



CHOOSING SPILL RESPONSE OPTIONS TO MINIMISE DAMAGE

Net Environmental Benefit Analysis

Astana Workshop

Choosing spill response options to minimize damage

1. Introduction
2. The NEBA process
3. Considerations and examples

1. Introduction

- Oil spills AND response actions can damage the environment
 - ecology, industry and amenity
- Weigh the advantages and disadvantages of possible responses versus natural clean-up
 - this is the process known as NEBA
- NEBA accepts some actions may cause damage
 - justified as they reduce overall damage



2. The NEBA Process

- Mix of common sense and scientific data
 - (a) information on resources at risk
 - (b) review feasible response options
 - (c) predict environmental outcomes if proposed options used and if area left to natural clean-up
 - (d) compare and weigh pros and cons
- Requires liaison, consensus and review
 - part of contingency planning

2(a) Resources at Risk

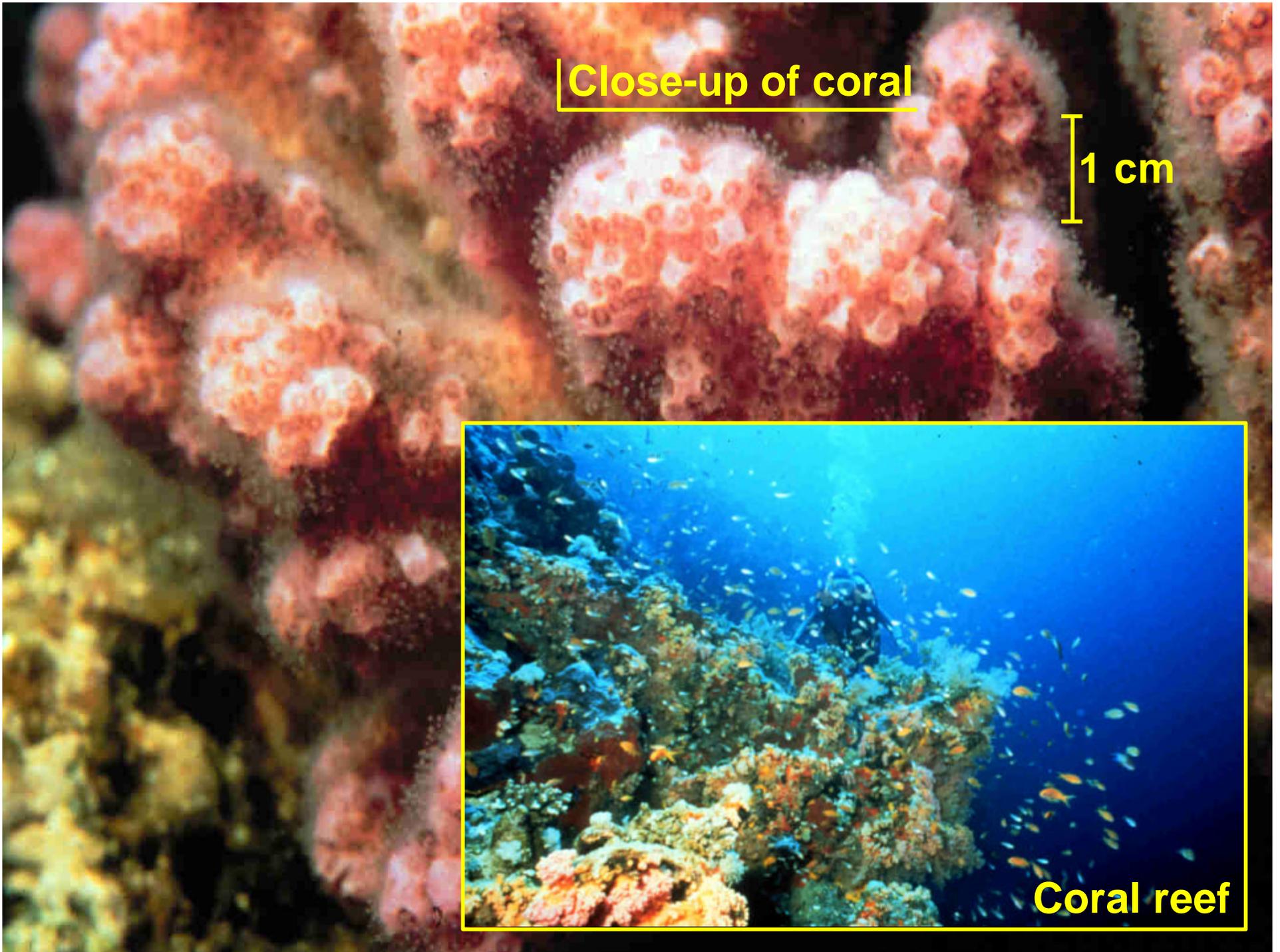
- **Shoreline sensitivity**
 - exposed versus sheltered
- **Key habitats and species**
 - corals, seagrass, kelp beds, turtles, birds etc...
- **Socio-economic (industry and amenity)**
 - fishing areas, shellfish beds, fish nurseries, aquaculture, harbours, marinas, seawater intakes, tourist facilities etc...

