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**PROPOSED NATIONAL ENVIRONMENTAL STANDARD FOR MARINE AQUACULTURE
PARE HAURAKI SUBMISSION**

INTRODUCTION AND BACKGROUND

1. Pare Hauraki Kaimoana¹ makes this submission along with the Pare Hauraki Fishing Trust² for the 12 Iwi of Hauraki:
 - i. Hako
 - ii. Ngāi Tai ki Tāmaki
 - iii. Ngāti Hei
 - iv. Ngāti Maru
 - v. Ngāti Paoa
 - vi. Ngāti Porou ki Hauraki
 - vii. Ngāti Pūkenga
 - viii. Ngāti Rāhiri-Tumutumu
 - ix. Ngāti Tamaterā
 - x. Ngāti Tara Tokanui
 - xi. Ngāti Whanaunga
 - xii. Te Patukirikiri
2. Pare Hauraki has a proven track record of successful aquaculture in our ancestral waters, Tikapa Moana/Hauraki Gulf. Indeed, it was Pare Hauraki leadership that set the vision in the 1970s to pioneer marine farming in our rohe. The people of Pare Hauraki are here forever and our long term approach ensures considered and strategic decision-making.
3. Pare Hauraki is one of the largest waterspace owners in Tikapa Moana, currently owning 418 hectares of coastal permits.³ We are a major investor in the marine farming industry.

PROPOSED NES

4. Pare Hauraki supports consistency in the aquaculture consenting process.
5. The Pare Hauraki response on the proposed NES is as follows:

¹ The trading name of Pare Hauraki Asset Holdings Limited (also incorporating the Hauraki Fishing Group), the fully-owned asset holding company of the Pare Hauraki Fishing Trust.

² The iwi aquaculture organisation (for the purposes of the Māori Commercial Aquaculture Claims Settlement Act 2004) and mandated iwi organisation (for the purposes of the Māori Fisheries Act 2004) for the 12 Iwi of Hauraki.

³ Including space at Wilsons Bay Areas A, B & C and the Coromandel Marine Farming zone.

- (a) Indicative Rule 2 - supported.
- (b) Indicative Rule 6 – amend to controlled activity. There is no basis in this context to retain an ability to decline consent and the matters of discretion (to be listed) can enable appropriate conditions to be imposed.
- (c) Indicative Rule 9 – amend as for indicative Rule 6.
- (d) Indicative Rule 12 – amend to include references to sections 6(e), 7(a) and 8 as well as whether Treaty settlement space is involved.
- (e) Indicative Rule 16 – supported.
- (f) New provisions required:
 - (i) Where space is currently zoned with marine farming as a controlled activity (for example Wilsons A & B), the activity status should be 'fixed' as controlled.
 - (ii) Identified sites of importance to aquaculture should be recognised (for example, spat farms at Wainui Bay and Aotea Harbour) and have controlled activity status.

Mauri ora



Haerengarangi (Harry) Mikaere

8 Augu7st 2017

Chairman

Pare Hauraki Kaimoana

Proposed National Environmental Standard for Marine Aquaculture Submission

To the Ministry for Primary Industries

aquaculture@mpi.govt.nz

8 August 2017

Submitter Details

Full Name of Submitter

Mr & Mrs Barry and Carol Jessop

Organisation Name Parua Bay Oysters

Address for Service [REDACTED] WHANGAREI 0174

Email [REDACTED]

1.0 Introduction

We own Parua Bay Oyster Lease 91, area 207, in Parua Bay, Whangarei Harbour. We both own and work the lease and employ extra labour on a regular basis through 7 months of the year and occasionally during the other 5.

Parua Bay Lease was licensed and has been farmed continually since 1972. The method of farming has changed over time from being all stick farming to currently having over half of the developed area being bag farmed. Now that production of hatchery spat is increasing this will become not only a more environmentally friendly but also a more productive way of growing oysters. A lack of new water space for oyster farming means that all available space should be in production. Lease 91 has room yet for further development, which is needed to achieve maximum production potential and better economic viability. However, this can only be achieved with further investment which will only happen with **security of tenure**. We believe this can be achieved through the proposals put forward in the NES.

As an industry we are proud farmers, we are passionate farmers and we are good farmers. Our commitment to the recently launched A+ sustainable management programme is a clear demonstration of the care and respect we have for the waters and locations in which we farm.

We support the submission of Aquaculture New Zealand (AQNZ).

2.0 The Issues

- Aquaculture is the heart of regional communities like Havelock, Coromandel, Warkworth, Stewart Island and Twizel.
- Our products provide kiwis with healthy, sustainable food, produced in New Zealand – a far better choice than most other protein sources available worldwide.

- The industry offers tremendous sustainable growth potential for New Zealand to create more regional jobs, support associated industries and bring much needed export earnings into local communities and the economy.
- But for years the potential has been hampered by a regulatory regime that drains vital resources that could otherwise be invested in innovation, product development and building new premium markets
- Under the current regime, variations and inconsistencies for re-consenting rules in different regions create complexity and uncertainty – and creates extra delays and costs for industry, councils and communities
- With up to 75% of marine farm consents due to expire by 2025, at a cost of \$50.3 million in total, the current re-consenting processes create a cloud over the future shape of the industry

3.0 General Support for the Proposed NES

- We broadly support the National Environmental Standard (NES) as proposed.
- The proposed NES will provide better outcomes for the industry, communities, councils, iwi groups and the environment
- The proposed NES will provide a more efficient and certain consent process for managing existing farms within evidence-based environmental limits.
- The NES proposal carefully balances improving certainty while recognising the values and characteristics that make our marine environment so special.
- It will allow efficient evidence based decisions to be made while encouraging regions to proactively plan for aquaculture in their regions into the future.
- It will require marine farmers to provide evidence and proof to councils that they are operating sustainably within environmental limits.
- The proposal will free up resources currently spent on consent processes, to invest in building value for New Zealand through innovation, product development and new premium markets as well as investment in proactive environmental management.

4.0 Specific Comments on the Proposal

- We agree that the NES is the best available option under the current circumstances.
- We agree that restricted discretionary activity should be given to all consent renewals for aquaculture but note that it is crucial to retain the accompanying proposal for consent renewals to be non-notified in order to meet the proposal's objectives.
- However, there is also a good case for making replacement consents for most existing aquaculture a controlled activity as for the most part, they are an accepted part of the existing environment and generally in appropriate locations.
- There is a strong need for the additional guidance, particularly in light of the current subjectivity and lack of clarity around implementation of the New Zealand Coastal Policy Statement (NZCPS).
- There is also a strong case for an NZCPS - Aquaculture to be progressed within its own timing as this would provide stronger policy support than the guidance as well as allowing for strategic planning for, and management of, aquaculture into the future.

- We support the intent of the biosecurity proposals, however note the AQNZ recommendations to ensure they are sensible and workable and set up in the context of other users in the coastal marine area.
- We support enabling innovation through providing for changes of species as a restricted discretionary activity.

5.0 Questions for Submitters

Question 1: Do you think an NES for marine aquaculture, including guidance material, is required? Alternatively do you think the status quo (where regional councils decide the activity status for replacement consents for existing marine farms and consents for change of species which can vary from controlled to non-complying) should be maintained?

Yes.

Question 2: Do you think restricted discretionary is an appropriate status for replacement consents for existing marine farms? How would other activity statuses address the issues identified in section 3 of the discussion document?

Yes. No public or limited notification is essential for the proposal to meet its objectives. Controlled activity status is preferred and appropriate for existing marine farm consents.

Question 3: Does the NES need to provide a full rule framework, including discretionary activity rules for those marine farms that cannot meet the requirements to be a restricted discretionary activity?

No.

Question 8: Should the extent of an acceptable overlap of existing marine farms with outstanding areas due to margins of error in mapping be defined?

It would be preferable that the Minister determine which farms should be subject to assessment under policy 13 and 15 using the best available information.

Question 9: Outstanding natural features, outstanding natural landscapes and areas of outstanding natural character have been identified as requiring a specific matter of discretion because of the direction provided by the NZCPS 2010. Are there other areas/values that should also be identified, such as those listed in Policy 11 of the NZCPS 2010?

No.

Question 10: If so, what are these areas/values and what are the potential effects of concern caused by existing marine farms on those areas/values?

Not applicable.

Question 11: Should the activity status be different for replacement consents for existing marine farms in outstanding natural features, outstanding natural landscapes and areas of outstanding natural character? If so, what should it be?

No.

Question 12: Are there certain types of aquaculture for which replacement consent applications should be publicly notified?

No.

Question 13: Are there advantages or disadvantages to allowing councils to take a more lenient approach that you would like us to be aware of?

Allowing councils to take a more lenient approach encourages proactive planning in accordance with the NZCPS Policy 8.

Question 14: Do you agree that the areas zoned specifically for aquaculture in Tasman and Waikato should be exempted from the provisions of the proposed NES relating to replacement consents for existing marine farms?

Yes.

Question 15: Do you agree that there are sites that should be recognised in the proposed NES because of their particular importance to aquaculture? If so, what sort of provisions do you think would be appropriate?

Yes. Spat farms of national significance such as the Wainui Bay mussel spat farms in Golden Bay.

Question 16: Are there other ways in which the proposed NES could usefully recognise council's future planning processes?

An NZCPS – Aquaculture should be implemented to support and encourage collaborative and strategic planning for new aquaculture in appropriate areas.

Question 17: What are your thoughts on the size restriction that is proposed to apply to realignments covered by the proposed NES?

It is appropriate.

Question 18: Is there further guidance that should be provided in the proposed NES in relation to realigning existing marine farms?

Yes.

Question 19: Are there other specific matters that councils should be able to consider for applications to realign existing marine farms? Are the matters that have been identified all relevant?

The matters that have been identified are relevant and sufficient.

Question 20: Should the proposed NES address change in farmed species?

Yes.

Question 21: Should the proposed NES limit the species it relates to?

No.

Question 22: Are the categories based on change in structure an appropriate approach? If not, can you suggest any other approach that might be suitable?

The categories are an appropriate approach.

Question 23: Are there any other categories [that should be considered for the change of species provisions]?

No.

Question 24: Should herbivorous finfish be treated differently from carnivorous finfish?

No.

Question 25: Is restricted discretionary an appropriate status for most changes in species?

Yes.

Question 26: Should spat catching farms be excluded [from the change of species provisions]?

No.

Question 27: Are there any other forms of farming or species that should be excluded [from the change of species provisions]?

No.

Question 28: Do you have any feedback on the scope of matters of discretion?

It will be important to ensure that these categories all remain non-notified so that the decisions can be evidence based.

Question 29: Should change of species involving finfish require additional matters of discretion?

No.

Question 30: Outstanding natural features, outstanding natural landscapes and areas of outstanding natural character have been identified as requiring a specific matter of discretion because of the direction provided by the NZCPS 2010. Are there other areas/values that should also be identified?

No.

Question 31: Should the activity status be different for changing species on existing marine farms in outstanding natural features, outstanding natural landscapes and areas of outstanding natural character? If so, what should it be?

No.

Question 32: Are there certain species or types of species where consent applications should be publicly notified?

No.

Questions 33 to 40 – Biosecurity Management Plans:

I agree with the points raised regarding Biosecurity Management Plans in the AQNZ submission.

Question 41: Have the range of costs and benefits arising from the proposed national environmental standard, and who might bear the costs or receive the benefits, been accurately reflected? Are there any costs and benefits that have been overlooked?

Further detail could be provided/explored regarding the social and community benefits of the industry.

Question 42: Are the estimates of costs and benefits accurate? Do you have information on costs and benefits that could assist the second stage of our assessment (of the impacts of the final proposal)? Do you have any information on costs and benefits that have not been quantified at this stage?

As above.

6.0 Summary Statement

I am proud of my role providing healthy, nutritious, sustainable seafood to kiwis as well as jobs and a sense of community to regional New Zealand. I want to focus my business' resources on making this contribution better, through innovation, product development and collectively improving our environment. Without the proposed NES I will instead need to focus on engaging planners and lawyers to continue to operate beyond the consent horizon. The proposed NES is an essential and welcome initiative that will bring a better future for the industry and our communities.

Barry & Carol Jessop

Signature

Date 02/08/17

SUBMISSION TO PROPOSED NATIONAL ENVIRONMENTAL STANDARD FOR MARINE AQUACULTURE

OUR SUBMISSION IS:

1. Replacement consents should remain discretionary. Many existing consents have never been subjected to a proper AEE (Assessment of Environmental Effects), which include effects on Outstanding Landscape, Natural Character and benthic effects. The logical time to correct improperly allocated consents is at expiry/renewal. Continuance of an improper consent "because it already exists", thereby perpetually sidestepping an AEE is contrary to the RMA and natural justice.
2. It is too early to rely on current Council maps because these are still being worked through the current generation of Environment Plans such as Marlborough's MEP.

SUBMITTER : Port Gore Group

C/- Cliff Marchant



Blenheim 7240

6th August 2017



Proposed National Environmental Standard for Marine Aquaculture Submission Template

We would like to hear your views on the proposed National Environmental Standard for Marine Aquaculture (NES: Marine Aquaculture).

Please feel free to use this template to prepare your submission. Once complete please email to aquaculture@mpi.govt.nz.

As stated in section 8 of the discussion document, your submission must include the following information:

- your name and postal address, phone number, and email address (where applicable)
- the part or parts of the proposed NES you are submitting on
- whether you support or oppose the part or parts of the proposed NES
- your submissions, with reasons for your views
- any changes you would like made to the proposed NES
- the decision you wish the Minister for the Environment and the Minister for Primary Industries to make.

For more information about how to make a submission, please refer to section 8 of the discussion document: *Proposed National Environmental Standard for Marine Aquaculture*.

Contact details

Name:

Fiona Black

Postal address:

Te Anau 9640

Phone number:

Email address:

Are you submitting on behalf of an organisation? Yes [☒] No [☐]

If yes, which organisation are you submitting on behalf of?

Real Journeys Limited



Privacy Act 1993

Where you provide personal information in this consultation MPI will collect the information and will only use it for the purposes of the consultation. Under the Privacy Act 1993 you have the right to request access and correction of any personal information you have provided or that MPI holds on you.

