

CRE Brazil Comments on:

Draft Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Water (“Draft Guidance”)

available online at

http://www.npws.ie/media/npwsie/content/files/Guidance_Consultation%20Draft.pdf,

**National Parks and Wildlife Service of
Ireland’s Department of Arts, Heritage and the Gaeltacht (“Department”).
Comments submitted electronically on April 26, 2012, to gearoid.o’connor@ahg.gov.ie**

Executive Summary

The Center of Regulatory and Effectiveness Brazil (“[CRE Brazil](#)”), is a nonprofit, non-government organization located in São Paulo city. Our mission is to ensure that: 1) the data which governmental agencies disseminate to the public is of the highest quality; and 2) the public has access to the data used to develop governmental policies. CRE Brazil is associated with [The Center for Regulatory Effectiveness](#) (Washington, D.C.) (“CRE”): an internationally recognized organization whose mission is to improve the federal regulatory process.

The Draft Guidance’s apparent position is that the effects of ocean noise on marine life are largely unknown, and that a “precautionary principle” must therefore be applied when assessing and regulating noise. This position is incorrect. The United States (“U.S.”) and other countries have regulated seismic and other anthropogenic noise in the ocean for decades. The effects of that noise and regulation have been studied extensively. No study has found a population level change in marine mammals caused by exposure to anthropogenic noise. For example, with regard to offshore oil and gas seismic exploration, the U.S. Department of the Interior and the U.S. National Academy of Sciences/National Research Council concluded that “there have been no known instances of injury, mortality, or population level effects on marine mammals from seismic exposure” during decades of seismic in the offshore U.S. That seismic was and still is conducted in compliance with long-standing regulation and mitigation.

This regulation and mitigation includes pre-survey environmental and risk assessments; cetacean-free zones around the seismic source vessel; marine mammal observers; soft-start of seismic energy sources (gradual ramp-up of sound); and recent use of PAMGUARD. With these measures in place the level of sound that actually reaches a marine mammal outside the exclusion zone is significantly reduced and not harmful.

The Draft Guidance should be revised to reflect these facts, and to eliminate any recommendation that extra precaution be taken. There is no uncertainty that warrants extra precaution.

The Draft Guidance should be also be revised to discuss PAMGUARD and to encourage its use whenever marine mammals might be affected by marine sound. There is no basis for the Draft Guidance’s limitation of passive acoustic monitoring (“PAM”) to blasting operations. PAM is being

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recommended for required use offshore Brazil and elsewhere during sound-producing operations.¹ Consequently, PAM and its freely available version PAMGUARD are among the main reasons why CRE Brazil is filing these comments on the Noise Report. We would be pleased to work with the Department to further the use and proper application of PAMGUARD.²

We also have some comments on the mitigation provisions in the Draft Guidance, Section 4.2, pages 19-25, “Operational/activity-specific guidance.” These and the rest of our comments are discussed in detail below.

CRE Brazil welcomes questions at e-mail: contato@cre.org.br, and we thank you for the opportunity to submit these comments. We look forward to the Department’s response.

**The Draft Guidance Should Be Revised To State That
Seismic Does Not Injure Marine Life
If Conducted In Accordance With
Long-Standing and Well-Known Mitigation Provisions**

The Draft Guidance apparently takes the position that a precautionary principle should be applied to regulating ocean sound because there is so much uncertainty about the effects of ocean sound. For example, the Draft Guidance at page 10 states:

Measuring and understanding the effects of an anthropogenic sound source on marine mammals are complex tasks, while gaps in scientific information, for a range of species and scenarios, will continue to take time to be addressed. Under these circumstances an element of caution is required to ensure that adequate protection may be given to animals at risk from a specific sound-producing activity. In February 2000, the European Commission adopted a Communication on the use of the Precautionary Principle 32, which is a key tenet of its policy and is particularly relevant to the management of potential risk in such situations. The implementation of a management approach based on the precautionary principle consists of three key elements: (i) risk assessment, (ii) risk management, and (iii) risk communication.

