The Oil and Gas Industry and Impact Assessment: The Protection of Marine Mammals Offshore

www.mmo-association.org

Presented by J. Barrs

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WHO IS THE MMOA?

- MMOs and PAM operators implement mitigation measures to protect marine life during industry operations.
- We aim to work with industry, government agencies, non government organizations and academics to improve the profession's effectiveness and provide advice on proper and appropriate mitigation practices.
- We require professional experience and encourage lifelong training and sharing of information within the field.
- We maintain an online directory for relevant literature and information for all members.

The Marine Mammal Observer Association (MMOA) is an international non-profit membership-based global group representing and supporting both the Marine Mammal Observer (MMO) and Passive Acoustic Monitor (PAM) to implement mitigation measures in order to protect marine life during industry operations.




Current Decision Making for Impact Assessment

- Current Mitigation Guidelines exist in many regions to reduce the impact on marine mammals and other species, but in current 'hot spot' regions there are no region specific guidelines.
- This leads to non-regional specific guidelines being used by agencies for simplicity and often poor Environmental Impact Assessments (EIAs) created.

Regional Guidelines	Non-Regional Guidelines
USA (BOEMR)	Africa
UK (JNCC)	South America
Australia -	Central America
New Zealand (DOC)	
Greenland (BMP)	
Canada (DFO)	