Official Information Act 1982

All submissions are subject to the Official Information Act 1982 and may be released (along with the personal details of the submitter) under the Act. If you have specific reasons for wanting to have your submission or personal details withheld, please set out your reasons in the submission. MPI will consider those reasons when making any assessment for the release of submissions if requested under the Official Information Act.

Please indicate below if you wish your personal details to be withheld:

- ☐ Please withhold my personal details where submissions are made public
- ☐ Please withhold my personal details in response to a request under the Official Information Act 1982

Questions for submitters

The questions for submitters that are included throughout the discussion document are provided below. We encourage you to provide comments to support your answers to the questions below. You do not have to answer all questions for your submission to be considered.

Question 1:

Do you think an NES for marine aquaculture, including guidance material, is required? Alternatively do you think the status quo (where regional councils decide the activity status for replacement consents for existing marine farms and consents for change of species which can vary from controlled to non-complying) should be maintained?

We believe the status quo is preferable as Regional Coastal Plans are better able to encompass the intrinsic values of the local area and address the desires of the local community and interested parties with respect to the management of the local coastal marine area (CMA). Even if a NES is introduced, Regional Councils should be able to amend any rules in the NES through its Coastal Planning processes to reflect the local environment and needs.



Question 2:

Do you think restricted discretionary is an appropriate status for replacement consents for existing marine farms? How would other activity statuses address the issues identified in section 3 of the discussion document?

Restricted discretionary status may be appropriate in some instances but should not be the default position. We contend that the assumption that existing marine farms should continue to exist as of right is flawed concept as these marine farms are private structures installed in the public space. Communities develop new priorities over time which may mean that the occupation of a site within the CMA may need to be re-evaluated especially if the environment at the marine farm site becomes significantly degraded by marine farm activities.

Question 3:

Does the NES need to provide a full rule framework, including discretionary activity rules for those marine farms that cannot meet the requirements to be a restricted discretionary activity?

Yes – refer Q.2

Question 4:

Do provisions covering replacement consents for existing marine farms where supplementary feeding occurs require additional terms to define what qualifies to be a restricted discretionary activity?

The marine farms that use supplementary feeding should have a more rigorous consent conditions to ensure adverse effects of supplementary feeding are avoided or adequately mitigated.

Question 5:

Do you have any feedback on the analysis of effects contained in Appendix G?

No

Question 6:

Should applications for replacement consents for existing marine farms where supplementary feeding occurs be treated differently under the proposed NES or



not addressed at all?

The marine farms that use supplementary feeding should have a more rigorous consent conditions to ensure adverse effects of supplementary feeding are avoided or adequately mitigated.

Question 7:

Do the provisions covering replacement consents for existing marine farms where supplementary feeding occurs require additional matters of discretion?

The marine farms that use supplementary feeding should have a more rigorous consent conditions to ensure adverse effects of supplementary feeding are avoided or adequately mitigated. Moreover Real Journeys contends that these resource consents should be either discretionary or non-complying depending on the marine farm size, effects and location.

Question 8:

Should the extent of an acceptable overlap of existing marine farms with outstanding areas due to margins of error in mapping be defined?

Yes by definition, the effects on outstanding areas need to be assessed.

Question 9:

Outstanding natural features, outstanding natural landscapes and areas of outstanding natural character have been identified as requiring a specific matter of discretion because of the direction provided by the NZCPS 2010. Are there other areas/values that should also be identified, such as those listed in Policy 11 of the NZCPS 2010?

In general, we do not support restricted discretionary status. If the consent is granted for a long period (over 10 years), then the environment could have changed or the values ascribed to the environment may have changed or new technologies may have been developed. A consenting regime that encourages reduction in adverse effects needs to be established. Given the NZCPS 2010 and its emphasis on protection of the marine environment, non-notified restricted discretionary is not an appropriate consent status for renewal of consents for this activity in the CMA.

Question 10:

If so, what are these areas/values and what are the potential effects of concern



caused by existing marine farms on those areas/values?

The NZCPS 2010 sets out the values that need to be protected in the marine environment. The presumption should be in favour of protecting the values of public space in the CMA which are adjacent to areas of outstanding natural landscapes (or arguably, part of them) rather than simply allowing existing activities continuing without the re-evaluation of these values.

Question 11:

Should the activity status be different for replacement consents for existing marine farms in outstanding natural features, outstanding natural landscapes and areas of outstanding natural character? If so, what should it be?

Yes. There is now established marine farming in areas which were outstanding natural landscapes prior to the introduction of marine farming such as Big Glory Bay, Patterson Inlet, Stewart Island. There have been significant adverse landscape effects which have been at best only partially avoided, remedied or mitigated. Hence it is appropriate that marine farming, if it is to continue in such areas, be a non-complying activity.

Question 12:

Are there certain types of aquaculture for which replacement consent applications should be publicly notified?

Regional Councils should be the organisations that decide whether or not the resource consent renewal is publically notified. It is not appropriate for this to be part of an NES because of the varying nature of activities and the varying nature of the CMA. Many replacement consent applications may be non-notified but others with significant effects should not be. These activities occur in the CMA which is public space so the public should have a say as a general principle. Public notification should be assumed unless there are special circumstances that don't require it. These should be specified in the Regional Coastal Plan that has been developed in consultation with the community.

Question 13:

Are there advantages or disadvantages to allowing councils to take a more lenient approach that you would like us to be aware of?

No, councils should not be allowed to be more lenient as this could compromise the environment.



Question 14:

Do you agree that the areas zoned specifically for aquaculture in Tasman and Waikato should be exempted from the provisions of the proposed NES relating to replacement consents for existing marine farms?

We are not qualified to answer this question. However, we would be opposed to the establishment of such spaces in the Southland region unless there is clear policy articulated in the Regional Coastal Plan for Southland.

Question 15:

Do you agree that there are sites that should be recognised in the proposed NES because of their particular importance to aquaculture? If so, what sort of provisions do you think would be appropriate?

We do not have enough knowledge of existing marine farming in NZ to answer this question.

Question 16:

Are there other ways in which the proposed NES could usefully recognise council's future planning processes?

Regional Coastal Plans should be the prevailing planning tool, guided by an NPS or NES to ensure consistency.

Question 17:

What are your thoughts on the size restriction that is proposed to apply to realignments covered by the proposed NES?

These appear reasonable.

Question 18:

Is there further guidance that should be provided in the proposed NES in relation to realigning existing marine farms?

We do not have enough knowledge of marine farming in NZ to answer this question.



Question 19:

Are there other specific matters that councils should be able to consider for applications to realign existing marine farms? Are the matters that have been identified all relevant?

Consideration should be given to providing for navigation by vessels. Especially with regarding to retaining or improving vessel access to recognised thoroughfares; anchorages; recreational areas; wharves or moorings.

Question 20:

Should the proposed NES address change in farmed species?

Yes

Question 21:

Should the proposed NES limit the species it relates to?

The NES should cover all existing and potential species that could be farmed.

Question 22:

Are the categories based on change in structure an appropriate approach? If not, can you suggest any other approach that might be suitable?

We are not qualified to answer this question.

Question 23:

Are there any other categories [that should be considered for the change of species provisions]?

We are not qualified to answer this question.

Question 24:

Should herbivorous finfish be treated differently from carnivorous finfish?

We would think so



Question 25:

Is restricted discretionary an appropriate status for most changes in species?

No as the activity status should depend on the environmental effects

Question 26:

Should spat catching farms be excluded [from the change of species provisions]?

No as the activity status should depend on the environmental effects as there are still effects of structures on landscapes and occupation of coastal space that need to be addressed.

Question 27:

Are there any other forms of farming or species that should be excluded [from the change of species provisions]?

There maybe when the species change is just a change in species variant and the effects of the proposal remain effectively unchanged.

Question 28:

Do you have any feedback on the scope of matters of discretion?

We contend that limiting discretion for marine farms resource consent applications is ill-advised and not consistent with the NZCPS or the RMA.

Question 29:

Should change of species involving finfish require additional matters of discretion?

We are not qualified to answer this question.

Question 30:

Outstanding natural features, outstanding natural landscapes and areas of outstanding natural character have been identified as requiring a specific matter of discretion because of the direction provided by the NZCPS 2010. Are there other areas/values that should also be identified?



Our knowledge of the marine environment is expanding all the time which inevitably results in changing views regarding the new values or attributes that need to be considered in any resource consent application. Moreover, the marine environment is in a constant state of flux leading to changes over time such as waterways slitting up or the likes of NZ Sea Lion colonies establishing around southern New Zealand. The principles of the RMA are best served by discretionary (or non-complying) status even for marine farms resource consent renewals.

Question 31:

Should the activity status be different for changing species on existing marine farms in outstanding natural features, outstanding natural landscapes and areas of outstanding natural character? If so, what should it be?

Yes non-complying activity status. The Regional Coastal Plan should identify these areas.

Question 32:

Are there certain species or types of species where consent applications should be publicly notified?

Public notification of consent applications should be the default position.

Question 33:

Do you think it is necessary for all marine farms to prepare, implement and keep up to date Biosecurity Management Plans (BioMP)? What concerns would you have if it were required? What (if any) exceptions should be made and why?

Yes – Appendix K appears to cover the relevant issues. All Marine farms should be encouraged to have BioMP no exceptions. However such Biosecurity Management Plans need to have robust provisions around managing risks to not only the marine farm but the surrounding environment including the land and its biota.

Question 34:

Is the deadline of 31 January 2025 appropriate, and why?

No a shorter time frame is more appropriate. Pest incursions are very costly to clean up hence prevention should be the main priority through BioMP.



Question 35:

Is a nationally consistent approach to BioMPs necessary to achieve an appropriate level of marine farm biosecurity nationally or should regional differences be accommodated?

Yes regional differences should be accommodated especially in areas where pest free islands are located or are being developed or in CMA is relatively free of marine pests such as Undaria.

Question 36:

Do you think the BioMP template in MPI's Aquaculture Biosecurity Handbook covers all the matters that are needed? What if any changes would you make and why? What level of detail do you think is needed for BioMPs to be effective?

We are not qualified to answer this question.

Question 37:

Is requiring a BioMP using an NES under the RMA the best approach to nationally requiring a Biosecurity Management Plan for aquaculture?

Yes

Question 38:

How would regional councils certify, audit and enforce BioMPs? Could external professionals be used to provide the required skills and expertise?

By using appropriately qualified external "experts" such as NIWA.

Question 39:

Is it appropriate for existing coastal permits to be reviewed and required to prepare BioMPs in order to comprehensively address biosecurity risks to industry and New Zealand's wider marine environment? If not, why not?

Yes as seen after the detection of *Bonamia ostreae* at two Stewart Island oyster farms.



Question 40:

Is marine farm monitoring and reporting as well as external auditing and enforcement of BioMP implementation and effectiveness justified? If not why not?

Yes, it is justified.

Question 41:

Have the range of costs and benefits arising from the proposed national environmental standard, and who might bear the costs or receive the benefits, been accurately reflected? Are there any costs and benefits that have been overlooked?

The marine farming industry should bear the costs. No consideration has been given to the benefit an area might provide through recreation or tourism dollars if a marine farm was removed from a given area. Or if the scale of a marine farm was reduced the community might be provided with greater benefits through the provision of other activities.

Question 42:

Are the estimates of costs and benefits accurate? Do you have information on costs and benefits that could assist the second stage of our assessment (of the impacts of the final proposal)? Do you have any information on costs and benefits that have not been quantified at this stage?

We are not qualified to answer this question.

Please use the space below to provide any additional comments you may have, and if continuing an answer from another question please indicate the question number.

To deny the public a say in the continuance of an existing farm in their public space is undemocratic, not consistent with public expectations or the principles of the RMA.

Also from our experience Regional Council staff do not have the requisite local knowledge to assess if an existing activity is causing problems in a local area. More and more Regional Council staff are totally office bound and do not have any significant links to community. Accordingly public participation is essential to ensure ill advised decisions are not made.

Proposed National Environmental Standard for Marine Aquaculture Submission

To the Ministry for Primary Industries

aquaculture@mpi.govt.nz

3 August 2017

Lynette Oldham

Red Sky Trust

Auckland 1071

1.0 Introduction

I am a beneficiary of a mussel farming business in the outer Marlborough Sounds, owning two marine farms held in a private trust.

I support the submissions of Aquaculture New Zealand (AQNZ) and Kevin Oldham.

3.0 General Support for the Proposed NES

I live out of the area, however I feel a deep affinity for Marlborough and visit as often as I can. I have a very large whanau living in Blenheim and Picton.

Knowing that the trust has a reasonable opportunity to renew these farms is very important to me as a descendant of Te Atiawa and Ngai Tahu, both of whom are tangata whenua of Te Tau Ihu. These two farms, one of which is in my ancestral rohe, form a vital part of my connection with my spiritual home.

Accordingly:

- I broadly support the National Environmental Standard (NES) as proposed.
- The proposed NES will provide better outcomes for the industry, communities, councils, iwi groups and the environment
- The proposed NES will provide a more efficient and certain consent process for managing existing farms within evidence-based environmental limits.
- The NES proposal carefully balances improving certainty while recognising the values and characteristics that make our marine environment so special.
- The proposal will free up resources currently spent on consent processes, to invest in building value for New Zealand through innovation, product development and new premium markets as well as investment in proactive environmental management.

4.0 Specific Comments on the Proposal

- I support the specific comments in the submissions of Aquaculture New Zealand and Kevin Oldham.

5.0 Summary Statement

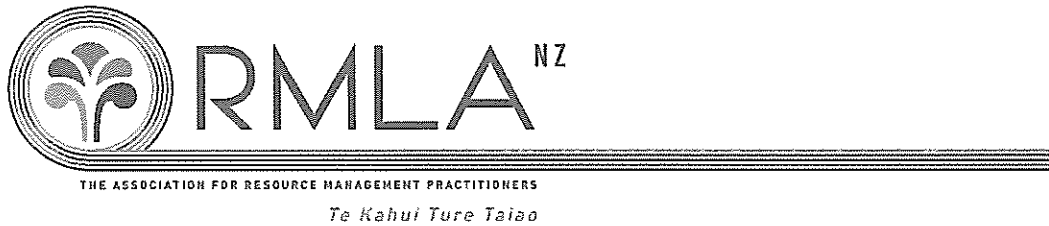
As a person born and breed in Picton and with generations of family who have experienced the same I have a strong relationship with Marlborough and I am keen to continue this.

