

# **Risk and Uncertainty in New Zealand's Fisheries Management: Adaptive Management under the Fisheries Act 1996**

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*This article examines the use of adaptive management under the Fisheries Act 1996. Adaptive management has the potential to reduce risk and uncertainty in fisheries management in the face of climate change. To be efficient it requires a legislative regime that promotes clear management objectives, a grounding in precaution, and administrative flexibility. This article argues that the Fisheries Act 1996 does not accord with these requirements because of its grounding in an ideology that is supposed to achieve environmentally sound outcomes through the ownership of private property. The result of such an ideology is an Act that promotes certainty and commercial growth ahead of flexibility and precaution. As such, adaptive management is inherently at odds with the Fisheries Act.*

## **1. INTRODUCTION**

The natural resources within New Zealand's exclusive economic zone provide for a \$3.97 billion commercial fishing industry as well as representing important recreational and customary Māori fishing interests.<sup>1</sup> Fisheries therefore have an important economic, social, cultural and intrinsic value in New Zealand. Such

\*This article is an edited version of a paper submitted for the completion of an LLB(Hons) thesis at Otago University. Many thanks to Ceri Warnock, Nicola When and Ben France-Hudson for their helpful comments on the draft. Thanks also to an anonymous reviewer. Email contact: w.hulmemoir@gmail.com.

1 Stats NZ Tātauranga Aotearoa "Fish monetary stock account" (3 July 2017) <[http://www.stats.govt.nz/browse\\_for\\_stats/environment/environmental-economic-accounts/fish.aspx](http://www.stats.govt.nz/browse_for_stats/environment/environmental-economic-accounts/fish.aspx)>.

importance demands a management regime that affords rigorous protection to the natural resources within the ocean, which can adapt and mitigate damage in the face of uncertainty, utilisation and change.

Claims about the environmental sustainability of New Zealand's current fisheries management system are misguided.<sup>2</sup> Poor management and overfishing has been driven by a lack of clear sustainability objectives, ineffective processes for gathering information and determining key research questions, and challenges to the delivery of accurate research.<sup>3</sup> Compounding these problems are the uncertain implications of climate change, which poses a large threat to marine ecosystems.<sup>4</sup> Future sustainability of fish stocks depends on a change in the regulatory system that incentivises continuous, high-quality research about the stocks and promotes the ecological resilience of the systems that are being exploited.<sup>5</sup>

Adaptive management (AM) may provide a solution.<sup>6</sup> AM has been recognised as a successful tool for monitoring natural resources that are inherently unpredictable and subject to change, such as fisheries.<sup>7</sup> AM is an incremental, iterative decision-making process that allows management measures to be changed and adjusted as new information comes to light and/or past measures are deemed ineffective or harmful.<sup>8</sup> AM is currently used in

2 J McKoy *Fisheries resource knowledge, management, and opportunities: Has the Emperor got no clothes?* (The Royal Society of New Zealand, Wellington, Miscellaneous Series 70, 2006) at 35–44 <docs.niwa.co.nz/library/public/1877264229C.pdf>; E Slooten and others “Evidence of bias in assessment of fisheries management impacts” (2017) 114(25) *Proceedings of the National Academy of Sciences of the United States of America* E4903; G Simmons and others “Reconstruction of marine fisheries catches for New Zealand (1950–2010)” (2016) *Sea Around Us*, Global Fisheries Cluster, Institute for the Oceans and Fisheries, University of British Columbia, Vancouver, BC, Canada at 47.

3 McKoy, above n 2, at 35.

4 MJ Salinger and others “Climate and oceanic fisheries: recent observations and projections and future needs” (2013) 119 *Climate Change* 213.

5 McKoy, above n 2, at 35.

6 CJ Walters and JS Collie “An experimental strategy for groundfish management in the face of large uncertainty about stock size and production” (1989) 108 *Canadian Special Publication of Fisheries and Aquatic Sciences* 1325 cited in McKoy, above n 2, at 41; L Rist and others “A New Policy for Adaptive Management” (2013) 18(4) *Ecology and Society* 63 at 67. For a discussion of the problems that need to be overcome for AM to be effective in fisheries management see CJ Walters “Is adaptive management helping to solve fisheries problems?” (2007) 36(4) *A J of the Human Environment* 304.

7 For a seminal description of AM in environmental management see CS Holling *Adaptive Environmental Assessment and Management* (John Wiley & Sons, Chichester, 1978) at 25–37.

8 RK Craig and JB Ruhl “Designing Administrative Law for Adaptive Management” (2014) 67 *Vanderbilt Law Review* 1 at 1.

New Zealand under the Resource Management Act 1991 (RMA), Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (EEZ Act) and Fisheries Act 1996.<sup>9</sup> Unlike the RMA and EEZ Act, AM in fisheries has yet to receive any judicial interpretation or explicit statutory recognition.

The purpose of this article is to analyse whether the Fisheries Act 1996 and the ideology underpinning it allows for AM to be utilised efficiently. The second part of the article sets out the importance of efficient fisheries management and the threats of climate change, some underlying management theory, and the current state of fisheries regulation. It also touches on the basics of what AM consists of, drawing on the work of Professors RK Craig and JB Ruhl.<sup>10</sup> The third part compares how AM is currently utilised under the RMA, EEZ Act and the Fisheries Act. It notes that the fisheries adoption of AM has significantly departed from how AM is utilised under the RMA and EEZ Act. The fourth part explores the ideology behind the Fisheries Act and whether it is consistent with AM. Given an argument that it is at least theoretically consistent, the fifth part tests the legislation to see whether it accords with AM in practice. It concludes that the statute does not align with AM by not setting clear management objectives, having a poor grounding in precaution, and not providing for administrative flexibility or the promotion of research. The sixth part concludes that a system based on achieving environmental sustainability through property rights is inherently at odds with AM, which relies on continuous research and administrative flexibility. The result is a statute that does not allow AM to be implemented effectively. Whether a complete ideological and regulatory overhaul of the Act is needed to accommodate AM in fisheries management is a question left for future research.

## 2. AN OVERVIEW OF FISHERIES MANAGEMENT IN NEW ZEALAND

### 2.1 The Mechanics of Fisheries Management

The Fisheries Act 1996 (the Act) provides the legislative framework for managing New Zealand's fisheries. Its purpose is to provide for the utilisation

<sup>9</sup> For a discussion on the adaptive management regime for fisheries in New Zealand see Ministry of Fisheries *Review of sustainability measures and other management controls for the 2004–05 fishing year adaptive management programme* (Ministry of Fisheries, Wellington, Final Advice Paper, 6 August 2004).

<sup>10</sup> Craig and Ruhl, above n 8.

of fishery resources while ensuring sustainability.<sup>11</sup> Under the Act commercial fisheries are managed through a quota management system (QMS) which provides a direct control of harvest levels to ensure sustainability.<sup>12</sup>

Section 18 of the Act gives the Minister the power to declare a fish stock to be part of the QMS. Individual species are managed under 10 quota management areas (QMAs) which define New Zealand's exclusive economic zone.<sup>13</sup> Within these areas the Minister for Primary Industries is responsible for sustaining fish stocks at a level capable of producing the maximum sustainable yield (MSY).<sup>14</sup> The MSY is determined by statistical modelling based on catch rates and indicates the level of biomass that should be maintained to maximise the yield of the fishery while ensuring its sustainability. The logic behind the MSY is that at a lower biomass the fishery will grow more quickly as the fish are younger and have less competition. The harvestable growth of the stock is what comprises the "yield". Once the MSY for a species is determined the Minister must set a total allowable catch (TAC) for that species that maintains stock at or above the MSY in the QMA.<sup>15</sup>

Once the TAC is set, the Minister must set a total allowable commercial catch (TACC)<sup>16</sup> according to the criteria in s 21. The TACC provides the proportion of the TAC that is allocated to the commercial industry. When setting the TACC the Minister must also allocate quota from the TAC towards Māori customary interests, recreational fishing, and other sources of mortality.<sup>17</sup> Commercial quotas are expressed as a number of shares in each fish stock and represent a portion of the total allowable commercial catch.<sup>18</sup> Quota are allocated amongst entitled fishers proportional to their past catch history.<sup>19</sup> Quota forms a property right that is transferable.<sup>20</sup> The quota for a stock that

11 Fisheries Act 1996, s 8(1).

12 K Lock and S Leslie *New Zealand's Quota Management System: A History of the First 20 Years* (Ministry of Fisheries, Motu Working Paper 07-02, Motu Economic and Public Policy Research, April 2007) at 1.

13 Fisheries Act, s 24.

14 Section 13. The maximum sustainable yield is defined in s 2 of the Fisheries Act 1996 as "the greatest yield that can be achieved over time while maintaining the stock's productive capacity, having regard to the population dynamics of the stock and any environmental factors that influence the stock".

15 Section 13(1).

16 Section 20(1).

17 Section 21(1).

18 Section 42.

19 Section 29A.

20 B France-Hudson "Surprisingly Social: Private Property and Environmental Management" (2017) 121 JEL 101 at 103. The implication of quota as property rights in the context of AM is discussed in detail in parts 4 and 6 of this article.

a fisher holds is called their annual catch entitlement (ACE) and if exceeded a fisher must either buy more or pay a penalty to the government.<sup>21</sup>

## 2.2 Climate Change and Fisheries

The Fisheries Act does not address climate change, which is problematic, because alongside pollution and the overexploitation of stocks, climate change poses one of the largest risks to fisheries management.<sup>22</sup> The Convention on Biological Diversity, to which New Zealand is a party, recognises that climate change poses a significant threat to marine and coastal ecosystems.<sup>23</sup> Historical analysis shows that climate change is causing the world's oceans to increase in temperature, acidity, and change in salinity.<sup>24</sup> These changes can have a major effect upon fishery production and replenishment, leading to alterations in the distribution and accessibility of stocks, and the modification of biological processes.<sup>25</sup> Apart from this generalised effect, there is currently very little certainty or scientific consensus about how marine ecosystems will respond to climate change,<sup>26</sup> giving rise to the need for precaution and high-quality research in fisheries management.

When examining the pressure climate change places on fish stocks, consideration must also be given to socio-economic factors such as the increasing demand for fish and changing fishing methods.<sup>27</sup> The uncertainty of how fish stocks will respond to climate change is only compounded when additional stressors such as overfishing and the significant anthropocentric alteration of marine environments is taken into account.<sup>28</sup> Management of fisheries therefore needs to provide for the sustainable use of resources across both short- and long-term timeframes, taking into account the interaction between the effects of climate change and fishing. Achieving long-term sustainability may require regulatory change that allows for the adaptation of harvesting methods to

21 This is called the "deemed value" of the extra catch. See Ministry of Primary Industries "Deemed values" <<http://mpi.govt.nz/growing-and-harvesting/fisheries/operating-as-a-fisher/deemed-values/>>.

22 Salinger and others, above n 4, at 214.

23 Convention on Biological Diversity 1760 UNTS 79 (opened for signature 5 June 1992, entered into force 29 December 1993).

24 PJ Durack and others "Ocean salinities reveal strong global water cycle intensification during 1950 to 2000" (2012) 336 *Science* 455 at 455.

25 JD Bell and others "Effects of climate change on oceanic fisheries in the tropical Pacific: implications for economic development and food security" (2013) 119 *Climatic Change* 199 at 200.

26 JH Barnhill "Maximum Sustainable Yield" in S George Philander (ed) *Encyclopedia of Global Warming and Climate Change* (Sage Publications, London, 2012) 899 at 900.

27 Salinger and others, above n 4, at 215.

28 At 215.

minimise harmful impacts upon fish stocks and to increase their resilience in the face of uncertain risk.<sup>29</sup> AM incentivises continuous research and flexible harvesting methods to provide for the uncertainty in climate projections and the response of harvested species.<sup>30</sup>

### 2.3 Ecological Resilience in Natural Resource Management

A management regime, such as AM, that considers the effects of fishing on the wider marine environment in conjunction with climate change is needed to promote sustainability. Traditionally, legislation created for the protection of the environment assumed that humans maintained complete control over ecosystems.<sup>31</sup> The underlying rationale behind this assumption was that ecosystems were understood as predictable systems that, when altered, would bounce back to some form of equilibrium. The most obvious example of this conception of nature in a regulatory context being that managers always have conservation and restoration options if it becomes evident that something is harming or changing the natural environment.<sup>32</sup> The problem with this assumption is that large-scale ecosystems, such as those in the marine environment, exist in a natural state of continual flux, subject to drivers at different temporal and spatial scales.<sup>33</sup>

To a degree, ecosystems naturally adapt to these changing conditions. Their ability to cope with change and stress is called “ecological resilience”.<sup>34</sup> However, disturbances of sufficient magnitude may cause an ecosystem to reach a point that causes a regime shift,<sup>35</sup> often to less desirable, degraded conditions.<sup>36</sup> For example, the more species or habitat that is lost due to ineffective management, the more likely it is that a system will lose functional

29 Bell and others, above n 25, at 212.

30 CJ Walters and R Hilborn “Ecological optimization and adaptive management” (1978) 9 *Ann Rev Ecol Syst* 157 at 173.

31 RK Craig “Putting resilience theory into practice: The example of fisheries management” (2017) 31(3) *Natural Resources and Environment* 1 at 3.

32 In the Fisheries Act 1996 decision-makers have the discretion to enact sustainability measures under s 11, to set fisheries plans under s 11A, to set and vary the total allowable catch [TAC] under s 13, impose alternative TACs for certain species under s 14B, set fishing mortality limits under s 15(2), or impose emergency measures under s 16.

33 Craig and Ruhl, above n 8, at 4.

34 B Walker and D Salt *Resilience Thinking: Sustaining Ecosystems and People in a Changing World* (Island Press, London, 2006) at 62–63.

