Envirolink: Mussel Farms and Marine Mammals

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A. Description of the Problem, Meeting Overview, and Objectives

There is a continuing issue of mussel farming relative to cetacean -- whale and dolphin -- use of habitat. The issue has been particularly difficult, some may say divisive, between foraging dusky dolphins and mussel farming concerns in Admiralty Bay, Marlborough Sounds. However, there are other broader issues and areas of concern.

Pursuant to the wish for open communication between stakeholders and researchers, the Ministry for the Environment has established a special linkage opportunity called "Envirolink", which consists of an open-forum consultation period, and a follow-up evaluation and advisory report.

In order to obtain stakeholder input, meetings were held between 1) mussel farm stakeholders/representatives of industry; 2) MDC and DOC representatives, and those from other government entities with interest; 3) Representatives of iwi of the South Island, bridging knowledge of the iwi perspective with a deep involvement in industry, conservation, government entities, and science; and 4) representative marine scientists. We gathered in an uncharged atmosphere where we could air concerns, voice opinions, and come to a unified or agreed-upon plan of action for proceeding with science and conservation issues that may help solve habitat-use unknowns or disagreements of opinion; help the animals of concern; help iwi concerns of sustainable use of natural or human-enhanced resources; and in the long-run, help the industry as well.

We met on three days in Blenheim, Monday July 24, 2006, Tuesday July 25, and again Wednesday October 2006. We discussed concerns and ways to help address them from industry, cultural, management, and scientific perspectives, and came up with draft statements for dissemination to Envirolink, and the community at large. It is our goal to further develop this report into a peer-reviewed scientific document for international dissemination. However, we view this goal as beyond the Envirolink initiative.

The specific objective of the meetings and follow-up report was to explore the issue of co-existence of mussel farms and marine mammals in New Zealand, with perspectives of researchers, managers, iwi, and the marine farming industry; and specifically to:

1) Share information.
2) Gain a greater understanding and appreciation of different needs and perspectives.
3) Assist stakeholders in analysing and understanding general and specific issues relating to mussel farms and marine mammals, and how to mitigate them.
4) Reach a consensus on how to move forward in terms of management and research.

5) Obtain enough information and consensus to prepare a report to summarise the issues and make recommendations.

We view this report as a "living document", and invite all interested parties to share their views, concerns, and ideas for ways forwards. These may then be brought up at a future meeting similar to those meetings engaged in here, and acted upon by the meeting attendees. The senior author can serve as a receiver of such information:

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C. Envirolink – Mussel Farming and Marine Mammals Perspectives of Stakeholders

I. Industry Perspectives:

1) Cost of research and related considerations:

a. Industry often finds itself undertaking significant amounts of research in support of applications that contain a large amount of public good/baseline knowledge acquisition.

b. Often the public benefit of this research is significant but private developers pay the costs.

c. How are government and industry aspirations for growth balanced against concerns relating to habitat overlap?

2) Outcomes/Methods of Research

a. Research should be holistic/multidisciplinary, and should increase certainty.

b. Potential effects should be examined objectively to ascertain if they are limiting.

c. Ecological benefits of mussel farms should be considered also.

d. Risks posed by mussel farms should be considered against a background of other risks.

3) Adaptive management/staged development should be utilised, and a toolkit of standard research methods would be useful for this.

II. Research Perspectives:

1) We need clear and broadly-accepted definitions of terms and research protocols, so that people from all groups are on the same page. There are many needs, but examples are definitions of population, habituation/tolerance, habitat fragmentation, etc.

2) Researchers need clearly defined goals and objectives and an indication of what level of impact is acceptable.

3) What questions need to be asked?

    a. Applied Research
        i. What questions do managers need answered in the short, medium and long –term?
        ii. Managers tend to require some answers in a shorter time frame than others, *e.g.*,

iii. The species involved, their numbers and their spatial and temporal variability are among the first questions that require immediate answers.

b. Pure ("basic") Research
   i. Interesting to academics
   ii. Longer time frame
   iii. Basic biology, behaviour, differential habitat usage, bottom up trophic studies to investigate food availability of the top predators.

   NB. Some of these basic questions and answers form the backbone of baseline info that is needed to answer the applied questions, so there definitely is a need for "basic" research in addition to the more applied research.

4) Interplay and consistent dialogue is required between researchers, industry, management and policy makers, and iwi concerns to advise and troubleshoot on issues including, but not necessarily limited to:

   a. what questions need to be asked – a clear indication of goals and objectives;

   b. how feasible these are – with respect to the researchers ability to provide the answers considering time, available technology and monetary constraints; and

   c. what time frame is needed – what questions need to be answered in the short, medium and long-term?

5) Standardised methods are useful to help streamline research and cut costs and planning time – however, it is important to keep in mind that methods used will vary depending upon the area in question, the timescale required, resources, the species in question etc. Researchers should use the best, most cost effective and appropriate research tools. They also should ensure that a good experimental design is developed that is appropriate for the research programme. All scientific protocols followed should be robust and valid.

III. Management Perspectives:

1) We are deficient in baseline data – e.g. on how many animals there are, where they are, and what they are doing in those places.