I would love to be involved in helping lead the charge into new high value species and innovative added-value products, if I can be assured of continuity of the raw materials. The proposed NES is an essential and welcome initiative that will reduce uncertainty and enable the innovation and investment needed to add value and bring an even brighter future for the industry and for Marlborough communities.

Name Lynette Oldham

Signature

Date 6/8/17



**Submission on the Proposed National Environmental Standard
for Marine Aquaculture**

TO: aquaculture@mpi.govt.nz

**Submission on behalf of the
Resource Management Law Association of New Zealand Inc**

Introduction

1. This is a Submission regarding the proposed National Environmental Standard for Marine Aquaculture ("NES") made on behalf of the Resource Management Law Association of New Zealand Inc ("RMLA").
2. The RMLA is concerned to promote within New Zealand:
 - (a) An understanding of Resource Management Law and its interpretation in a multi-disciplinary framework;
 - (b) Excellence in resource management policy and practice; and
 - (c) Resource management processes which are legally sound, effective and efficient and which produce high quality environmental outcomes.
3. The RMLA comprises a diverse membership. Members include lawyers, planners, judges, environmental consultants, environmental engineers, local authority officers and councillors, central government policy analysts, industry representatives etc. Currently the Association has over 1,100 members.
4. Within such an organisation there is inevitably a divergent range of interests and views.
5. It is not possible for the RMLA to form a single universally accepted view on the proposed amendments to the NPSFM. It should also be noted that a number of members may be putting in their own submissions and those may represent quite different approaches than the views expressed here.
6. For these reasons, this submission is made with a view to ensure that the amendments:

- (a) Are consistent with the general framework of existing laws, regulations and policies of relevance, and work alongside the Resource Management Act 1991 ("RMA") where relevant, (as well as regional plan and national policy statement frameworks).
 - (b) Are practicable and workable.
 - (c) Will assist in promoting best practice.
7. The submission is structured by the questions posed in the template response form. The RMLA submission does not seek to answer every question, but focuses on those raising matters identified in paragraph [6] above.

Question 1:

Do you think an NES for marine aquaculture, including guidance material, is required? Alternatively do you think the status quo (where regional councils decide the activity status for replacement consents for existing marine farms and consents for change of species which can vary from controlled to non-complying) should be maintained?

8. **Submission:** The RMLA supports achieving greater certainty and consistency in decision making, and to the extent that the NES (or other initiatives) achieve this, the NES is supported by the RMLA. However, the RMLA is concerned that the detail of the NES may not achieve as much certainty as is intended.
9. The RMLA is cautiously of the view that were a NZCPS and NES for Marine Aquaculture progressed together, there would be greater potential for consistency and guidance in the policy framework that must be applied when considering any consent application. The discussion document both appears overly dismissive of the benefits of increased national policy direction in an additional NZCPS (or an amendment to the 2010 NZCPS), and unduly pessimistic about the costs of advancing an NZCPS (despite streamlined processes being available for doing so).
10. The current experiences of the RMLA and many of its members is that the *NZ King Salmon* decision has created, and continues to contribute, to uncertainty in how objectives and policies are to be considered and applied (or developed in plan reviews). Differences in language and emphasis in objectives and policies have taken on much greater importance than previously. The issues have been compounded by the *R J Davidson* case (not mentioned in the discussion material), which creates additional uncertainty in how consent decisions are to be made. While there may be some variation in how objectives and policies in an NZCPS are interpreted by Regional Councils, or translated into lower order objectives and policies in their plans, they would provide greater consistency than the status quo. Court decisions on the meaning and application of policies in an NZCPS would soon give greater guidance across the country.
11. The RMLA's points in respect of restricted discretionary status are identified below.
12. **Recommendation:** That further consideration be given to the progression of an NZCPS on Marine Farming (or an amendment to the 2010 NZCPS) together with the proposed NES.

Question 2:

Do you think restricted discretionary is an appropriate status for replacement consents for existing marine farms? How would other activity statuses address the issues identified in section 3 of the discussion document?

13. **Submission:** If the objective is to provide applicants, industry, the community etc with greater certainty that (most) existing marine farms will be re-consented, then restricted discretionary status may not be the most appropriate activity status, even if processed on a non-notified basis. The key reason for this is that restricted discretionary consents can be declined, or granted subject to inconsistent conditions by consent authorities, particularly if the matters of discretion are (as proposed) widely cast. There are also difficulties in a restricted discretionary regime in having regard to and weighing the positive benefits of any application. At least, as proposed, these matters are not reserved as a matter for discretion – essentially, they focus solely on potential adverse effects. This is one reason that a consistent policy framework is important, if certainty and predictability is sought, such as could be provided through an NZCPS/amendment to the 2010 NZCPS.
14. Greater certainty would be provided through a controlled activity regime. This could be modified through regional plans where appropriate, or where other values (eg outstanding landscapes) have been identified and it would be more appropriate to have a discretionary or restricted discretionary status.
15. **Recommendation:** Further consideration be given to the use of a controlled activity status regime, or a revised restricted discretionary framework with narrower matters for discretion and explicit recognition of positive effects.
16. If there are concerns about controlled status in some circumstances (such as where there are competing values, or where the original farm may not have gone through a full RMA process but was transitioned through a marine farming licence) that could be addressed through the application of restricted discretionary or full discretionary status as considered appropriate.

Question 3:

Does the NES need to provide a full rule framework, including discretionary activity rules for those marine farms that cannot meet the requirements to be a restricted discretionary activity?

17. **Submission:** If the objective is to achieve the greatest certainty and consistency, then the RMLA supports provision of a full rule framework in the NES; including the circumstances where there is to be a departure from the 'base' status. The base status is currently proposed to be restricted discretionary.
18. In some areas there is likely to be uncertainty because of how the relevant plan has identified areas as being (eg) outstanding landscapes. For example, in Canterbury, the entire Banks Peninsula has been identified as an outstanding natural landscape. This means all farms in that location will not have the same certainty as others. It may be that the farms do not impact on the relevant values, or that a more up to date mapping exercise could provide greater certainty; but there will be cost and delay and continuing uncertainty in resolving these matters.
19. In addition, in terms of any rule framework that provides for discretionary (including restricted discretionary) activities the relevant objectives and

policies can take on significant importance in how that discretion is to be exercised. That is another reason why an NZCPS (or amendment to the 2010 NZCPS) could be of assistance in reducing uncertainty and increasing consistency and efficiency. Otherwise, there risks being uncertainty and inconsistency in the application and determination of such discretionary consents, depending on the status of the relevant objectives and policies in the regional coastal plans.

20. It may also be appropriate for the NES to regularise the approach to spat catching within the context of marine farming. Some Regional Coastal Plans separately define and treat the two activities, when both have similar effects including occupation of space, the use of structures, etc. The more specific effects (and benefits) considerations can be addressed through a consenting phase.
21. It is also appropriate to ensure that the NES overrides any more stringent rules in a regional coastal plan, unless the contrary is intended for a specific reason.
22. **Recommendation:** The RMLA recommends that a “full” rule framework be adopted. In order to avoid unintended or adverse consequences (both in terms of certainty as well as for the environment) there may need for a greater level of ‘sophistication’ in the rule package, rather than just applying a restricted discretionary and full discretionary regime. Consideration could be given to inclusion of a controlled activity component or option for councils to easily adopt to better reflect their circumstances.
23. Further consideration should also be given to an NZCPS (or amendment to the 2010 NZCPS) to assist in providing a consistent objective and policy framework to inform decision making under any rule regime, particularly a discretionary (including restricted discretionary) one.
24. Clearly provide within the framework for marine farming renewals, spat catching activities (including, if necessary, defining spat and spat catching).

Question 4

Do provisions covering replacement consents for existing marine farms where supplementary feeding occurs require additional terms to define what qualifies to be a restricted discretionary activity?

25. **Submission:** The RMLA supports an effects based approach. It understands that the proposed approach will enable consideration of the effects of supplementary feeding. There does not appear to be an obvious need for additional requirements beyond this.
26. **Recommendation:** No further changes appear necessary.

Question 5:

Do you have any feedback on the analysis of effects contained in Appendix G?

27. **Submission:** The analysis of effects generally appears to address the main adverse effects often associated with aquaculture. While it includes a section on “economic effects” that also touches on social and community benefits, the recognition of positive effects appears disproportionately “light”. Given the driving purpose of the NES is to provide certainty for the industry it may be appropriate to better articulate the benefits of providing that certainty.

28. While the document also has a 'place-holder' in respect of "cultural matters", and while there may be a range of views on this matter, it does not appear to recognise that some iwi and hapu support sustainable marine farming, including from a cultural perspective.
29. **Recommendation:** Consider whether to better articulate the positive economic, social and cultural effects in Appendix G.

Question 6:

Should applications for replacement consents for existing marine farms where supplementary feeding occurs be treated differently under the proposed NES or not addressed at all?

30. **Submission:** Provided that the potential effects of supplementary feeding can be considered in any consent process, unless there is a clear effects basis, it would seem unnecessary to treat replacement consents where supplementary feeding occurs differently; particularly if the 'restricted discretionary /discretionary' regime is to be applied.
31. **Recommendation:** Subject to the above submission, no change is recommended.

Question 7:

Do the provisions covering replacement consents for existing marine farms where supplementary feeding occurs require additional matters of discretion?

32. **Submission:** refer the answer to question 6.
33. **Recommendation:**

Question 8:

Should the extent of an acceptable overlap of existing marine farms with outstanding areas due to margins of error in mapping be defined?

34. **Submission:** For clarity and certainty in approach, any acceptable "overlap" or provision for a margin of error should be clearly identified. Clarification could also assist where some plans identify landward margins only as outstanding, while others also include areas of the coastal marine areas as well. There may be some benefit from providing a consistency in approach through the NES.
35. **Recommendation:** Provide as much certainty as possible so that the interpretation or identification of farms which are to be subject to additional controls because they "overlap" or are within an outstanding area is clear.

Question 9:

Outstanding natural features, outstanding natural landscapes and areas of outstanding natural character have been identified as requiring a specific matter of discretion because of the direction provided by the NZCPS 2010. Are there other areas/values that should also be identified, such as those listed in Policy 11 of the NZCPS 2010?

36. **Submission:** The existence of a notation in the relevant plan of a "King Shag feeding habitat" was a key consideration in the *R J Davidson* case, in light of Policy

11 of the NZCPS 2010 in particular. This was despite it triggering (only) a discretionary consent requirement, rather than a non-complying requirement.

37. The NES should avoid uncertainty arising from the consideration of other values other than landscape and natural character by being very clear as to how other such values are to be considered or if they are to also trigger a different treatment in approach if present. Greater guidance could be given from a Policy perspective in a NZCPS (or amendment to the 2010 NZCPS).
38. **Recommendation:** Consider ways to make it clear how values other than landscape and natural character are to impact on any consent requirement and/or consideration.

Question 10:

If so, what are these areas/values and what are the potential effects of concern caused by existing marine farms on those areas/values?

39. **Submission:** The RMLA does not take a view on what, if any, other values or effects may require additional consideration, beyond noting the uncertainty that arose in the *R J Davidson* case from the “Kind Shag feeding habitat” notation in the relevant plan.
40. **Recommendation:** see above.

Question 11:

Should the activity status be different for replacement consents for existing marine farms in outstanding natural features, outstanding natural landscapes and areas of outstanding natural character? If so, what should it be?

41. **Submission:** As indicated above, the RMLA sees some merit (to provide greater certainty) in adopting a controlled ‘base’ activity status. In that context, where there are competing other values (eg outstanding landscapes) then restricted discretionary or discretionary status could be the starting point.
42. **Recommendation:**

Question 12:

Are there certain types of aquaculture for which replacement consent applications should be publicly notified?

43. **Submission:** If the intention is to increase certainty, and consistency in approach and administration, then generally providing for replacement consents as non-notified would assist. The “special circumstances” exemption could be retained; it generally appears to present a high threshold that is rarely used, and so would be unlikely to be triggered without good reason.
44. **Recommendation:** Consider whether relying on “special circumstances” would provide opportunity for notification in appropriate cases, if the general position for replacement consent applications is to be non-notification.

Question 13:

Are there advantages or disadvantages to allowing councils to take a more lenient approach that you would like us to be aware of?

45. **Submission:** The RMLA generally supports districts and regions making informed planning decisions that are appropriate to the values and interests of their region, and reflect community wishes through a public and participatory planning process. To that extent, the NES should enable Councils to take a more lenient approach if that better reflects what is appropriate to their local circumstances.
46. **Recommendation:** Consider enabling councils to take a more lenient approach if that is what better reflects what is most appropriate to their circumstances.

Question 14:

Do you agree that the areas zoned specifically for aquaculture in Tasman and Waikato should be exempted from the provisions of the proposed NES relating to replacement consents for existing marine farms?

47. **Submission:** RMLA does not have any specific understanding of the local circumstances, but generally supports maintenance of local decisions where they have been arrived at through a comprehensive and robust process; rather than facing a change in position, uncertainty, and “loss” the local investment of time, effort and resources in resolving a local solution.
48. **Recommendation:** Consider exempting the areas specifically zoned for aquaculture in Tasman and the Waikato based on an evaluation of the recent processes and outcomes for those areas.

Question 15:

49. Do you agree that there are sites that should be recognised in the proposed NES because of their particular importance to aquaculture? If so, what sort of provisions do you think would be appropriate?
50. **Submission:** The reasons as to why a site or sites may be of particular importance are better addressed by others. Accordingly, to the extent not already addressed above (eg in comments about benefits), the RMLA leaves others to comment further on this issue.

Question 16:

Are there other ways in which the proposed NES could usefully recognise council’s future planning processes?

51. **Submission:** The RMLA considers that the NES should provide a framework that set an appropriate national ‘base’ set of rules; but allows appropriate modification through future planning processes. Depending on the base rules established, that might (for example) allow councils to adopt more lenient rules (eg from restricted discretionary to controlled), or, in identified circumstances, allow council to adopt more stringent rules, for example, where sites of particular significance or having other significant values are identified.
52. Greater certainty, and national direction, as to what competing values might need to override (or potentially override) the general certainty being sought through the NES, would be provided through an NPS.
53. **Recommendation:** Refer above.