35 A regime shift is a large, abrupt shift in the functioning of an ecosystem. See M Scheffer and others “Catastrophic shifts in ecosystems” (2001) 413 *Nature* 591 at 592.

36 G Peterson and others “Ecological Resilience, Biodiversity, and Scale” (1998) 1(1) *Ecosystems* 6 at 10.

and response diversity,<sup>37</sup> and the more susceptible it will be to harm from disturbances such as climate change.<sup>38</sup>

If the goal of fisheries management in a climate change era is to maintain the functionality of ecosystems, then a management regime, such as AM, that fosters ecological resilience and recognises the complexity of the marine environment is needed.<sup>39</sup>

## 2.4 Adaptive Management as a Solution

AM has emerged as a key regulatory tool for the management of natural resources that are inherently unpredictable and subject to change.<sup>40</sup> It recognises the complexity of environmental management problems and the need to preserve ecological resilience in the face of human stressors and climate change.<sup>41</sup>

AM is an iterative, incremental decision-making process based upon monitoring the effects of decisions and adjusting those decisions to meet predetermined goals.<sup>42</sup> Given the importance of maintaining biodiversity and healthy ecosystem functions, CS Holling concluded that management policy must put a premium on collecting information, establishing models, monitoring, using new information to adjust practices, and regulatory flexibility.<sup>43</sup> This allows AM to reduce uncertainty in decision-making through an incremental process of learning and adaptation.<sup>44</sup>

The formal process of AM begins with a start-up phase during which the stakeholders are identified, management goals are defined, and models and plans are decided upon. This is followed by the iterative stage, where the agency specifies the decision-making process, follow-up monitoring and feedback mechanisms. It is this structured process that makes AM different from trial and error and allows for a continuous process of learning.<sup>45</sup>

37 Functional diversity refers to the number of species that roughly perform the same function in an ecosystem, while response diversity refers to the variation in how species within the same functional group respond to shocks and disturbances. See T Elmqvist and others "Response diversity, ecosystem change, and resilience" (2003) 1(9) *Frontiers in Ecology and Environment* 488.

38 Craig, above n 31, at 4.

39 At 7.

40 Holling, above n 7.

41 Walters and Hilborn, above n 30, at 173.

42 JB Ruhl "Regulation by adaptive management — Is it possible?" (2005) 7 *Minnesota J L Science & Tech* 21 at 28.

43 CS Holling *Adaptive Environmental Assessment and Management: United Nations Environment Programme; Workshop on Adaptive Assessment of Ecological Policies* (International Series on Applied Systems Analysis, 1977) at xviii, 25–37.

44 Craig and Ruhl, above n 8, at 20.

45 At 18.

Craig and Ruhl identify the main steps of AM as including:<sup>46</sup>

1. The definition of the problem;
2. Determination of goals and objectives for management of ecosystems;
3. Determination of the ecosystem baseline;
4. Development of conceptual models;
5. Selection of future restoration actions;
6. Implementation of management actions;
7. Monitoring the ecosystem response; and
8. Evaluation of restoration efforts and proposals for remedial actions.

For ease of discussion these steps are summarised into three key parts:<sup>47</sup>

- Part 1: Determination of management goals and determination of the ecosystem baseline;
- Part 2: The application of management actions; and
- Part 3: The monitoring, evaluation, and adjustment of management actions.

## 2.5 The Applicability of Adaptive Management to Fisheries

A management regime that promotes ecological resilience is essential for efficient fisheries management. The nature of fisheries is that they are controlled by a diverse range of variables and constantly evolving interactions, making it very hard to research them and even harder for the law to adequately control their management.<sup>48</sup> Administrative agencies cannot simply “command away” the effects of climate change, and it is problems such as this uncertainty that demands adaptation and flexibility in regulatory regimes.<sup>49</sup> The fisheries context

46 This approach was designed by the Committee on Endangered and Threatened Fishes in the Klamath River Basin: *Endangered and Threatened Fishes in the Klamath River Basin: Causes of Decline and Strategies for Recovery* (National Academies Press, Washington, DC, 2004) at 332–334 and was also adopted by Craig and Ruhl, above n 8, at 7 and Ruhl, above n 42, at 29.

47 These three parts are similar to the guidelines for the use of AM set out by the IUCN in 2007: International Union for Conservation of Nature “Guidelines for applying the precautionary principle to biodiversity conservation and natural resource management” (as approved by the 67th meeting of the IUCN Council, 14–16 May 2007) [IUCN Report].

48 For a discussion on the problems adaptive systems have upon the regulatory law see JB Ruhl and J Salzman “Mozart and the Red Queen: The problem of Regulatory Accretion in the Administrative State” (2003) 91 *Georgetown Law Journal* 757.

49 JB Ruhl “Thinking of environmental law as a complex adaptive system: How to clean up the environment by making a mess of environmental law” (1997) 34 *Houston LR* 101 at 139.



fulfils Craig's four requirements of a system appropriate for the application of AM: uncertainty in the resource, controllability of the industry, low risk of irreversible effects from hypothesis testing, and a dynamic system.<sup>50</sup> Thus, the question is "not whether [fisheries] regulation should be adaptive, but rather where and how to make it so".<sup>51</sup>

The aim of this article is not to set out a specific framework for how AM should be applied. Rather, based on Craig and Ruhl's article,<sup>52</sup> it is to analyse whether the Fisheries Act provides a framework that allows for AM to be effectively implemented.

### 3. ADAPTIVE MANAGEMENT

AM is currently utilised in New Zealand natural resource law. The New Zealand Biodiversity Strategy defines AM as:<sup>53</sup>

An experimental approach to management, or "structured learning by doing". It is based on developing dynamic models that attempt to make predictions or hypotheses about the impacts of alternative management policies. Management learning then proceeds by systematic testing of these models, rather than by random trial and error. Adaptive management is most useful when large complex ecological systems are being managed and management decisions cannot wait for final research results.

This part of the article looks at how different New Zealand legal contexts have adopted AM. AM's position within the Resource Management Act 1991, Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 and the Fisheries Act 1996 is compared. The part concludes that the way AM is applied in the Fisheries Act does not align with the approach adopted in the RMA and EEZ Act.

#### 3.1 Adaptive Management in the RMA

AM is not specifically provided for in the RMA. The concept has developed through case law. The key case that considered AM is *New Zealand King*

50 RK Craig and others "Adaptive Management for a turbulent future" (2011) 92 JEM 1339 at 1380.

51 Craig and Ruhl, above n 8, at 15.

52 At 15.

53 Department of Conservation *The New Zealand Biodiversity Strategy 2000–2020* (DoC, Wellington, February 2000) at 137.

*Salmon Requests for Plan Changes and Applications for Resource Consent*.<sup>54</sup> Resource consents were granted for salmon fishing sites in the Marlborough Sounds subject to conditions that were designed to monitor adverse effects under an AM approach. The Board of Inquiry described AM as:<sup>55</sup>

[A] precautionary technique that provides a pragmatic way forward, enabling development while securing the ongoing protection of the environment, in complex cases where there are ecological or technological uncertainties as to the effects of the proposal.

The Board also outlined four requirements for AM to be an acceptable method for managing the environmental effects of an activity:<sup>56</sup>

- [a] There will be good baseline information about the receiving environment;
- [b] The conditions provide for effective monitoring of adverse effects using appropriate indicators;
- [c] Thresholds are set to trigger remedial action before the effects become overly damaging; and
- [d] Effects that might arise can be remedied before they become irreversible.

The Supreme Court upheld these requirements when the decision was appealed in *Sustain Our Sounds Inc v New Zealand King Salmon*.<sup>57</sup> It further outlined that before AM can be implemented:<sup>58</sup>

[T]here must be an adequate evidential foundation to have reasonable assurance that the adaptive management approach will achieve its goals of sufficiently reducing uncertainty and adequately managing any remaining risk. The threshold question is an important step and must always be considered. As Preston CJ said in *Newcastle*, adaptive management is not a “suck it and see” approach.

The Supreme Court’s approach highlights that AM is not to be used in cases of complete uncertainty. There must be an adequate level of baseline information about the receiving environment before AM is implemented and further

54 Final Report and Decision of the Board of Inquiry *New Zealand King Salmon Requests for Plan Changes and Applications for Resource Consent* (Board of Inquiry, Blenheim, 22 February 2013) [*King Salmon* (Board decision)].

55 At [179].

56 At [181].

57 *Sustain Our Sounds Inc v New Zealand King Salmon* [2014] NZSC 40, (2014) 17 ELRNZ 520, [2014] 1 NZLR 673.

58 At [125] (footnotes omitted).

information that shows how AM will achieve its goals of reducing uncertainty and managing risk. In the case, “evidential foundation” referred to models and scientific consensus provided by experts that indicated whether the water quality or surrounding environment would be compromised by the farms.<sup>59</sup>

In deciding when AM will be considered a legitimate alternative to a declined consent, the Court concluded that this will depend on an assessment of the following factors:<sup>60</sup>

- (a) the extent of the environmental risk (including the gravity of the consequences if the risk is realised);
- (b) the importance of the activity (which could in some circumstances be an activity it is hoped will protect the environment);
- (c) the degree of uncertainty; and
- (d) the extent to which an adaptive management approach will sufficiently diminish the risk and the uncertainty.

### 3.1.1 Summary of AM in the RMA

For AM to be implemented as part of a resource consent the Supreme Court is concerned with ensuring that there is sufficient baseline information before the activity takes place, adequate monitoring which will reduce uncertainty, and clear and certain environmental thresholds that cannot be crossed. If these criteria are not established, consent will not be granted. This approach is consistent with the approach Craig and Ruhl outline and the three key parts of AM identified in the second part of the article.<sup>61</sup>

## 3.2 Adaptive Management in the EEZ Act

AM has been explicitly incorporated into the EEZ Act.<sup>62</sup> When applying for a consent under the EEZ Act the Environmental Protection Agency (EPA) can accept or reject an application, or grant consent based on the applicant taking an AM approach to the activity. AM was incorporated into the Act as a necessary tool for dealing with the high levels of uncertainty in the marine environment.<sup>63</sup>

59 At [126]–[128].

60 At [129].

61 Craig and Ruhl, above n 8, at 7; IUCN Report, above n 47. Part 1: Determination of management goals and determination of the ecosystem baseline; Part 2: The application of management actions; and Part 3: The monitoring, evaluation, and adjustment of management actions.

62 Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 [EEZ Act], s 64.

63 Ministry for the Environment *New Zealand's experiences with adaptive management for seabed mining projects: A submission to the International*

It provides an alternative route for applicants to take where the effects of an activity would be too risky or uncertain for consent to be given immediately. However, the legislation does not explicitly describe the form that AM should take. Section 4 states that AM has the meaning given to it in s 64:

- (2) An **adaptive management** approach includes—
  - (a) allowing an activity to commence on a small scale or for a short period so that its effects on the environment and existing interests can be monitored;
  - (b) any other approach that allows an activity to be undertaken so that its effects can be assessed and the activity discontinued, or continued with or without amendment, on the basis of those effects.
- (3) In order to incorporate an adaptive management approach into a marine consent, a marine consent authority may impose conditions under section 63 that authorise the activity to be undertaken in stages, with a requirement for regular monitoring and reporting before the next stage of the activity may be undertaken or the activity continued for the next period.

*Trans-Tasman Resources*<sup>64</sup> and *Chatham Rock Phosphate*<sup>65</sup> are the two leading EPA decisions concerning AM under the EEZ Act. In *Trans-Tasman Resources* a proposed seabed mining project had its consent application rejected because the effects of the sediment plume from mining would have significant impacts upon the biological productivity of the ecosystem.<sup>66</sup> The information regarding the harm of these effects was too uncertain and the decision-making

*Seabed Authority to support the development of a regulatory framework for the exploitation of seabed minerals* (MfE, Wellington, 2016) at 9.

64 Environmental Protection Authority *Decision on an Application by Trans-Tasman Resources Ltd to excavate iron sand from the seabed of the exclusive economic zone in the South Taranaki Bight* (EPA, Wellington, 18 June 2014). On 3 August 2017 a new consent application by Trans-Tasman Resources to mine the South Taranaki Bight was granted by the EPA. The consent was allowed after considering EEZ Act, s 87F(4) which had been inserted into the legislation since the 2014 decision. It stated that AM could not apply to a marine discharge consent. Section 87F was repealed in June 2017 and moved to s 64(1AA). The EPA ruled that the applications from Trans-Tasman for a marine consent and a discharge consent could not be practically separated and thus an AM approach was not available. Taking all other considerations into account the EPA granted the consents to mine without AM. The decision is currently being appealed to the High Court. See Environmental Protection Authority *Decision on an Application by Trans-Tasman Resources Ltd to excavate iron sand from the seabed of the exclusive economic zone in the South Taranaki Bight* (EPA, Wellington, 3 August 2017).

65 Environmental Protection Authority *Decision on marine consent application by Chatham Rock Phosphate Limited to mine phosphorite nodules on the Chatham Rise* (EPA, Wellington, 11 February 2015).

66 *Trans-Tasman Resources*, above n 64, at [9].

committee was compelled to favour caution and environmental protection.<sup>67</sup> The decision-making committee then considered whether an AM approach would sufficiently reduce uncertainty and provide safeguards for managing any remaining risk. The applicant, Trans-Tasman Resources, proposed a risk-based tiered approach, which they argued was part of AM under the open-ended definition of s 64(2)(b).<sup>68</sup> They rejected the staged implementation approach under s 64(3) because “staging of the commercial activity was not realistic”.<sup>69</sup> Trans-Tasman needed certainty due to the large investment they would have to make in the activities.