This position is inconsistent with the growing body of evidence discussed in various regulatory risk assessments for ocean sound, including those produced by the U.S. Department of the Interior and the U.S. National Oceanic and Atmospheric Administration/National Marine Fisheries Service (“NOAA/NMFS”). These risk assessments correctly conclude that, under long-standing regulation and mitigation, cetacean and pinniped stocks are growing concurrent with decades of oil and gas seismic and other sound-producing operations. These risk assessments show that there is no basis for excessive precaution and over-regulation.

¹ See, e.g., page 415 of the document available online at http://www.aprh.pt/rgci/pdf/rgci-251_Parente.pdf.

² The PAMGUARD website is at <http://www.pamguard.org/home.shtml>.

No study has found a population level change in marine mammals caused by exposure to anthropogenic sound. The many studies that have found **NO** effect include a U.S. Department of Interior Environmental Impact Statement for Gulf of Mexico OCS Oil and Gas exploration and production. This EIS states that, after more than 50 years of oil and gas seismic and other sound-producing activities, “there are no data to suggest that activities from the preexisting OCS Program are significantly impacting marine mammal populations”:

Overall, within the CPA [Gulf Central Planning Area], there is a long-standing and well-developed OCS Program (more than 50 years); there are no data to suggest that activities from the preexisting OCS Program are significantly impacting marine mammal populations. Therefore, in light of the above analysis on the proposed action and its impacts, the incremental effect of the proposed action on marine mammal populations is not expected to be significant when compared with all other past, present, and reasonably foreseeable future activities.³

This EIS further concludes, “Marine mammals may exhibit some avoidance behaviors, but their behavioral or physiological responses to noise associated with the proposed action, however, are unlikely to have population-level impacts to marine mammals in the northern Gulf of Mexico.”⁴

The U.S. NOAA/NMFS reached similar conclusions about oil and gas seismic in the Arctic. For example, a recent NOAA/NMFS Biological Opinion concluded that marine mammals are flourishing and increasing in the Arctic despite increasing oil and gas seismic activities there:

Data indicate that bowhead whales are robust, increasing in abundance, and have been approaching (or have reached) the lower limit of their historic population size at the same time that oil and gas exploration activities have been occurring in the Beaufort Sea and, to a lesser extent, the Chukchi Sea.

To our knowledge, no whales or other marine mammals have been killed or injured by these past seismic operations, and the BCB population of bowhead whales continues to increase at an annual rate estimated more than 3 percent. Because the Western Arctic bowhead whale population is approaching its pre-exploitation population size and has been documented to be increasing at a roughly constant rate for over 20 years, the impacts of oil and gas industry on individual survival and reproduction in the past have likely been minor (Angliss and Outlaw 2010). These activities are unlikely to have any effect on the other four stocks of bowhead whales. Similarly, only the western North Pacific stock of humpback whales and the Northeast Pacific stock of fin whales would be potentially affected by oil and gas leasing and exploration activities in the Chukchi Sea. The described work would have no effect on the remaining

³ Page 4-231 of document available online at http://www.boem.gov/BOEM-Newsroom/Library/Publications/2012/2012-058_vol_1-pdf.aspx.

⁴ *Id.*, pages 4-225 to 4-226.

*worldwide stocks of humpback or fin whales. No injury or lethal takes are anticipated from these activities, nor are population level consequences to the stocks expected. Most impacts would be due to harassment of whales, which may lead to behavioral reactions from which recovery is fairly rapid. Mitigative measures will be recommended to reduce harassment and the possibility of harm or lethal takes.*⁵

The U.S. National Academy of Sciences/National Research Council has agreed with the U.S. Department of Interior that “there are no documented or known population-level effects due to sound,” and has concluded with regard to the entire U.S. Outer Continental Shelf that:

*[T]here have been no known instances of injury, mortality, or population level effects on marine mammals from seismic exposure but... the potential for these types of impacts may exist without appropriate mitigation measures. The [Interior]-approved seismic surveys include mitigation measures designed to reduce the potential for effects to occur.*⁶

The U.S. NOAA/NMFS NMFS has correctly emphasized that “to date, there is no evidence that serious injury, death, or stranding by marine mammals can occur from exposure to airgun pulses, even in the case of large airgun arrays.”⁷

Consequently, the mitigation measures used in the past should be deemed adequate to protect sea life from sound unless there is good evidence to the contrary, which there is not. There is, however, one advance in monitoring which the Department should encourage.