Questions 17 – 19

[Various questions relating to realignments]

54. **Submission:** The RMLA supports the intention to allow re-alignments, but the extent allowable is more of a technical matter that others will be more qualified to comment on.

Question 21-27

[Various matters including change in structure, categories, etc]

55. **Submission:** These are more technical matters, to the extent not already addressed above, the RMLA remains neutral in respect of them.
56. **Recommendation:**

Question 28:

Do you have any feedback on the scope of matters of discretion?

57. **Submission:** As noted above, the matters for discretion are broadly cast. It is appropriate to ensure that positive benefits in term of economic, social and cultural well-being are able to be considered, in such circumstances. It may also be appropriate to specifically include adaptive management and offsetting in the matters reserved for discretion, so there is clarity that those matters can be taken into account and conditions imposed/offered in respect of such matters where appropriate.
58. The RMLA also queries, based on member feedback, whether matter for discretion 12(b) relating to the “timing” of seasonal activities is appropriate. Those matters are dependent on a range of natural variables, and there is a concern that any operator needs sufficient flexibility to make business decisions as they need to be made in order to take that into account.
59. **Recommendation:** As above.

Question 29:

Should change of species involving finfish require additional matters of discretion?

60. **Submission:** The intended NES proposes to reserve the following matters for discretion in respect of marine farming involving supplementary feeding:
- (a) Management of effects on water quality and benthic values
 - (b) Significant adverse effects on reefs and/or biogenic habitat
 - (c) Use of antibiotics, therapeutants and antifouling
 - (d) Fallowing and rotation
 - (e) Underwater lighting
 - (f) Any other lighting of structures
 - (g) Discharges of odour.

61. This appears to address the potential matters requiring consideration associated with both a change in species to finfish (from non-finish) and from one finfish species to another.
62. **Recommendation:** Retain the currently proposed matters reserved for discretion (or similar) where supplementary feeding is involved.

Question 30:

Outstanding natural features, outstanding natural landscapes and areas of outstanding natural character have been identified as requiring a specific matter of discretion because of the direction provided by the NZCPS 2010. Are there other areas/values that should also be identified?

63. **Submission:** Refer answer to question 9-10.
64. **Recommendation:**

Question 31:

Should the activity status be different for changing species on existing marine farms in outstanding natural features, outstanding natural landscapes and areas of outstanding natural character? If so, what should it be?

65. **Submission:** From a principled, effects based approach, if there is to be a different activity status in respect of the re-consenting of marine farms generally in outstanding 'areas' and that involves a restricted discretionary or discretionary consent status, no further difference in activity status should be required. The matters reserved for discretion include "Effects of the aquaculture activity on the values and characteristics that make the area, feature or landscape outstanding", so the effects arising from the change in species must be considered in that context.
66. **Recommendation:** No additional change in activity status appears necessary (particularly in the absence of national policy direction on the issue, and the fact that some changes in species can reduce rather than increase effects).

Question 32:

Are there certain species or types of species where consent applications should be publicly notified?

67. **Submission:** RMLA considers that this should only be the case if clearly justified on an effects or 'special circumstances' basis.
68. **Recommendation:** refer above.

Questions 33-40

[Questions relating to BioMPs]

69. **Submission:** RMLA generally supports the concept of BioMPs, but considers the details to be technical matters better addressed by other submitters. Based on feedback from members, however, the RMLA notes that:
- (a) It may be appropriate to separate the template / provide different templates for specific types of farming;

- (b) More practical guidance on expectations could usefully be provided (for example as to what is intended by “contingency plans”);
- (c) Further clarification would be useful as to roles in managing biosecurity (in particular information provision, education, and emergency responses).

Question 41:

Have the range of costs and benefits arising from the proposed national environmental standard, and who might bear the costs or receive the benefits, been accurately reflected? Are there any costs and benefits that have been overlooked?

70. **Submission:** Refer the above comments in respect of the appropriate identification of costs and benefits of promulgating a NZCPS (or an amendment to the 2010 NZCPS) together with the NES.

Question 42:

Are the estimates of costs and benefits accurate? Do you have information on costs and benefits that could assist the second stage of our assessment (of the impacts of the final proposal)? Do you have any information on costs and benefits that have not been quantified at this stage?

71. **Submission:** As above.

If there is any further opportunity to do so, the RMLA wishes to be heard in support of this submission.



Signature of Maree Baker-Galloway on behalf of the Resource Management Law Association

Date: 8 August 2017

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Royal Forest and Bird Protection Society of New Zealand Inc.

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1 August 2017

To : Ministry for Primary Industries (MPI)

Private Bag 14, Port Nelson 7042

**Proposed National Environmental Standard for
Marine Aquaculture**

1. We request that the marine aquaculture industry should no longer be subsidised by tax and rates payers. Marine farmers should be paying rates on the common land(sea bed) and water they are using.
2. *"Applications for replacement consents for existing marine farms would be processed as non-notified, restricted discretionary activities, as long as the application is for the same location, space, species and structures as the existing marine farm"*

The document says very little about maintaining and improving environmental standards instead it appears to be encouraging the degradation of standards. The proposal appears to presume that past consents have been granted while taking cumulative effects into account. In reality, applicants for development were almost entirely ignorant about these effects. The industry as a whole has never undertaken a holistic analysis of the overall effects of marine farming over an extended area.

Restricted discretionary presumes an in-depth knowledge of the natural marine environment by the consenting authority. But this is unlikely due to a lack of research into the effects of marine farming on all aspects of marine life. Past consents have been granted with little scientific research and analysis, therefore the base-line is likely to be well below a good environmental level.

Until extensive research has been done and a better understanding of the effects of marine farming all consents should remain non-complying. The consent can then be dependent on the applicant avoiding and mitigating adverse effects.

The Government appears to have learnt nothing from its replacement of the democratically elected Canterbury Regional Council in 2010 with its own appointments which has resulted in utter degradation of the Canterbury freshwater systems with 75% of fish, one-third of invertebrates and some plant species at risk of extinction. It is repeating this unfortunate policy with the fishing industry by reducing the statutory responsibility of local councils to ensure that the intrinsic marine and landscape values of the coastal marine area are maintained. For MPI to process renewal consents is unethical and over-rides the democratic process. Coastal areas vary greatly and we are strongly opposed to the transfer of power from regional councils to central government.

Marine areas are dynamic and use of them has to be constantly reviewed. Without independent scientific monitoring of the sea floor and surrounding water column under and around marine farms degradation will occur with possible failure of the farms.

Resource Consent applications should be issued for shorter rather than longer periods and open to scientific reviews and comments from the community. Failure to do this will result in continuing degradation of the environment

3. *"Future planning by regional councils (and communities) that identifies areas that are inappropriate for aquaculture would be recognised, by making existing marine farming in those areas a discretionary activity (rather than a restricted discretionary activity)".*

We support all marine farming areas remaining non-complying. The coastal area is dynamic and it is unwise to make long term irrevocable plans. Environmental concerns include dolphin and king shag feeding areas and clarity of the water, the health of the benthic community, the landscape values of the surrounding country, keeping good access for other water users and the vagaries of climate change.

Proposed National Environmental Standards threaten to erode the coastal/marine environment and opportunities for public input through ministry interference. The Ministry for Primary Industry (MPI) acts on behalf of NZ King Salmon (NZKS), bypassing long established judicial knowledge which has underpinned management decisions. The Marlborough Resource Management Plan (MRMP), evolved from decades of public consultation but is being ignored with farms planned for sites prohibited in the Plan. Little consideration is given to long term cumulative effects ie. sedimentation build up, nor crowding of farms which adversely affects wild life.

4. *Regional council consideration would be limited to focused matters of discretion, for example adverse effects on seabed features, marine mammals and seabirds; public access and navigation; biosecurity; and management of rubbish, noise and debris.*

Under the RMA local regional councils issue consents. Councils may be guided by NES but should not be usurped nor bypassed by central government. All the topics mentioned here should be a part of a holistic consent process. They cannot be separated from the total RC application – each one is a part of the whole.

Re-placement consents should be made from a platform of greater understanding of marine farming effects than when the consents were first granted. There can be no assumption that farms will be able to continue as before with regards to position and site.

Adverse effects from over stocking will have similar repercussions on the environment as the over-stocking of dairy farms in Canterbury.

5. *Councils would be able to set more lenient rules for existing farms in their regional coastal plans, in consultation with their communities.*

We oppose this as in recent years there has been a continual flouting of the rules by consent holders eg exceeding the consent time with no apparent effort to renew the consent; expanding the area of the farm by stealth; expecting as of right to replace a

consented species with a non-consented. The Rules should be as stringent as land-based enterprises where pollution can be seen and has to be remediated. Rules for underwater farming should be tightened, certainly not more lenient.

6. *Future planning by regional councils (and communities) that identifies areas that are inappropriate for aquaculture would be recognised, by making existing marine farming in those areas a discretionary activity (rather than a restricted discretionary activity).*

Where areas have been identified as inappropriate for marine farming then consents should be prohibited or at the very least non-complying. Anything less makes a mockery of the whole EPS.

Areas specifically zoned for aquaculture should still be regularly reviewed because of the lack of scientific data on effects.

7. *Feedback is requested on whether to make special provision for replacement consents for sites of particular importance to the aquaculture industry, such as the Wainui Bay spat catching farms. Realignment of existing farms*

A healthy marine environment is the bottom line so every application, wherever it is and whatever size it is, should be judged from that standpoint. The New Zealand Coastal Policy Statement 2010 is the document which should under-ride all decision-making.

Signed: Gillian Pollock, branch secretary



Proposed National Environmental Standard for Marine Aquaculture Submission Template

We would like to hear your views on the proposed National Environmental Standard for Marine Aquaculture (NES: Marine Aquaculture).

Please feel free to use this template to prepare your submission. Once complete please email to aquaculture@mpi.govt.nz.

As stated in section 8 of the discussion document, your submission must include the following information:

- your name and postal address, phone number, and email address (where applicable)
- the part or parts of the proposed NES you are submitting on
- whether you support or oppose the part or parts of the proposed NES
- your submissions, with reasons for your views
- any changes you would like made to the proposed NES
- the decision you wish the Minister for the Environment and the Minister for Primary Industries to make.

For more information about how to make a submission, please refer to section 8 of the discussion document: *Proposed National Environmental Standard for Marine Aquaculture*.

Contact details

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Are you submitting on behalf of an organisation? Yes [x] No []

If yes, which organisation are you submitting on behalf of?

Nelson-Tasman branch, Royel Forest and Bird protection Society



Privacy Act 1993

Where you provide personal information in this consultation MPI will collect the information and will only use it for the purposes of the consultation. Under the Privacy Act 1993 you have the right to request access and correction of any personal information you have provided or that MPI holds on you.

Official Information Act 1982

All submissions are subject to the Official Information Act 1982 and may be released (along with the personal details of the submitter) under the Act. If you have specific reasons for wanting to have your submission or personal details withheld, please set out your reasons in the submission. MPI will consider those reasons when making any assessment for the release of submissions if requested under the Official Information Act.

Please indicate below if you wish your personal details to be withheld:

☐ Please withhold my personal details where submissions are made public

☐ Please withhold my personal details in response to a request under the Official Information Act 1982

Questions for submitters

The questions for submitters that are included throughout the discussion document are provided below. We encourage you to provide comments to support your answers to the questions below. You do not have to answer all questions for your submission to be considered.

Question 1:

Do you think an NES for marine aquaculture, including guidance material, is required? Alternatively do you think the status quo (where regional councils decide the activity status for replacement consents for existing marine farms and consents for change of species which can vary from controlled to non-complying) should be maintained?

No

Yes

See attachment



Question 2:

Do you think restricted discretionary is an appropriate status for replacement consents for existing marine farms? How would other activity statuses address the issues identified in section 3 of the discussion document?

No

See attachment

Question 3:

Does the NES need to provide a full rule framework, including discretionary activity rules for those marine farms that cannot meet the requirements to be a restricted discretionary activity?

See attachment

Question 4:

Do provisions covering replacement consents for existing marine farms where supplementary feeding occurs require additional terms to define what qualifies to be a restricted discretionary activity?

See attachment



Question 5:

Do you have any feedback on the analysis of effects contained in Appendix G?

See attachment

Question 6:

Should applications for replacement consents for existing marine farms where supplementary feeding occurs be treated differently under the proposed NES or not addressed at all?

Tey should be addressed

Question 7:

Do the provisions covering replacement consents for existing marine farms where supplementary feeding occurs require additional matters of discretion?

Yes



Question 8:

Should the extent of an acceptable overlap of existing marine farms with outstanding areas due to margins of error in mapping be defined?

There should be no overlap

Question 9:

Outstanding natural features, outstanding natural landscapes and areas of outstanding natural character have been identified as requiring a specific matter of discretion because of the direction provided by the NZCPS 2010. Are there other areas/values that should also be identified, such as those listed in Policy 11 of the NZCPS 2010?

Indigenous taxa

Question 10:

If so, what are these areas/values and what are the potential effects of concern caused by existing marine farms on those areas/values?

Need scientific research into this



Question 11:

Should the activity status be different for replacement consents for existing marine farms in outstanding natural features, outstanding natural landscapes and areas of outstanding natural character? If so, what should it be?

Yes, they should be removed

Question 12:

Are there certain types of aquaculture for which replacement consent applications should be publicly notified?

Yes so that effects on environment can be assessed by independent analysis

Question 13:

Are there advantages or disadvantages to allowing councils to take a more lenient approach that you would like us to be aware of?

There is no place for leniency. Rules should be stringent.



Question 14:

Do you agree that the areas zoned specifically for aquaculture in Tasman and Waikato should be exempted from the provisions of the proposed NES relating to replacement consents for existing marine farms?

No, research on effects should continue

Question 15:

Do you agree that there are sites that should be recognised in the proposed NES because of their particular importance to aquaculture? If so, what sort of provisions do you think would be appropriate?

Because of the dynamic state of coastal areas scientific observations should continue

Question 16:

Are there other ways in which the proposed NES could usefully recognise council's future planning processes?