A photograph of a rugged coastline with dark, steep cliffs. Large, white-capped waves are crashing against the base of the cliffs, creating a high-energy, turbulent scene. The sky is overcast and grey.

High energy, 'exposed'

A photograph of a wide, sandy beach at low tide. The water is calm and shallow, reflecting the sky. The sand is a mix of light and dark patches, with some small clumps of vegetation scattered across the surface.

Low energy, 'sheltered'



Close-up of coral

1 cm

Coral reef



Fishing



Aquaculture



Marinas



Tourism



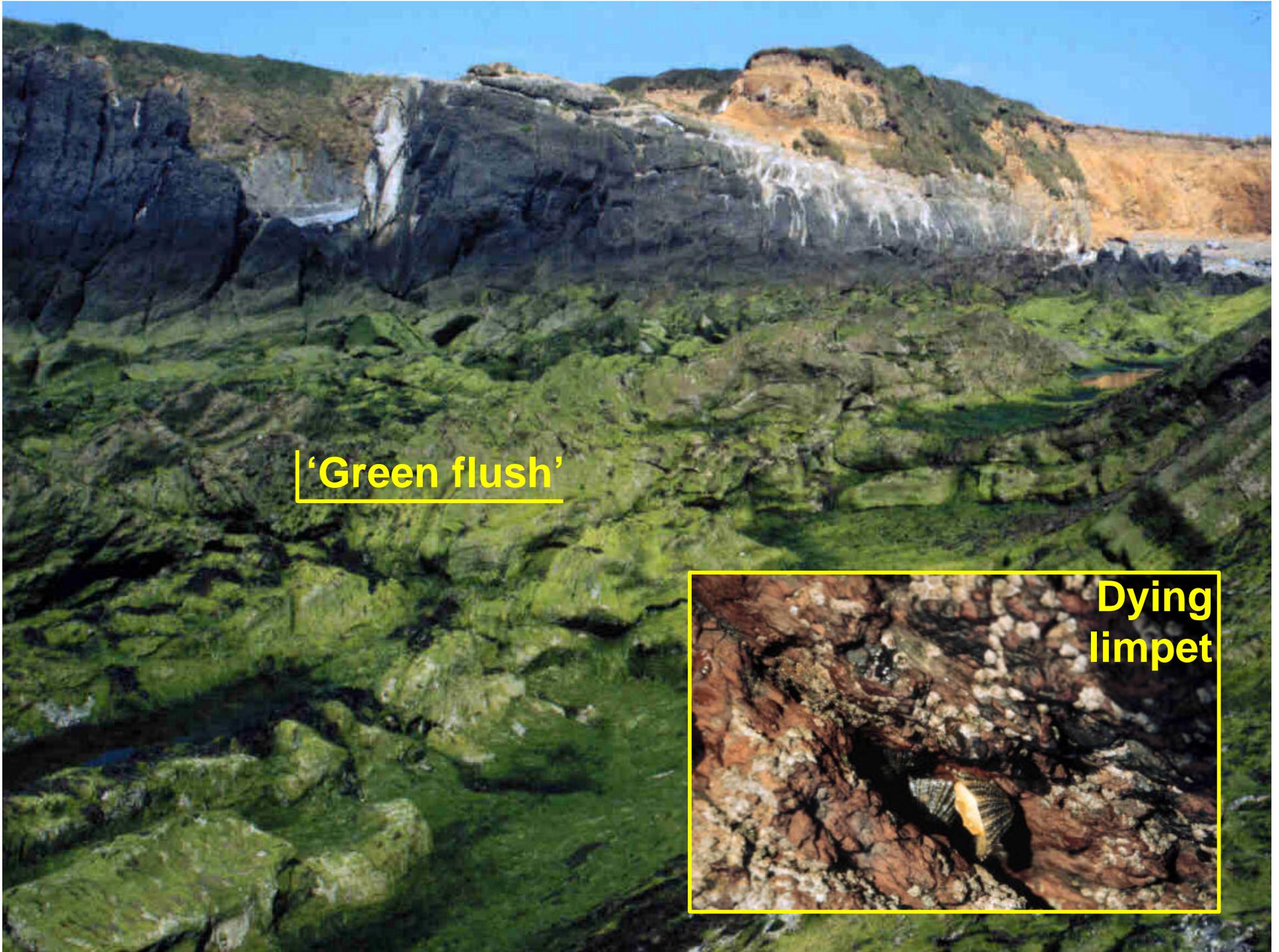
Industrial intakes

2(b) Feasible Options

- 🔥 Strategies and techniques
 - 🔥 effects and efficiencies
- 🔥 Previous experience
 - 🔥 location
 - 🔥 oil type(s)
 - 🔥 climate
 - 🔥 cultural, political and regulatory context

2(c) Predict Outcomes

- 🔥 Natural cleaning time scales
 - 🔥 open water the oil may dissipate relatively rapidly
 - 🔥 stranded oil may persist for days to decades
- 🔥 Effects of oil
 - 🔥 varied impacts and recovery times
- 🔥 Response effects and efficiency
 - 🔥 known limitations of strategies
 - 🔥 non-aggressive versus invasive techniques



['Green flush']



**Dying
limpet**

2 (d) Weighing Pros and Cons

- First consider natural clean-up
 - case histories show many examples of good recovery
- Consider intervention (response) if:
 - natural cleaning too long for main stakeholders
 - floating oil threatens birds and sensitive shorelines
 - bulk oil may re-mobilise and spread





3. Considerations Oil on Water

- Large spills offshore
 - sea conditions and logistics may preclude containment and recovery
 - dispersants may be only active option, potentially benefiting seabirds & shorelines
- Use of dispersants in shallow waters
 - difficult decisions, but can bring net benefit



3. Considerations Oil on Shorelines

- Bulk oil removal needs rapid response
- Good information for temperate rocky shores and salt marshes
 - for many spills moderate cleaning has little effect on longer term recovery
- Key questions are:
 - is the oiling severe, justifying clean-up?
 - are there 'interacting systems'?
 - do socio-economic factors dictate clean-up?



3. Examples, continued...

💧 Socio-economic factors

- 💧 may justify aggressive clean-up
- 💧 examples:
 - 💧 shellfish tainting from leaching shorelines
 - 💧 amenity and tourism beaches
 - 💧 jetties and wharves









NEBA

- Damage caused by response may be justified if it brings net benefit
- NEBA requires planning
- Pros and cons of response must be balanced against natural clean-up