The decision-making committee considered that this did not provide “sufficient certainty, clarity or robustness on which to form the foundation of an appropriate AM approach”.<sup>70</sup> They concluded that it was not clear enough whether the proposed conditions or objectives would achieve the goals of an AM approach of “reducing uncertainty and adequately managing any remaining risk”.<sup>71</sup> Thus, the application was declined on the basis that it “did not meet the sustainable management purpose of the Act”.<sup>72</sup>

The second marine consent decision came when the EPA considered an application from Chatham Rock Phosphate (CRP) to mine phosphorite nodules in the Chatham Rise. The mining activity would involve a large bottom-trawling vacuum that would suck up the top layer of the seabed and expel the unwanted debris behind. CRP proposed several measures to mitigate environmental harm under its AM scheme,<sup>73</sup> but the decision-making committee concluded that notwithstanding the efforts of CRP, they were left with various uncertainties, both about the receiving environment and any adverse effects of the project. The project would be the first one extending to significant depths and there was heavy reliance placed on insufficiently validated modelling to predict the impacts of the project. While the decision-making committee considered

67 At [11]. The EPA determined that the application did not satisfy the purpose of the EEZ Act under s 10(1): “The purpose of this Act is to promote the sustainable management of the natural resources of the exclusive economic zone and the continental shelf.” In reaching this conclusion the EPA was influenced by the precautionary principle in s 61(2) which states: “If, in relation to making a decision under this Act, the information available is uncertain or inadequate, the marine consent authority must favour caution and environmental protection.”

68 EEZ Act, s 64(2)(b) states that an AM approach includes “any other approach that allows an activity to be undertaken so that its effects can be assessed and the activity discontinued, or continued with or without amendment, on the basis of those effects”.

69 *Trans-Tasman Resources*, above n 64, at [144].

70 At [850].

71 At [805]. Here the EPA adopted the Supreme Court’s threshold approach in *Sustain Our Sounds*, above n 57, at [125].

72 At [853].

73 *Chatham Rock Phosphate*, above n 65, at ch 7.6.

that the wording of the EEZ Act did not require complete certainty about the risks of the proposal, it highlighted that it did need to have “sufficient, and sufficiently certain, information to identify and evaluate the risks involved” in the proposal, including a good level of baseline information so standards, limits and thresholds could be determined.<sup>74</sup> In relation to AM, the decision-making committee stated that “[c]losing the gap to an acceptable risk-tolerance point is, however, critical to the granting of consent under the EEZ Act”.<sup>75</sup>

The decision-making committee considered that a three-stage AM approach would be required. This would include a data-gathering stage and a trial mining period (during which the activities could be abandoned if they revealed sufficient environmental harm), and then if all environmental standards were met the actual mining could commence.<sup>76</sup> CRP thought that this approach would not be economically viable and ultimately their consent was rejected. Their AM regime would not adequately mitigate uncertainty without the pre-mining research and the staged approach that they had rejected.

### 3.2.1 Summary of AM in the EEZ Act

The EPA echoes the Supreme Court’s point of AM not being a “suck it and see” approach, but instead one that requires careful planning, clear monitoring objectives, and sufficient methods of reducing uncertainty. In the *Chatham Rock* case, there is a particular focus on the uncertainty of effects resulting from unverified modelling and inadequate baseline information.<sup>77</sup> While there is room for the “learning by doing” approach in AM, it seems clear that AM cannot compensate for a lack of baseline information about potential effects or inadequate modelling. AM cannot be invoked simply as a mechanism to fill information gaps.<sup>78</sup>

## 3.3 Adaptive Management in the Fisheries Act

Through case law both the RMA and the EEZ Act have developed robust mechanisms describing when and how AM should be implemented in the consent process. The approaches are consistent with each other and fit well with international conceptions of AM and the approach outlined by Craig and

74 At ch 13.1.4, para [824].

75 At ch 14.1, para [845].

76 At [847]–[848].

77 Ministry for the Environment (2016), above n 63, at 16.

78 At 19.

Ruhl.<sup>79</sup> AM within fisheries is relatively new<sup>80</sup> and has not received any judicial attention or statutory direction.

Fisheries seem to present a completely different regulatory context for AM compared to the RMA and EEZ Act. AM in fisheries is concerned with managing the harvest of a resource for an indefinite time, as opposed to granting consents for individual projects and using AM to manage their development and effects on the environment. Thus, it could be argued that the RMA and EEZ Act standards for when AM should be implemented cannot be directly applied to fisheries. However, it is the form and nature of uncertainty that is the starting point of considering whether AM should be applied to a management problem, rather than whether the management problem fits within a specific regulatory context.<sup>81</sup> Just as a resource consent may require AM because of the uncertain effects a proposal has on the environment, fishing a particular fish stock may require AM because of the uncertain effects fishing will have upon the stock and wider aquatic ecosystem.<sup>82</sup> Therefore, the Supreme Court's analysis<sup>83</sup> of the nature of uncertainty and what sort of risk is acceptable should apply equally to fisheries as it does to the RMA and EEZ Act. So too does the EPA's discussion about the standard of certainty<sup>84</sup> required before AM can be implemented.

Furthermore, Craig's discussion does not distinguish between different AM contexts. Rather, once a management problem fulfils the criteria of high controllability, uncertainty, risk, and a dynamic system,<sup>85</sup> the same basic eight steps identified in part 2 of this article apply regardless of the context.<sup>86</sup> Where AM varies in different contexts is between the specific management objectives, models and evaluative techniques that are used in its implementation.

To avoid AM becoming a "suck it and see"<sup>87</sup> approach, it is essential that the basic steps identified by Craig and Ruhl<sup>88</sup> and the standards of certainty and risk adopted in the RMA and EEZ Act are followed in fisheries. Without

79 This being that AM is a structured process with key environmental bottom lines, monitoring standards and objectives identified before the process can be started. See Craig and Ruhl, above n 8, at 7.

80 It was first implemented in 1991 as a mechanism for increasing TAC levels for uncertain stocks; Ministry of Fisheries (2004), above n 9, at 25.

81 Rist and others, above n 6, at 65.

82 Especially in the context of climate change, when the effects of fishing are very uncertain given the potential for changing stock dynamics.

83 *Sustain Our Sounds*, above n 57, at [125].

84 *Chatham Rock Phosphate*, above n 65, at ch 13.1.4.

85 See part 2 of this article for discussion on this point; Craig and others, above n 50, at 1380.

86 See part 2.4 of this article; Craig and Ruhl, above n 8, at 18.

87 *Sustain Our Sounds*, above n 57, at [125].

88 Craig and Ruhl, above n 8, at 7.

this consistency and grounding in precaution<sup>89</sup> and research, AM risks failing.<sup>90</sup> The next section analyses whether the standards required to implement AM in fisheries compare favourably with the RMA and EEZ criteria.

### *3.3.1 Adaptive management programmes*

The following analysis is focused on the Ministry of Fisheries 2004 Review of Sustainability Measures Final Advice document,<sup>91</sup> which lays out how AM works under the Fisheries Act.<sup>92</sup>

AM in fisheries is split up into two different components; the adaptive management programme (AMP), and the low knowledge framework. Both are designed to provide ways of increasing the TAC within the purposes and principles of the Act.<sup>93</sup> The low knowledge framework is used when, despite not much information being available, there is minimal risk of increasing TAC levels and additional monitoring through AM is not required.<sup>94</sup> The AMP is available when risk can be mitigated through incremental stakeholder-driven research/information programmes. AMPs can apply to existing fishing grounds where there is a high degree of uncertainty about the nature of fish stocks, but are generally used in the development and exploration of new fishing grounds.<sup>95</sup> The following discussion will focus primarily on the AMP system, as it fits better with the traditional conception of AM.

The AMP was introduced in 1991 as a mechanism for increasing the TAC where the Ministry for Primary Industries (MPI)<sup>96</sup> has limited information on stock size. AMPs seek to provide information for MPI concerning the effects of fishing on uncertain stocks and the wider aquatic environment as identified by the Fisheries Act.<sup>97</sup> To mitigate risk the AMP framework provides a variety of checks during the utilisation stage to ensure that statutory obligations

89 C Iorns and T Stuart “Murky Waters — adaptive management, uncertainty and seabed mining in the exclusive economic zone” (2017) 13 PQ 10 at 11. AM and precaution is discussed in detail in part 5.3 of this article.

90 Walters, above n 6, at 305.

91 Ministry of Fisheries (2004), above n 9.

92 It is important to acknowledge that this is only one source on how MPI conducts AM under the Fisheries Act and there may have been changes since 2004. However, there is a distinct lack of public information on how AM is conducted in fisheries, which is why this article solely focuses on the 2004 review document.

93 Ministry for the Environment (2016), above n 63, at [96].

94 Ministry of Fisheries (2004), above n 9, at 23.

95 At 22–24.

96 Fisheries used to be managed by the Ministry of Fisheries [MFish] but in 2012 this was dissolved and superseded by the Ministry for Primary Industries [MPI]. The 2004 review document specifically refers to MFish, but this article will refer to MPI given it currently manages fisheries.

97 Ministry of Fisheries (2004), above n 9, at 27.



under the Fisheries Act are met. These include monitoring and review programmes, management guidelines, and an onus on the industry to fulfil their commitments.<sup>98</sup> The AMPs are carried out under five-year rotations and during this period the TAC or TACC can be altered having regard to the information collected or monitoring requirements.<sup>99</sup>

The suitability of the AMP framework to a fishery will depend on the nature of the risk involved. If the risks involved in increasing a TAC can be mitigated through a stakeholder research programme then an AMP may be appropriate.<sup>100</sup>

MPI's view is that the Minister can proceed with TAC or TACC increases under an AMP after "taking into account the purposes and principles of the Act",<sup>101</sup> provided that:<sup>102</sup>

- (a) there is *a reasonable probability* that current biomass is greater than the size that will support the MSY; and
- (b) *on balance* the new TACC and TAC level are likely to allow the stock to move towards a size that will support the MSY, or remain at or above the level that will support the MSY over the five-year period of the programme.

Unlike AM in the RMA and EEZ context, there seems to be a very low standard of certainty required about the effects on the environment before an AMP is implemented. In both the RMA and EEZ Act, before AM is implemented there needs to be "sufficient, and sufficiently certain, information to identify and evaluate the risks involved" and well-established baselines and standards.<sup>103</sup> That is not to say there must be complete certainty about the risks of AM, only that the "evidential foundation [will give] reasonable assurance that the adaptive management approach will achieve its goals of sufficiently reducing uncertainty and adequately managing any remaining risk".<sup>104</sup>

In fisheries, while there are checks involved once an AMP has been implemented,<sup>105</sup> the policy provides little to no direction as to when an AMP should be utilised beyond compliance with the Act. None of the assessment measures identified by Craig and Ruhl or other New Zealand law are proposed

98 At 25–26.

99 Ministry for the Environment (2016), above n 63, at [106]–[110].

100 Ministry of Fisheries (2004), above n 9, at 25.

101 The effect that the Act's principles and purposes have on AMPs is explored in part 5 of this article.

102 Ministry of Fisheries (2004), above n 9, at 25 (emphasis added).

103 *Chatham Rock Phosphate*, above n 65, at [824].

104 *Sustain Our Sounds*, above n 57, at [125].

105 These include the use of monitoring programmes, reviews of progress, and guidelines on intended management actions, amongst others. See Ministry of Fisheries (2004), above n 9, at 25.

or pre-empted in the 2004 Ministry of Fisheries review document.<sup>106</sup> All that the Minister is left with are the two highly ambiguous criteria of “reasonable probability” and “on balance” identified above.

The low standards of “reasonable probability” and “on balance” seem to tend more towards the “suck it and see” approach that the Supreme Court specifically warns against in *King Salmon*.<sup>107</sup> However, an AMP must be implemented in accordance with the Fisheries Act.<sup>108</sup> The next part of the article explores the ideology that underpins the Act and whether this theoretically allows AM to be utilised effectively despite the vague policy of AMPs.

#### 4. THE IDEOLOGICAL UNDERPINNING OF THE FISHERIES ACT

The implementation of AM always takes place within a broader management framework, itself embedded in a social, economic and political context. Because AM is implemented under the Fisheries Act the ideology that underpins the Act directly influences how AM is practised. Decisions about how and when AM should be utilised are always made within this broader context.<sup>109</sup> This part of the article explores the property rights-based ideology behind the Act and whether, theoretically, it is in line with the ethos of AM.

##### 4.1 Property Rights and the QMS

During the late 1970s, stock harvests had increased from 50,000 tonnes to 500,000 tonnes and questions of sustainability began to arise.<sup>110</sup> Ownership of fish only occurred once the fish had been caught. Without a secure right to future catches, fishers were driven by a “first in first served” mindset, without any motivation to conserve.<sup>111</sup> Subsequently, it was thought that a property rights regime was the answer to ensuring that stocks were sustained in perpetuity.<sup>112</sup>

The quota management system was devised in the early 1980s in response to depleted fish stocks and general economic reforms. It was heavily influenced by

106 At 25.

107 *Sustain Our Sounds*, above n 57, at [125].

108 Ministry of Fisheries (2004), above n 9, at 25.

109 Rist and others, above n 6, at 70.

110 Ministry of Fisheries *Fisheries Management in a Property Rights Regime: The New Zealand Experience* (MFish, Wellington, 1996) at 2.

111 K Guerin *Property Rights and Environmental Policy: A New Zealand Perspective* (New Zealand Treasury, Wellington, Working Paper 03/02, March 2003) at 5.3.

