

# **Regulating Ocean Noise: A Collaborative and Creative International Approach**

*Helen Andrews  
M Phil Candidate  
Macquarie University  
Sydney*

## **Abstract**

There is substantial scientific evidence that noise generated by activities such as shipping, naval exercises and seismic surveys causes harm to marine mammals. Strandings of whales were tentatively linked with nearby seismic and sonar activities as early as 1960 and documented strandings since the early 1990s show stronger linkages. Despite the proliferation of international environmental treaties in that same period, there are no provisions to regulate ocean noise. This paper discusses legal and governance issues and concludes that a collaborative and creative international approach is necessary given the nature and complexity of ocean noise.

# Regulating Ocean Noise: A Collaborative and Creative International Approach

## 1. Introduction

There is a growing body of scientific evidence that the generation of noise<sup>1</sup> into the ocean harms some marine species. For example, strandings of whales have been linked to nearby activities such as naval exercises and seismic surveys.<sup>2</sup> Over the past few decades ambient noise levels in the oceans have increased as a result of the expansion in marine activities such as shipping, fishing, tourism and prospecting.<sup>3</sup> However, none of the numerous international environmental governance regimes developed over the same period has specifically addressed the issue of ocean noise. A number of states have enacted domestic legislation or issued guidelines to control some marine activities such as whale watching and seismic surveys but there is no inherent consistency of approach.<sup>4</sup>

As marine species migrate across jurisdictional boundaries, both between states and between zones defined by the Law of the Sea Convention,<sup>5</sup> a consistent and collaborative approach is needed if these problems are to be addressed. Moreover, an international governance framework could facilitate coordination of mitigation and enforcement measures.

The purpose of this paper is to review the current literature and activities in relation to the regulation of ocean noise and to propose a broad international governance approach. The paper commences with a brief discussion of the sources and impacts of anthropogenic<sup>6</sup> noise in the ocean. The complexities inherent in regulating a transient invisible "pollutant" are then identified. Recent activities within international treaty organisations and the views of legal commentators in relation to regulation of ocean noise are then discussed. Developments in approaches to regulation are briefly discussed before proposing a governance approach which would involve a range of players.

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<sup>1</sup> The terms "noise" and "sound" are used interchangeably in this paper.

<sup>2</sup> For a summary of documented strandings, see Michael Jasny, Joel Reynolds, Cara Horowitz and Andrew Wetzler, *Sounding the Depths II: The Rising Toll of Sonar, Shipping and Industrial Ocean Noise on Marine Life* (2005) Natural Resources Defense Council, <<http://www.nrdc.org/wildlife/marine/sound/contents.asp>> at 7 May 2007.

<sup>3</sup> Elena M McCarthy, *International Regulation of Underwater Sound* (2004).

<sup>4</sup> The Commonwealth Department of Environment and Water Resources has issued Guidelines on the application of the *Environment Protection and Biodiversity Conservation Act* to interactions between offshore seismic operations and larger cetaceans. Available at <<http://www.environment.gov.au/epbc/policy/seismic/index.html>> at 18 May 2007.

<sup>5</sup> *The United Nations Convention on the Law of the Sea* opened for signature, 10 December 1982, 1833 UNTS 3 (entered into force 16 November 1994) (hereafter 'Law of the Sea Convention').

<sup>6</sup> In other words, relating to the influence humans have on the natural world, or caused by humans.

## 2. Sources and Impacts of Noise in the Marine Environment

Sound is a form of energy that travels as a wave and sound waves differ in wavelength, amplitude (volume) and frequency. The level of sound is measured in decibels, while frequency is measured in cycles per second. The ocean transmits sound very effectively and the lower the frequency, the further the sound travels. For example, at frequencies lower than 1000 cycles per second, sound travels up to thousands of kilometres.<sup>7</sup> Noise occurs naturally in the oceans as a result of wind, waves and marine life.<sup>8</sup> It is well known that marine mammals use sounds to navigate, communicate and find prey.<sup>9</sup> Similarly, fish and marine invertebrates also produce and use sound.<sup>10</sup>

This paper is not concerned with the naturally occurring sounds in the ocean but with anthropogenic noise. All human activities in the ocean generate noise but the major sources of noise are commercial shipping, fishing, military exercises, seismic surveys for oil/gas exploration, tourism and marine scientific research.<sup>11</sup> These activities have increased, over the past few decades, both in volume and geographical extent, as a result of expanding economies, globalisation of trade and more sophisticated technology. Liberalisation of international trade under the World Trade Organisation has significantly increased the total of goods carried by sea.

