	No Effect Effect adverse



Reference Points – Application to Resource Issues

Reference Point	Application
Current population trajectory or harvest rate of subject species	(1) Marine mammals (2) Target commercial fish species (3) Incidental catch of non-specified species (4) Forage species (5) Prohibited species bycatch (6) ESA list Pacific salmon (7) Seabirds
Current size and quality of marine benthic habitat and other essential fish habitat	Marine benthic habitat and other essential fish habitat
Application of principles of ecosystem management	Ecosystem
Current management and enforcement activities	(1) State of Alaska managed fisheries (2) Management complexity and enforcement
Current rates of fishing accidents	Human safety and private property (vessels)



Making Cumulative Effects Analysis Useful

- What is required in a cumulative effects analysis, and why?**
- How do practitioners analyze cumulative effects?**
- What do decision makers need from the cumulative effects analysis?**
- How can we resolve the difference, if any, between what is done and what is needed?**



What is required, and why?

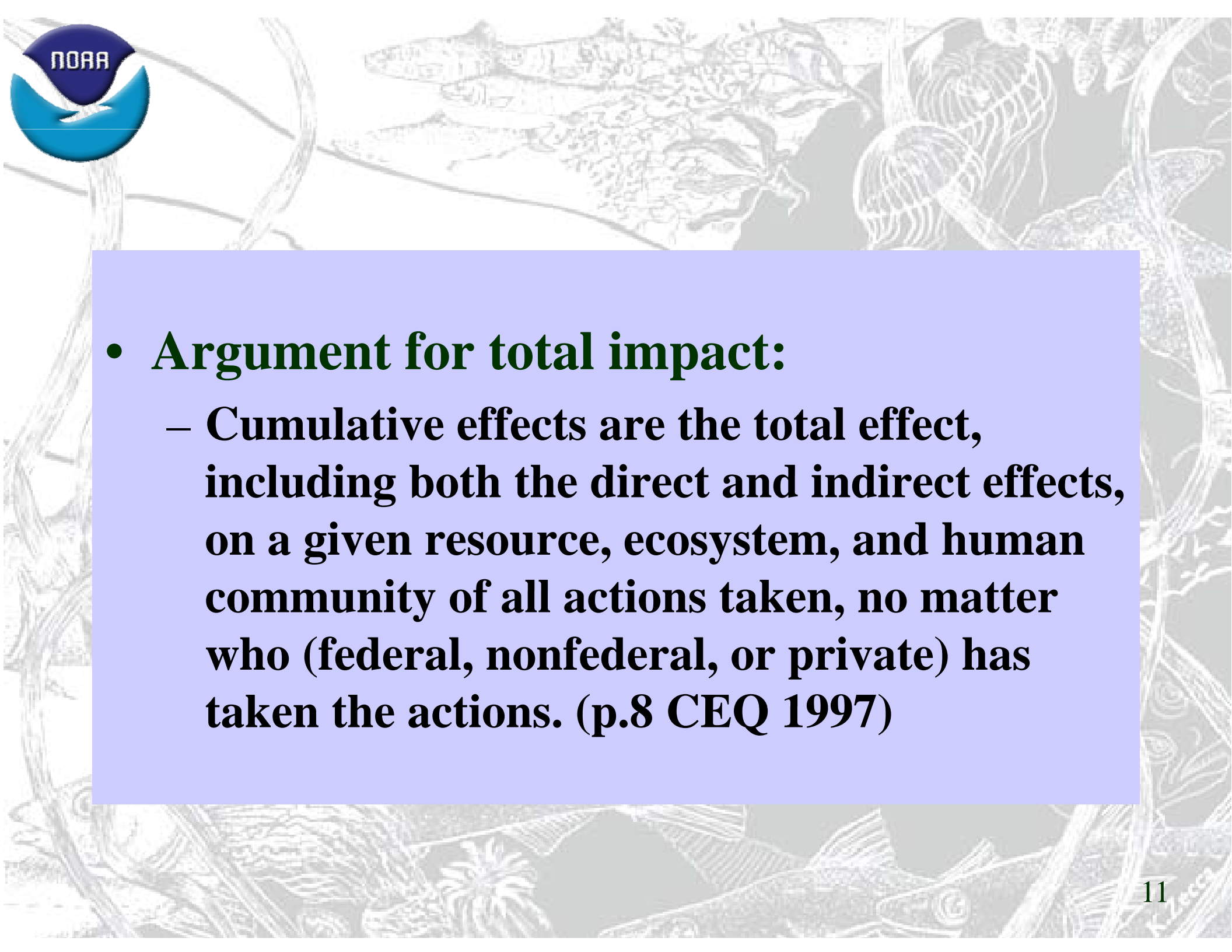
- **CEQ Guidelines Considering Cumulative Effects Under NEPA**
 - **The purpose of cumulative effects analysis, therefore, is to ensure that federal decisions consider the full range of consequences of actions. (p.3 CEQ 1997)**





What is required and why?