Provide good scientific data so as to avoid 'ill-effects'



Question 17:

What are your thoughts on the size restriction that is proposed to apply to realignments covered by the proposed NES?

Depends on situation.

Question 18:

Is there further guidance that should be provided in the proposed NES in relation to realigning existing marine farms?

See attachment

Question 19:

Are there other specific matters that councils should be able to consider for applications to realign existing marine farms? Are the matters that have been identified all relevant?

Holistic appraisal always necessary



Question 20:

Should the proposed NES address change in farmed species?

Yes

Question 21:

Should the proposed NES limit the species it relates to?

No

Question 22:

Are the categories based on change in structure an appropriate approach? If not, can you suggest any other approach that might be suitable?

Not necessarily

Must be looked at holistically



Question 23:

Are there any other categories [that should be considered for the change of species provisions]?

Possible disease

Question 24:

Should herbivorous finfish be treated differently from carnivorous finfish?

Depends on scientific research

Question 25:

Is restricted discretionary an appropriate status for most changes in species?

No



Question 26:

Should spat catching farms be excluded [from the change of species provisions]?

No

Question 27:

Are there any other forms of farming or species that should be excluded [from the change of species provisions]?

All should be looked at scientifically

Question 28:

Do you have any feedback on the scope of matters of discretion?

Discretion is unlikely to be based on science.



Question 29:

Should change of species involving finfish require additional matters of discretion?

Yes

Question 30:

Outstanding natural features, outstanding natural landscapes and areas of outstanding natural character have been identified as requiring a specific matter of discretion because of the direction provided by the NZCPS 2010. Are there other areas/values that should also be identified?

Recreational boating; proximity of dwellings; changing climate and sea level.

Question 31:

Should the activity status be different for changing species on existing marine farms in outstanding natural features, outstanding natural landscapes and areas of outstanding natural character? If so, what should it be?

All changes must be based on scientific analysis of individual situation



Question 32:

Are there certain species or types of species where consent applications should be publicly notified?

All should be publicly notified

Question 33:

Do you think it is necessary for all marine farms to prepare, implement and keep up to date Biosecurity Management Plans (BioMP)? What concerns would you have if it were required? What (if any) exceptions should be made and why?

Yes.

Necessary to control disease and avoid adverse effects on surrounding environment..

Question 34:

Is the deadline of 31 January 2025 appropriate, and why?

This gives ample time for any changes to be made



Question 35:

Is a nationally consistent approach to BioMPs necessary to achieve an appropriate level of marine farm biosecurity nationally or should regional differences be accommodated?

Regional differences must be accommodated.

Question 36:

Do you think the BioMP template in MPI's Aquaculture Biosecurity Handbook covers all the matters that are needed? What if any changes would you make and why? What level of detail do you think is needed for BioMPs to be effective?

Because it is discussing a fluid situation, in every aspect, there should be continual review.

Question 37:

Is requiring a BioMP using an NES under the RMA the best approach to nationally requiring a Biosecurity Management Plan for aquaculture?

It may be the best approach but should be continually reviewed.



Question 38:

How would regional councils certify, audit and enforce BioMPs? Could external professionals be used to provide the required skills and expertise?

It is likely external professionals would be needed.

Question 39:

Is it appropriate for existing coastal permits to be reviewed and required to prepare BioMPs in order to comprehensively address biosecurity risks to industry and New Zealand's wider marine environment? If not, why not?

Yes

Question 40:

Is marine farm monitoring and reporting as well as external auditing and enforcement of BioMP implementation and effectiveness justified? If not why not?

Yes



Question 41:

Have the range of costs and benefits arising from the proposed national environmental standard, and who might bear the costs or receive the benefits, been accurately reflected? Are there any costs and benefits that have been overlooked?

Costs to NGOs that monitor this situation.

Question 42:

Are the estimates of costs and benefits accurate? Do you have information on costs and benefits that could assist the second stage of our assessment (of the impacts of the final proposal)? Do you have any information on costs and benefits that have not been quantified at this stage?

NGO 'watchdogs'



Please use the space below to provide any additional comments you may have, and if continuing an answer from another question please indicate the question number.

Additional comments attached.

Ministry for Primary Industries
Manatū Ahu Matua

[illegible]



**SUBMISSION BY THE ROYAL FOREST & BIRD PROTECTION SOCIETY OF NEW ZEALAND INC
ON THE PROPOSED NATIONAL ENVIRONMENTAL STANDARD FOR MARINE AQUACULTURE**

To: Ministry of Primary Industries
aquaculture@mpi.govt.nz

Date: 8 August 2017

Contact: Royal Forest and Bird Protection Society of New Zealand Inc
PO Box 266
Nelson 7040

Contact person: Sally Gepp

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INTRODUCTION

1. Forest & Bird is New Zealand's largest and longest-serving independent conservation organisation, with over 70,000 members and supporters. Its mission is to be a voice for nature, on land, in fresh water, and at sea, on behalf of its 70,000 members and supporters. Volunteers in 50 branches carry out community conservation projects around New Zealand. It has nine branches in the Auckland region alone.
2. As part of our societies' objectives, we have been involved in resource management processes around New Zealand for many years, at the national, regional, and district level. We routinely submit on regional and district plan provisions, and advocate in the Environment Court, on provisions relating to aquaculture, particularly as it affects biodiversity, landscape and natural character of the coastal environment. We are particularly interested to ensure that the environmental bottom lines established in the New Zealand Coastal Policy Statement are given effect to in regional and district plans.
3. Forest & Bird is also actively involved in marine spatial planning, such as the Hauraki Gulf Marine Spatial Plan and marine protected area planning such as the South-East Marine Protection Forum.

4. We are therefore particularly interested in how the National Environmental Standard for Marine Aquaculture (NES) will provide for aquaculture while ensuring that environmental matters of national importance are protected.
5. We welcome the opportunity to comment on the Proposed NES and hope that our submission points are of assistance to the Government in its consideration of the NES.
6. This submission is on all parts of the proposed NES.

SUMMARY OF SUBMISSION

7. The NES does not give effect to the NZCPS requirement to avoid adverse effects on outstanding natural landscapes, features and outstanding natural character areas and to avoid significant adverse effects on other natural landscapes and features, and natural character areas. It also contains insufficient considerations relating to effects on indigenous fauna and habitat. It does not enable regional councils and communities to identify areas where marine farms are inappropriate and to implement this.
8. The proposal to give certain existing marine aquaculture a favoured regulatory status may be acceptable in principle (provided environmental bottom lines are not compromised). However, there is insufficient evidence to support giving such status to Wainui Bay spat catching farms.
9. The proposal for almost all consenting to be non-notified, including where it is located in an outstanding part of the coast, is strongly opposed. The ability for councils to be more lenient than the NES, but not more stringent than it, is also opposed.

ANALYSIS

10. The analysis below takes as its context the following key elements of the proposed NES:
 - a. It applies only to consenting (with the exception of Biosecurity Management Plans which would apply to existing and new marine farms).
 - b. The default activity status for consenting is restricted discretionary, with the matters of discretion specified in the NES.
 - c. Effects of aquaculture on the values and characteristics that make an identified outstanding natural feature or landscape outstanding are a relevant consideration only where the marine farm is “in” an “identified” outstanding natural landscape or outstanding natural feature.
 - d. Consenting in areas that have been identified in a plan as “inappropriate” is a discretionary activity.
 - e. Where a “realignment” is proposed as part of consenting, additional matters of discretion become relevant including effects on marine mammals and seabirds (for the new area).

- f. Otherwise, effects on fauna are limited to consideration of (i) significant adverse effects on reefs and/or biogenic habitat underneath and within 20 metres of the marine farm; and (ii) management practices to minimise marine mammal and seabird interactions with the marine farm, including entanglement.
- g. Certain farms could be given a have more favourable status, eg Wainui Bay spat catching (although no specific provisions are included for this).
- h. Non-notification will be the norm.

Relationship with NZCPS

- 11. As subordinate legislation, the proposed NES must be consistent with the purpose of the Act. This means that the proposed NES must give effect to the New Zealand Coastal Policy Statement, because the NZCPS “gives substance to Part 2’s provisions in relation to the coastal environment”.¹ Policy consistency considerations also strongly support a consistent approach across different national level instruments.
- 12. Directive policies of the NZCPS must be given effect to according to their terms. The NES does not presently achieve this. In particular its approach to landscape and natural character effects is inadequate.

Policy 7 NZCPS

- 13. Objectives and policies of plans and policy statements are relevant to the consideration of applications for resource consent to the extent that they relate to a matter to which discretion is reserved.² Clearly, if a community has identified that a particular area is inappropriate for marine farming, the decision-maker should be able to take that into account at consenting stage. However, there is no matter of discretion which clearly enables this to be considered.
- 14. Forest & Bird submits that restricted discretionary status should apply only where a regional council has carried out an assessment of appropriateness/inappropriateness under Policy 7, and the marine farm is in an “appropriate” location. If this has not occurred, or if the marine farm is not in an appropriate location, the full range of potential effects of the marine farm should be able to be considered.
- 15. Alternatively, reference to the NZCPS, or to Policy 7 in particular, should be included in the matters to which discretion is restricted.

Policy 11 NZCPS and other fauna considerations

- 16. The discussion paper does not propose to include an additional matter of discretion that gives effect to Policy 11 NZCPS. The justification for this is that:

¹ *Environmental Defence Society v New Zealand King Salmon* [2014] NZSC 38 at [85].

² *Wellington Fish and Game Council v Manawatu-Wanganui Regional Council* [2017] NZEnvC 37 at [91] – [94].

Areas identified by regional councils under Policy 11 to date have tended to be either wide in extent, sometimes without clear boundaries, or very confined. Recommended matters of discretion in relation to significant seabed values such as reefs or biogenic habitats, and in relation to the management of marine mammal and seabird interactions with marine farms are considered to provide appropriate flexibility for councils to ensure that decisions on consent applications have regard to the requirements of Policy 11.

17. In our experience, identification of Policy 11 areas has not been wide in extent (eg Bay of Plenty Regional Coastal Environment Plan, Marlborough Environment Plan, Auckland Unitary Plan) and even if this were the case, we do not see that it is relevant to the way in which effects of marine aquaculture on such areas is dealt with.
18. The discussion document wrongly assumes that existing marine farms do not have an adverse effect on marine habitat: the loss of habitat that results from marine farms occupying part of the coastal marine area is expressly excluded from consideration, and only management practices to minimise marine mammal and seabird interactions such as entanglement can be taken into account. This approach is very concerning because it locks in any existing habitat exclusion (eg loss of foraging habitat) caused by marine farms. In some areas, even existing marine farming is having a significant adverse effect on endangered fauna, and the tipping point for habitat exclusion may have already passed – although such examples are likely to be rare (the loss of king shag foraging habitat in the Marlborough Sounds, which is having an unknown but likely significantly adverse impact on this species, is the most obvious example). All aspects of Policy 11 should be able to be taken into account on reconsenting decisions in order to implement the NZCPS and maintain indigenous biodiversity. While this means less “certainty” for marine farms, there will be certain areas where this is a necessary corollary of the need to ensure sustainable management is achieved.
19. A significant amount of work has been done on identifying Important Bird Areas (IBAs) for seabirds.³ IBAs are areas that are internationally important for the seabirds that use them. Marine aquaculture that excludes seabird habitat in IBAs has cumulative adverse effects on seabirds that is contributing to increasingly threatened status of these species (35 percent of seabird species and subspecies – including albatrosses, petrels, penguins, shags, and terns – and 57 percent of shorebird species and subspecies – including herons and dotterels – are threatened with extinction⁴). Where existing marine farms are within an IBA, effects on the relevant seabird species should be able to be taken into account in reconsenting.
20. In relation to effects on the seabed, the discussion document posits that many of the marine farms that were established under the RMA will have had seabed assessments undertaken as part of the original consent application process. This is a surprising assertion as even if such an assessment did occur (noting that many consent were issued pre-RMA), our

³ Forest & Bird (2014). *New Zealand Seabirds: Sites at Sea, Seaward Extensions, Pelagic Areas*. The Royal Forest & Bird Protection Society of New Zealand, Wellington, New Zealand.

⁴ Ministry for the Environment and Statistics New Zealand (2016) *Our Marine Environment*. Wellington

understanding of the ecological values of the seabed has increased dramatically over the past 20 years. It could not be said that a 15 or 20 year old assessment could adequately supplant a seabed assessment in light of current knowledge.

21. There is no basis for limiting consideration of effects on the seabed to “significant” adverse effects, or to effects on reefs and biogenic habitat “within 20 metres of the marine farm”. If the marine farm is having an adverse effect on the seabed or a reef at any proximity, that should be a relevant consideration under the sustainable management obligation to avoid, remedy or mitigate adverse effects, and the requirements of Policy 11 of the NZCPS.
22. A specific matter of discretion is recommended in the discussion document for adverse effects of offshore farms on marine mammals. To meet the definition of an offshore farm, a marine farm must be 100 hectares in size or larger. There is no justification given for limiting this to large farms. The size threshold should be deleted.

Policies 13 and 15 NZCPS

23. The NZCPS requires that adverse effects on outstanding natural landscapes and outstanding natural features are avoided and that significant adverse effects on other natural landscapes and features are avoided.
24. The landscape values of a particular area must be assessed as if the existing aquaculture activity were not in it.⁵ Otherwise, landscape effects are essentially locked in permanently, which would cut across the sustainable management purpose of the Act.⁶
25. An activity does not need to be “in” an outstanding natural landscape or feature to have an impact on it. Many such features are land-based, such as a headland. The presence of a marine farm nearby clearly has the potential to adversely affect the visual and experiential elements of the landscape or feature, particularly when viewed from the sea or another vantage point that looks across the marine farm to the landscape or feature beyond. The proposal to include landscape effects as a matter for consideration only where the marine farm is “in” the landscape or feature does not achieve s 6(b) of the Act or implement Policy 15 of the NZCPS.
26. The NES says that this approach is taken “in order to provide certainty”. We do not accept that as a sufficient reason to fail to implement Policy 15 of the NZCPS. Visibility of an activity is not of itself an adverse effect; the question is whether the sight of the activity diminishes the quality of the ONL.⁷ This is a factual evaluation undertaken in light of the Plan’s relevant objectives and policies. The reference to “certainty” really just means excluding some effects from consideration, contrary to the NZCPS.