The Draft Guidance Should Be Revised To Encourage PAM and PAMGUARD

The Draft Guidance states on page 18:

In some cases involving the persistent significant risk of injury to marine mammals, the use of passive acoustic monitoring may be encouraged in order to optimize marine mammal detection around the site of the operation/activity. However it should not be regarded as the primary or sole monitoring approach.

⁵ Pages 64-65, Endangered Species Act: Section 7 Consultation Biological Opinion, Incidental harassment authorization to allow for incidental takes of marine mammals during shallow hazards survey in the Chukchi Sea, Alaska, 2011 (NOAA/NMFS 2011), available online at http://www.nmfs.noaa.gov/pr/pdfs/permits/statoil_biop2011.pdf .

⁶ See, e.g., Outer Continental Shelf Oil & Gas Leasing Program, 2007-2012 Final Environmental Impact Statement, page V-64 (MMS April 2007), available online at <http://www.boemre.gov/5-year/2007-2012DEIS/VolumeII/5and6-ConsultationPreparers.pdf>.

⁷ 75 FR 49795-96 (Aug. 13, 2010), page 49795, available online at <http://edocket.access.gpo.gov/2010/2010-19962.htm>.

Passive acoustic monitoring (PAM) involves the use of acoustic monitoring hardware (e.g., hydrophone array(s), associated computer & electronic systems), analytical software and expertise for the detection and localisation of vocalising marine mammals.

The Draft Guidance states on page 24, as part of its guidelines for blasting:

Where there is a persistent significant risk of injury to marine mammals, the use of passive acoustic monitoring may be encouraged in order to optimise marine mammal detection around the site of the operation/activity. However it should not be regarded as the primary or sole monitoring approach.

These are the only references to PAM in the Draft Guidance.

We agree that PAM should not be used in lieu of visual monitoring, but we suggest that the Draft Guidance be revised to encourage more strongly the use of PAM in general, and the use of PAMGUARD in particular. For example, the Draft Guidance should follow the lead of other nations and recommend the use of passive acoustic monitoring in connection with all noise producing activities where marine mammals might be affected. There is no reason to limit PAM and PAMGUARD to blasting.

Recent Brazilian studies have recommended the increased use of PAM to help protect sea life from marine sound:

The possibility of detecting marine mammals by hydrophone arrays linked to special software (Passive Acoustic Monitoring – PAM) has shown promise as a monitoring tool for some species of marine mammal with frequent vocalization (e.g. Swartz et al., 2002; Mellinger, 2004). PAM has been suggested as an alternative or additional technique to improve the effectiveness of monitoring marine mammals (Lewis et al., 1998). This acoustic technique has been used to complement visual surveys during periods of darkness and may have advantages over the visual technique in areas with strong wind and poor visibility (Swartz et al., 2003). Considering all of these factors, it is recommended to start experiments with PAM in Brazilian waters as an auxiliary tool to document the presence of marine mammals during seismic surveys.⁸

The U.S. Department of the Interior has issued a *Notice to Lessees and Operators of Federal Oil, Gas, and Sulphur Leases in the OCS, Gulf of Mexico Region, Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program* (“NTL”). This NTL has a section which strongly encourages the use of PAM:

⁸ Effectiveness of Monitoring Marine Mammals during Marine Seismic Surveys off Northeast Brazil, Parente and de Araújo, *Journal of Integrated Coastal Zone Management* 11(4):409-419 (2011), available online at http://www.aprh.pt/rgci/pdf/rgci-251_Parente.pdf

*Whales, especially sperm whales, are very vocal marine mammals, and periods of silence are usually short and most often occur when these animals are at the surface and may be detected using visual observers. However, sperm whales are at the greatest risk of potential injury from seismic airguns when they are submerged and under the airgun array. Passive acoustic monitoring appears to be very effective at detecting submerged and diving sperm whales, and some other marine mammal species, when they are not detectable by visual observation. BOEM and BSEE strongly encourage operators to participate in an experimental program by including passive acoustic monitoring as part of the protected species observer program. Inclusion of passive acoustic monitoring does **not** relieve an operator of any of the mitigations (including visual observations) in this NTL **with the following exception:** Monitoring for whales with a passive acoustic array by an observer proficient in its use will allow ramp-up and the subsequent start of a seismic survey during times of reduced visibility (darkness, fog, rain, etc.) when such ramp-up otherwise would not be permitted using only visual observers. If you use passive acoustic monitoring, include an assessment of the usefulness, effectiveness, and problems encountered with the use of that method of marine mammal detection in the reports described in this NTL. A description of the passive acoustic system, the software used, and the monitoring plan should also be reported to BSEE at the beginning of its use.⁹*