- **Ambiguity - Is the analyst being asked to assess:**
 - The **total impact** on the environment, including the past actions, present actions, the proposed action, and reasonably foreseeable future actions, or
 - The **incremental impact** of the action, given past actions, present actions, and reasonably foreseeable future impacts.



- **Argument for total impact:**
 - **Cumulative effects are the total effect, including both the direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (federal, nonfederal, or private) has taken the actions. (p.8 CEQ 1997)**



- **Argument for incremental impact:**
 - **The analyst’s primary goal is to determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative effects of other past, present, and future actions. (p.41 CEQ 1997)**
 - **The analysis should evaluate “both the total threshold beyond which the resource degrades to unacceptable levels and the incremental contribution of the proposed action to reaching that threshold” (p.17 EPA 1999)**

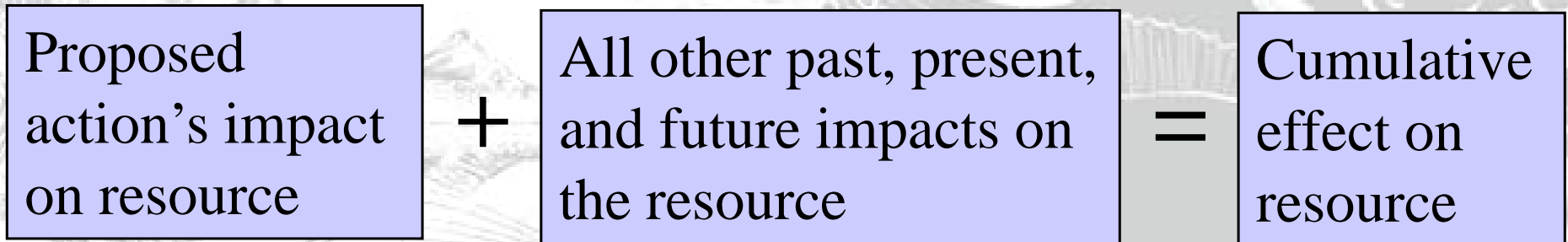
How do practitioners analyze cumulative effects?

- **Ambiguity in the guidelines has led agencies and many practitioners to conclude that the goal of cumulative effects analysis is to assess the total effect of past actions, the proposed action, and any reasonably foreseeable future actions on the environment**



How do practitioners analyze cumulative effects?

- **“total effects” methodology**





How do practitioners analyze cumulative effects?

- **Pros:**
 - Meets CEQ guidelines “total effects” (CEQ 1997)
 - Meets CEQ intent to assess impact of proposed action within context of other actions
- **Cons:**
 - Could shortchange the decision maker from understanding the full consequences of proposed action as doesn’t necessarily inform decision maker of the role the proposed action has in total effect



How do practitioners analyze cumulative effects?

- **Cons:**
 - In particular, the total effects methodology is less helpful when it comes to evaluating a proposed action that would take place within a dynamic environment exerting a strong influence on the impacted resources.



How do practitioners analyze cumulative effects?

- **Cons:**
 - **For example, an action that is beneficial for a resource may result in an adverse cumulative effects conclusion due to natural factors (e.g., regime shift changes).**
 - **Doesn't provide a basis for distinguishing among differing impacts of the alternatives (the degree of the proposed action's impacts' is small compared to the influence of external actions).**



What do decision makers need from the analysis?

Decision makers need:

- An understanding of impacts of the proposed action within the context of other ongoing actions impacting the affected resources**
- Awareness of potential interactions between the proposed action and other actions that may be beyond the agency jurisdiction**



What do decision makers need from the analysis?

Because:

- **The decision is about the proposed action, whether and how to do it.**
- **Analysis should help clarify the “full range of consequences” of the proposed action.**
- **Decision maker needs to understand the contribution of the proposed action to an eventual cumulative effect in order to be able to make an informed decision on the action.**



How can we resolve the difference between what is done and what is needed?

- The proposed action should be the focus of the cumulative effects analysis**
 - the incremental effects of the proposed action in contributing to the total effects on the resource**



How can we resolve the difference?

- **By extending the “total effects” methodology, can focus on the proposed action**

Baseline condition (including all past, present, and future impacts on resource), excludes the proposed action and any foreseeable future impacts that are dependent on the proposed action

+

Proposed action's foreseeable impacts on resource

=

Total effect on resource

difference = cumulative impact of the proposed action



How can we resolve the difference?