Current Decision Making of Impact Assessments: Angola

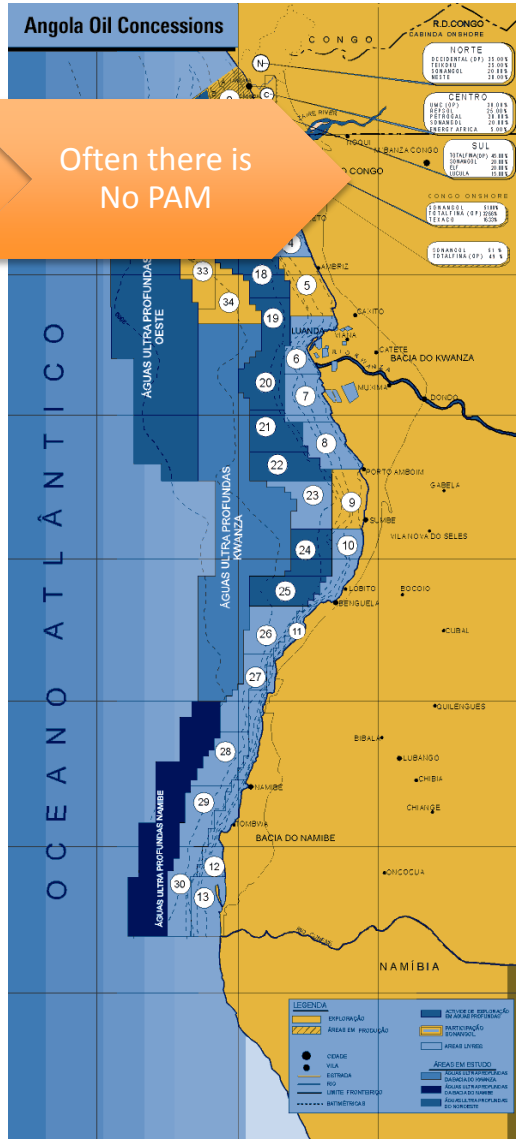
No data stored with Government agency

Uninformative EIA for region

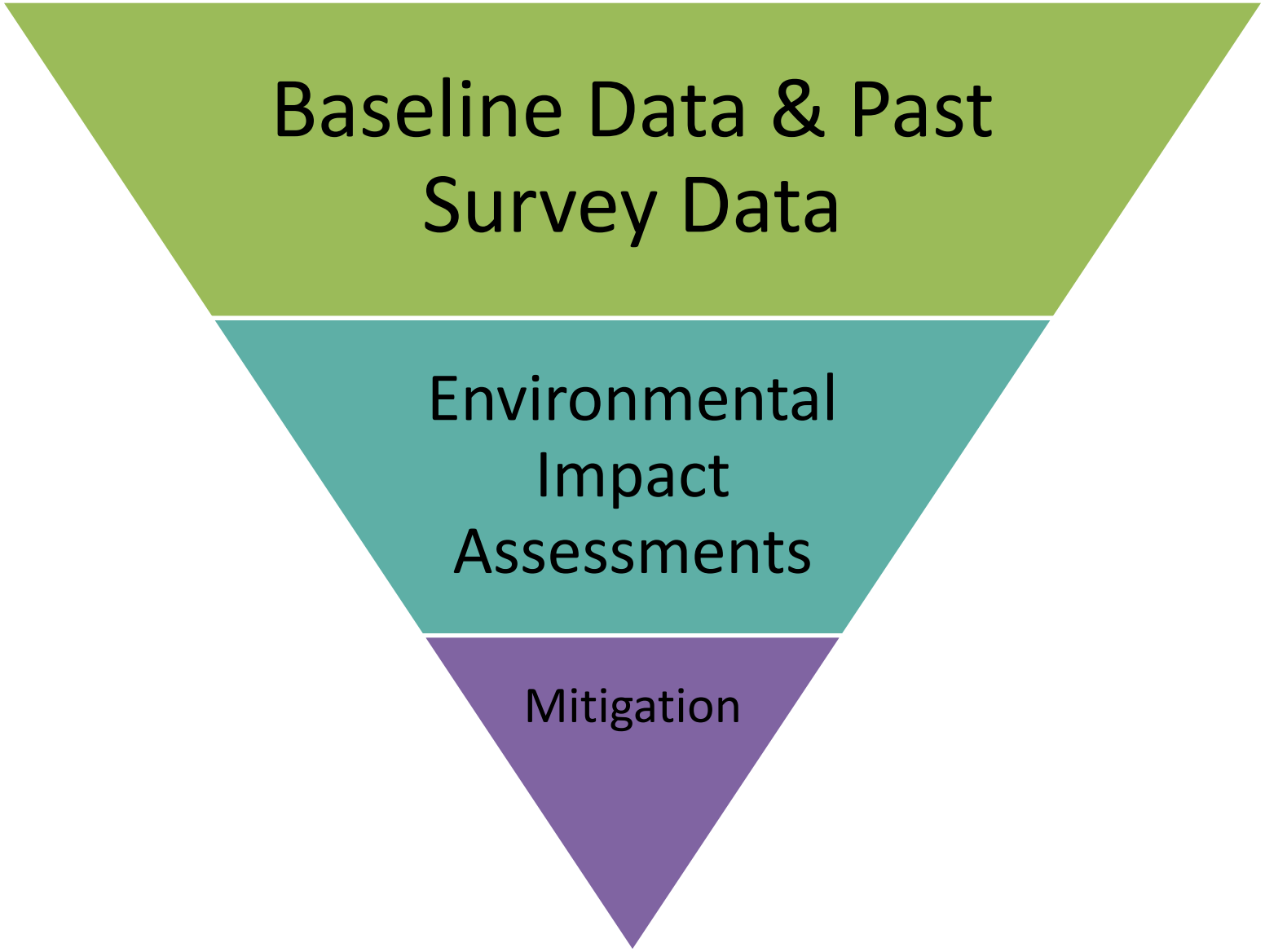
Potential for Inappropriate Mitigation Plan

Often there is only one MMO

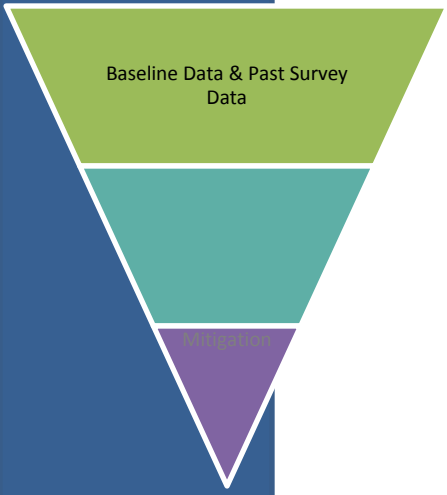
Often there is No PAM



Successfully Reducing the Impact on Marine Mammals



ACHIEVING BASELINE DATA

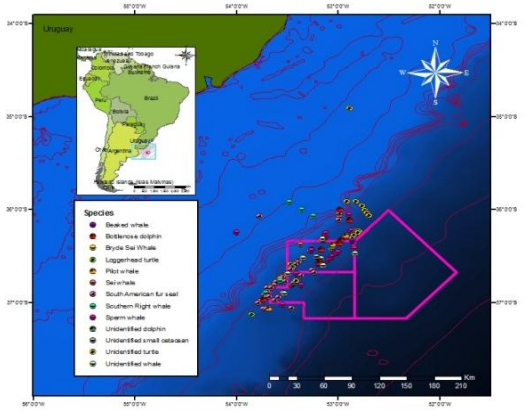


How can we set mitigation measures without baseline data?

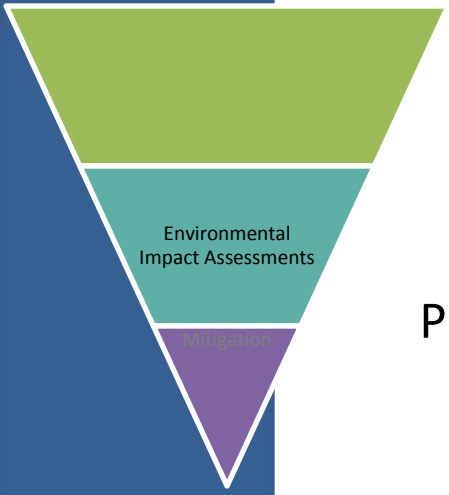
1. Need to conduct baseline surveys prior to offshore projects.