For example, world shipping has increased exponentially<sup>12</sup> over the past thirty years and it is estimated that it carries over 90% of world trade in some 85,000 commercial ships.<sup>13</sup> The total tonnage of the world's merchant fleet increased from 477 million gross tonnes in 1996 to 646 million gross tonnes in 2006 - an increase of 35%, with the largest growth being in the tonnage of containers ships - an increase of 135%.<sup>14</sup> Similarly, the cruise industry has expanded over the past ten years with larger and larger ships, some now over 150,000 tonnes carrying more than 3,500 passengers. Cruise ships regularly

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<sup>7</sup> McCarthy, above n 3, 9.

<sup>8</sup> Ibid, 9.

<sup>9</sup> Ibid, 14-15.

<sup>10</sup> Ibid, 23-28.

<sup>11</sup> Land based sources of noise contributing to ocean noise include dredging, coastal, developments and wind farms but they are not considered further in this paper as control of these activities rests solely with individual states.

<sup>12</sup> The number of ships of over 1000 GRT has tripled since the end of World War II while the total tonnage has increased almost eight times. See <<http://www.coltoncompany.com/shipping/statistics.htm>> at 9 May 2007.

<sup>13</sup> See <[http://www.dft.gov.uk/stellent/groups/dft\\_transstats/documents/page/dft\\_transstats\\_024543.hcsp](http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/page/dft_transstats_024543.hcsp)> at 7 May 2007.

<sup>14</sup> See Table 7.3 at <<http://www.dft.gov.uk/pgr/statistics/datatablespublications/maritime/shipping>> at 9 April 2007.

visit sensitive areas such as the Southern Ocean and Antarctic waters<sup>15</sup> which are recognised feeding grounds for several species of whales. Apart from cruise ships, whale watching has become a popular tourist activity and a number of states have introduced guidelines and regulations to limit distance of approach to whales and vessel speed.<sup>16</sup>

Generally speaking, the level of noise increases with the size, load and speed of ships with the main source of noise being the propellers.<sup>17</sup> While the noise from individual ships is transient, ships are continuously present in the busier shipping areas such as the high seas of the Northern Atlantic and Northern Pacific Oceans.<sup>18</sup> Continuous noise such as that in busy shipping lanes can mask the sounds used by mammals and other marine species to communicate, find prey and to locate predators.<sup>19</sup>

Naval vessels generate sound similar to that of commercial shipping when underway but generate additional more intense noise when using low frequency sonar to map the seafloor or to look for enemy submarines.<sup>20</sup> There are well documented accounts of the impacts of low to mid range frequency sonar on whales in the vicinity of military exercises such as the stranding of 17 whales of four species and the eventual death of at least seven of these whales in the Bahamas in 2000 which coincided with the US naval exercises in the vicinity.<sup>21</sup> In addition to explosions of bombs, torpedoes, etc directly killing marine life, the noise of these explosions can also kill.<sup>22</sup>

Exploration and extraction activities such as seismic surveys and offshore drilling for minerals, oil or gas deposits generate significant noise. It is unclear whether the number of seismic surveys has increased worldwide as

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<sup>15</sup> There are comprehensive tourism statistics on the website of the International Association of Antarctic Tour Operators (IAATO). Available at <[http://www.iaato.org/tourism\\_stats.html](http://www.iaato.org/tourism_stats.html)> at 8 May 2007.

<sup>16</sup> For example see the *National Parks and Wildlife Amendment (Marine Mammals) Regulation 2006* (NSW). Available at <[http://www.nationalparks.nsw.gov.au/npws.nsf/content/whale\\_regulation](http://www.nationalparks.nsw.gov.au/npws.nsf/content/whale_regulation)> at 8 May 2007.

<sup>17</sup> McCarthy, above n 3, 32.

<sup>18</sup> Steve Raaymakers, 'Maritime Transport and High Seas Governance - Regulation, Risks and the IMO Regime', (Paper presented to International Workshop on Governance of High Seas Biodiversity Conservation, Cairns, Australia, 17-20 June 2003).

<sup>19</sup> McCarthy, above n 3, 14.

<sup>20</sup> Ibid, 52.