Academic groups (University of St. Andrews, Oregon State University, Herriot Watt University, and Scripps Institute of Oceanography), environmental groups (EcoLogic), and select oil and gas companies (through the International Association of Oil and Gas Producers) have spent considerable time, effort and money developing a freely available version of PAM called PAMGUARD. The PAMGUARD web site discusses PAMGUARD in considerable detail, and provides free, public access to PAMGUARD.¹⁰ This site explains why PAMGUARD should be used as a supplement to visual monitoring, and it is worth quoting at some length:

The PAMGUARD project was set up to provide the world standard software infrastructure for acoustic detection, localisation and classification for mitigation against harm to marine mammals, and for research into their abundance, distribution and behaviour. Many marine activities involve underwater sound emissions. These may be a by-product of the activity (e.g. piling or explosives), or a tool (e.g. air guns used for seismic surveys in oil and gas exploration, or military/commercial sonar). To mitigate against harm to marine mammals, observers are often employed to visually scan the sea surface for the presence of animals. In the event of a sighting, procedures such as suspension/delay of activities may be implemented to avoid harm.

Current Methods

⁹ This document is available online at <http://www.bsee.gov/Regulations-and-Guidance/Notices-to-Lessees/2012/2012-JOINT-G02-pdf.aspx> (emphasis in the original).

¹⁰ The industry-sponsored PAMGUARD website is available online at <http://www.pamguard.org/home.shtml> .

Visual observations play a vital role, but marine mammals are difficult to spot on the sea surface, especially when weather and light conditions are poor. However, many marine mammals produce loud and distinctive vocalisations, which can often be detected more reliably than visual cues. For these species, passive acoustic monitoring (PAM) offers an effective means of detection. Furthermore, the creatures do not need to be on the surface to be detected.

Why do we need PAMGUARD?

While PAM software already exists, the source code is not freely available for others to help to expand and improve. This means that assumptions, and therefore margins for error, are not readily understood, that code evolves more slowly, or not at all, and source code improvements are at the mercy of the time and resources that the few responsible developers can commit. In the case of the military and some commercial organisations, detection, classification and localisation (DCL) technologies are in-house and protected. What is needed is an environment which raises the profile of PAM and creates a means of tapping into the intellectual resources of the research community. Industry and marine environmentalists are well aware of the need to upgrade and modernise.¹¹

The Sound and Marine Life Joint Industry Program (SAML JIP) Annual Report for 2009 also contains extensive, detailed documentation of PAMGUARD.¹² This report explains:

A software package called PAMGuard has been released that can interpret and display calls of vocalising marine mammals, locate them by azimuth and range and identify some of them by species. These abilities are critical for detecting animals within safety zones and enabling shut-down.¹³

The 2010 seismic guidelines for the UK's Joint Nature Conservation Committee ("JNCC") include the following section encouraging the use and further testing of PAMGUARD:

In the last few years, software that processes and analyses cetacean sounds has been developed. PAMGUARD is open source software that has been developed as part of the International Association of Oil and Gas Producers Joint Industry Project (JIP). JNCC recognizes that PAMGUARD is currently in a transition period between use as a research tool and widespread adoption as a monitoring technique. Moreover, JNCC recognizes the need to balance proactive implementation of PAM with the need to further develop its capability, for example to include species recognition and baleen whale detection, and therefore

¹¹ PAMGUARD site available at <http://www.pamguard.org/background.shtml>.

¹² See 2009 Report, pages 1, 2, and 3, available online at <http://www.soundandmarinelife.org/Site/Basics/AnnRep3.pdf>.

¹³ *Id.*, page 1.