⁵ *Port Gore Marine Farms v Marlborough District Council* [2012] NZENVC 72 at [140]; *Ngati Rangī Trust v Manawatu-Wanganui Regional Council* [2016] NZHC 2948 at [63] – [68].

⁶ *Ngati Rangī* at [63].

⁷ *Rangitikei Guardians Soc Inc v Manawatu-Wanganui RC* [2010] NZEnvC 14 at [119].

27. The NES also fails to implement Policy 15(b), as significant adverse effects on a natural landscape or feature that is not significant are not able to be taken into account and therefore cannot be avoided.
28. Some plans have not yet identified the region's outstanding natural landscapes and features. The NES is unclear as to how such areas would be treated. While those identified in draft plans are listed in Appendix H, the indicative provisions in Appendix F refer only to areas identified in proposed or operative regional plans. The discussion document indicates that this is not considered to be a major problem because most consents do not expire until around 2025.
29. Marine farmers are not obliged to wait until their consent is due to expire before seeking to re-consent, and there is a powerful incentive to re-consent early if it means that any consideration of the outstanding landscape status of the site can be foreclosed. The NES should not apply in a region where it would be more lenient than a regional plan in circumstances where the region's outstanding landscapes and features are not yet mapped.
30. We do not consider it valid to assume that "effects on landscape and natural character ... will have been assessed when coastal permits were first granted."⁸ Even if such effects were assessed, this will not have occurred with the rigour of post-NZCPS assessments..
31. The same comments above apply to consideration of outstanding natural character areas and natural character in all other areas of the coast.
32. The NES should ensure that adverse effects on outstanding natural character areas, outstanding natural landscapes and outstanding natural features are avoided (regardless of whether the marine farm is within or near to these sites), and that significant adverse effects on other natural character areas, landscapes and features are avoided.

Water quality

33. To come within the NES rules, it is proposed that for aquaculture requiring supplementary feeding, feed limits must not exceed those contained in conditions on the current coastal permit,⁹ and additional matters of discretion relating to conditions to avoid, remedy or mitigate water quality effects are able to be considered.
34. The NES would assist in ensuring environmental bottom lines were met, and would provide greater certainty for marine farmers, if it proposed particular water quality standards that must be met.

Biosecurity

35. Forest & Bird supports the emphasis being placed on the mandatory requirement of Biosecurity Management Plans (BioMP) for all marine farms and the requirement that they

⁸ Discussion document, p 27

⁹ Indicative NES provisions, clause 3(f)

are kept up to date and current. The need for a consistent approach to biosecurity across New Zealand is supported.

- 36. Regional Councils need to be able to cost recover for monitoring and enforcement of BioMPs
We support making BioMP mandatory rather than voluntary.
- 37. We agree that the BioMP should be provided at lodgement and certified by the regional council so that it forms part of the consent requirement. It is important that this is a true certification, with the ability to refuse or require changes to the BioMP if it is inadequate. The conditions of consent need to clearly require implementation of the BioMP.

Notification

- 38. In general, public notification of marine farms is excluded. This is opposed.
- 39. Marine farms are given permission to occupy public space, for a fixed period of time, often for exclusive occupation of that space. The public should be consulted on whether that should be allowed to continue. This is not private land.
- 40. Marine farms that were established prior to 1991 were authorised under a very different consent regime, and those consents were rolled over as section 12, 14 and 15 permits in 2004. Even where marine farms were established under the RMA, they will often pre-date the NZCPS and identification of landscapes and features. Often, effects on high value landscapes or features or natural character areas will not have been taken into account. It is not correct to assert¹⁰ that the effects of existing marine farms that are seeking no or minor changes “have already been realised” as a reason for excluding public participation from any aspect other than “the extent an existing farm is changing its impacts on the environment”.
- 41. Another argument made against notification is that “the public can still participate in second generation regional coastal plan processes to ensure marine farms are not located in inappropriate areas”. Presumably this refers to the exercise under Policy 7 of the NZCPS of identifying areas where particular activities and forms of subdivision, use and development are inappropriate, or may be appropriate without consideration of effects. The assumption that this could affect existing marine farms – the subject of the discussion document – is wrong. While potentially a regional plan could map the site of an existing marine farm as an area that is “inappropriate” for marine farming, no regulatory consequences could flow from this, otherwise the plan would be more stringent than the NES (which is not provided for¹¹, and therefore cannot occur).
- 42. Applications will not be notified even where they are “under 2”, ie they are in an outstanding natural landscape or feature. These areas are treasured parts of New Zealand’s coastal environment, and the public is entitled to be heard on whether marine farms should be allowed to continue to operate there. It is difficult to see how the “experiential” elements of the landscape, and effects on it, will be assessed without hearing from the

¹⁰ Discussion document, p 13

¹¹ Clause 18, Appendix F

people who experience it. The justification for excluding the public from these processes is completely inadequate.

43. The default RMA test for notification should apply, particularly where the marine farm affects an outstanding natural landscape, feature or natural character area or an area with high ecological value (such as existing mussel farms within King Shag habitat).

Certainty, stringency and leniency

44. As a general proposition, Forest & Bird supports an activity status for all consenting that enables consent to be declined (as proposed), and would not support controlled or permitted activity status.
45. Change in species should not be the only matter that results in full discretionary status, as set out above.
46. The NES proposes to allow regional councils to be more lenient than the NES (but not more stringent).
47. Forest & Bird does not support the ability for councils to be more lenient than the NES. Aside from the fact that this undermines the role of a “National Environmental Standard”, the default provisions set by the NES are already sufficiently lenient, particularly with respect to outstanding areas of the coast.
48. The NES should enable councils to be more stringent if local conditions support this, or to give effect to NZCPS (as is the case in the Resource Management (National Environmental Standard for Plantation Forestry) Regulations 2017).
49. The NES floats the concept of “favoured status” for particular areas, such as the Wainui Bay spat catching farms (although nothing is proposed in the indicative provisions). These farms are within an outstanding natural landscape and in or adjacent to an outstanding natural feature. It would not be appropriate to provide an activity status that did not enable these farms’ effects on the landscape values of their surroundings to be considered, and for consent to potentially be declined.
50. Also, there is insufficient evidence as to the actual value of the farms at Wainui Bay. The statements in the discussion document regarding the importance of Wainui Bay farms to the industry are sourced from the Wainui Bay consent holders’ assessment of environmental effects for Plan Change 61 to the Tasman Resource Management Plan. In the AEE they are given as bare assertions with no substantiation. It is inadequate for MPI to rely on the marine farmer’s unverified assertions as a basis for a more lenient regulatory regime.
51. If “favoured status” is going to be provided to any marine farm or category of marine farm, this should only be on the basis that the farm is in an area that the community has identified is appropriate (it is not “inappropriate” in terms of Policy 7 NZCPS), does not adversely affect a high value area of the coastal environment, and is of particular economic value to the industry.

Changes sought

52. In summary, Forest & Bird seeks the following changes:

- a. Restricted discretionary status should apply only where a regional council has carried out an assessment of appropriateness/inappropriateness under Policy 7, and the marine farm is in an “appropriate” location. If this has not occurred, or if the marine farm is not in an appropriate location, the full range of potential effects of the marine farm should be able to be considered.
- b. Where a marine farm adversely affects a Policy 11 area or an IBA, this should be able to be taken into account on consenting.
- c. If the marine farm is having an adverse effect on the seabed or a reef at any proximity, that should be a relevant consideration.
- d. To meet the definition of an offshore farm, a marine farm must be 100 hectares in size or larger. The size threshold should be deleted.
- e. The NES should ensure that adverse effects on outstanding natural character areas, outstanding natural landscapes and outstanding natural features are avoided (regardless of whether the marine farm is within or near to these sites), and that significant adverse effects on other natural character areas, landscapes and features are avoided. This means that it cannot limit landscape considerations to where a marine farm is “in” such an area, and cannot limit this consideration to “identified” areas in proposed or operative planning instruments.
- f. The NES should not enable councils to be more lenient than the NES, and should enable councils to be more stringent if local conditions support this, or to give effect to the NZCPS.
- g. “Favoured status” should apply only to marine farms that are within areas that regional councils and communities have identified as appropriate for marine farming, that do not adversely affect a high value area of the coastal environment, and that are of particular economic value to the industry. The criteria should ensure that the marine farm’s importance is properly justified (in contrast to the Wainui Bay example given).



Sally Gepp

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SUBMISSION

BY THE

**Royal New Zealand Society for the
Prevention of Cruelty to Animals
Inc.**

ON

**The Proposed National
Environmental Standard for
Marine Aquaculture**

8th August 2017

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Introduction

The following submission is made on behalf of The Royal New Zealand Society for the Prevention of Cruelty to Animals (RNZSPCA).

The RNZSPCA is the preeminent animal welfare and advocacy organisation in New Zealand. We have been in existence for over 130 years with a supporter base representing many tens of thousands of New Zealanders across the nation.

The organisation includes 44 Animal Welfare Centres across New Zealand and over 80 inspectors appointed under the Animal Welfare Act 1999.

The RNZSPCA welcomes the opportunity to make a submission and provide feedback on the Proposed National Environmental Standard for Marine Aquaculture.

SPCA position

Marine aquaculture is one of the fastest growing industries in New Zealand. Greenshell Mussels, Pacific Oysters, and King (Chinook) Salmon are currently being farmed commercially and the viability of farming snapper, hāpuku, and kingfish is being assessed. The administration of aquaculture in New Zealand is currently regulated under the Resource Management Act (1991), the Marine and Coastal Area Act (2011), and the Fisheries Act (1996). The current Aquaculture Biosecurity Handbook (2016) provides guidance for management practices and stock health to minimise production losses.

While these documents, and the Proposed National Environmental Standard for Marine Aquaculture, address health management and disease outbreak from a biosecurity perspective, there is no direct consideration of animal welfare. The RNZSPCA is concerned that the proposed National Environmental Standard for Marine Aquaculture does not incorporate any specific mention of, or provisions to, safeguard the welfare of the species it is intended to manage.



The welfare of farmed fish is an important issue; fish are recognised as sentient under the 2015 Amendment Act (AWAA, 2015) and this brings with it legal obligations and responsibilities to safeguard their welfare. In addition, there is a fundamental legal obligation to meet the physical, health and behavioural needs for animals for animals we are farming. There is also a need to protect our national and industry reputation with respect to high animal welfare standards. High standards of welfare improve public perception, marketing, and product acceptance. In addition, high standards of welfare also improve production efficiency, quality, and quantity of the animal product.

Many international organisations have specifically addressed the welfare of farmed fish; issuing recommendations regarding husbandry, transport, and slaughter. These include the World Organisation for Animal Health (OIE, 2008); the European Food Safety Authority (2009); the Council of Europe (2005); the Farmed Animal Welfare Committee (1996; 2014); and the Humane Slaughter Association (2005).

The RNZSPCA believes specific provisions for the welfare of species farmed in marine aquaculture need to be included in these New Zealand National Standards. As part of the proposed National Environmental Standard, all marine farms must prepare, implement, and regularly update an individual biosecurity management plan by 31st January 2025, the criteria of which are to be specified in a separate document to be developed by MPI. Similarly, our organisation submits that all farms should address the welfare of their animals with the development of an individualised management plan which includes a focus on maximising animal welfare.

Legally, fish are afforded the same protections under the New Zealand Animal Welfare Act (1999) as other animals. Fish are recognised as sentient under the 2015 Amendment Act (AWAA, 2015), as they have the ability to evaluate the actions of themselves and others, to assess risk and consequences, and are capable of experiencing both positive and negative affective states (Broom, 2006). Yet in practice the recognition of sentience and the protections it affords are only selectively applied.



Fish welfare has largely been neglected. Reasons for this may include their aesthetic difference from other animals and their silence, which makes it difficult for people to recognise and empathise with their suffering.

The RNZSPCA emphasises that scientific evidence has sufficiently demonstrated the sentience of fish. These animals are capable of experiencing pain and suffering and our organisation strongly advocates that fish must be treated humanely, and practices which have the potential to cause pain, injury or suffering must be avoided. This includes fish caught for food, or other consumptive purposes, must be humanely handled and killed as soon as possible after capture. Fish welfare should be given the same importance as any other species which we manage. All processes involved in farming fish must be being designed and conducted in a way that minimises pain and suffering, and avoids injuring both target and non-target animals.

Literature review and assessment

Background

The brain structure of fish is not merely a simple version of a mammalian brain, but a unique and equally complex organ that has adapted during their own special evolution (Rose, 2002). Like other vertebrates (i.e. mammals and birds) fish display sophisticated behavioural, physiological, and cognitive processes. These demonstrate their ability to experience different affective states, including pain and suffering.

Fish live in social groups and some can recognise individual companions (Swaney et al, 2001). Some species form mental representations of their environment for complex feats of navigation (Rodriguez et al, 1994). Several fish species are capable of learning complex spatial relationships and forming mental maps and hierarchical associations about the order or sequence of information (Burt de Perera, 2004). Fish are acutely aware of their environment. The current literature on fish cognition indicates that several species can learn and integrate several separate variables, which is a more complex process than simple associative learning

(Braithwaite, 2006). In response to adverse environmental conditions, individual fish will integrate information to generate a response in order to mitigate that change, just like other complex animals (Wingfield, 2003; Portavella et al, 2004; Yoe et al, 2004; Huntingford et al, 2006).

In response to aversive conditions, fish will alter their patterns of swimming, produce changes in body colour, shoal, take shelter, and reduce feeding (Huntingford et al, 2006). Fish remember negative experiences and individuals will avoid the associated stimulus for many months (i.e. a place where or bait on which they were previously hooked) (Czanyi & Doka, 1993; Beukema, 1970).

The neuroendocrine reaction to stress in fish is virtually identical to that in mammals: this involves the release of adrenaline, corticotrophin-releasing hormone (CRH), adrenocorticotrophic hormone (ACTH) and cortisol. In fish, acute stressors will result in a brief spike in cortisol, whereas chronic stress produces persistently high cortisol levels, just as in mammals (Huntingford et al, 2006).