- **Primary difference in the extended methodology is the definition of a comprehensive baseline condition**
- **EPA (1999) guidance on the baseline:**
 - **The NEPA analysis should establish the magnitude and significance of cumulative impacts by comparing the environment in its naturally occurring [or ecologically sustainable] state with the expected impacts of the proposed action when combined with the impacts of other actions (p.13)**



How can we resolve the difference?

- **baseline condition needs to reflect the past and present condition of the resources, as well as reasonably foreseeable future impacts on the resource**
- **dynamic representation of the state of the resource independent of the proposed action**



How can we resolve the difference?

- **Proposed action can then be evaluated to determine the incremental impact on the baseline condition of all affected resources that would result from introducing the proposed action**
- **Cumulative impact of the proposed action on the resource would be the difference between the resource's baseline condition and the condition of the resource under the proposed action**



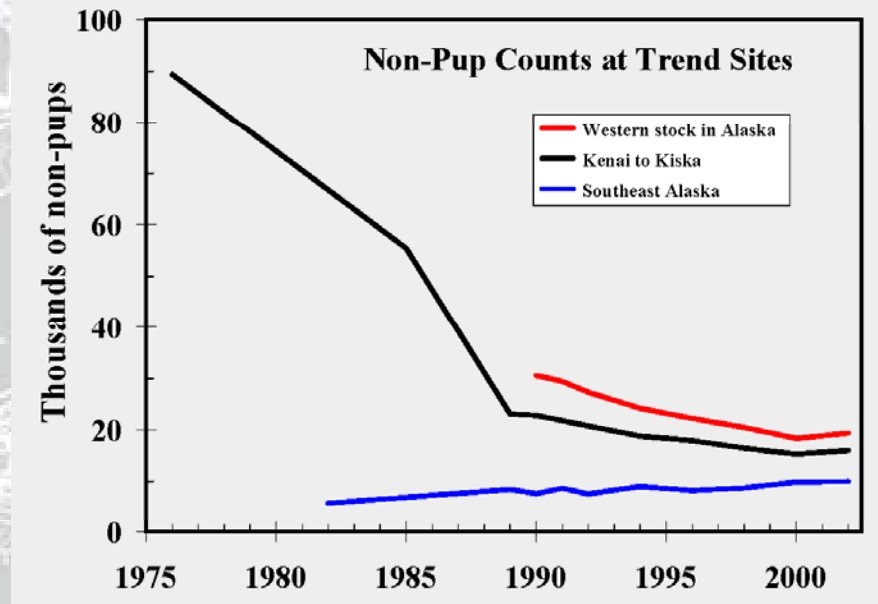
Issue: Marine Mammals

Project Impacts has:

--Direct take

--Indirect take

**Cumulative Impact:
Projected trajectory of
population taking all
stressors into
consideration**





Step 1. Direct and Indirect Effects

Step 2. Cumulative Effects

Human Community I

Ecosystem A

Ecosystem B

Alternative X

Habitat 1

Seabirds 2

Habitat 3

Other Present Action 1

Past Stressor 1

Past Stressor 2

Past Stressor 3

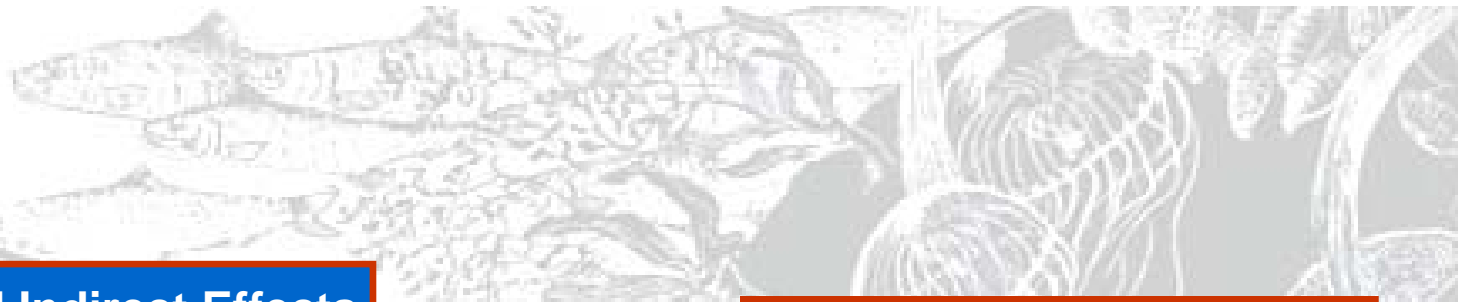
RFFA 1

RFFA 2

IMPACTS

- Direct adverse
- - - Indirect adverse
- Beneficial
- Cumulative

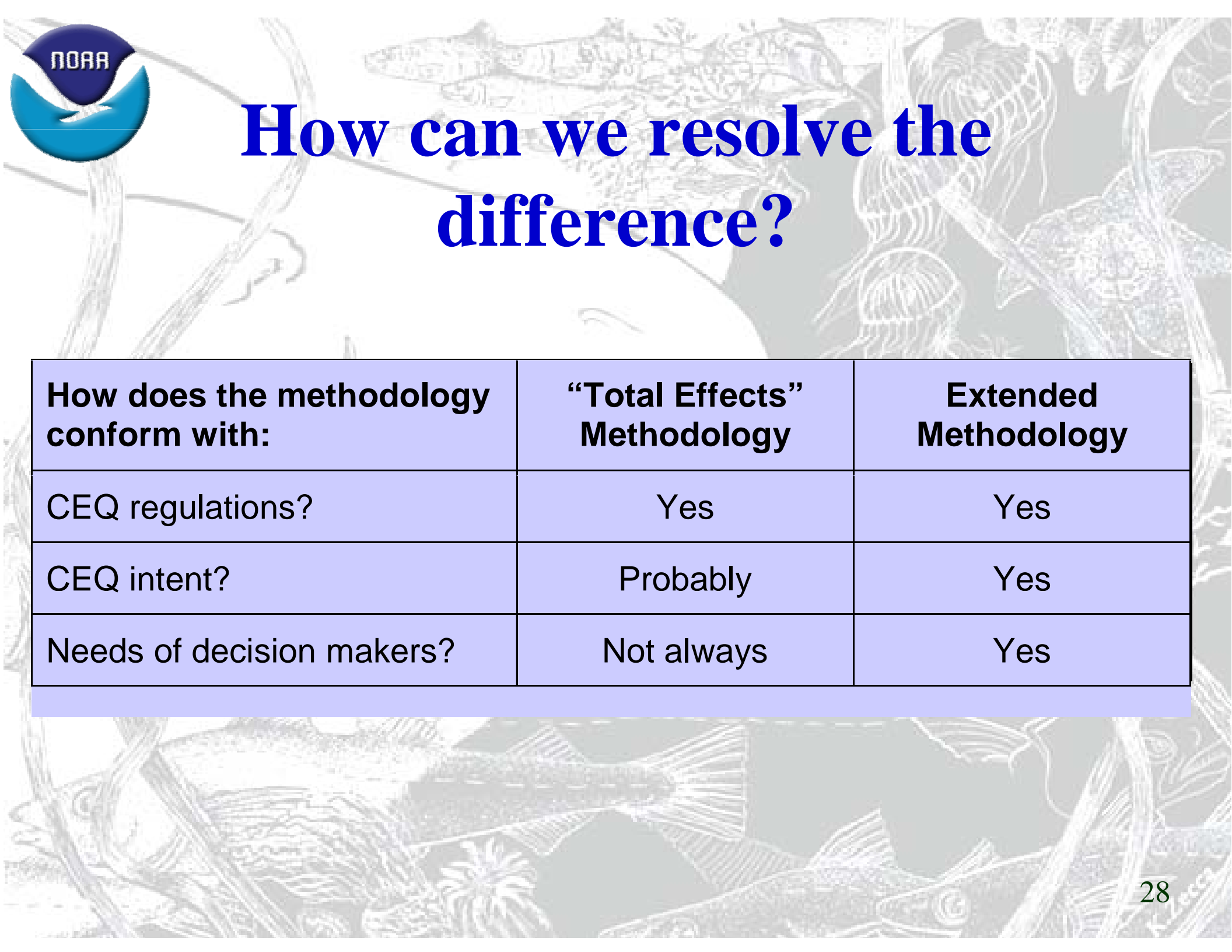
Time





How can we resolve the difference?

- **Adjusting the cumulative effects methodology will allow the analyst to achieve:**
 - **Consistency with CEQ guidelines on cumulative effects analysis**
 - **Consistency with CEQ intent of environmental consequences analysis**
 - **A useful analysis that facilitates informed decision-making (intent of NEPA)**



How can we resolve the difference?

How does the methodology conform with:	“Total Effects” Methodology	Extended Methodology
CEQ regulations?	Yes	Yes
CEQ intent?	Probably	Yes
Needs of decision makers?	Not always	Yes



Main References

- **Council on Environmental Quality, Considering cumulative effects under the National Environmental Policy Act, Council on Environmental Quality, Executive Office of the President (January 1997).**
- **Environmental Protection Agency, Consideration of cumulative impacts in EPA review of NEPA documents, United States Environmental Protection Agency, EPA 315-R-99-002 (May 1999).**



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