<sup>21</sup> See <[http://www.nmfs.noaa.gov/pr/pdfs/health/stranding\\_bahamas2000.pdf](http://www.nmfs.noaa.gov/pr/pdfs/health/stranding_bahamas2000.pdf)> at 12 May 2007. Since 1996 the US Navy has funded independent scientific teams to investigate impacts of sonar on marine mammals, fish and turtles and drafted environmental impact statements. Details are at <<http://www.surtass-lfa-eis.com/index.htm>> at 10 August 2007. However, on 6 August 2007, the US District Court issued a preliminary injunction preventing the use of mid-frequency sonar in waters off Southern California until a lawsuit brought by the National Resources Defense Council is heard. Details are at <<http://www.nrdc.org/media/2007/070806.asp>> at 10 August 2007.

<sup>22</sup> McCarthy, above n 3, 53.

exploration activity tends to mirror the prevailing economic situation in relation to oil and gas. However, new technologies have enabled drilling rigs to operate in deeper water where the sound travels further.<sup>23</sup> Of particular concern is the high energy, low frequency sound used in seismic surveys to map geological features. Surveys typically generate short sharp blasts from airguns and this noise has been reported to affect the behaviour of mammals as far as up to 10 km away.<sup>24</sup> Airgun noise can also damage fish ears.<sup>25</sup> Greenpeace has published a comprehensive assessment of the impact of ocean seismic surveys in US waters and has concluded that safeguards have been relaxed and further scientific research is needed.<sup>26</sup> The Australian framework for approvals of seismic surveys has just been revised and contains detailed guidelines and mitigation measures.<sup>27</sup>

Another potentially dangerous source of noise is marine scientific research that involves the use of sonar and seismic surveys. Marine scientific research can be a "double-edged sword" in that it is necessary to provide certainty in establishing the impacts of human activities on the marine environment yet at the same time it can be a source of damage. Academic researchers and oceanographers use sonar and seismic surveys to measure ocean properties such as density, salinity and temperature. While these surveys are generally of short duration, the impacts can be as severe as those from military and commercial uses of sonar and seismic techniques.

### **3. Underlying Complexities: The Challenges in Regulating Ocean Noise**

Despite the amount of research, the increasing evidence of harm and the precautionary approach,<sup>28</sup> action towards developing an effective legal regime has been slow. One of the reasons for this inaction is undoubtedly the

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<sup>23</sup> McCarthy, above n 3, 45.

<sup>24</sup> Ibid, 42.

<sup>25</sup> Robert D Mc Cauley, Jane Fewtrell and Arthur N Popper, 'High intensity anthropogenic sound damages fish ears' (2003) 113 *The Journal of the Acoustical Society of America*, 638-642.

<sup>26</sup> Jim Cummings and Natalie Brandon, *Sonic Impact: A Precautionary Assessment of Noise Pollution from Ocean Seismic Surveys*, Greenpeace 2004. Available at <<http://www.greenpeace.org/raw/content/usa/press/reports/sonic-impact-a-precautionary.pdf>> at 11 May 2007.

<sup>27</sup> EPBC Act Policy Statement 2.1 - Interaction between offshore seismic exploration and whales, Department of Environment and Water Resources March 2007. Available at <<http://www.environment.gov.au/epbc/publications/seismic/index.html>> at 10 August 2007. Under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth), persons wishing to undertake seismic surveys need to refer proposals that are likely to have significant impact on matters of national environmental significance to the Department of Environment and Water for assessment.

<sup>28</sup> Principle 15 of the 1992 Rio Declaration on Environment and Development states: "In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

number of variables to be considered in addressing the problem as shown in Table 1.

## 4. Existing Situation

### 4.1 International and Regional Legal Regimes

The sources of international law are set out in the statute of the International Court of Justice (ICJ)<sup>29</sup> and include both treaty and customary international law. Customary international law is defined as "law which has evolved from the practice and custom of states."<sup>30</sup> For the practice of states to give rise to customary international law, it must meet two primary criteria, that is, to have been the subject of consistent and constant usage, generally over a substantial period of time, and to be regarded by states as legally binding (the notion of *opinio juris*). It has been noted that the major powers or those most affected by the particular custom, must concur in the practice.<sup>31</sup> Evidence of state practice can include treaties, court decisions, policy statements and official manuals. While it may be premature to suggest a customary norm in relation to ocean noise, there is some evidence of state practice especially at the regional level and within individual states.

Turning to treaty law, it has been noted that there is an "alphabet soup" of current environmental regimes that apply to the marine environment.<sup>32</sup> However, there is no specific international legal treaty that regulates the generation of noise by humans into the marine environment. Also, apart from a broad reference to the introduction of energy into the marine environment in the Law of the Sea Convention,<sup>33</sup> there are no provisions relating to ocean noise in any of the current treaties. This contrasts with the extensive provisions of the International Convention for the Prevention of Pollution from Ships<sup>34</sup> and its Annexes which regulate substance-based pollution of the marine environment.