2) Further research is needed to understand what the necessary requirements are for different/crucial life stages for each species - e.g. nursery/foraging/social.

This should encompass research to improve Ecosystem/Trophic management, which would complement single species/single population studies.

a. “Big picture” understanding of links between trophic layers and what causes particular species to be in particular areas at certain times.

b. What are the other threats to ecosystem processes that need to be understood/managed in order to protect populations of marine mammals?

c. We must consider cumulative effects at all levels.

It is important to understand the full range of issues that may be affecting marine mammal populations and their distribution and behaviour.

3) Are there any areas where the risks/impacts would be particularly high?

4) Entanglement of southern right whale (and other species); although current data suggest this is not a particularly common occurrence, marine farms in new (offshore) locations may increase risk, and the impact on species with small population size could be significant . Particular questions include:

a. Are there historic calving locations that should be avoided?

b. Are there bottlenecks in migration routes? There needs to be more research on this.

5) Hector’s dolphin – research at Clifford Bay (and elsewhere, e.g. Jackson Bay) will be important to increase understanding of this species.

6) Alternative designs of mussel farms (e.g. subsurface farms) - do they have different effects/risks for different species (not just marine mammals?)

7) The scope of AEE’s (Assessments of Environmental Effects, which form part of resource consent applications) should be broadened to include effects on marine mammals.

Industry (and management practitioners) would benefit from agreed standards for the information that should be provided in AEEs, including standard requirements for research and monitoring. Industry, in particular, requires some certainty in the resource consent process in order to plan for development and investment. However, there must be some flexibility in approach to cater for differences between proposals (e.g. in terms of their size & location).

Research used to support individual resource consent applications needs to be made more widely accessible – studies are of limited use if they just sit in the Council application file, as few will know of their existence. This also applies to monitoring studies carried out after consents are granted. The question is how the wider dissemination of these studies can be achieved. Not all reports are suitable for publication in scientific journals, and those who commissioned the work may be reluctant to give permission it to be published as they may wish to retain discretion over its use.

An alternative option is to use an on-line database to record published & 'grey' literature, which can be searched to find documents relating to a particular area or subject. There are however questions over who would host and maintain the database, and who would have access to it (and on what terms). It would also require a commitment from all parties involved to ensure that details of any relevant study are added to the database.

8) A primary question is one of how to fund such studies.

IV. Iwi Perspectives:

1) The iwi members at the meeting represented views of Ngati Koata, Ngati Apa and Te Atiawa from Te Tau Ihu (top of the South Island). The views expressed in this paper do not necessarily reflect the views of all iwi in Te Tau Ihu.

2) It was acknowledged at the meeting that iwi concerns span all aspects of the kaupapa – mussel farming and marine mammals. Iwi are mussel farmers themselves and thus have input into the Industry view. Iwi also have concerns about the research conducted in relation to mussel farming and the interaction with marine mammals and last but not least, iwi also participate in the ongoing protection of marine mammals through the partnership with the Crown (Department of Conservation).

3) This, and previous meetings, appear to have focused on the tangible concerns relating to mussel farming and the interaction with marine mammals. However, iwi are also concerned with the cultural responsibilities associated with the Maori world-view or Te Ao Maori. Iwi have a responsibility as kaitiaki in Te Tau Ihu. That responsibility places an obligation on iwi to respond to those concepts that are integral to Te Ao Maori. In very simplistic terms, Te Ao Maori obligates iwi to acknowledge that everything is inter-connected, so each action has a reaction.

4) Therefore, as participants in industry and kaitiaki of the area, iwi must consider such things as kaitiakitanga, rangatiratanga and the mauri of the resource. It is not the intention to discuss in detail these concepts. Suffice it to say that they are some of the foundation blocks that govern iwi responses to issues such as mussel farming and its associated concerns.

5) Rangatiratanga is the ability of iwi to determine, for themselves, the path into the future. Mussel farming is an avenue that can be used to provide a financial base for iwi to provide for that future development. These commercial operations need to be balanced against other responsibilities such as ensuring the mauri of the receiving environment.

6) Mauri relates to the health or life supporting qualities of the resource, in this case the sea. It not only applies to the ability of the sea to maintain a productive mussel farm but the ability of all other life, within the sea, being able to co-exist. To maintain and enhance the mauri of any resource is one of the many obligations placed upon iwi through their association with the Te Tau Ihu rohe. Through active

participation and the setting of relevant research objectives, it is hoped to protect and enhance the mauri of this resource.

7) The well-being of marine mammals is also at the forefront of iwi concerns. All things are inter-connected. Therefore, marine mammals are part of our whakapapa and are entitled to our protection as is appropriate. This connection can be evidenced through the stories and legends involving whales and dolphins.

8) Kaitiakitanga is interpreted in the Resource Management Act, but for iwi Maori this interpretation is somewhat limited. Iwi are the guardians of the resource not the stewards, as stewardship implies the resource belongs to someone else. Kaitiakitanga encompasses many concepts but for this kaupapa, it is probably best described as upholding the mauri of the resource. To not do this, would impact on the mana of iwi as iwi would be unable to host manuhiri (guests) through the lack of kaimoana. They would not be upholding the obligations to look after and manage the resource, and thus fail those responsibilities to tupuna, to the people and to the future generations.