In addition, negative consequences are seen when fish are exposed to a stressful stimulus and provide a strong indication of poor welfare. These negative consequences include loss of appetite, impaired growth and muscle wasting (Farbridge & Leatherland, 1992; Puste & Das, 2001), immunosuppression (Weyts et al, 1999), reduced disease resistance (Balm, 1997), and suppressed reproduction (Pottinger, 1999).

Studies have identified nociceptors (receptors which sense a painful stimulus) in fish that respond to heat, pressure, and noxious stimuli, just like in mammals (Ashley et al, 2007; Roques et al, 2010). Fish show prolonged behavioural and physiological responses to adverse events and will maintain self-exposure to analgesics when in pain (Sneddon et al, 2011).

Based on the sophisticated behavioural, cognitive, and physiological processes demonstrated by fish it is concluded that fish are able to experience pain and suffering (EFSA, 2009).



Welfare issues

Stocking Density

Stocking density is one of the most significant welfare issues in Aquaculture, as it is with all intensive farming systems. The RNZSPCA does not support intensive rearing systems of farmed fish with unacceptably high stocking densities. Free-range ocean-ranching of fish is preferred to sea-cage-systems. If fish have to be reared in pens or cages, stocking densities should be low enough to enable the fish to perform natural behaviours and avoid health and water quality problems.

While stocking density has direct repercussions for welfare, there are also a range of indirect effects that impact on welfare. These include oxygen levels, water quality, metabolic waste and social behaviour. Consideration needs to be given to both the carrying capacity of the environment and the spatial and behavioural needs of the animals.

High stocking densities can be stressful due to crowding, changes in oxygen levels, water quality, and light intensity (HSA, 2005). While some species adapt to high densities (Ruane & Komen, 2003), others show prolonged elevation of cortisol levels following confinement (Barton et al, 2003) indicating ongoing stress.

Increased cortisol levels, the expression of stress related genes, decreased immune response (Vazzana et al, 2002; Gornati et al, 2004), and altered metabolism (Montero et al, 1999) have all been reported in Sea bream and Sea bass in response to high stocking densities. Adult halibut show abnormal activity, surface swimming, reduced food consumption, and reduced growth rates (Kristiansen et al, 2004). All of these effects have been demonstrated in Rainbow trout (Ellis et al, 2002). In Atlantic salmon densities above 22kg/m³ have been associated with reduced welfare, regardless of water quality or social interaction (Turnbull et al, 2005). Crowded fish are also more sensitive to additional acute stressors (Ruane et al, 2002) and experience more pre-slaughter stress than non-crowded fish (Bagani et al, 2002).

High fish stocking densities are also associated with increased social stress, competition, aggression, and physical injury in fish; all of these have a negative impact on welfare and can also negatively affect production (Ashley, 2007). Conspecific attacks are often the primary cause of fin damage (Turnbull et al, 1998). Competition for food is an important factor contributing to aggression and physical injury in fish as the majority of damaging contact between fish appears to occur during feeding (Greaves & Tuene, 2001). Feeding method and the provision of dietary supplements have both been shown to alter aggressive interaction (Winberg et al, 2001; Andrew et al, 2002). The environment may also affect aggression levels; for example dark body colour has been suggested to signal social subordination in salminoids. Fish interacting on a dark background showed an initial dark colouration and had a lower frequency of aggressive interaction, whereas those on a white background had pale colouration and high levels of aggressive behaviours (Hoglund et al, 2002).

The New Zealand Code of Welfare for Commercial Slaughter (2016) states that finfish, when held in tanks, must not be overcrowded to the extent that their welfare is compromised. Good management of stocking density should include assessment of water quality, the addition of oxygen to the water if needed, and close monitoring of the behaviour and activity of the fish. Surface swimming, chaotic swimming, and residence where tanks drain are all indicators of reduced welfare (HSA, 2005; Ashley, 2007).

Behaviour

The freedom to express natural behaviour is one of the basic freedoms to which an animal is entitled. Aquaculture and confinement violate this entitlement to basic freedom. Animals have intrinsic drive to perform their natural behaviours (for example migration) and the inability to fulfil this need may cause suffering. There are ways that this suffering may be mitigated such as allowing the fish freedom to perform important components of the behaviour and making sure that the purpose of the behaviour is fulfilled. For example, allowing the fish the ability to swim continuously and ensuring them access to improved

feeding grounds. However, additional enrichment should be provided to improve biological functioning and welfare.

Feeding and environmental enrichment improves survival rates of hatchery reared Atlantic and Chinook salmon (Brown et al, 2003; Maynard et al, 1996). Enrichment has also been shown to produce a more natural behavioural repertoire in young fish compared to those reared in a barren environment (Berejikian et al, 2000). Measures that reduce the effects of density such as overlapping floors, alternative substrates, and variation in the size and species of fish have also been suggested to reduce the aggressiveness associated with high stocking densities (Kristiansne et al, 2004).

Disease

Health is a fundamental measure of welfare and also an indicator of other welfare concerns. Stress is a major contributing factor to the health of farmed fish and a known cause of reduced immune function. Due to the inherent conditions of intensive farming systems, a range of health concerns and diseases are seen in aquaculture. Some of these problems include:

- Fin rot: this describes a variety of lesions, which result initially from either environmental or aggressive interactions and where infection develops secondarily. Susceptibility to the development of Fin rot and secondary infection increases with chronic stress (Turnbull et al, 1996).
- Sea lice: this refers to a range of parasitic species commonly found in intensive fish farm systems that have implications for both welfare and production. Parasites are known to erode the skin of fish and are also vectors for other diseases (Johnson et al, 2004). Parasites also alter the behaviour of host fish, including their locomotion, foraging, and competitive ability (Barber, 2007).
- Viral diseases: these pose an increasing risk to commercial operations (Ashley, 2007).
- Non-infectious health problems: these are also recurrent in aquaculture and include: heart, spine, and spin bladder deformities. These are thought to be caused by both hereditary and environmental factors.

Food Deprivation

Fish are often deprived of food to reduce the rate of their metabolism before certain management procedures, including handling, transport, and slaughter. Reducing the rate of a fish's metabolism reduces physiological stress, oxygen demand, and defaecation; this improves water quality and food hygiene post-slaughter. Fish are ectothermic and periods of food deprivation may be less detrimental to them than to endotherms such as mammals. Fish should not be deprived of food for any longer than 72 hours and this should not be for any reason other than conditioning or adjustment of body composition (HSA, 2005; FAWC, 1996). However, in practise the period of food deprivation for management practices can extend for some days or weeks (Bjornevik et al, 2017). Levels of particular vitamins and trace minerals have an important influence on immuno-competence, development of disease, and the response of fish to stressful events. Food deprivation may impact the fish's levels of particular vitamins and trace minerals and, consequently, negatively affect welfare (Ashley, 2007). The sudden withdrawal of feed may also increase aggression among fish (Brannas et al, 2003).

Handling & Transport

Handling and transport are inherently stressful events for all animals and should be avoided wherever possible.

Removal of fish from water is highly aversive and produces a severe stress response in the animals (Arends et al, 1999; Donaldson, 1981). Handling and/or transport can result in abrasions and the removal of scales from fish; this disrupts the mucous layer of fish. The mucous layer serves as a physical and chemical barrier to infection as well as being important for osmoregulation and locomotion. Transportation, capture, loading, and unloading can induce vigorous swimming activity, elevated oxygen consumption (Chandroo et al, 2005) disease outbreaks (Iversen et al, 2005), and physiological stress responses that can affect fish over a prolonged period and can negatively affect production (Iversen et al, 1998; Davis and Parker, 1986; Schreck et al, 1989; Specker and Schreck, 1980).

Moving fish in water through the use of well-designed pumps, channels, and pipes is likely to provide protection from abrasion and appears to be the least stressful transportation technique. Therefore, having adequately trained personnel move fish with the assistance of well-designed pumps, channels, and pipes, with appropriate speed and minimal potential for abrasion, is likely to improve the welfare of fish during handling (FAWC, 1996; 2014).

Additionally, the addition of anaesthetic agents may be used to sedate fish prior to transport in order to reduce stress (Zahl et al, 2012; HSA, 2005; Iversen et al, 2003; Tort et al, 2002).

Slaughter

The RNZSPCA strongly condemns the use of slaughter methods for fish that are inhumane, such as suffocation, bleeding without stunning, allowing fish to die through asphyxiation, and stunning using carbon dioxide gas. The Society absolutely opposes the processing of live fish, for example, gutting, filleting or freezing of live fish.

Removing fish from water is highly aversive and produces a severe stress response (Arends et al, 1999; Donaldson, 1981). Asphyxia either in air or chilled water is considered one of the most stressful killing methods for fish (Bagani et al, 2007; Ottera et al, 2001). The time to loss of unconsciousness and death from asphyxiation is extremely variable and has been shown to range from 2.5- 70 minutes; this is dependent on the species, temperature, and pre-slaughter conditions (Bagani et al, 2007; Robb & Kestin, 2002). During this time fish are experiencing aversive physical and physiological changes that are generally associated with stress, pain, and suffering.

Chilling in ice slurry or on packed ice negatively impacts the welfare of fish (Skjervold et al, 2001). These practices result in physiological stress responses and forced muscle contractions that are known to be painful for other species (Roth et al, 2009).

Stunning using carbon dioxide gas requires several minutes to induce unconsciousness, during which time fish appear severely distressed (Robb et al, 2000a,b) and display vigorous aversive

reactions (Robb & Kestin, 2002). Following this 'stun' method fish are normally removed from the water and have their gills cut.

Exsanguination or gill cutting also results in an extended time to death and fish are reported to show clear signs of aversive behaviour whilst bleeding out. Evisceration of live fish results in death due to both asphyxia and exsanguination, again producing an extended time to death (Robb et al, 2000b).

Slow killing methods that do not render the animal insensible immediately and induce unconsciousness or death gradually, severely compromise the welfare of fish and expose animals to extended periods of suffering. This would not be acceptable for other domestic, farmed, or wild-caught species and the application of humane killing techniques, based on current scientific evidence, are equally as important for fisheries as they are for any other animal industries.

In addition, slow killing methods that lead to fish struggling produce an earlier onset and more intense rigor mortis which reduces the quality of the meat (Robb & Kestin, 2002).

The New Zealand Code of Welfare for Commercial Slaughter (2016, Part 6, No.21), as a minimum standard states:

- d) Killing methods must result in rapid and irreversible loss of consciousness
- e) A person killing a finfish using the brain spiking technique must be competent and experienced with the method to ensure that the awl or spike enters the head at the appropriate point
- f) Gill arches must not be ripped or severed in unstunned finfish
- g) When reversible electrical stunning is used, finfish must be bled by severing the blood vessels in the gill arches or by puncturing the heart before they regain consciousness

At present, the best practice guidelines for the humane killing of fish recommend that the fish should remain in water until the moment they are stunned. Percussive stunning and electrical stunning methods can improve the humaneness of slaughter practises due to the rapid loss of consciousness, when they are applied correctly (Ashley, 2007; Robb & Roth, 2003). Percussive stunning involves a forceful and accurate blow to the head. The blow should be aimed just above the eyes to impact on the brain and the force required will depend on the size of the fish. It is important to check the effectiveness of the stun and another blow must be applied immediately if the fish is not unconscious. Aquaculture operations that need to rapidly kill large numbers of fish would benefit from automatic percussive stunning devices, as maintaining accuracy with manual percussion over a prolonged period on a commercial scale is likely to be difficult. More recent automated stunning systems also avoid the need for the operator to handle the fish as they are designed to swim into the entry channels (Ashley, 2007).

Electric stunning induces unconsciousness by passing current through the brain and causing an epileptic like fit. If the current continues fish will die from anoxia before consciousness is regained, otherwise fish need to be killed before consciousness is regained. Electric stunning conditions need to be carefully managed to ensure that neither pain nor carcass damage are caused. Too weak a stun may cause pain or paralysis but not unconsciousness. The kind of current applied is also important; direct current has failed to produce unconsciousness where alternative current has been effective (Robb & Roth, 2003). The specific stunning conditions necessary are dependent on a range of factors, including the species, volume of water and frequency or strength of the current (HSA, 2016).

In order to maintain the humaneness of slaughter techniques, people who are involved in the stunning of fish must be appropriately and adequately trained, skilled and experienced. They must ensure that the fish are rendered insensible in a humane and prompt manner.

To reduce stress, the addition of anaesthetic agents may be used to sedate fish prior to slaughter (Zahl et al, 2012; HSA, 2005; Iversen et al, 2003; Tort et al, 2002).

The Society believes that there is a continuing need to improve the humaneness of current methods for the killing of fish, and strongly encourages and supports further research and development in this area.

Effects on other Wildlife

The impacts of Aquaculture on the environment and other species are significant and have received considerable attention from the media, government and the public in recent years.

The RNZSPCA is opposed to the killing of wild predators such as seals or seabirds to protect fish farms. The Society also disagrees with the practice of feeding farmed fish with specially caught wild fish. These practices cause significant suffering to the animals involved, are unsustainable, and have a negative environmental impact.

Conclusion

The RNZSPCA supports the development of a code of practice for aquaculture that contains guidelines to adequately protect the welfare of fish, based on evidence and the demonstrated capacity of fish to experience pain and suffering. The principles of fish welfare from such a code of practice for aquaculture, should underpin the Proposed National Environmental Standard for Marine Aquaculture, and any other regulatory documents relating to fisheries management (such as the Biosecurity handbook). Ultimately this should result in the compulsory regulation of marine aquaculture according to these standards.

The RNZSPCA also wants to highlight that there are a range of other issues that can impact on fish welfare that need consideration. These include: housing (e.g. water quality independent of stocking density, temperature and lighting), environmental conditions (e.g. extreme weather events, natural predators, jellyfish and algal blooms), equipment failure,

depopulation, procedures such as tagging, administration of medicines, selection and breeding of fish and smolting of salmon.

