Oil Spill Response

Lesson Learnt

Oil Spill Response Thailand 2017

Overview

- Oiled Wildlife Response
  - Case Study 1: Rena Incident
  - Case Study 2: Papua New Guinea
- Post Clean-up Monitoring
  - Case Study 1: Sea Empress Incident, 1996
  - Case Study 2: Indonesia, 2009
  - Case Study 3: Gulf of Thailand, 2013

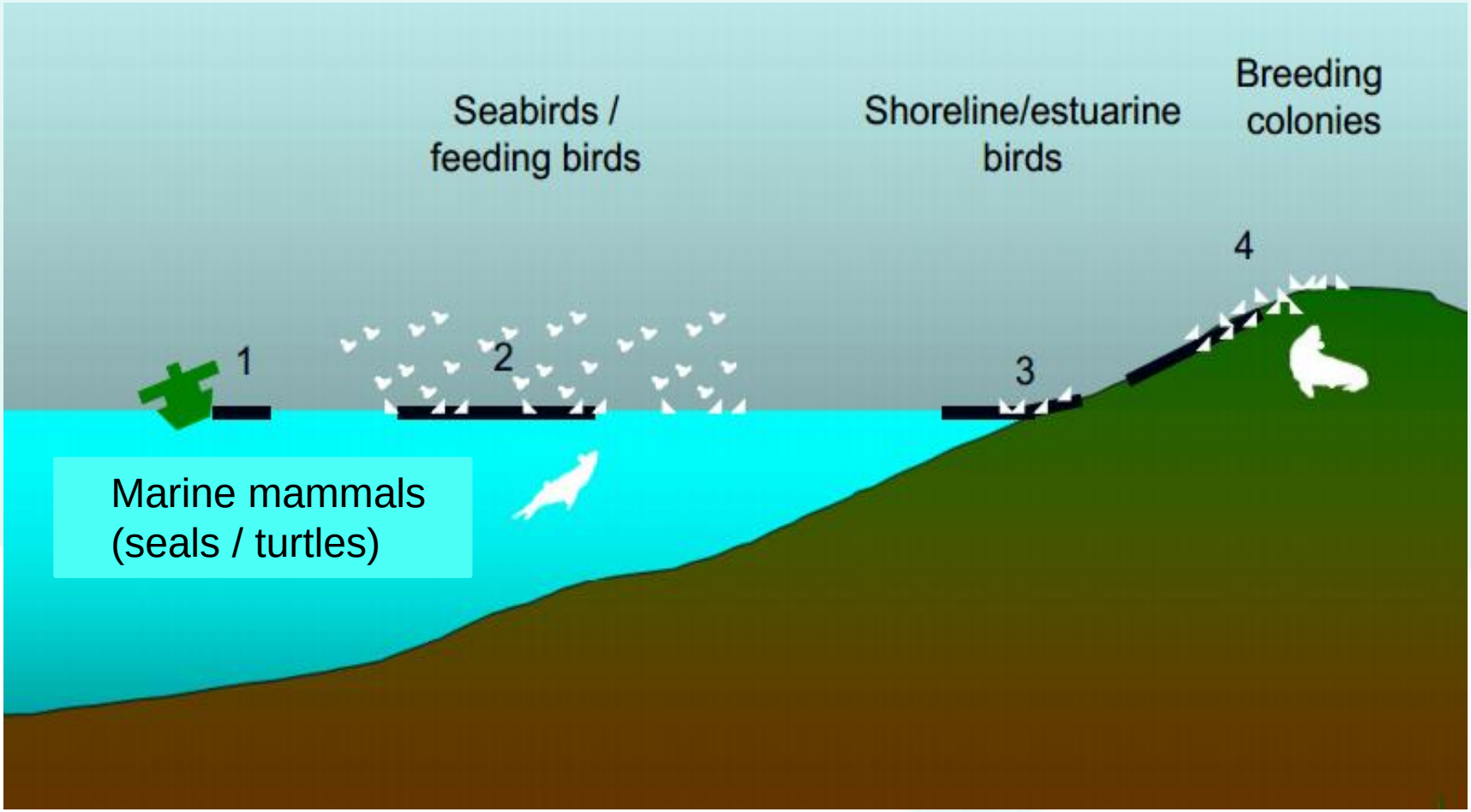
Oil Spill Response

Case Studies
Oiled Wildlife Response

Why Wildlife Response?

- Public & Media Expectations
- Animal Welfare
  - Prevention of suffering
  - Moral responsibility – Incident caused by humans
- Conservation Values