2. Need to assess the region in which the survey is conducted as offshore blocks may vary due to depth and distance offshore.

3. In the absence of baseline data must adopt a strong precautionary principle to protect what potentially is found in the region by utilizing published research applicable to the region.



Informative Environmental Impact Assessments



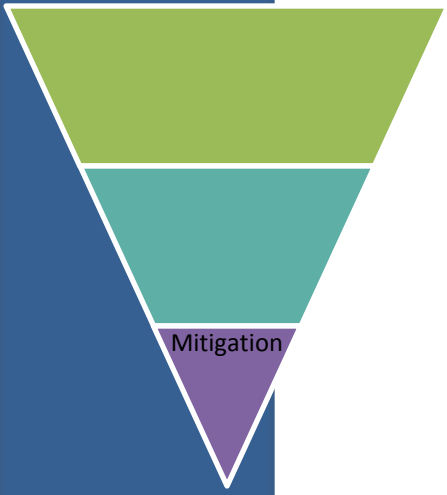
GOAL

To have all marine mammal and other species of concern mitigation based on region specific scientific information and principals.

Proper Development for any offshore Impact Assessment:

- ✓ Determining the Who, What, Where, When, & Why?
- ✓ Are there minimum standards that should be followed?
- ✓ Contacting Associations for Position Papers or Information and potential researcher contacts.
- ✓ Appropriate Research by the appropriate parties.
- ✓ Having the ability to utilize regional Government agency data from previous or current offshore projects.