References

- Arends, R.J., Mancera, J.M., Munoz, J.L., Bonga, S.E.W., Flik, G. (1999). The stress response of gilthead sea bream (*Sparus aurata* L.) to air exposure and confinement. *Journal of Endocrinology*. 163: 149-157.
- Ashley, P.J., Sneddon, L.U., McCrohan, R. (2007). Nociception in fish: Stimulus-response properties of receptors on the head of trout *oncorhynchus mykiss*. *Brain Research*. 1166: 47-54.
- Ashley, P.J. (2007). Fish Welfare: Current issues in Aquaculture. *Applied Animal Behaviour Science*. 104: 199-235.
- AWA (1999). Animal Welfare Act 1999. Section 2. Retrieved from <http://www.legislation.govt.nz/act/public/1999/0142/latest/whole.html>
- AWAA (2015). Animal Welfare Amendment Act (No. 2) 2015. Part 1, Section 4. Retrieved from <http://www.legislation.govt.nz/act/public/2015/0049/30.0/DLM6165701.html>
- Balm, P.H.M. (1997). Immune-endocrine interactions. In: Iwama, G., Pickering, A., Sumpter, J., Schreck, C. (Eds). *Fish Stress and Health in Aquaculture*. Cambridge University Press, Cambridge. 195-222.
- Bagani, M., Civitareale, C., Priori, A., Ballerini, A., Finoia, A., Brambilla, G., Marino, G. (2007). Pre-slaughter crowding stress and killing procedures affecting quality and welfare in sea bass (*Dicentrarchus labrax*) and sea bream (*Sparus aurata*). *Aquaculture*. 263: 52-60.
- Barber, I. (2007). Parasites, behaviour, and welfare in fish. *Applied Animal Behaviour Science*. 104: 251-264.
- Barton, B.A., Haukenes, A.H., Parsons, B.G., Reed, J.R. (2003). Plasma cortisol and chloride stress responses in juvenile walleyes during capture, transport, and stocking procedures. *National American Journal of Aquaculture*. 65: 210-219.

- Berejikian, BA., Tezak, EP., Riley, SC., LaRae, AL. (2001). Competitive ability and social behaviour of juvenile steelhead reared in enriched and conventional hatchery tanks and a stream environment. *Journal of Fish Biology*. 59: 1600-1613.
- Beukema, JJ. (1970). Angling experiments with carp: decreased catchability through one trial learning. *Netherlands Journal of Zoology*. 20: 81-92.
- Bjornevik, M., Hansen, H., Roth, B., Foss, A., Vikinstad, E., Solberg, C., Imsland, AK. (2017). Effects of starvation, subsequent feeding, and photoperiod on flesh quality in farmed cod (*Gadus morhua*). *Aquaculture Nutrition*. 23(2):285-292.
- Braithwaite, VA. (2006). Cognition in Fish. *Behaviour and Physiology of Fish*. 24: 1-37.
- Brannas, E., Jonsson, S., Lundqvist, H. (2003). Influence of food abundance on individual behaviour strategy and growth rate in juvenile brown trout (*Salmo trutta*). *Canadian Journal of Zoology*. 81: 684-691.
- Broom, DM. (2006). The Evolution of Morality. *Applied Animal Behaviour Science*. 100(1-2): 20-28.
- Brown, C., Davidson, T., Laland, L. (2003). Environmental enrichment and prior experience of live prey improve foraging behaviour in hatchery-reared Atlantic salmon. *Journal of Fish Biology*. 63: 187-196.
- Burt de Perera, T. (2004). Fish can encode order in their spacial map. *Proceedings of the Royal Society London*. 271: 2131-2134.
- Chandroo, KP., Cooke, SJ., McKinley, RS., Moccia, RD. (2005). Use of electromyogram telemetry to assess the behavioural and energetic responses of rainbow trout, *Oncorhynchus mykiss* (Walbaum) to transport stress. *Aquaculture Research*. 36: 1226-1238.
- Council of Europe (2005). Recommendation concerning Farmed Fish. Retrieved from http://www.coe.int/t/e/legal_affairs/legal_co-operation/biological_safety_and_use_of_animals/Farming/Rec%20fish%20E.asp
- Czanyi, V & Doka, A. (1993). Learning interactions between prey and predator fish. *Marine Behaviour and Physiology*. 23: 63-78.
- Davis, KB., Griffin, BR., Gray, WL. (2002). Effect of handling stress on susceptibility of channel catfish *Ictalurus punctatus* to *Ichthyophthirius multifiliis* and channel catfish virus infection. *Aquaculture*. 214(1-4): 55-66.

- Davis, KB & Parker, NC. (1986). Plasma corticosteroid stress response of 14 species of warmwater fish to transportation. *Transactions of the American Fisheries Society*. 126: 248-258.
- Donaldson, EM. (1981). The pituitary-interrenal axis as an indicator of stress in fish. Pickering, AD. (Ed). In: *Stress and Fish*. Academic Press. London: UK.
- EFSA (2009). General approach to fish welfare and the concept of sentience in fish. *European Food Standards Authority*. Retrieved from <http://www.efsa.europa.eu/en/efsajournal/pub/954>
- Ellis, T. (2002). The effects of stocking density on the welfare of farmed rainbow trout. In: Report of the Workshop on Farmed Fish Welfare. *Department of Environment, Food, and Rural Affairs*. UK.
- Ellis, T., North, B., Scott, AP., Bromage, NR., Porter, M., Gadd, D. (2002). The relationships between stocking density and welfare in farmed rainbow trout. *Journal of Fish Biology*. 61: 493-531.
- Farbridge, KJ. & Leatherland, JF. (1992). Plasma growth hormone levels in fed and fasted rainbow trout (*Oncorhynchus mykiss*) are decreased following handling stress. *Fish Physiology and Biochemistry*. 10: 67-73.
- FAWC (Farmed Animal Welfare Committee) (2014). Opinion on the welfare of farmed fish. Retrieved from www.defra.gov.uk/fawc.
- FAWC (Farmed Animal Welfare Committee) (1996). Handling, Grading, and Transport. Report on the welfare of farmed fish. Retrieved from <http://webarchive.nationalarchives.gov.uk/20110909181248/http://www.fawc.org.uk/reports/fish/fishrtoc.htm>
- Gornati, R., Papis, E., Rimoldi, S., Terova, G., Saroglia, M., Bernardini, G. (2004). Rearing density influences the expression of stress-related genes in sea bass (*Dicentrarchus labrax* L.). *Gene* 341. 111-118.
- HSA (2016). Humane Harvesting of Fish. *Humane Slaughter Association*. Retrieved from www.hsa.org.uk
- HSA (2005). Humane Harvesting of Fish. *Humane Slaughter Association*. Retrieved from www.hsa.org.uk

- Hoglund, E., Balm, PHM., Winberg, S. (2002). Behavioural and neuroendocrine effects of environmental background colour and social interaction in Arctic charr (*Salvelinus alpinus*). *The Journal of Experimental Biology*. 205: 2535-2543.
- Huntingford, FA., Adams, C., Braithwaite, A., Kadri, S., Pottinger, TG., Sandoe, P., Turnbull, JF. (2006). Current Issues in Fish Welfare. *Journal of Fish Biology*. 68: 332-372.
- Iversen, M., Finstad, B., McKinley, RS., Eliassen, RA., Carlsen, KT., Evien, T. (2005). Stress responses in Atlantic salmon (*Salmo salar* L.) smolts during commercial well boat transports, and effect on survival after transfer to sea. *Aquaculture*. 243: 373-382.
- Iverson, M., Finstad, B., McKinley, RS., Eliassen, RA. (2003). The efficacy of metomidate clove oil, Agui-S[™] and Benzoak (R) as anaesthetics in Atlantic Salmon (*Salmo salar* L.) smolts and their potential stress reducing capacity. *Aquaculture*. 221: 549-566.
- Iversen, M., Finstad, B., Nilssen, KJ. (1998). Recovery from loading and transport stress in Atlantic Salmon (*Salmo salar* L.) smolts. *Aquaculture*. 168:387-394.
- Johnson, SC., Treasurer, JW., Bravo, S., Nagasawa, K., Kabata, Z. (2004). A review of the impact of parasitic copepods on marine aquaculture. *Zoology Studies*. 43: 229-243.
- Lockwood, SJ., Pawson, MG., Eaton, DR. (1983). The effects of crowding on mackerel (*Scomber scombrus*): physical conditions and mortality. *Fisheries Research*. 2: 129-147.
- Maynard, DJ., McDowell, GC., Tezak, EP., Flagg, TA. (1996). Effect of diets supplemented with live food on the foraging behaviour of cultured fall chinook salmon. *Fish Culturist*. 58: 187- 191.
- Montero, D., Izquierdo, MS., Tort, L., Robaina, L., Vergara, JM. (1999). High stocking density produces crowding stress altering some physiological and biochemical parameters in gilthead seabream, *Sparus aurata*, juveniles. *Fish Physiology and Biochemistry*. 20: 53-60.
- OIE (2008). Aquatic Animal Health Code. Section 7 - Welfare of Farmed Fish. *World Organization for Animal Health*. Retrieved from http://www.oie.int/index.php?id=171&L=0&htmfile=titre_1.7.htm
- Ottera, H., Roth, B., Torrissen, OJ. (2001). Do killing methods affect the quality of Atlantic Salmon? Kestin, SC., Warriss, PD. (Eds). In: *Farmed Fish Quality*. Blackwell Science Ltd: Oxford.

- Portavella, M., Torres, B., Slas, C. (2004). Avoidance response in goldfish: emotional and temporal involvement of medial and lateral telencephalic pallium. *The Journal of Neuroscience*. 24: 2342-2335.
- Pottinger, TG. (1998). Changes in blood cortisol, glucose, and lactate in carp retained in anglers' keepnets. *Journal of Fish Biology*. 53(4): 728-742.
- Puste, AM & Das, DK. (2001). Impact of air pollutant emissions on the ecosystems in the vicinity of industrial areas of Indian sub-tropics. *Water Air Soil Pollution*. 130: 843-848.
- Robb, DHF & Roth, B. (2003). Brain activity of Atlantic salmon (*Salmo salar*) following electrical stunning using various field strengths and pulse durations. *Aquaculture*. 216: 363-369..
- Robb, DHF. & Kestin, SC. (2002). Methods used to kill fish: Field observations and literature reviewed. *Animal Welfare*. 11: 269-282.
- Robb, DHF., Kestin, SC., Warriss, PD., (2000a). Muscle activity at slaughter. I. Changes in flesh colour and gaping in Rainbow trout. *Aquaculture*. 182: 261-269.
- Robb, DHF., Wotton, SB., McKinstry, JL., Sorensen, NK., Kestin, SC. (2000b). Commercial slaughter methods used on Atlantis salmon: determination of the onset of brain failure by electroencephalography. *Veterinary Record*. 147: 298-303.
- Rodriguez, F., Duran, E., Vargas, JP., Torres, B., Salas, C. (1994). Performance of goldfish trained in allocentric and egocentric maze procedures suggests the presence of a cognitive mapping system in fishes. *Animal Learning and Behaviour*. 22: 409-420.
- Rose, JD. (2002). The neurobehavioural nature of fishes and the question of awareness and pain. *Reviews in Fisheries Science*. 10: 1-38.
- Roth, B., Imsland, AK., Foss, A. (2009). Live chilling of turbot and subsequent effect on behaviour, muscle stiffness, muscle quality, blood gases and chemistry. *Animal Welfare*. 18(1): 33-41.
- Roques, JAC., Abbink, W., Geurds, F., Van De Vis, H., Flik, G. (2010). Talifin clipping, a painful procedure: Studies on the Nile tilapia and common carp. *Physiology & Behaviour*. 101: 533-540.
- Ruane, NM., Komen, H. (2003). Measuring cortisol in the water as an indicator of stress caused by increased loading density in common carp (*Cyprinus carpio*). *Aquaculture*. 218: 685-693.

- Ruane, NM., Carballo, EC., Komen, J. (2002). Increased stocking density influences the acute physiological stress response of common carp (*Cyprinus carpio* L). *Aquaculture Research*. 33: 777-784.
- Schreck, CB., Solazzi, MF., Johnson, SL., Nickelson, TE. (1989). Transportation stress affects performance of coho salmon, *Oncorhynchus kisutch*. *Aquaculture*. 82: 15-20.
- Sneddon, LU. (2011). Pain perceptions in Fish: Evidence and Implications for the Use of Fish. *Journal of Consciousness Studies*. 18(9-10): 209-229.
- Specker, JL. & Schreck, CB. (1980). Stress responses to transportation and fitness for marine survival in coho salmon (*Oncorhynchus kisutch*) smolts. *Canadian Journal of Fish Aquaculture Science*. 37:765-769.
- Swaney, W., Kendal, J., Capon, H., Brown, C., Laland, K. (2001). Familiarity facilitates social learning of foraging behaviour in the guppy. *Animal Behaviour*. 62: 591-598.
- Tort, L., Puigcerver, M., Crespo, S., Padros, F. (2002). Cortisol and haematological response in sea bream and trout subjected to the anaesthetics clove oil and 2-phenoxyethanol. *Aquaculture Research*. 33: 907-910.
- Turnbull, JF., Adams, CE., Richards, RH., Robertson, DA. (1998). Attach site and resultant damage during aggressive encounters in Atlantic Salmon (*Salmo salar* L.) parr. *Aquaculture*. 159: 345-353.
- Turnbull, JF., Bell, A., Robertson, DA. (1996). Gross, histological, and scanning electron microscopic appearance of dorsal fin rot in farmed Atlantic salmon, *Salmo salar* L. *Journal of Fish Diseases*. 19: 415-427.
- Weyts, FAA., Cohen, N., Flik, G., Verburg-van Kemenade, B. (1999). Interactions between the immune system and the hypothalamo-pituitary-interrenal axis in fish. *Fish and Shellfish Immunology*. 9: 1-20.
- Wingfield, JC. (2003). Control of behavioural strategies for capricious environments. *Animal Behaviour*. 66: 807-815.
- Yue, S., Moccia, RD., Duncan, IJH. (2004). Investigating fear in domestic rainbow trout, *Oncorhynchus mykiss*, using an avoidance learning task. *Applied Animal Behaviour Science*. 87: 34-354.
- Zahl, IH., Samuelson, O., Kiessling, A. (2012). Anaesthesia of farmed fish: implications for welfare. *Fish Physiology and Biochemistry*. 38: 201-218.