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<sup>29</sup> Article 38 (1).

<sup>30</sup> *Butterworths Concise Australian Legal Dictionary* (2nd ed, 1997).

<sup>31</sup> Malcolm N Shaw, *International Law* (5th ed, 2003) 76.

<sup>32</sup> K Gjerde and G Kelleher, 'ABCs of HSMPAs: Legal Options for Cooperation for High Seas Marine Protected Areas', Paper presented to the IMPAC1 Conference, Geelong, 23-28 October 2005.

<sup>33</sup> Article 1 (1) (4) states, inter alia, "pollution of the marine environment' means the introduction by man, directly or indirectly, of substances or energy into the marine environment". Most commentators have interpreted this to mean that noise is included as sound is a form of energy. Of interest also is Article 236 which states that the provisions of the LOSC do not apply to any warship or other vessels or aircraft owned and operated by a state and used on government non-commercial service. However, such vessels or aircraft are expected to act in a manner consistent, as far as is reasonable and practicable, with the LOSC. This provision has implications for the control of any military activities such as the use of sonar.

<sup>34</sup> *International Convention for the Prevention of Pollution from Ships*, 2 November 1973, in force 2 October 1983, as amended by the 1978 Protocol, 1340 UNTS 61 (hereafter 'MARPOL'). The majority of states have incorporated MARPOL provisions into their domestic law.

Other major international treaties that apply to the marine environment are species specific<sup>35</sup>, apply to particular geographic areas<sup>36</sup> or are broadly based.<sup>37</sup> There are also a number of non-binding environmental declarations and agreements, but these should not necessarily be dismissed as history has shown that these agreements can be a source of customary international law, precursors to, or at the least, influence the content of later binding agreements.<sup>38</sup>

## 4.2 International Activities

There have been numerous papers published and scientific workshops<sup>39</sup> on the impacts of ocean noise yet there is still no universal acceptance of the need for action by the major international forums. The issue has been discussed within the International Whaling Commission, the Antarctic Treaty Consultative Meetings and the Conference of the Parties of the Convention on Biological Diversity.

The United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea<sup>40</sup> has listed ocean noise on its agenda since 2003 but there have been no definite recommendations for action. As a result, the United Nations General Assembly (UNGA) in its annual debate on Oceans and the Law of the Sea in 2006 could only note the increasing concerns and encourage further studies as knowledge is incomplete. The UNGA also reiterated a recommendation by the IWC Scientific Committee to member Governments strengthen monitoring and mitigation in relation to seismic surveys.<sup>41</sup> The inherent delays in developing international environmental

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<sup>35</sup> See for example, *International Convention for the Regulation of Whaling* opened for signature 2 December, 1946, 161 UNTS 72 (entered into force 10 November 1948), *Convention for the Conservation of Antarctic Seals*, opened for signature 1 June 1972, 11 ILM 251 (entered into force 11 March 1978), *Convention on the Conservation of Migratory Species of Wild Animals*, opened for signature 23 June 1979, 1651 UNTS 333 (in force 1 November 1983).

<sup>36</sup> See for example, *The Antarctic Treaty*, opened for signature 1 December, 1959, 402 UNTS 71 (entered into force 23 June 1961).

<sup>37</sup> See for example, *Convention on Biological Diversity*, opened for signature 5 June 1992, 31 ILM 818 (entered into force 29 December 1993).

<sup>38</sup> Patricia Birnie and Alan Boyle, *International Law and the Environment* (2nd ed, 2002), 26-27.

<sup>39</sup> For example, Shipping Noise and Marine Mammals, 18-19 May 2004, Arlington, VA, USA Available at <[http://www.nmfs.noaa.gov/pr/pdfs/acoustics/shipping\\_noise.pdf](http://www.nmfs.noaa.gov/pr/pdfs/acoustics/shipping_noise.pdf)> at 9 May 2007.

<sup>40</sup> The annual meeting of the Parties to the LOSC is purely administrative in nature and does not consider implementation issues associated with the Convention. Following a review undertaken by the Commission on Sustainable Development on the theme "Oceans and Seas", on 24 November 1999, the General Assembly established an open-ended informal consultative process in order to facilitate the annual review of developments in oceans affairs. This process was to consider the Secretary-General's annual reports on oceans and the law of the sea and to suggest particular issues for consideration by the General Assembly, with an emphasis on identifying areas where intergovernmental and inter-agency coordination and cooperation should be enhanced. The initial term of the group was for three years and this was extended by the UNGA in 2002 for three years and again in 2005 for a further three years.