112 M Quin “The Fisheries Act 1996: Context, Purpose, and Principles” (1996–1999) 8 Auckland U L Rev 503 at 515.

neoliberal economic theory and individual transferable quota were introduced as a way of encouraging competition and adopting free-market mechanisms.<sup>113</sup> The idea was centred around the desire to give more power and responsibility to those using the resource — the fishers — while maintaining sustainability.<sup>114</sup> Based on Hardin's "tragedy of the commons" theory,<sup>115</sup> the idea was that by allocating resources as "tradeable environmental allowances",<sup>116</sup> users would be incentivised to use them in a way that ensured long-term sustainability.<sup>117</sup>

Initially, quotas were held as a specific tonnage of fish stock, giving the fishers a recognisable property right in a set amount of stock. After the orange roughly collapse in the late 1980s it became clear that TAC levels were unsustainable and the government was forced to spend \$45 million to buy back quota.<sup>118</sup> As a result, the status of individual transferable quotas was changed to a fixed percentage of the relevant TAC.<sup>119</sup> These gained certain property right features such as the ability to be mortgaged,<sup>120</sup> have caveats lodged against them to prevent dealings,<sup>121</sup> and the ability to transfer them through a register backed up by a Crown guarantee similar to that of the New Zealand Torrens land-based transfer system.<sup>122</sup>

## **4.2 The Critique of Private Property Used in Environmental Management**

Despite initial thought, considerable unease arose about property rights being used to incentivise sound environmental outcomes in fisheries management.<sup>123</sup> The unease stemmed from the idea that the classification of resources as private property can lead to environmental consequences because it entails privilege and not obligation to use resources sustainably.<sup>124</sup> Instead of having

113 G Scott and others "New Zealand's Public Sector Management Reform: Implications for the United States" (1997) 16 *Journal of Policy Analysis and Management* 357 at 359.

114 Quin, above n 112, at 517.

115 G Hardin "The Tragedy of the Commons" (1968) 162 *Science* 1243.

116 C Rose "Expanding the Choices for the Global Commons: Comparing Newfangled Tradable Allowance Schemes to Old-Fashioned Common Property Regimes" (1999) 10 *Duke Envtl L Policy Forum* 45 at 51 as cited in France-Hudson, above n 20, at 105.

117 G Winter "The Climate is No Commodity: Taking Stock of the Emissions Trading System" (2010) 22 *JEL* 1 at 16.

118 JH Annala "New Zealand's ITQ system: have the first eight years been a success or a failure?" (1996) 6 *Reviews in Fish Biology and Fisheries* 43 at 45.

119 Fisheries Act, s 42.

120 Sections 136–146.

121 Sections 147–152.

122 France-Hudson, above n 20, at 103.

123 At 105.

124 At 105.

regard to the environmental effect of activities, critics argue that the classical liberal conception of property encourages people to view resources as objects available for human exploitation through their own hard work.<sup>125</sup> The pursuit of maximising wealth overtakes any regard for sustainability.<sup>126</sup>

Underlying this critique is the understanding that the pursuit of individual autonomy encouraged by classical liberalism incentivises self-interest over wider community concerns and needs.<sup>127</sup> France-Hudson notes that these concerns have become ingrained in literature discussing private property being used as a resource management tool.<sup>128</sup>

A system that gives individual property rights to natural resources and encourages exploitation to the detriment of wider environmental concerns seems contrary to the practice of AM which has its roots in ecological resilience theory.<sup>129</sup> AM is based in precaution,<sup>130</sup> a value which places environmental concerns above the uninhibited right to use a resource. It relies on continuous assessment, monitoring and experimentation to achieve the management goals that are set out in the initial plan.<sup>131</sup> Therefore, a management environment is needed where flexibility and controllability of the resource is promoted ahead of certainty in the market. This means that decision-makers must have the power and flexibility to implement a range of sustainability measures if precaution deems necessary. If the critique of classical liberalism and property rights is correct, it would promote the opposite incentives needed for the successful implementation of AM.

### **4.3 An Argument Supporting Property Rights-based Environmental Management**

France-Hudson advocates an alternative view of the nature of property rights and environmental management.<sup>132</sup> At the core of France-Hudson's argument is the rejection of property rights acting to exclude others for the promotion

125 J Sax "Property Rights and the Economy of Nature: Understanding *Lucas v. South Carolina Coastal Council*" (1993) 45 *Stan L Rev* 1433 cited in France-Hudson, above n 20, at 105.

126 E Freyfogle "Ownership and Ecology" (1993) 43 *Case W Res L Rev* 1269 at 1276–1277.

127 France-Hudson, above n 20, at 106.

128 At 106.

129 Walters and Hilborn, above n 30, at 173.

130 Iorns and Stuart, above n 89, at 11.

131 CT Moore and others "Adaptive Management in the U.S. National Wildlife Refuge System: Science-Management Partnerships for Conservation Deliver" (2011) 92 *Journal of Environmental Management* 1395 at 1396.

132 For the complete thesis see B France-Hudson "Private property's hidden potential" (PhD Thesis, University of Otago, Dunedin, 2015).

of self-interest. Instead, he recognises an approach that advocates the “social obligation norm” to private property.<sup>133</sup>

The core of the social obligation norm is based on the idea that membership in society is a prerequisite to flourishing,<sup>134</sup> and as a result of this, people are morally obliged to provide for the community as well as themselves.<sup>135</sup> Furthermore, if human flourishing is dependent on one's access to resources, then property rights become important because they identify who has access to certain resources.<sup>136</sup> Those people that have rights in property are therefore morally obliged to use them for the benefit of the wider community to the extent that this might take priority over their own personal use of the resources.<sup>137</sup> When the state demands certain things of property, it is recognising the owner's moral obligation to the wider community.<sup>138</sup> France-Hudson argues that the social obligation norm remains true to the current law, despite the rise of classical liberalism.<sup>139</sup> He argues that the use of private property can still promote environmental sustainability. As an example, he points to the Fisheries Act's purpose allowing for the sustainability of fisheries to be privileged over the unfettered autonomous use of one's rights;<sup>140</sup> “the operation of private property may be grounded in normative goals beyond individual preference satisfaction”.<sup>141</sup> The concern that “private property *will* drive a range of unsustainable practices is *not* a given”<sup>142</sup> and it does not necessarily inhibit flexibility in decision-making.

In support of this approach is the judicial recognition that the property rights in quota are weak and are always subject to the provisions of the Act. In *New Zealand Federation of Commercial Fishermen v Minister of Fisheries* the Minister determined that the TAC should be reduced by 39 per cent to conserve snapper stocks in the north of the North Island.<sup>143</sup> The decision was

133 France-Hudson, above n 20, at 107.

134 The argument here is that even self-contained capabilities such as freedom, autonomy and personal security are dependent on other people and access to resources. See France-Hudson, above n 20, at 109.

135 G Alexander and E Penalver “Properties of Community” (2009) 10 *Theo Inq L* 127 at 138.

136 C Rose “Property in All the Wrong Places” (2004) 114 *Yale L J* 991 at 994.

137 C Serkin “Affirmative Constitutional Commitments: The State's Obligations to Property Owners” (2013) 2 *Brigham-Kanner Property Rights Conference Journal* 109 at 110 cited in France-Hudson, above n 20, at 109.

138 France-Hudson, above n 20, at 104.

139 At 112.

140 At 112.

141 At 114.

142 At 115 (emphasis in original).

143 *New Zealand Federation of Commercial Fishermen v Minister of Fisheries* High Court Wellington CP 237/95, 24 April 1997, McGechan J; Court of Appeal, CA82/97, 22 July 1997.

challenged on judicial review, the central question of which was whether the Minister had failed to recognise the “strong property rights” that the Act intends to create.<sup>144</sup> While McGechan J accepted that the rights are property,<sup>145</sup> they are subject to qualifications in the Act and subservient to the Minister’s powers.<sup>146</sup> In the Court of Appeal Tipping J upheld this decision, noting that it was important to have regard to the legislation that created the right.<sup>147</sup> France-Hudson notes that this provides evidence of the social obligation norm’s presence in the law, as the Court’s acknowledgement that fishers have to accept “the rough along with the smooth” suggests that the private property contains obligations as well as entitlements.<sup>148</sup>

On this analysis, so long as managerial flexibility is maintained and environmental sustainability advocated above individual preference, it is conceivable that AM should be able to function efficiently under existing fisheries legislation. The necessary ingredient of high controllability is present,<sup>149</sup> and in an ideal situation the property rights would incentivise research to promote sustainability. Furthermore, the Act’s grounding in sustainability, the concept of MSY, environmental principles, and wide-ranging public considerations all provide that the rights of fishers can be limited to provide for the public and environmental good.<sup>150</sup> Whether this occurs in reality needs to be analysed in the context of the Act itself. The next part of the article tests France-Hudson’s theory and explores whether the Act and how it has been interpreted allows for the effective utilisation of AM.

## **5. THE COMPATIBILITY OF AM AND THE FISHERIES ACT**

The 2004 Ministry of Fisheries review document outlines that AM should be utilised within the purposes and principles of the Act.<sup>151</sup> For AM to be effective, it is essential that the Act’s provisions match up with the objectives of AM.<sup>152</sup> Where the statute promotes contrary objectives, this creates a barrier to AM’s effectiveness.<sup>153</sup> This part of the article analyses the statute and whether it promotes the three key components of AM: the need for clear management

144 *New Zealand Federation of Commercial Fishermen* (HC), above n 143, at 8.

145 At 20.

146 At 91.

147 *New Zealand Federation of Commercial Fishermen* (CA), above n 143, at 16.

148 France-Hudson, above n 20, at 119.

149 Craig and others, above n 50, at 1380.

150 France-Hudson, above n 20, at 119.

151 Ministry of Fisheries (2004), above n 9, at 26.

152 Craig and Ruhl, above n 8, at 15.

153 At 26.

objectives and environmental bottom lines;<sup>154</sup> a grounding in precaution;<sup>155</sup> and a flexible regime that incentivises research.<sup>156</sup> It concludes that the provisions of the Act are at odds with AM. While the purpose and environmental principles of the Act do create management objectives and environmental bottom lines, they lack the clarity and force that AM requires. Similarly, while the Act does contain the precautionary principle in s 10(d), judicial interpretation has left it with little effect. The provisions relating to the TAC and TACC do not confer enough administrative flexibility and do not incentivise research.

### 5.1 Clear Management Objectives: The Purpose of the Act

AM must be used to promote the purpose of the Act.<sup>157</sup> The Act's purpose therefore forms one of the Part 1 management goals that are identified by Craig and Ruhl as being a crucial component of AM.<sup>158</sup> This section analyses whether the purpose of the Act creates a clear management objective for AM. Section 8(1) sets out the purpose of the Act: "[T]o provide for the utilisation of fisheries resources while ensuring sustainability." Section 8(2) further defines "ensuring sustainability":

- (a) maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and
- (b) avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment[.]

And "utilisation":

means conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural well-being.

The purpose of the Act indicates that the two competing interests of sustainability and utilisation both need to be accommodated in the administration of fisheries. However, the language of the section implies that while fisheries are to be utilised, sustainability must be ensured as the primary objective.<sup>159</sup> As noted by the Supreme Court in *New Zealand Recreational Fishing Council Inc v Sanford Ltd*, the concept of sustainability limits the scope

154 At 7.

155 Iorns and Stuart, above n 89, at 11.

156 Ruhl, above n 42, at 28.

157 Ministry of Fisheries (2004), above n 9, at 22.

158 Craig and Ruhl, above n 8, at 7.

159 *New Zealand Recreational Fishing Council Inc v Sanford Ltd* [2009] NZSC 54, [2009] 3 NZLR 438 at [39].

with which the Minister may act when making decisions under the Act.<sup>160</sup> The importance of sustainability in fisheries compares favourably with the purpose of the RMA<sup>161</sup> in s 5: “to *promote* the sustainable management of natural and physical resources” (emphasis added), which acts as “a guiding principle” to those performing functions (such as AM)<sup>162</sup> in the context of resource management.<sup>163</sup>

The purpose of the Act provides a clear management objective: AM must operate to ensure utilisation within the confines of sustainability. However, the Act does not point to any preference between “avoiding, remedying, or mitigating any adverse effects of fishing” under the definition of sustainability in s 8(2)(b). There is an obvious discrepancy between whether a decision-maker should “avoid” completely or “mitigate” adverse effects. Avoiding implies a decision-maker should not take a course of action when the effects of that action may have adverse effects on the sustainability of fish stocks. Mitigating implies that a decision-maker may take a course of action so long as they minimise any damage. Furthermore, no direction is given as to the standard of “mitigating” or “remedying” adverse effects required.

Although s 8 sets out a purpose that AM can work towards, there is some ambiguity in the definition of sustainability. The legislative preference for avoiding, remedying, or mitigating, as well as what amounts to “mitigating” and “remedying” in the context of AM, must be ascertained in light of the environmental principles set out in s 9.

## 5.2 Establishing Environmental Bottom Lines: The Environmental Principles

AM aims to reduce ecological uncertainty through a holistic approach to management, considering all aspects of ecosystem functions.<sup>164</sup> The environmental principles are important for AM because they recognise an integrated management approach that considers the effects of fishing not just upon individual species but also upon wider ecosystems and habitats. These principles fall within the Part 1 management objectives. They create an evaluative framework that sets out the boundaries the Minister is to act within

160 At [59].

161 Quin, above n 112, at 528.

162 See, for instance, *Sustain Our Sounds*, above n 57, which discusses AM in the context of the Coastal Policy Statement.

163 *Environmental Defence Society Inc v The New Zealand King Salmon Co Ltd* [2014] NZSC 38, [2014] 1 NZLR 593 at [24].