*encourages users of these systems to actively contribute to their development and refinement.*¹⁴

PAMGUARD has now undergone beta testing:

*Last year Ocean Science Consulting agreed to help the PAMguard team (www.pamguard.org) with their ongoing development project to improve the functionality of PAMguard for understanding small cetacean survey work. The PAMguard team have just built a new installer and have asked us to try it out in field conditions. Our Passive Acoustic Monitoring (PAM) operators are currently trialling the installer on various seismic vessels operating around the world. This involves OSC providing comments and feedback about the current features of PAMguard, the types of features we would like to see and actual testing the developing software....Generic problems with publicly revealed versions of PAMGUARD are also being tested....This collaborative effort informs the developers of what's happening in real field conditions, and how the programme can be improved.*¹⁵

In sum, there is general agreement that PAM is an important tool to help ensure that no marine mammals are adversely affected by seismic sound sources, and PAMGUARD is an open source, freely available version of PAM.

We believe that encouraging and helping to perfect the use of PAMGUARD is a very useful action that the Department can take to protect sea life. CRE Brazil would be pleased to work with the Department to achieve this goal.

We recommend that the Department begin by revising the Draft Guidance to strongly encourage the use of PAM and PAMGUARD whenever marine mammals might be adversely affected, and to adopt provisions similar to those in the U.S. Department of Interior's NTL for Gulf of Mexico seismic.¹⁶

¹⁴ JNCC Guidelines for Minimising the Risk of Injury and Disturbance to Marine Mammals from Seismic Surveys (August 2010), Section 4,1, available online at http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Seismic%20Guidelines_August%202010.pdf.

¹⁵ Ocean Science Consulting, "Advisors to the New Zealand Government," blog entry dated March 15, 2012, available online at <http://www.osc.co.uk/blog/index.php/2012/03/ongoing-beta-testing-of-pamguard/>.

¹⁶ This U.S. NTL is *Notice to Lessees and Operators of Federal Oil, Gas, and Sulphur Leases in the OCS, Gulf of Mexico Region, Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program*, OMB Control Number: 1010-0151, and it is available online at <http://www.bsee.gov/Regulations-and-Guidance/Notices-to-Lessees/2012/2012-JOINT-G02-pdf.aspx>.

**Comments On Draft Guidance, Section 4.2, Pages 19-25,
“Operational/activity-specific guidance.”**

- The Draft Guidance may not contain any safety zone limit on the pre-start-up marine mammal monitoring provisions. The currently effective 2007 Guidance prohibits start-up if a marine mammal is spotted by the MMO within 1000 meters of the vessel.¹⁷ The Draft Guidance does not contain this 1000 meter limit, unless paragraph 6 on page 23 of the Draft Guidance is read to modify paragraphs 4 and 5 on page 23. There is no factual basis for eliminating the 1000 meter limit.¹⁸ We ask the Department to clarify this issue by revising the Draft Guidance to state that the 1000 meter limit still applies to the marine-mammal observation start-up prohibition.
- There appear to be significant typographical errors in the Draft Guidance: *i.e.*, omitted *nots* before “continue” in no. 7, page 20; no. 7, page 21; no. 8, page 22; and no. 8, page 23. Without a *not* these requirements do not seem to make any sense. We ask the Department to clarify this issue.

¹⁷ The currently effective *Irish Code of Practice for the Protection of Marine Mammals during Acoustic Seafloor Surveys in Irish Waters* is available online at <http://www.npws.ie/media/npws/publications/marine/media,5176,en.pdf> (“2007 Guidance”).

¹⁸ The industry standards include monitoring a 500 meter radius before start up. International Association of Geophysical Contractors, *Recommended Mitigation Measures for Cetaceans during Geophysical Operations*, available online at <http://www.iagc.org/files/2682/>. So do the U.S. regulatory requirements for Gulf of Mexico seismic. *Notice to Lessees and Operators of Federal Oil, Gas, and Sulphur Leases in the OCS, Gulf of Mexico Region, Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program*, OMB Control Number: 1010-0151, available online at <http://www.bsee.gov/Regulations-and-Guidance/Notices-to-Lessees/2012/2012-JOINT-G02-pdf.aspx>.