<sup>41</sup> UN Doc A/62/ /, 'Oceans and the law of the sea. Report of the Secretary-General.' Advance and unedited text, [286-288]. Available at <[http://www.un.org/Depts/los/general\\_assembly/documents/text\\_advance\\_unedited\\_62nd\\_session.pdf](http://www.un.org/Depts/los/general_assembly/documents/text_advance_unedited_62nd_session.pdf)> at 15 May 2007.

controls are illustrated by this inaction and as will be seen below, understandably some commentators favour a combination of existing regimes as an expeditious solution. However, such a fragmented approach would not necessarily be easy to implement, nor synchronise as existing treaty organisations are already dealing with competing priorities.

### 4.3 Legal Opinions

While the scientific literature has paid considerable attention to the impacts of noise on marine species, especially mammals, the issue has received limited attention from international environmental lawyers. A few commentators<sup>42</sup> have analysed existing regimes to assess whether there is scope to include regulation of ocean noise. It is acknowledged that international law is relevant,<sup>43</sup> and that the pollution control provisions of the Law of the Sea Convention could provide a framework for regulation<sup>44</sup> as could a global species or ecosystem protection approach.<sup>45</sup> A detailed analysis of the texts of the relevant pollution conventions, both global and regional leads to the conclusion that existing regimes, both global and local, can form a basis for control of ocean noise. However, significant political will would be necessary to develop multilateral options and states should be encouraged to use available legislative powers.<sup>46</sup>

Regional seas agreements such those in the Mediterranean<sup>47</sup> and the Atlantic<sup>48</sup> are also seen as providing a basis for regulation, as well as regional species agreements such as the 1992 Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas.<sup>49</sup> There will need to be a compromise between economic benefits and environmental protection and there are other obstacles to an international treaty such as the challenge of

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<sup>42</sup> Harm M Dottinga and Alex G Oude Elferink, 'Acoustic Pollution in the Oceans: The Search for Legal Standards' (2000) 31 *Ocean Development and International Law* 151, Elena M McCarthy, 'International Regulation of Transboundary Pollutants: The Emerging Challenge of Ocean Noise' (2001) 6 *Ocean and Coastal Law Journal* 257, and Karen N Scott, 'International Regulation of Undersea Noise' (2004) 53 *International Comparative Law Quarterly* 287.

<sup>43</sup> Dottinga and Oude Elferink, *ibid.*, 157.

<sup>44</sup> Scott, above n 41, 292-6.

<sup>45</sup> Dottinga and Oude Elferink, above n 41, 170.

<sup>46</sup> Daniel Owen, 'The Application of Marine Pollution Law to Ocean Noise', Annex 1 in Mark Simmonds, Sarah Dolman and Lindy Weilgart (eds), *Oceans of Noise 2004* (2004) Whale and Dolphin Conservation Society. Available at [http://www.wdcs.org/dan/publishing.nsf/c525f7df6cbf01ef802569d600573108/48a0c8d9c559fa0680256d2b004027d4/\\$FILE/OceansofNoise.pdf](http://www.wdcs.org/dan/publishing.nsf/c525f7df6cbf01ef802569d600573108/48a0c8d9c559fa0680256d2b004027d4/$FILE/OceansofNoise.pdf) > at 16 May 2007.

<sup>47</sup> *Convention for the Protection of the Mediterranean Sea Against Pollution*, opened for signature 16 February 1976 15 ILM 290 (entered into force 12 February 1978).

<sup>48</sup> *Convention on the Protection of the Marine Environment of North-East Atlantic*, opened for signature 22 September 1992 32 ILM 1069 (entered into force 25 March 1998).