164 JE Herrick and others “A holistic strategy for adaptive management” (2012) 67(4) *Journal of Soil and Water Conservation* 105 at 105.



while trying to move fish stocks towards the MSY.<sup>165</sup> They establish limits to the extent of utilisation and provide key environmental bottom lines<sup>166</sup> which should not be compromised. This section analyses the strength of the principles and whether they provide substantive limitations for decision-makers under AM. It concludes that while they help to clarify the purpose of the Act and do set environmental bottom lines, there is no substantive requirement for a decision-maker to enforce them, thus posing a barrier to effective AM.

The s 9 environmental principles were drawn from UNCLOS<sup>167</sup> and the United Nations Convention on Biological Diversity<sup>168</sup> and reflect the ecosystem approach towards fishery management that was adopted by these conventions.<sup>169</sup> They define “the limits of extraction and impact on the aquatic environment”.<sup>170</sup> Section 9 states:

All persons exercising or performing functions, duties, or powers under [the] Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following environmental principles:

- a) associated or dependent species should be maintained above a level that ensures their long-term viability;
- b) biological diversity of the aquatic environment should be maintained;
- c) habitat of particular significance for fisheries management should be protected.

165 *Attorney-General v Trustees of the Motiti Rohe Moana Trust* [2017] NZHC 1429.

166 Environmental bottom lines are recognised as a principle that guides New Zealand fisheries management in Ministry of Fisheries *Fisheries 2030* (MFish, Wellington, 2009) at 12. The bottom lines are not explicitly described but it can be inferred that they include the environmental principles of s 9 as well as the maximum sustainable yield [MSY].

167 The 1982 United Nations Convention on the Law of the Sea has been in force since 16 November 1994.

168 UN Convention on Biological Diversity, above n 23.

169 Quin, above n 112, at 507 and 512 notes that the ecosystem approach is highlighted in UNCLOS pt XII: “Protection and preservation of the marine environment” and in art 8(d) of the Convention on Biological Diversity which requires states to protect ecosystems, natural habitats, and maintain viable populations of species in natural surroundings. The ecosystem approach is a strategy of integrated management of natural resources that promotes conservation and sustainable use in an equitable way.

170 Quin, above n 112, at 12.

### 5.2.1 Using the principles to interpret s 8(2)(b)

The principles help to define “adverse effects of fishing on the aquatic environment” under s 8(2)(b).<sup>171</sup> When read in light of s 8, the ultimate requirement for an AM regime, based on the best information available,<sup>172</sup> should be for fishing practices to “avoid” conflict with the environmental principles altogether. Given its ordinary meaning, to “avoid” amounts to “prevent the occurrence of”.<sup>173</sup>

However, given the purpose of the Act is for sustainable *utilisation*, there will necessarily be some adverse effects on the environment that come from fishing. In these instances, “ensuring sustainability” under s 8 requires decision-makers to remedy or mitigate any adverse effects. The extent of the remedial steps or mitigation may be coloured by the precautionary principle in s 10(d),<sup>174</sup> which requires decision-makers to act with precaution where the effects of activities are uncertain. Furthermore, due to the uncertain nature of fish stocks, situations may inevitably occur where the viability of species reproduction, biodiversity or habitat is threatened. For instance, when it becomes apparent that a certain harvest level or practice is reducing stock below a viable reproductive level, AM provides a flexible platform for changing the existing management strategies. In these scenarios the decision-maker will be required to “remedy” the situation and to try and “mitigate” any further environmental damage according to the standards set by the environmental principles.<sup>175</sup>

Therefore, the s 8(2)(b) definition of sustainability, when read in light of the s 9 environmental principles, fits nicely with the AM approach of incremental decision-making and continuous learning.

### 5.2.2 The weak requirement to implement the principles

Under s 9 the words “take into account” and “should” provide a large amount of discretion for the decision-maker, despite setting out some responsibility

171 The Supreme Court in *Environmental Defence Society Inc*, above n 163, at [93] notes that “avoid” must be considered against the background of the goals that avoidance is meant to achieve. The context is critical. In this case the context is conflict with the environmental principles. Quin, above n 112, at 528 notes that the principles provide detail on the meaning of ensuring sustainability in Fisheries Act, s 8(2).

172 Fisheries Act, s 10(a).

173 *Environmental Defence Society Inc*, above n 163, at [24].

174 This is discussed in greater depth in part 5.3 of this article.

175 For example, this could be through an alteration of the total allowable commercial catch [TACC] or TAC, the enactment of sustainability measures under Fisheries Act, s 11, or a change to the harvesting techniques themselves.

towards conservation and sustainability.<sup>176</sup> The Primary Production Committee thought that using the wording “shall recognise and provide for” would provide too large an obligation on decision-makers, “possibly forcing them to undertake vast amounts of research to meet the obligation”.<sup>177</sup> “Recognise and provide for” is the stronger wording used in s 6 of the RMA in regard to decision-makers considering matters of national importance. The Environment Court in *Long Bay-Okura Great Park*<sup>178</sup> held that “recognise and provide for” was a statutory direction with greater strength than “take account of”, and provides that the matters identified have significant priority in the decision-making process.<sup>179</sup>

Thus, while the environmental principles do set substantive environmental bottom lines, they are not subject to a firm requirement to implement them. The weak managerial mandate to “take account of” falls short of the clear management objectives that AM requires.<sup>180</sup> Essentially, a decision-maker could consider, but disregard, the principles, so long as their decision would maintain sustainability of the resource and the adverse environmental effects of the activity in question could be sufficiently mitigated to an arbitrary level.<sup>181</sup> Quin notes that many activities will not be caught by these two bottom lines.<sup>182</sup>

The approach of the courts has reflected this weak obligation imposed upon decision-makers. The principles are only mentioned by judges, and never discussed in depth. For example, in *Sanford*, a key case in the interpretation of how the TACC should be set under ss 20 and 21, the majority of the Supreme Court did not even consider them.<sup>183</sup> Because setting the TACC falls within the ambit of s 9 as a power under the Act, more consideration should have been given to the effect the environmental principles have upon a decision-maker. Elias CJ recognised them briefly in her dissent, but gave them no more than a passing mention as principles that the Minister considers alongside the precautionary principle of s 10(d).<sup>184</sup>

The legislation that governs AM in New Zealand should promote broad ecosystem-based principles and recognise their importance in effective fisheries management.<sup>185</sup> The environmental principles in s 9 do reflect a strong

176 *New Zealand Federation of Commercial Fishermen Inc v Minister of Fisheries* HC Wellington CIV-2008-485-2016, 23 February 2010 at [32].

177 Primary Production Committee *Fisheries Bill: Commentary* (1996) at viii.

178 *Long Bay-Okura Great Park Soc Inc v North Shore CC* EnvC A078/08, 16 July 2008.

179 *Bleakley v Environmental Risk Management Authority* [2001] 3 NZLR 213 (HC) (discussing “recognise and provide for” at [72]).

180 Craig and Ruhl, above n 8, at 7.

181 Quin, above n 112, at 529.

182 At 529.

183 *Sanford*, above n 159.

184 At [9] per Elias CJ dissenting.

185 Herrick and others, above n 164, at 105.

ecosystem approach that clarifies the purpose of the Act and aims to protect biodiversity, but their lack of authority renders them almost useless under an AM regime. Decision-makers can essentially disregard them in the interests of larger commercial yields, thus compromising the whole point of AM having clear management objectives and focusing on reducing uncertainty in the marine environment.

### **5.3 A Grounding in Precaution: The Precautionary Principle**

AM must be implemented in line with the precautionary principle and only in situations where “the two concepts are in harmony”.<sup>186</sup> The precautionary principle must be considered in all decisions throughout the AM process.<sup>187</sup> This section analyses the precautionary principle in the Act<sup>188</sup> and argues that the wording of s 10 and judicial interpretation leave it without its proper effect. AM demands “continual managerial flexibility”<sup>189</sup> so that decision-makers can quickly enact precautionary measures where information is uncertain or harvesting practices pose an unacceptable environmental risk. If AM “cannot be made to sufficiently reduce associated risk, acting in the face of uncertainty can be a foolhardy and potentially catastrophic endeavour”.<sup>190</sup>

The United Nations Rio Declaration on Environment and Development, principle 15 sets out the precautionary principle as:<sup>191</sup>

Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

Gillespie boils the precautionary principle down to meaning that where there is uncertainty in a fisheries management decision, this should not be used as a reason for inaction to prevent harm, and attempts should be made to resolve the uncertainty.<sup>192</sup>

186 Iorns and Stuart, above n 89, at 11.

187 The Fisheries Act, s 10 information principles, which includes the precautionary principle, apply to “All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability”.

188 Fisheries Act, s 10(d).

189 Craig and Ruhl, above n 8, at 37.

190 Iorns and Stuart, above n 89, at 11.

191 United Nations General Assembly, Report of the UN Conference on Environment and Development (Rio de Janeiro, 12 June 1992) Annex 1 “Rio Declaration on Environment and Development” UNGA A/CONF.151/26 (vol 1) (12 August 1992), principle 15.

192 A Gillespie “Precautionary New Zealand” (2011) 24 NZULR 365 at 366.

The s 10 information principles of the Act provide:<sup>193</sup>

All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles:

- (a) decisions should be based on the best available information:
- (b) decision makers should consider any uncertainty in the information available in any case:
- (c) decision makers should be cautious when information is uncertain, unreliable, or inadequate:
- (d) the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act.

The precautionary principle is addressed in para (d), which adopts language similar to the Rio Declaration.<sup>194</sup>

### *5.3.1 The relationship between the precautionary principle and AM*

AM functions to decrease levels of uncertainty in situations where the precautionary principle on its own would necessitate a ban on the activity.<sup>195</sup> By proceeding cautiously in incremental stages, more can be learned about the effects of the activity on the environment than if it were prohibited outright.<sup>196</sup> Iorns Magallanes and Severinsen state that, without precaution, AM amounts to “permissive regulation” which can result in negative environmental consequences.<sup>197</sup> The whole point of AM is for regulators to advance cautiously and “to safeguard initially against the possibility of unexpected severe future costs”.<sup>198</sup> AM without precaution may amount to potentially catastrophic situations.<sup>199</sup>

A precautionary approach to AM in fisheries is essential, especially in the context of climate change where the impact of fishing in changing

193 Fisheries Act, s 2: “the best information that, in the particular circumstances, is available without unreasonable cost, effort, or time”.

194 D Modeste “The Precautionary Principle and the Fisheries Act” (2011) NZLJ 179 at 181.

195 Iorns and Stuart, above n 89, at 11.

196 At 11.

197 CJ Iorns Magallanes and G Severinsen “Diving in the Deep End: Precaution and Seabed Mining in New Zealand’s Exclusive Economic Zone” (2015) 13 NZJPIL 201 at 213.

198 R Harding and E Fisher *Perspectives on the Precautionary Principle* (Federation Press, Annandale, NSW, 1999) at 140.

199 Iorns and Stuart, above n 89, at 11.

environmental conditions is uncertain.<sup>200</sup> As the *King Salmon* Board notes, AM arose partially from the precautionary principle as a way of enabling development while securing ongoing protection for the environment.<sup>201</sup> Fisheries must be managed cautiously, keeping in mind the purpose of the Act and the environmental principles identified in s 9.

### 5.3.2 Judicial interpretation of the precautionary principle

In *Roaring Forties Seafoods v Minister of Fisheries* it was held that a Minister is entitled to take a precautionary approach to management when there was unreliability in the interpretations of available scientific evidence.<sup>202</sup> However, the courts have since emphasised the importance of para (a), the best available information principle (the BAI), to the effect that Ministerial decisions based on precaution have been struck down.<sup>203</sup> Iorns Magallanes argues that the Court of Appeal in *Squid Fisheries Management v Minister of Fisheries*<sup>204</sup> failed to give effect to the precautionary principle in s 10(d) because they did not give effect to its wider purpose.<sup>205</sup> In that case when considering whether the model used by the Minister of Fisheries to set the fishing-related mortality limit (FRML)<sup>206</sup> for sealion deaths was appropriate, the Court found that the Minister was in breach for not utilising the best available information when he set a conservative number (based on an older model).<sup>207</sup> The Court failed to observe that the Minister was seemingly recognising the uncertainty between the two models and making a conservative value to favour precaution as directed by s 10(d).<sup>208</sup>

200 Barnhill, above n 26, at 900.

201 *King Salmon* (Board decision), above n 54, at [179].

202 *Roaring Forties Seafoods v Minister of Fisheries* HC Wellington CP64/97, 1 May 1997.

203 W Gullett “The Threshold Test of the Precautionary Principle in Australian Courts and Tribunals: Lessons for Judicial Review” in E Fisher, J Jones and R von Schomberg (eds) *Implementing the Precautionary Principle: Perspectives and Prospects* (Edward Elgar, Cheltenham, 2006) at 182; Modeste, above n 194.

204 *Squid Fishery Management Company v Minister of Fisheries* Court of Appeal, CA39/04, 13 July 2004.

205 CJ Iorns Magallanes “The Precautionary Principle in the New Zealand Fisheries Act: Challenges in the New Zealand Court of Appeal” (Australasian Law Teachers Association Annual Conference, Melbourne, July 2006).

206 Fisheries Act, s 15(2).

207 *Squid Fishery Management Company*, above n 204, at [103].

208 Ellen France J made this point in the High Court in *Squid Fishery Management Company Ltd v Minister of Fisheries* (High Court, Wellington, 27 February 2004). See NR Wheen “How the Law Lets Down the ‘Down-Under Dolphin’ — Fishing-Related Mortality of Marine Animals and the Law in New Zealand” (2012) 24(3) JEL 477 at 494.