Effective Mitigation Measures

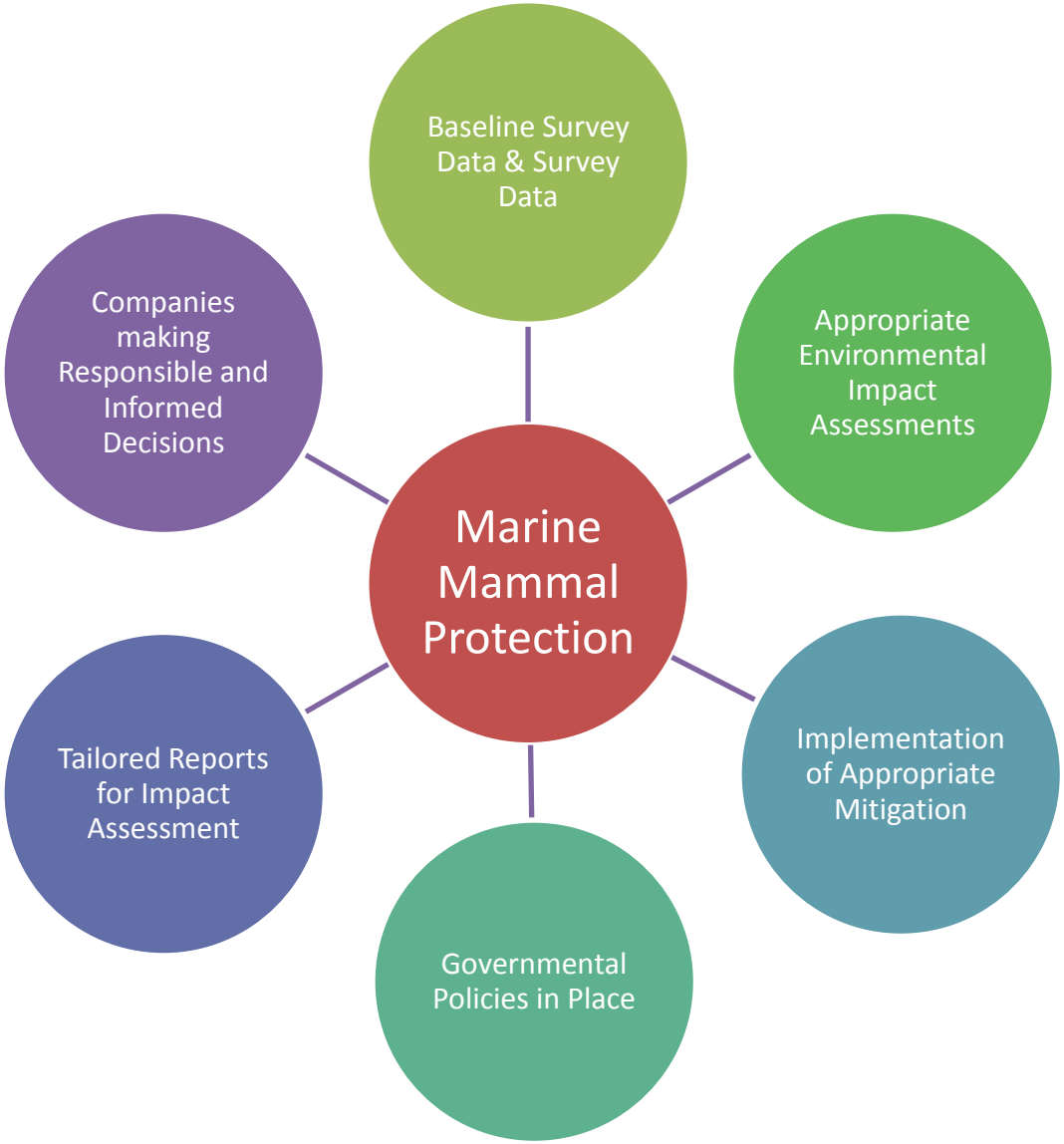


Both baseline data and informative EIAs shape effective mitigation measures.

However,

- Effective mitigation measures can not be successfully implemented to reduce impact on marine mammals without continuing on the vessel by both;
  - ✓ the offshore oil & gas company,
  - ✓ the survey company,
  - ✓ and the trained professional to carry-out mitigation procedures.
- The role of a policy maker or government should be to ensure the measures are followed through the entirety of a project.
- The role of a policy maker or government should be to continually assess the data and modify mitigation measures appropriately.

Protection of Marine Mammals Offshore



IMPLEMENTATION

Available online at www.sciencedirect.com
ScienceDirect
Marine Policy 32 (2008) 255–262
MARINE POLICY
www.elsevier.com/locate/marpol

A critical examination of worldwide guidelines for minimising the disturbance to marine mammals during seismic surveys

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Abstract

Marine seismic exploration has potentially detrimental effects upon marine life and marine mammals in particular. Potential effects range from disturbance that may lead to displacement from feeding or breeding areas, to auditory damage and potential mortality. Nations including the USA, Canada and Brazil have followed the example set by the United Kingdom by introducing guidelines to minimise acoustic disturbance to marine mammals. This paper describes the mitigation measures central to the guidelines currently in place, and identifies the similarities, differences and deficiencies within them. A need for further review by some nations is identified, with a recommendation that an international standard should be produced, benefiting both the geophysical exploration industry and the conservation community.

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Keywords: Underwater noise; Marine mammal; Mitigation; Seismic survey; Marine mammal observer

1. Introduction

There is an increasing level of interest in the effects of anthropogenic sound on the marine environment, particularly the potential effects of widespread marine geophysical exploration upon marine mammals [1–3]. Marine geophysical or seismic exploration typically involves the use of airgun arrays (the seismic source) to produce low frequency impulsive sounds at intervals of 10–15 s, with broadband source levels of 220–255 dB re: 1 μPa at 1 m (all decibel levels [dBr] are referenced to 1 μPa unless otherwise stated in the text) [3]. The dominant frequencies of airgun pulses lie within the 0–120 Hz range, though there are significant levels of high-frequency sound up to 20 kHz also produced by the pulses [4]. The dominant frequencies overlap with those used by baleen whales (30 Hz–1 kHz), with the high-frequency component also overlapping with the frequency range used by many odontocetes (10–150 kHz) [3].

Despite correlations between cetacean stranding events and seismic activity being demonstrated [5], a causal link between cetacean stranding and seismic exploration is disputed due to lack of clear data [6]. There is however, a growing body of evidence detailing a host of behavioural effects caused by a variety of underwater noise sources, as well as the potential for physical damage [2,3,7–10]. Physical damage includes damage to body tissues resembling decompression sickness ('the bends') and auditory damage. Symptoms resembling decompression sickness may result from the initiation of bubble growth caused by sound, or from hypothesised behavioural changes to normal dive profiles (such as a faster ascent rate) [11,12].

Auditory damage is the physical reduction in hearing sensitivity due to exposure to high intensity sound and can be either temporary (temporary threshold shift—TTS), or permanent (permanent threshold shift–PTS) depending on the exposure level and duration [3]. Other than physical

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To implement mitigation measures:

- Policy makers should utilize experts, professional associations, and publications, to share information.
- There should be an appropriate EIA in place for the project, completed prior to the survey, and provided to the MMO.
- The consistent hiring of professional and experienced marine mammal observers and passive acoustic monitors, which should be set by the policies in place and enforced throughout the project.

Marine Mammal Observer Association

www.mmo-association.org

Look for Heather this afternoon

Heather McRae