<sup>49</sup> Scott, above n 41, 17-29.

monitoring noise emissions globally and continuously and the ability of any non-signatory states to continue to emit noise.<sup>50</sup>

#### 4.4 Discussion

All commentators have arrived at the conclusion that existing regimes provide sufficient scope for regulation. The consensus is that there is unlikely to be a simple or universal solution and it may be necessary to develop different requirements depending upon species, geographic areas and sources of noise. While this may be the case, given the complexity of the issues referred to in Table 1, some form of international framework, even a non-binding instrument such as a Plan of Action or a Memorandum of Understanding,<sup>51</sup> would provide a level of consistency and coordination not inherent in the "smorgasbord" approach of recent commentators as described above. This approach would be further compromised by differing standards and the strong likelihood of there being different parties to different agreements. As the majority of species affected by ocean noise are migratory, some form of global guidance would also assist in protecting these species throughout their range.<sup>52</sup>

None of the commentators has considered the role of "soft law" in the evolution of environmental law. As noted above, non-binding agreements can be a source of customary international law and influence the content of later binding agreements. Also, ambitious soft law can strengthen institutions based on hard law as acceptance is easier to achieve and domestic ratification is not required. In addition, soft law offers greater flexibility, can put pressure on "laggards" and can accommodate intrusive verification and review structures for implementation similar to those required for hard law institutions.<sup>53</sup>

There are a number of non-binding global instruments that could provide a model for ocean noise. These include the International Plans of Action developed by the UN's Food and Agriculture Organisation (FAO) to provide a framework for regulation of complex environmental issues.<sup>54</sup> A possible model is the FAO's 1995 Code of Conduct for Responsible Fisheries which includes duties of all states, detailed operational requirements and

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<sup>50</sup> McCarthy, above n 41, 290.

<sup>51</sup> For example, Memoranda of Understanding have been concluded under the Convention on Migratory Species for the protection of Siberian Cranes and for Marine Turtles of the Indian Ocean and South-East Asia.

<sup>52</sup> The Convention on Migratory Species sets out the special responsibilities of Range States, including the encouragement for Range States to conclude global or regional Agreements.

<sup>53</sup> Jon Birger Skjaereth, Olav Schram Stokke and Jorgen Wettestad, 'Soft Law, Hard Law, and Effective Implementation of International Environmental Norms', (2006) 6 *Global Environmental Politics*, 104.

<sup>54</sup> For example, see UN Food and Agriculture Organisation, 'International Plan of Action for the Conservation and Management of Sharks' (1999). Available at [http://www.fao.org/fi/website/FIRetrieveAction.do?dom=org&xml=ipoa\\_sharks.xml](http://www.fao.org/fi/website/FIRetrieveAction.do?dom=org&xml=ipoa_sharks.xml) at 19 May 2007.

management measures.<sup>55</sup> However, the FAO is not the appropriate organisation to develop and implement a comprehensive instrument for ocean noise as its responsibilities are limited to fishing related issues. Further research will be necessary to determine if there is a suitable organisation that can encompass all the varied activities that generate ocean noise. If there is no one organisation, joint approaches from a number of organisations will require effective coordination and collaboration.

## 5. The Way Forward: A Governance Approach

### 5.1 Background

As described above, commentators have taken existing regimes as their starting point in analysing the problem of ocean noise and looked for relevant provisions. Existing regulatory regimes such as MARPOL and the London Dumping Convention<sup>56</sup> have been successful in controlling substance based pollution since their introduction. However, because of the inherent complexities in regulating ocean noise, a more fundamental approach would be to ask what are the outcomes required, the strategies for controlling ocean noise and how can these best be achieved and by whom. This idea is consistent with emerging trends in Australia at least, for more rigorous assessment of regulatory proposals by governments with regulatory impact statements and cost benefit analyses required of regulatory agencies.<sup>57</sup>

### 5.2 Recent Developments

Recent developments such as new governance,<sup>58</sup> outcomes-based regulation<sup>59</sup> and principles-based regulation<sup>60</sup> across a range of government sectors support the idea of a fresh, less prescriptive approach to complex legal problems. For example, the characteristics of a new governance approach include coordination at many levels of government, decentralisation,

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<sup>55</sup> UN Food and Agriculture Organisation, 'Code of Conduct for Responsible Fisheries' (1994). Available at <<http://www.fao.org/DOCREP/005/v9878e/v9878e00.htm>> at 7 May 2007.

<sup>56</sup> 1972 *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter*, opened for signature 29 December 1972 11 ILM 1294 (entered into force 30 August 1975).

<sup>57</sup> The responsibility of the Office of Best Practice Regulation of the Australian Government is to promote effective and efficient legislation and regulation, including calculations of costs to industry of proposed legislation. Guidelines on preparing Regulatory Impact Statements (RIS) are provided on its website and interestingly, one of the sample RISs is for a Marine Reserve Management Plan. See <<http://www.obpr.gov.au/ris/examples/simrmp/simrmp.pdf>> at 7 May 2007.