In *Antons Trawling Co Ltd v Minister of Fisheries* the High Court found that the Minister must take all information into account even if unreliable.<sup>209</sup> The Minister had failed to take account of a topographic survey when he determined that it was not possible to determine the biomass that would produce the MSY. Furthermore, the Minister, at the beginning of their decision-making process, should have begun by assessing the BAI. Not doing so was in contravention of s 10(a).<sup>210</sup> This is despite the Court being aware that the Minister was entitled to exercise a precautionary approach.<sup>211</sup>

In *Northern Inshore Fisheries Company Limited v Minister of Fisheries* the Minister's failure to base their decision on the BAI resulted in the set-net ban for the protection of Maui's dolphins to be successfully challenged.<sup>212</sup> The Minister had based their decision on information from an outdated report that did not reflect relevant information. Section 10(d) is not even discussed, the judge only emphasising the importance of s 10(a) when a Minister is making a decision.<sup>213</sup>

In *New Zealand Federation of Commercial Fishermen* Mallon J described the effect of s 10.<sup>214</sup>

In the usual course decisions are to be based on best available information (because they should be). Before making his or her decision the Minister is required to consider this [and so] must know what information is available and at what cost and in what timeframe. If he or she decides not to base his decision on the best available information there would have to be a reason for not doing so ... This does not mean that the Minister can only act when the information is certain and reliable ... To achieve the purposes of the Act the Minister may need to act on uncertain information.

This means that although the Minister "retains discretion as to the information he or she may take into account",<sup>215</sup> they "must be accurately informed of what information is available before he or she makes a decision".<sup>216</sup> This requirement potentially places the burden upon them of having to know about all of the

209 *Antons Trawling Co Ltd v Minister of Fisheries* HC Wellington CIV-2007-485-2199, 22 February 2008 at [61].

210 At [61].

211 At [50].

212 *Northern Inshore Fisheries Company Limited v Minister of Fisheries* (High Court, Wellington, 4 March 2002) at [42]–[68].

213 At [75].

214 *New Zealand Federation of Commercial Fishermen*, above n 176, at [39].

215 At [34].

216 At [38].

information available before making a decision.<sup>217</sup> Gullet argues that the effect of the best information principle in s 10(a):<sup>218</sup>

can actually work against the [precautionary] principle with respect to [its] second application — whether to prohibit or restrict an existing activity before there is conclusive proof of harm. [T]he ... best information requirement in the Act reduces the ability to make precautionary decisions because decisions to close fisheries due to concerns about unacceptable impact on threatened bycatch species cannot be made until all presently available relevant scientific information is considered and correctly understood.

### 5.3.3 How the s 10 interpretation affects AM

The current judicial interpretation of the precautionary principle hinders Ministerial discretion because of the overarching focus on the BAI. This poses a barrier to the effective utilisation of AM in fisheries management. The effect of the focus on the BAI is that precautionary measures are delayed or have little effect.<sup>219</sup> This is contrary to the very purpose of the precautionary principle and AM, which both reflect a policy choice favouring environmental protection in light of uncertainty.<sup>220</sup> A reputable scientific minority should be the minimum standard for a Minister to act upon,<sup>221</sup> as this ensures the balance of having enough scientific evidence to make a decision and the need to act with precaution.

For AM to be implemented successfully it demands “continual managerial flexibility”.<sup>222</sup> Part of this flexibility must come from the ability to act with precaution in respect of reducing catch rates or changing harvesting practices where information is uncertain. Decisions must be able to be made in a short period of time to reduce the chance of adverse environmental consequences. When decisions to act with precaution can be easily challenged based on procedural error this defeats the purpose of AM and precaution being linked together.

217 Wheen, above n 208, at 495.

218 At 495, quoting Gullett, above n 203, at 182.

219 At 495.

220 C Cameron “The Precautionary Principle: Core Meaning, Constitutional Framework and Procedures for Implementation” in R Harding and E Fisher (eds) *Perspectives on the Precautionary Principle* (Federation Press, Annandale, NSW, 1999) at 29; Iorns and Stuart, above n 89, at 11.

221 JE Hickey “Refining the Precautionary Principle in International Environmental Law” (1995) 14 VJEL 423 at 449–450.

222 Craig and Ruhl, above n 8, at 37.



### 5.3.4 The precautionary principle and AMPs

The current AMP system suggests that management actions should be made in line with the principles and purposes of the Act.<sup>223</sup> The information principles in s 10 fall within this ambit. Although case law indicates that the s 10(d) precautionary principle competes with the s 10(a) BAI principle, the legislative direction is still that a Minister should act with precaution (to ensure the purpose of sustainable utilisation) when there is uncertain information about a proposed TAC or TACC increase under an AMP. A precautionary approach is in line with the Supreme Court's ruling that "there must be an adequate evidential foundation to have reasonable assurance that the adaptive management approach will achieve its goals of sufficiently reducing uncertainty and adequately managing any remaining risk".<sup>224</sup>

However, MPI suggests that the Minister can increase a TAC or TACC under an AMP where there is merely a "reasonable probability" that there is a biomass that can support MSY, and that "on balance" TAC/TACC levels will move the stock towards MSY.<sup>225</sup> What amounts to a "reasonable probability" is uncertain and it does not seem to impose a high burden for the industry to prove. A low standard of certainty about risk to stocks directly contradicts the precautionary principle. The precautionary principle demands that where there is uncertain information, such that it only meets the low "reasonable probability" and "on balance" sustainability tests, the TAC increase should be postponed until further research is available to confirm the sustainability of such an action.

Furthermore, when considering information that will inform the reasonable probability test, the s 10(a) BAI provision only places a burden on the Minister to consider all the information *available*.<sup>226</sup> Where the information is uncertain or absent, the BAI provision does not place any greater emphasis on the Minister to conduct further research. It therefore seems obsolete and unnecessary, given that its interpretation runs contrary to the precautionary, research-based ethos of AM.

What amounts to "reasonable probability" is further compounded by the fact that the information about the stock's biomass comes from the industry itself.<sup>227</sup> Fishery catch statistics have been shown to be incomplete because of underreporting and discarding.<sup>228</sup> In 2008 MPI acknowledged that there were

223 Ministry of Fisheries (2004), above n 9, at 25.

224 *Sustain Our Sounds*, above n 57, at [125].

225 Ministry of Fisheries (2004), above n 9, at 25.

226 *New Zealand Federation of Commercial Fishermen*, above n 176, at [39].

227 Under AMP information about the harvested stock is primarily recorded by the stakeholders — the fishers. Ministry of Fisheries (2004), above n 9, at 27.

228 Slooten and others, above n 2.

incentives for commercial fishermen to underreport discards, which disrupts MPI's ability to conduct accurate assessments of stock health upon which TACCs are based.<sup>229</sup> MPI was concerned that the "chronic underreporting of discards" could pose ongoing sustainability risks for stocks.<sup>230</sup> The reliability of any information MPI receives from the industry is highly questionable, given that for the 1950 to 2013 period an estimated 24.7 million tonnes of catch was not reported compared to the 15.3 million tonnes that was.<sup>231</sup> The fact that illegal discarding is ignored by management officials means that catch statistics realistically "throw little or no light upon the condition of fisheries".<sup>232</sup> Thus, where statistics provided by a fisher may show a reasonable probability that the biomass is being maintained, the reality could be quite different.

In situations such as this, s 10(c) provides that decision-makers should be cautious where information is uncertain, unreliable, or inadequate. Thus, where there was no information about a stock, or the information was unreliable because of discarding, it would seem in line with precaution to limit TAC/TACC increases under an AMP. Despite this, the Ministry's position is:<sup>233</sup>

[MPI] recognise that there are a large number of fisheries where comprehensive and or detailed stock assessment information producing sustainable yield estimates are not available. However, this lack of assessment information should not of itself preclude consideration of adjustment to TACs in these fisheries.

The statement indicates that when MPI is aware that the information they have about a fish stock is uncertain or non-existent, TAC increases can still be considered. This is despite the precautionary principle of s 10(d) and s 10(c) which specifically requires caution in the face of uncertainty. What this shows is a complete disregard from MPI of the s 10 precautionary principle and a disconnect between the policy of AMPs and the requirements of the Act.

229 A Telesetsky *Fishing for the Future: Addressing Fisheries Discards and Increasing Export Value for New Zealand's Sustainable Fisheries* (Fulbright New Zealand, August 2016) at 51.

230 At 51.

231 Simmons and others, above n 2, at 48. The dangers of stock assessment being based on industry reporting is highlighted by the Newfoundland cod fishery collapse in 1992. See C Walters and J-J Maguire "Lessons for stock assessment from the northern cod collapse" (1996) 6(2) *Review in Fish Biology and Fisheries* 125.

232 Simmons and others, above n 2, at 47.

233 Ministry of Fisheries (2004), above n 9, at 22.

### 5.3.5 Summary of AM and the precautionary principle

The precautionary principle in the Fisheries Act does not provide an adequate platform for AM to work from. The interpretation of the BAI provision hinders the effect of the Minister's ability to act with precaution where information is uncertain. Furthermore, there is a significant disconnect between the policy of AMPs and the legislation that underpins them. The test for when AMPs may be introduced to increase TAC/TACC levels does not accord with s 10(c), nor the precautionary principle itself.

## 5.4 Administrative Flexibility and Incentivising Research: The TAC and TACC

Setting the TAC and TACC are key management actions under Part 2 of AM. How they are set and managed directly controls the sustainability of the stock. Within the AM framework it is essential that the TAC and TACC remain flexible so that in the face of uncertainty they can be reduced if precaution deems necessary. However, administrative flexibility must be balanced with the need to ensure that there are also measures in place that ensure TACs cannot be raised arbitrarily without supporting information that it is sustainable to do so. It is essential that under an AM system research about the TAC and MSY is incentivised to support the incremental management of the stock.<sup>234</sup> Without administrative flexibility and research-based decision-making, uncertainty about the receiving environment cannot be reduced, thus defeating the very purpose of AM.<sup>235</sup> The following section argues that the legislation governing the TAC and TACC does not promote administrative flexibility and research-based decision-making, thus posing a barrier to the effective utilisation of AM.

### 5.4.1 Setting the TAC for uncertain stocks

Around 65 per cent of stocks have TACs set when their biomass and MSY is unknown or uncertain.<sup>236</sup> Climate change is likely to enhance this number by accentuating uncertainties regarding the biomass of stocks and how

234 B Cosens "Transboundary River Governance in the Face of Uncertainty: Resilience Theory and the Columbia River Treaty" (2010) 30 J Land Resources & Envtl L 229 at 263.

235 At 263.

236 Ministry of Fisheries Science Group (Comps) 2006: Report from the fishery assessment plenary, May 2006: stock assessments and yield estimates (unpublished report held in NIWA Library, Wellington) cited in McKoy, above n 2, at 41.

fishing will affect them.<sup>237</sup> Under AM it is paramount that research into the stock is incentivised to maximise information about what can be sustainably harvested.<sup>238</sup>

The key operative provision in relation to sustainability is s 13, which requires the Minister to set the TAC.<sup>239</sup> It is the provision through which ss 8, 9 and 10 are given effect.<sup>240</sup> Section 13(1) states that the TAC stays in force until it is changed or varied. Subsections (2) and (3) provide:

- (2) The Minister shall set a total allowable catch that—
  - (a) maintains the stock at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; or
  - (b) enables the level of any stock whose current level is below that which can produce the maximum sustainable yield to be altered—
    - (i) in a way and at a rate that will result in the stock being restored to or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; and
    - (ii) within a period appropriate to the stock, having regard to the biological characteristics of the stock and any environmental conditions affecting the stock; or
  - (c) enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.
- ...
- (3) In considering the way in which and rate at which a stock is moved towards or above a level that can produce maximum sustainable yield under subsection (2)(b) or (c), or (2A) (if applicable), the Minister shall have regard to such social, cultural, and economic factors as he or she considers relevant.

*Antons Trawling Co Ltd v Minister of Fisheries* is a 2008 High Court decision that discusses the Act's approach to how the Minister may change the TAC where information about a stock is uncertain.<sup>241</sup> The case reviewed the Minister's decision to reduce the TAC for orange roughy, a species very susceptible to overfishing.<sup>242</sup> The decision led to the amendment of the Act

237 Salinger and others, above n 4, at 215.

238 Cosens, above n 234, at 263.

239 *Sanford*, above n 159, at [43].

240 At 43.

241 *Antons Trawling Co Ltd*, above n 209.

242 At [3].

to include s 13(2A), which allows the Minister to change the TAC with no information, thus disincentivising research, which is crucial in AM.

Because of the low knowledge about the stock, the orange roughy fishery was initially managed under an AMP.<sup>243</sup> The MSY of the stock had never been estimated and the AMP aimed to measure biomass by placing the stock under stress so that its depletion could be gauged and monitored over time.<sup>244</sup> However, the AMP was abandoned in 2006 because scientists concluded that it was too easy to deplete the stock by accident and there had not been any increase in understanding about the status of the stock.<sup>245</sup> Following this the Minister significantly reduced the TAC, which formed the basis for review.

The Minister reduced the TAC, not the on basis of the biomass (because this could not be obtained), but because of the uncertainty about the stock and its vulnerability to overfishing. In doing so, he took a precautionary approach having regard to s 10.<sup>246</sup> However, Miller J found that s 13(2)(b)<sup>247</sup> did not allow the Minister to set a TAC with no regard to stock levels at all.<sup>248</sup> His Honour recognised the perversity of the situation where “because an existing TAC continues until changed, any attempt under s 13 to reduce a TAC that has been set without benefit of a stock estimate may summon a challenge on the ground that there is no stock estimate”.<sup>249</sup> Although this ruling is consistent with the wording of the statute, it seems unreasonable given that 65 per cent of stocks are set with uncertain information regarding the biomass and MSY.<sup>250</sup>

In response to this ruling, the Fisheries Act 1996 Amendment Bill (No 2) 2008 introduced the new provision, s 13(2A):

- (2A) For the purposes of setting a total allowable catch under this section, if the Minister considers that the current level of the stock or the level of the stock that can produce the maximum sustainable yield is not able to be estimated reliably using the best available information, the Minister must—
- (a) not use the absence of, or any uncertainty in, that information as a

243 At [16].

244 At [16].

245 At [27].

246 At [36].

247 It is worth noting that Fisheries Act, s 14 provides the Minister with another option for setting the MSY. However, in the case this was not a viable option because s 14 is only applicable to stocks such as squid, where the biological characteristics of the stock make it impossible to estimate the MSY. See para [52] for further discussion.