Oiling of Wildlife

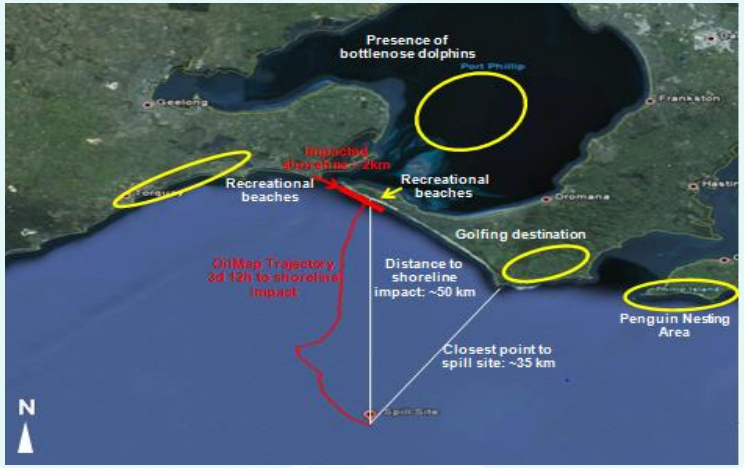


Effects of Oil on Wildlife

- External contamination
  - Affects swimming / wading ability
  - Loss of insulation
- Internal contamination
  - Dehydration
  - Destruction of red blood cells
  - Organ damage
- Indirect Effect
  - Food source contamination
  - Habitat loss
  - Decreased reproductive success

Elements of Wildlife Response

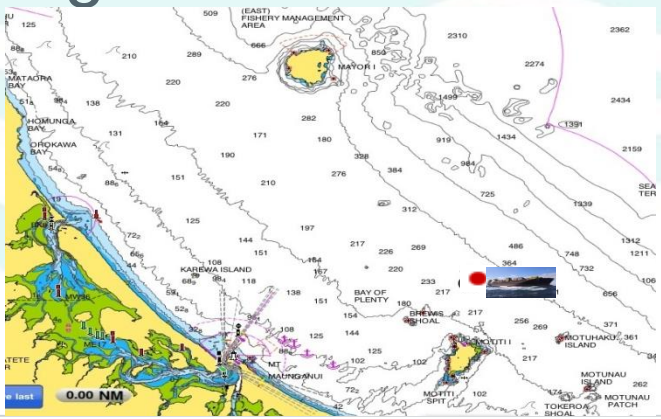
- Knowledge / predicting
  - Knowledge on sensitive areas / species
  - Monitoring oil -> animals
  - Assessment
- Prevent oiling of animals
  - Stop oil reaching animals
  - Clear animals from area
- Impact assessment
  - Collect + analyse dead animals
- Deal with live animals
  - Euthanasia
  - Rehabilitate



Case Study 1: Rena Incident

Incident

- MV Rena ran aground on Astrolabe Reef
- 300 tons of fuel oil spilled
- Astrolabe Reef located in the Bay of Plenty
- Breeding ground for aquatic animals
- Popular tourist scuba diving destination



Lessons Learnt

Findings

- MNZ declared a Tier 3 emergency
- Maritime Incident Response Team activated
- Set up an oiled wildlife treatment facility
- 420 live oiled birds admitted in total
- 95% blue penguins released back into the wild
- Pre-emptive capture of NZ dotterels, 90% released back into the wild

Lessons Learnt

Lessons Learnt

- Early response is essential
- High degree of emphasis on wildlife response
- Release of little blue penguins in stages
  - Witnessed by the media and public
  - Portray good public image

Case Study 2: Papua New Guinea

Incident

- Pipeline leak near Port Moresby
- HFO spilled, quantity unknown
- Affected mangroves nearby
- Invited local experts – professor from local university
  - Controlled pruning of affected mangroves

Case Study 2: Papua New Guinea

Lessons Learnt

- Experts from local community may response more swiftly than external resource
- Keep good relationship/contact with local community

Case Studies
Post Clean-up Monitoring

Case Study 1: Sea Empress, 1996

- Source: European Maritime Safety Agency
- Region: Europe – Near Wales, UK
- Details: Over 440 tonnes of dispersant sprayed, Offshore and shoreline clean-up & recovery
- Oil concentrations were monitored in the upper water column

Time after dispersant application	Oil concentration in the upper water column (ppm)
Just after treatment	10
2 day s after treatment	1
1 week after treatment	0.5
1 month after treatment	0.2
3 months after treatment	Background level

Case Study 2: Indonesia, 2009

- Source: OSRL
- Region: Indonesia
- Details: Shoreline clean-up & recovery
- Water (11 sampling points) and sediment (9 sampling points) quality monitoring
  - Parameters:
    - Total Petroleum Hydrocarbon (TPH)
    - Polycyclic aromatic hydrocarbon (PAH)
    - Btex
    - Oil and grease
    - Visual
    - Organoleptic

Case Study 3: Gulf of Thailand 2013

- Source: Public domain
- Region: Gulf of Thailand
- Details: ~10 tonnes of dispersant sprayed, shoreline clean-up and recovery
- Water quality monitoring
  - Coastal area
  - Parameters:
    - Total Petroleum Hydrocarbon (TPH)
    - Mercury (Hg)
  - Offshore
  - Parameters:
    - Total Petroleum Hydrocarbon (TPH)

Case Study 3

- Selected sensitivities
  - Water quality
  - Parameters:
    - Heavy Metals (HM)
    - Total Petroleum Hydrocarbon (TPH)
    - Polycyclic aromatic hydrocarbon (PAH)
  - Sediments
  - Parameters:
    - Total Petroleum Hydrocarbon (TPH)
    - Mercury (Hg)
- Suggestion to have baseline for comparison (in order of priority)
  - Water sample before spill
  - Water sample from location not affected by spill
  - Reference to national water quality standard

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THANK YOU!