<sup>58</sup> For definitions and discussions, see <<http://wage.wisc.edu/research/collaboratives/governance/>> at 19 May 2007.

<sup>59</sup> For definitions and discussion, see <<http://www.innovation.gov.uk/innovationreport/index.asp?lvl1=5&lvl2=1&lvl3=0&lvl4=0>> at 19 May 2007.

<sup>60</sup> For definitions and discussion, see <<http://www.fsa.gov.uk/pubs/other/principles.pdf>> at 19 May 2007.

extended deliberations, flexibility, experimentation, knowledge creation and participation and power sharing.<sup>61</sup>

As well as approaching problems from a different perspective, a governance approach involves a range of non-state actors such as civil society and commercial interests that could contribute to research for, drafting of, implementation of, monitoring of and evaluating compliance with, any new regime. These bodies could include international, regional and national organisations, NGOs, community groups, the business community and individuals. To date NGOs have had significant involvement in environmental issues and before examining this involvement in some detail, it is instructive to look briefly at the involvement of some other non-state actors.

Corporations are taking greater responsibility for their environmental performance and impacts. The corporate social responsibility<sup>62</sup> movement has embraced environmental as well as social issues and many large international corporations now proudly display their “green” credentials.<sup>63</sup> While there could be a degree of cynicism attached to these initiatives, the growing acceptance of the threats posed by global warming can only intensify a “green” approach by major corporations.

Concerned citizens also have a role to play, as a recent example illustrates; a speedboat operator on Sydney Harbour was fined \$10,000 for harassing a whale after he was reported by locals.<sup>64</sup>

### 5.3 The Role of NGOs

The role of NGOs in the development of international environmental law has been significant as one brief case study illustrates; the actions of Greenpeace over a period of 20 years contributed to the regime change which outlawed the dumping of low level radioactive waste.<sup>65</sup> Similarly, Greenpeace's actions in relation to the proposed dumping of decommissioned oil platforms contributed to the eventual ban on such dumping.<sup>66</sup>

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<sup>61</sup> Joanne Scott and David M Trubek, 'Mind the Gap: Law and New Approaches to Governance in the European Union' (2002) 8 *European Law Journal*, 1.

<sup>62</sup> See for example, <<http://www.csr.gov.uk/whatiscsr.shtml>> at 17 May 2007.

<sup>63</sup> For example the BP website contains considerable detail of their global environmental performance and initiatives.  
<<http://www.bp.com:80/multipleimagesection.do?categoryId=9015678&contentId=7030461>> at 17 May 2007.

<sup>64</sup> Ben Cubby, "Marina man fined over whale", *Sydney Morning Herald* (Sydney), 3 May 2007, 3.

<sup>65</sup> Lasse Ringius, 'Environmental NGOs and Regime Change: The Case of Ocean Dumping of Radioactive Waste' (1997) 3 *European Journal of International Relations* 61.

<sup>66</sup> Remi Parmentier, 'Greenpeace and the Dumping of Wastes at Sea: A Case of Non-State Actors' Intervention in International Affairs' (1999) 4 *International Negotiation*. Available at <<http://www.greenpeace.org/raw/content/international/press/reports/greenpeace-and-the-dumping-of.pdf>> at 7 May 2007.

A number of NGOs have taken on the role that would be normally expected of subsidiary bodies to the various international agreements, such as Scientific Committees and have developed comprehensive analyses and discussion papers.<sup>67</sup> It is clear that NGOs have a significant role to play and this has increasingly been recognised with the more established and credible NGOs allowed observer status at international forums. Similarly, intergovernmental organisations such as the UN Environment Program are playing a more direct role in environmental management, often in partnership with local communities.<sup>68</sup>

In relation to ocean noise, the major environmental non government organisations (NGOs), including Greenpeace and the World Wildlife Fund, have developed campaigns to raise awareness of the issues and to lobby for regulatory action and at least one specialist NGO<sup>69</sup> has been formed to campaign for controls on ocean noise. The International Union for the Conservation of Nature (IUCN) adopted a resolution,<sup>70</sup> at its 2004 Congress, calling for further research and for member states to develop mechanisms for the control of undersea noise through international organisations.

## 6. Conclusion

If ocean noise is to be regulated, there is a need for a sustained consciousness raising campaign worldwide. A range of non-legal players are already taking an interest in protecting the environment and making significant contributions. The involvement of individuals, civil society, NGOs, inter-governmental organisations, states and international treaty organisations such as Conferences of the Parties and Scientific Committees will be necessary. Similarly, the involvement of those most directly affected by any proposed regulation, such as private companies and the defence sector, is critical.