248 At [50].

249 At [55].

250 Ministry of Fisheries (2006), above n 236.

- reason for postponing or failing to set a total allowable catch for the stock; and
- (b) have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stock; and
  - (c) set a total allowable catch—
    - (i) using the best available information; and
    - (ii) that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield.

The issue with s 13(2A) is that it disincentivises research where increasingly more research functions are being transferred to the fishing industry, especially under AMPs.<sup>251</sup> As Boyd notes, “section 13(2A) means that commercial fishers do not have to demonstrate the sustainability of their fishing, thus creating an incentive to do the least research possible”.<sup>252</sup> What this means is that the Minister may set a TAC regardless of the industry having done very little research into the stock. There is then no obligation on the Minister to review the TAC,<sup>253</sup> meaning that a TAC set with little or no information may remain until a stock decline is obvious. When compared to how the courts have interpreted the precautionary principle in s 10,<sup>254</sup> s 13(2A) seems to make increasing a TAC, or setting it with no information, far easier than reducing it. As aforementioned, the s 10(a) BAI provision effectively excludes the proper application of the precautionary principle when a decision-maker wants to reduce the TAC in the face of uncertainty.<sup>255</sup>

The effect of the s 13(2A) provision is detrimental to the way AM is designed to operate. Cosens notes that existing legislative frameworks will only be appropriate for AM where uncertainty is reducible through continued research.<sup>256</sup> A legislative scheme that disincentivises research and allows the Minister to increase TACs with little information does not fit well with AM being designed as a precautionary tool for reducing uncertainty in the face of new emerging stressors.

251 J Boyd “Fishing for the Big Boys: Competing Interests Under the Fisheries Act 1996” (2010) 41 VUWLR 761 at 784.

252 At 784.

253 *Antons Trawling Co Ltd*, above n 209, at [60].

254 Refer to part 5.3 of this article.

255 Gullett, above n 203, at 182.

256 Cosens, above n 234, at 263.

#### 5.4.2 Emergency measures and the TACC

Given AM's grounding in precaution and need for administrative flexibility, it is essential that the Minister has the discretion to enact emergency sustainability measures.<sup>257</sup> If AM is taking the system grossly off any path towards achieving its management goals, if environmental conditions change, or information is found to be unreliable, the Minister must be able to either alter the AM plan or terminate it.<sup>258</sup> To do this requires a flexible statutory regime, one that allows the Minister to change the TAC/TACC easily,<sup>259</sup> or to enact emergency measures quickly and efficiently.

The Act clearly envisages that the TAC can be changed by the Minister. Section 13(1) allows the TAC to be varied, and s 11 provides that sustainability measures, such as imposing catch limits, can be put on the TAC.<sup>260</sup> However, the Minister is under no obligation to change the TAC, or to even review it regularly.<sup>261</sup> Furthermore, the TAC is always subject to the BAI provision in s 10(a),<sup>262</sup> making it hard to change quickly because of the onus on the Minister to review all the information.<sup>263</sup> Therefore, the TAC cannot be reduced quickly or easily in an AM scheme. Similarly, reducing the TACC cannot be done quickly. Under s 20(4) a variation to the TACC does not have effect until the first day of the next fishing year. There is also no reason why the BAI provision of s 10(a) would not apply when the Minister wishes to reduce the TACC,<sup>264</sup> thus imposing the same restriction.

The Minister may set the TACC at zero.<sup>265</sup> This is important as it does allow some flexibility under AM to completely close off stocks to commercial fishing, while allowing recreational interests to continue. However, it still only provides an all-or-nothing solution. It is not of any use in the situations where the TACC may need to be quickly reduced, but not entirely done away with altogether. Furthermore, under AMPs the commercial fishers undertake research about the

257 Craig and Ruhl, above n 8, at 56.

258 At 56.

259 Reducing the TACC is one recognised strategy for improving species health. EL Miles "Fisheries Management and Governance Challenges in a Changing Climate" in OECD *The Economics of Adapting Fisheries to Climate Change* (OECD, Paris, 2011) 159 at 171.

260 Fisheries Act, s 11(3)(a).

261 *Antons Trawling Co Ltd*, above n 209, at [60].

262 At [61].

263 Wheen, above n 208, at 495.

264 The Fisheries Act, s 10 principles have a very broad scope, applying to "All persons exercising or performing functions, duties, or powers under [the] Act, in relation to the utilisation of fisheries resources or ensuring sustainability".

265 Fisheries Act, s 20(2) and (3).

stock.<sup>266</sup> When the TACC is set at zero there is no incentive for research to be continued by the industry, potentially leaving an information gap while there is still recreational and customary fishing pressure being placed upon a stock.

Despite the issues with changing the TAC and TACC, s 16 specifically provides Ministerial powers for enacting emergency measures. Under s 16(1), if satisfied that there has been:

- (a) an outbreak of disease; or
- (b) a serious decline in the abundance or reproductive potential of 1 or more stocks or species; or
- (c) a significant adverse change in the aquatic environment,—

the Minister may enact sustainability measures that include closing an area to fishing, restricting fishing methods, restricting catches based on their size, altering the fishing season, imposing additional requirements for reporting, or requiring the disposal of fish in a specific manner.<sup>267</sup> These measures do not require the same consultation requirements as other sustainability provisions do,<sup>268</sup> but the Minister must still “to the extent reasonably practicable” consult interested parties before giving notice under s 16(1). The emergency provisions can only remain in force for three months, subject to one nine-month renewal after consultation with interested parties.<sup>269</sup> There is no direction by the statute as to what happens after the three- or nine-month period is up. Section 16(4) specifically provides that the Minister cannot reduce the TAC as an emergency measure under the provision.

The emergency provisions are an “all or nothing” option for decision-makers. They allow the Minister to act swiftly by closing areas or restricting the methods that are used to take fish. The flexibility to do this is very useful in an AM scheme where emergency measures may need to be enacted in short timeframes.<sup>270</sup> However, this does not address the lack of ability for the Minister to make quick changes to the TAC or the TACC. In situations where information is found to be unreliable, but there is no immediate threat to the stocks, closing the entire fishery may not be necessary. A precautionary reduction in the TAC or TACC could be the best option for the Minister until further information is available. This would allow the utilisation of the stock to continue (albeit at a lesser rate), thus conforming with the Act’s utilisation purpose.

266 Ministry of Fisheries (2004), above n 9, at 25.

267 Fisheries Act, s 16(7)(a)–(f).

268 Section 12(3).

269 Section 16(3).

270 Craig and Ruhl, above n 8, at 56.



### 5.4.3 A potential remedy for a lack of administrative flexibility

A possible way to deal with emergency situations that required less than a total shutdown of the fishery would be to create a buffer between the TAC and how much stock is allocated out beneath it. Leaving a buffer could occur when the Minister allocates out the TAC between recreational, commercial and customary interests under ss 20 and 21.<sup>271</sup> The Minister could leave part of the TAC unallocated to provide for sustainability. Although sustainability is supposed to be provided for in setting the MSY,<sup>272</sup> where information about the stock or catch rates was found to be inaccurate,<sup>273</sup> or where significant environmental changes posed a threat to the stock, having a buffer would reduce the chance of a depleted biomass. A buffer under the TAC would therefore be giving effect to the precautionary principle in s 10(d).

The Supreme Court in *Sanford* addressed the Minister's discretion to leave a buffer under the TAC.<sup>274</sup> Once set, the TAC provides for the TACC, recreational interests, customary Māori harvest, and other related mortality for a given stock. Part 4 of the Act provides the mechanisms of the quota management system and for setting the TACC. Like s 13(1), s 20 provides that once the TACC is set, it stays in force until changed or varied. Section 20 states:

- (2) The Minister may from time to time, by notice in the *Gazette*, vary any total allowable commercial catch set for any quota management stock by increasing or reducing that total allowable commercial catch.
- (3) Without limiting the generality of subsections (1) and (2) [of this section], the Minister may set or vary a total allowable commercial catch at, or to, zero.
- ...
- (5) A total allowable commercial catch for any quota management stock shall not—
  - (a) be set unless the total allowable catch for that stock has been set under section 13 or section 14; or
  - (b) be greater than the total allowable catch set for that stock.

Section 21 provides for how the Minister must set or vary the TACC:

271 As a matter of procedure the Minister must first set the TAC under Fisheries Act, s 13 and then ss 20 and 21 provide for allocating some of the TAC to the TACC, which includes apportioning some to the other interests as well. See *Sanford*, above n 159, at [52].

272 At [60].

273 Simmons and others, above n 2, at 47.

274 *Sanford*, above n 159.

- (1) In setting or varying any TACC for any quota management stock, the Minister shall have regard to the total allowable catch for that stock and shall allow for—
  - (a) the following non-commercial fishing interests in that stock, namely—
    - (i) Maori customary non-commercial fishing interests; and
    - (ii) recreational interests; and
  - (b) all other mortality to that stock caused by fishing.

The case was a judicial review brought to the Supreme Court by the New Zealand Recreational Fishing Council and the New Zealand Big Game Council, who represented recreational fishing interests (the recreational fishers). The review concerned the TACC the Minister had set for kahawai in 2004 and 2005. The recreational fishers wanted a TAC set below the MSY which would provide for larger sizes and higher quantities of fish. The commercial parties had an interest in the MSY being realised as this allowed the TACC to be set higher, giving them a greater proprietary interest in the available stock.

The argument regarded whether the Minister should give preference to recreational fishing interests over commercial interests when he allocated the TAC.<sup>275</sup> The recreational fishers argued that when setting the TACC the Minister had to take into account s 8, which meant that the decision had to “enable people to provide for their social, economic, and cultural well-being”. When the Minister set the kahawai TAC and TACC using traditional catch rates, he failed to take into account the qualitative measure imposed by s 8.<sup>276</sup> The recreational fishers’ argument was that had the Minister correctly applied s 8, he would have given preference to them.<sup>277</sup>

The majority of the Court dismissed the recreational fishers’ claim.<sup>278</sup> In their view, the purpose of sustainable utilisation had already been achieved when setting the TAC under s 13.<sup>279</sup> When setting the TAC, s 13 also provides for recognition of “social, cultural, and economic factors”.<sup>280</sup> Therefore, s 8 is “not of direct relevance to decisions under ss 20 and 21 which are apportioning a total allowable catch that has been fixed under a sustainability measure”.<sup>281</sup> What follows is that the Minister cannot provide for sustainability under s 21 and is expected to allocate out the entire TAC to the different interests referred to in s 21.<sup>282</sup>

275 At [3] per Elias CJ dissenting.

276 At [3].

277 At [3].

278 At [60] per the majority.

279 At [43].

280 At [44].

281 At [60].

282 At [52].

Chief Justice Elias dissented. In her Honour's view, s 21 is not an allocative provision, but merely exists to ensure that the TACC does not exceed the TAC.<sup>283</sup> Section 21(1) provides that the Minister must deduct the mortality of stock caused by other interests (recreational, customary Māori, and other causes of mortality — mainly poaching) and allocate the remainder to the TACC.<sup>284</sup> Section 21(2) is concerned with ensuring the interested parties are consulted when setting the TACC and with “the substantive assessment of what the total allowable commercial catch *should* be, applying the policies of the legislation”.<sup>285</sup> Thus, s 21(1) is a standalone provision that allows the decision-maker to act with precaution and take into account sustainability measures that may not have been met under s 13, or to provide for the particular interests expressed by parties identified under the statute.<sup>286</sup> It follows that the Minister does not have to fully allocate out the TAC.<sup>287</sup>

The majority of the Supreme Court failed to apply the purpose and principles of the Act to ss 20 and 21 which provide for setting the TACC. There is no reason why the purpose of the Act should only apply to setting the TAC and not the TACC.

Section 13 of the Fisheries Act does not contain any recognition that it is the primary mechanism for fulfilling the purpose of the Act. Nor do ss 20 or 21 state that the purpose is not to apply when setting the TACC. If the purpose of the Act was not to apply to a provision, the Act would be explicit in stating this. In support of a wider approach to the application of the purpose of the Act, the ss 9 and 10 principles say that they apply to: “[a]ll persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability”. If utilisation and sustainability concerns were entirely achieved in setting the TAC, there would be no reason for the ss 9 and 10 principles to use such broad language. They could simply refer to “section 13” or “when setting the TAC”. Instead, it seems that the principles are to be applied broadly, and to be adhered to in the wide range of scenarios where the Minister may be giving effect to the purpose of the Act, including setting the TACC.

In support of this interpretation is the practical consideration that TACs are often based on uncertain MSYs because of inaccurate information.<sup>288</sup> The TAC should not be the only method for achieving sustainable utilisation if it is subject to uncertainties and error itself. Moreover, if the precautionary principle of s 10(d) applies to setting the TACC as a “power” under the Act, then it would

283 At [4] per Elias CJ dissenting.

284 At [21].

285 At [21] (emphasis added).

286 At [21].

287 At [22].

288 Telesetsky, above n 229, at 51; Simmons and others, above n 2, at 47.

be prudent for the Minister to be able to acknowledge the inherent uncertainties in estimates of the MSY and allow for a buffer when allocating the TACC out under s 20.