9) It is not all about profitability; it is about achieving a balance between both tangible and intangible worlds. Adherence to tikanga Maori will go some way to achieving this balance.

D. Summary and Recommendations

The Envirolink program allowed researchers, industry representatives, managers/conservation concerns, and iwi to interact in informative and non-combative manner. The results were a general exchange of information and opinion, and a respect of others' notions. We believe that this kind of dialogue is important as we wrestle with human effects on the environment, and how best to address real or perceived problems.

In more concrete terms, industry perspective stressed that research should not be funded largely by them, but should be thought of as being for the public good and be more equitably funded. As well, research should be multidisciplinary, to provide for as much certainty as possible. The general notion of "we do not really know, and need more research" should be replaced with more goal-oriented research that will provide either definitive answers, or clearly point the way towards research still needed to provide answers, with appropriate time-tables.

Industry representatives also stressed that a precedent has been established through the Clifford Bay Marine Farms Coastal Permit. This process allowed for uncertainties to be narrowed, by specifying a research programme to be undertaken, to confirm or reject assumptions made upon which the decision to issue a permit was based. Through such a process, the applicant knows that marine farming can or cannot proceed if assumptions are properly evaluated. The precedent may be used as a model to see a way forwards in other areas.

Research perspectives largely agreed with these notions, with the admonition that clear and concrete goals need to be formulated, relative to both basic and goal-oriented research, the latter directed to a pressing "applied" need. It was furthermore

stressed that lines of communication are especially important for researchers and management/policy makers, but that concerns of industry and iwi must also be taken into account better than in most previous situations. Standardised research methods, with scientific protocols of robustness and validity (allowing repeatability) must be strived for.

Management perspective stressed that decision makers are often stymied by a lack of basic understanding of species and habitats, and that research needs to fulfill such long-term overall data deficiency needs, as well as be able to respond to very discrete situations of particular species potentially affected by, for example, an offshore mussel farm, in a particular environment. It was mentioned that Assessments of Environmental Effects, AEE's, should be broadened to include effects on marine mammals.

Iwi perspectives brought forth that iwi concerns span all aspects of industry, environmental appreciation, management/conservation, and research needs and appreciation. Thus, "iwi concerns" are not to be thought of in isolation. While iwi are concerned with the health of the mussel farming industry, they are also concerned with the well-being of the people, and the environment on which the people rely. In short, it was stated that it is not only about profitability, but about a balance between tangible and intangible worlds.

A general theme mentioned or highlighted by all stakeholders was that funding issues need to be worked out. An equitable funding protocol for applied research, for example, might be supported by industry, government, and non-governmental agencies. Overall, the view of longer-term and well-organised ("5 to 10 year") research support seemed to be favoured, although there may not have been unanimous agreement on this point.

A recommendation was made for consideration of creating a Marine Research Authority (MMRA). Such an authority could provide “a stamp of approval” and guidance for the Environment Court. An ideal chair of the MMRA might be a retired Environment Court judge, lawyer, or anyone else who knows the decision making process intimately. However, we here stress that while the idea of such an MMRA was brought forth, discussed, and received support, there was not unanimous agreement on whether or how such body should be created.

A list of priority items was developed by meeting attendees, for action by concerned parties when working towards the goals of balancing industry, iwi, and marine mammal concerns. This is to be viewed as a preliminary list, with additions and edits to be made:

1) Terms of use should be clearly defined, so that stakeholders agree on meanings and intents.

2) There should be clear channels of communications between groups, with dissemination of information between, for example (but not limited to) researchers, iwi, and mussel farmers. Mangers can assist with these channels of communication.

3) There should a clear understanding of what research needs to be done. This understanding results from good dialogue of discussing questions that need to be answered.

4) There needs to be a summary of both the research done to date and the findings of these studies. Marine mammal studies should be highlighted. It is recommended that this need be investigated by managers, and appropriate funding/resources be made available.

5) In general, research should be ecosystem and not merely species-specific based. In practice, this may mean engaging researchers with different types of expertise, instead of, for example, only a marine mammal biologist.

6) Overall, for potentially affected species, such as Hector's dolphins, dusky dolphins, or large whales (as incomplete examples), we need to identify
   - Crucial habitats
   - Crucial areas
   - Genetically unique populations
   - Cultural entities

7) We need to define standard protocols and experimental designs to ensure robust and repeatable science. It is encouraged that science be published as reports, followed up with peer review publications in the scientific literature.

All representatives of the various stakeholders appeared appreciative of the chance to exchange ideas and perspectives. It was recommended by several participants that such a multiple-stakeholder meeting be held periodically, perhaps annually or biennially. However, no concrete decisions have been made on this front. It was recommended that this report be made available to multiple government departments, and to the various stakeholders represented here. Furthermore, we recommend that this report be re-written to form the basis of a scientific peer-review publication. We see this as a *desideratum* for this coming year, but outside the purview of the present Envirolink initiative.

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