While existing legal regimes may support short term solutions, a governance approach, rather than a strictly legal approach, is necessary given the complexity of sources, impacts and jurisdictions. A blend of legal and extra-legal measures will be needed, including soft law instruments to raise awareness and pave the way for later binding agreements. Global, regional and local action is required and needs to be coordinated. It is conceded that commentators realistically conclude that a single international agreement is unlikely to solve the problems. However, an international framework

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<sup>67</sup> The Antarctic and Southern Ocean Coalition has presented information papers on ocean noise to the annual Antarctic Treaty Consultative Meetings. Both the Whale and Dolphin Conservation Society and Greenpeace have produced comprehensive reports on Ocean Noise and Seismic Surveys respectively.

<sup>68</sup> For a summary of joint work to conserve turtles, see < <http://www.roap.unep.org/press/NR06-02.html> > at 19 May 2007.

<sup>69</sup> The International Ocean Noise Coalition is a partnership of over 150 NGOs. Details at < [www.awionline.org/whales/noise/IONC/](http://www.awionline.org/whales/noise/IONC/) > at 7 May 2007.

<sup>70</sup> Resolution 3.068 "Undersea noise pollution". Available at < [www.iucn.org/congress/2004/members/Individual\\_Res\\_Rec\\_Eng/wcc3\\_res\\_068.pdf](http://www.iucn.org/congress/2004/members/Individual_Res_Rec_Eng/wcc3_res_068.pdf) > at 7 May 2007.

agreement or plan of action could set out minimum requirements to ensure consistency across jurisdictional zones, especially as the affected species are migratory and require protection throughout their range.

It is one thing to say that governance is the better approach, but what should be the substance of that particular approach? This question requires consideration of at least five additional questions:

- What do we want to achieve?
- Who is best placed to do it?
- How can it be done?
- How will we know it is working?
- What sanctions do we want to impose?

These questions need to be answered for all sources of noise, for all affected species and by all interested parties. There are no right or wrong answers but a collaborative and creative approach will facilitate the process. With this approach, the challenges of ocean noise might be met.

**Table 1**

**Regulating Ocean Noise – Examples of Complexities**

<b>Variable</b>	<b>Issues</b>
Noise	<ul style="list-style-type: none"><li>▪ Invisible, transient, transboundary,</li><li>▪ Lack of data on ambient levels and trends</li><li>▪ Inconclusive data for some sources of noise</li></ul>
Sources	<ul style="list-style-type: none"><li>▪ Variety of sources often associated with powerful interests</li></ul>
Marine life	<ul style="list-style-type: none"><li>▪ Different impacts for different species</li><li>▪ Difficulty of observation of effects of noise</li><li>▪ Similarly, migratory species move within and across jurisdictional zones, established under the LOSC, including the high seas, often travelling thousands of kilometres through the waters of many states and on the high seas.</li></ul>
Scientific Uncertainty	<ul style="list-style-type: none"><li>▪ Scientific evidence of damage caused by shipping considered inconclusive by some commentators</li><li>▪ Vested interests in some research programs</li></ul>
Shipping	<ul style="list-style-type: none"><li>▪ The global economy depends upon commercial shipping for trade and attempts to further restrict when and where ships may ply their trade would not necessarily be supported by business interests.</li></ul>
Military activities	<ul style="list-style-type: none"><li>▪ State sovereignty</li><li>▪ National security</li><li>▪ Political power</li></ul>
Jurisdiction	<ul style="list-style-type: none"><li>▪ Ships move within and between jurisdictional zones established under the LOSC, emitting both constant and transient noise raising issues of state sovereignty, freedom of the high seas, flag state control, etc.</li><li>▪ Marine life may be affected by noise generated by a vessel of one state in another state's waters, and eventually strand and die on the shores of yet another state.</li><li>▪ Flag vs. port state control</li><li>▪ Freedom of the high seas</li></ul>
Monitoring and Enforcement	<ul style="list-style-type: none"><li>▪ Jurisdiction and authority not clear</li><li>▪ Any action will be resource intensive</li><li>▪ The oceans are vast, covering some 70% of the earth's surface raising questions of capabilities to monitor and enforce any regulations that could be developed.</li><li>▪ Relative priorities attached to, or capacity to regulate ocean noise and/or enforce regulations between developing and developed states.</li></ul>