AM requires administrative flexibility in the management of the TAC and TACC. It also requires a precautionary approach as to how these are set. Allowing a buffer between the TAC and what is allocated out beneath it provides another level of precaution where TACs are set on uncertain MSYs. In cases where the stock is threatened, a buffer also gives the Minister time to enact emergency measures, or to go through the process of reducing the TAC or TACC. The decision in *Sanford* reflects the incorrect assumption that TACs can completely provide for sustainability and hinders the ability for AM to provide a flexible platform for reducing risk. Chief Justice Elias' judgment is preferable as it provides that the Minister does not have to fully allocate out the TAC, which fits better with the purpose of the Act and AM's need for flexibility.

### **5.5 Summary of the Compatibility of Adaptive Management and the Fisheries Act**

AM and the Fisheries Act seem incompatible. The provisions of the Act do not match up with key components of AM. While the Act does have a clear purpose, its application is frustrated by environmental principles that lack the authority to set substantial environmental bottom lines. Judicial interpretation of the s 10(d) precautionary principle has left it with little effect, defeating the need for AM to be grounded in precaution. The mechanics for setting the TAC disincentivise research and the Act does not provide enough administrative flexibility when it comes to quickly changing the TAC or TACC. Furthermore, while some administrative flexibility could be achieved by creating a buffer under the TAC, the majority of the Supreme Court ruled against this proposition in *Sanford*. To analyse the reasons for the disconnect between the Act and AM, it is necessary to look at the ideology underpinning fisheries management in New Zealand again.

## **6. THE INCOMPATIBILITY OF FISHERIES ACT IDEOLOGY AND ADAPTIVE MANAGEMENT**

### **6.1 The Reality of a Property Rights-based Ideology in Fisheries**

The reason for the Act's mismatch with AM is that the Act has been structured to provide primarily for property interests, particularly those of the commercial industry, while AM is grounded in an ecosystem ideology that places

environmental sustainability ahead of human interest. When the interests of commercial fishermen dominate the management of fisheries,<sup>289</sup> research and administrative flexibility are reduced, decisions are not based in precaution, and it becomes harder for the Minister to implement precautionary measures. McKoy states that the introduction of property rights into the system has “disproportionately dominated the administration, management and politics of commercial fisheries over the [last] 20 years, to the possible exclusion, or at least the cost, of other important objectives such as sustainability”.<sup>290</sup>

Property rights create incentives for quota holders to argue against research to improve the understanding of stocks<sup>291</sup> and short-term economic gain trumps ecological sustainability. Where costs can be reduced and profits maximised, there is a high degree of risk-taking in uncertain situations by commercial fishers, and active resistance to research that might result in TAC reductions or increase costs to rights-holders.<sup>292</sup> Compounding this issue is the fact that research is funded by the industry itself through levies. When there are uncertain conditions, and further research is likely to reduce TAC or TACC levels, what stronger incentive could exist for rights-holders to resist expenditure on research?<sup>293</sup> Less research means more risk and a greater risk of environmental degradation, especially in the face of climate change.

Even if it is argued that rights-holders have a stake in protecting the future of stocks, they will only do so to the minimum extent possible. The industry has no incentive to provide research into the wider ecological effects of fishing because fish biomass is held to be a sufficient indicator of stock health. Not only is this an untrue assumption<sup>294</sup> but it misses the importance of ecosystem resilience and the holistic approach needed for environmental management.<sup>295</sup> One example of the failure to consider ecosystem resilience and holistic management has been the creation of “kina barrens”, where the removal of top predators causes an explosion of kina that decimate kelp forests and reduce the biodiversity and productivity of an area.<sup>296</sup> Such a result falls contrary to

289 See Boyd, above n 251, at 785–787 for a discussion on the dominance of the commercial industry in fisheries.

290 McKoy, above n 2, at 38.

291 SJ Hall and B Mainprize “Towards ecosystem-based fisheries management” (2004) 5 *Fish and Fisheries* 1 at 20. Also see the argument about Fisheries Act, s 13(2A) disincentivising research in part 5.4.1 of this article.

292 McKoy, above n 2, at 39.

293 At 39.

294 A Reiser “Property Rights and Ecosystem Management in US Fisheries: Contracting out for the Commons?” (1997) 24 *Ecology LQ* 813 at 815.

295 Craig, above n 31, at 4.

296 This effect is known as a trophic cascade. See V Kerr and R Grace *Intertidal and subtidal habitats of Mimiwhangata Marine Park and adjacent shelf* (Department of Conservation, Wellington, DOC Research & Development Series 201, 2005)

the environmental principles of the Act, which specifically provide for the protection of habitat and biodiversity.<sup>297</sup>

Not only does this analysis point to the failure of a rights-based approach in fisheries management but it also has dire implications for AM. Where research is disincentivised and the ideology underpinning fishing management promotes certainty and self-interest over flexibility and ecological sustainability, AM is bound to fail.

## 6.2 Adaptive Management “Lite” Under the Fisheries Act

While the 2004 Ministry of Fisheries review document indicates that AM is being implemented, in reality the Fisheries Act and the ideology underpinning it means that what New Zealand has is something that Craig and Ruhl call “[AM] lite”, “a watered-down form of adaptive management agencies use to play it safe”.<sup>298</sup> The Ministry’s approach to AM fits into Craig and Ruhl’s description of “bold promises to adapt unspecified parameters of the decision in the unspecified future through unspecified means when unspecified conditions arise”.<sup>299</sup> The perfect example being the Ministry’s vague criteria for when an AMP should be used to increase TAC or TACC levels: where there is a “reasonable probability” biomass will support the MSY, and where “on balance” the new TAC and TACC levels will likely move stocks towards sustainability.<sup>300</sup> Instead of being a system aimed at “reduc[ing] uncertainty through integrative learning fostered in a structured, iterative decisionmaking process”,<sup>301</sup> AMPs seem to be a “long-winded abstraction of ‘learning by doing’”, with “no firm commitments to do anything in particular”,<sup>302</sup> other than to increase harvest levels.

Furthermore, instead of researching the stock to reduce uncertainty before fishing, AMPs are implemented by increasing the TAC or TACC in uncertain stocks *and then* monitoring and/or progressively increasing the catch until the haul starts to decline.<sup>303</sup> Retrospective research hardly compares to the precautionary approach in the EEZ Act, where “sufficient, and sufficiently

at 31–32; NT Shears and RC Babcock “Continuing trophic cascade effects after 25 years of no-take marine reserve protection” (2003) 1 Marine Ecology Progress Series 246 at [1.16] as cited in Boyd, above n 251, at 785.

297 Fisheries Act, s 9(b) and (c).

298 Craig and Ruhl, above n 8, at 10.

299 At 11.

300 Ministry of Fisheries (2004), above n 9, at 25.

301 Craig and Ruhl, above n 8, at 20.

302 At 11.

303 A good example is the Bluenose (BSN2) AMP plan: Ministry of Fisheries (2004), above n 9, at 33–43.

certain, information to identify and evaluate the risks involved”<sup>304</sup> must be obtained *before* the activity is undertaken.

The problem, it seems, rests on the fact that New Zealand has a system that is based on setting a TAC which creates property rights and is supposed to incentivise sound environmental practices. The whole Act is focused on commercial fishers utilising their property right,<sup>305</sup> with sustainability concerns coming in at second best; a concept that is inherently at odds with AM. A good example of the dominance of commercial interests is found in the Bluenose (BSN2) AMP proposal.<sup>306</sup> Little was known about the bluenose fishery but commercial catch rates were considerably higher than the TACC. The report specifically notes that the “proposed increase in the TACC will better provide for utilisation by allowing fishers to more efficiently fish target species such as alfonsino and bluenose without having to pay deemed values”.<sup>307</sup> Sustainability was assumed to be accounted for because of the previous catch rates and the fact that an AMP would promote further research.<sup>308</sup> In this context, as opposed to research reducing uncertainty and informing decision-making, the decision was informed merely by the fact that research *would* be undertaken under an AMP. Such an approach hardly seems to be based in precaution, as AM requires.<sup>309</sup> It is more a “suck it and see” style of thinking that is specifically warned against in the RMA context.<sup>310</sup> Moreover, the fact that AMPs were implemented to increase TACC levels in order to reduce deemed value payments goes to show where the priority between sustainability and commercial utilisation lies.

### 6.3 Comparison to the RMA and EEZ Act

Both the RMA and EEZ Act have a more flexible, nuanced approach to AM, recognising it is based in ecological resilience theory and precaution. For instance, both management systems focus on obtaining a certain standard of information coupled with clear management goals before AM can be implemented.<sup>311</sup> They also both recognise that AM plans must accord with

304 *Chatham Rock Phosphate*, above n 65, at [824].

305 Certainly this is supposed to be based within the confines of sustainability, but as part 5 of this article illustrates, the sustainability provisions of the Act are not as strong as they could be and lack substantive authority especially when coupled with insufficient research.

306 Ministry of Fisheries (2004), above n 9, at 33–43.

307 At 42.

308 At 41.

309 Iorns and Stuart, above n 89, at 11.

310 *Sustain Our Sounds*, above n 57, at [125].

311 For the Resource Management Act 1991 [RMA] approach see *New Zealand King Salmon* (Board decision), above n 54, at [179]. For the EEZ approach see *Chatham Rock Phosphate*, above n 65, at [850].

certain standards, such as being able to reduce uncertainty to a sufficient level before the activity can go ahead. No such constraint is found in fisheries AMPs. In fact, fisheries AMPs act in the opposite fashion, in that they allow fishing in a new area purely on the basis that AMPs “could conceivably lead to a more reliable index of abundance”.<sup>312</sup>

The reason for these differences is that the RMA and EEZ Act provide a flexible regulatory environment that is not driven by a property rights-based ideology. Both Acts provide that resource consents are not personal or real property.<sup>313</sup> There is a strong argument that they do not create property rights at all.<sup>314</sup> Decision-makers maintain control over the way that resources are managed and the industry is not dominated by commercial interests looking to protect their rights. The problems created by valuable property rights disincentivising research are not present.<sup>315</sup> Comparatively, the Fisheries Act’s focus on quota as a property right means that the utilisation and protection of these rights trumps the Act’s environmental standards, leading to “AM lite” and ineffective environmental management.

## 7. CONCLUSION

AM is a useful tool for managing complex environmental systems faced with uncertainty.<sup>316</sup> It is inherently flexible, based in precaution, and does not require legal intervention or modification every time a rule needs to be changed.<sup>317</sup> Instead, it recognises and works with “complex, nonlinear systems where discontinuous behaviour and structural change are the norm”.<sup>318</sup> However, to operate efficiently, AM requires “a structured legal process”.<sup>319</sup>

312 Ministry of Fisheries (2004), above n 9, at 42.

313 RMA, s 122(1); EEZ Act, s 72(1).

314 *Hampton v Canterbury Regional Council (Environment Canterbury)* [2015] NZNA 509 at [99]. Compare with *Aoraki Water Trust v Meridian Energy Ltd* [2005] 2 NZLR 268 at [35]. However, there are subtleties to this argument in the RMA context. See L Fraser “Property Rights in Environmental Management: The Nature of Resource Consents in the Resource Management Act 1991” (2008) 12 NZJEL 145.

315 This is referring to the fact that in fisheries research is funded by levies paid by the fishermen and when research is likely to reduce TACCs a strong incentive to avoid any research is created. See McKoy, above n 2, at 39.

316 Craig and Ruhl, above n 8, at 39.

317 At 37.

318 CS Holling “What Barriers? What Bridges?” in LH Gunderson, CS Holling and SS Light (eds) *Barriers and Bridges to the Renewal of Ecosystems and Institutions* (Columbia University Press, New York, 1995) 3 at 19 as cited in Craig and Ruhl, above n 8, at 37.

319 Craig and Ruhl, above n 8, at 15.



AM is being utilised under the RMA and the EEZ Act. In both contexts, the courts have recognised AM's inherent pairing with precaution and need for administrative flexibility. Statutory direction and judicial interpretation has provided decision-makers with clear boundaries for when AM should be implemented, and the standards that it should meet. The same cannot be said for AM in fisheries, despite the Ministry of Fisheries 2004 Review for Sustainability<sup>320</sup> document outlining that a regulatory system under the guise of AM is currently being implemented. Instead, AM in the fisheries context amounts to what Craig and Ruhl call "AM lite",<sup>321</sup> a process dominated by uncertain objectives, boundaries, and an ineffective legislative backing.

The reason for AM's failure in fisheries management is that the Fisheries Act 1996 and AM are inherently at odds. The Fisheries Act is based on an ideology focused on allocating property rights to fishers on the basis that this will lead to environmentally sound outcomes. Instead, commercial interests dominate the industry to the detriment of sustainability concerns. For AM to be effective, incentives need to move away from promoting fishing efficiency and instead be aimed at supporting an ecosystem-based management approach that promotes sustainability, research gathering and reasonable fishing practices.<sup>322</sup>

While this article has outlined the problems associated with trying to implement AM under the current Fisheries Act, the question of how the New Zealand fisheries regulatory system could efficiently adopt AM remains. Further research could focus on whether current law could be amended to accommodate AM, whether Craig and Ruhl's blueprint for an AM legal framework<sup>323</sup> could be adopted, or whether a complete ideological and regulatory overhaul of the way fisheries are managed is needed. These questions remain important for the future of New Zealand's fisheries in the uncertain times ahead.

320 Ministry of Fisheries (2004), above n 9.

321 Craig and Ruhl, above n 8, at 10.

322 Hall and Mainprize, above n 291, at 2.

323 Craig and Ruhl, above n 8, at 63–89.