Biosecurity New Zealand
By email: caulerpa@mpi.govt.nz

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Review of exotic Caulerpa Controlled Area Notices (CANs)

SUBMITTER DETAILS

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Introduction

1. This is a submission on the review of exotic Caulerpa Controlled Area Notices (**CAN**) as proposed by Biosecurity New Zealand (**BNZ**) in its August 2025 paper.[1] The paper presents three options:

    a) Option 1: No CANS and provide the public with information encouraging good biosecurity practices
    b) Option 2: Status quo which is CANs for infested areas that meet certain criteria with varying restrictions
    c) Option 3: Introduce a cross-regional CAN covering the habitable range with stricter controls for high-risk zones.

2. The Environmental Defence Society (**EDS**) is an independent not-for-profit organisation conducting interdisciplinary policy research and litigation. It was established in 1971 with the purpose of improving environmental outcomes in Aotearoa New Zealand.

[1] https://www.mpi.govt.nz/dmsdocument/70389-Option-3/

3. EDS has a long history of policy work and submissions in the marine area and most recently reviewed the management of exotic Caulerpa in the Bay of Islands in its oceans reform case study as set out below.[2]

Findings from the Bay of Islands case study

4. The Te Rāwhiti CAN has not limited the spread of *Caulerpa brachypus and Caulerpa parvifolio* (exotic Caulerpa species) despite this being its express purpose.[3] Exotic Caulerpa was first discovered at Te Rāwhiti Inlet, Ōmakiwi Cove and Albert Channel, in May 2023, after it washed ashore.[4] There had been no prior surveillance effort in this area.

5. By the time they were discovered there, the seaweeds had already formed very thick carpets over the seafloor, indicating that they had been established for some time. BNZ concluded this was potentially the original site of the country's incursion, with Caulerpa likely present prior to May 2021, when the algae were first discovered in the Hauraki Gulf.[5]

6. In June 2023, BNZ put a CAN on Te Rāwhiti Inlet, imposing anchoring, diving and fishing restrictions. Although the CAN many have slowed the spread of Caulerpa (it is not clear whether this is the case or not) it has not been sufficient to keep it contained. In April 2024, Northland Regional Council conducted a dive surveillance survey around Northland and discovered a further infestation at Poroporo Island in Te Rāwhiti Inlet.[6] In addition, by November 2024, exotic Caulerpa covered more than 70 per cent of the seabed in Ōmakiwi Cove.[7]

7. Exotic Caulerpa has since spread to many other locations in the Bay of Islands (as well as in the Hauraki Gulf) including in bays at Urupukapuka, Motukiekie and Moturua Islands (see Figure 1). These new infestations were not found through surveillance, but were detected when a member of the public reported seaweed on an anchor in Paradise Bay at Urupukapuka Island, in early February 2025.[8]

8. It is clear that the CAN in the Bay of Islands has not worked as intended. It was arguably established too late because exotic Caulerpa had likely been present for more than two years prior. It has also not been sufficiently agile, as it was not expanded quickly to capture outliers when new infestations were discovered.

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[2] Peart R, 2025, *Caring for Te Pēwhaitangi – Bay of Islands: Oceans oceans reform case study*, Environmental Defence Society, Auckland
[3] See Exotic Caulerpa Controlled Area Notice 2024
[4] Northland Regional Council, 2024, *Wider surveillance in Northland*, Northland Regional Council, Whangārei, at 3
[5] Biosecurity New Zealand, 2024, *Summary of current known exotic caulerpa locations and summary of Biosecurity New Zealand funded removal trials or removal missions*, Biosecurity New Zealand, Wellington
[6] Northland Regional Council, 2024, *Wider surveillance in Northland*, Northland Regional Council, Whangārei, at 7
[7] Keeler S, N Barr, M Pinkerton and F Thoral, 2025, *Evaluation of exotic Caulerpa biomass reduction*, NIWA, Wellington, at 55
[8] Northland Regional Council, 2025, '$6.2M Northland exotic Caulerpa funding welcomed, media release, 26 February

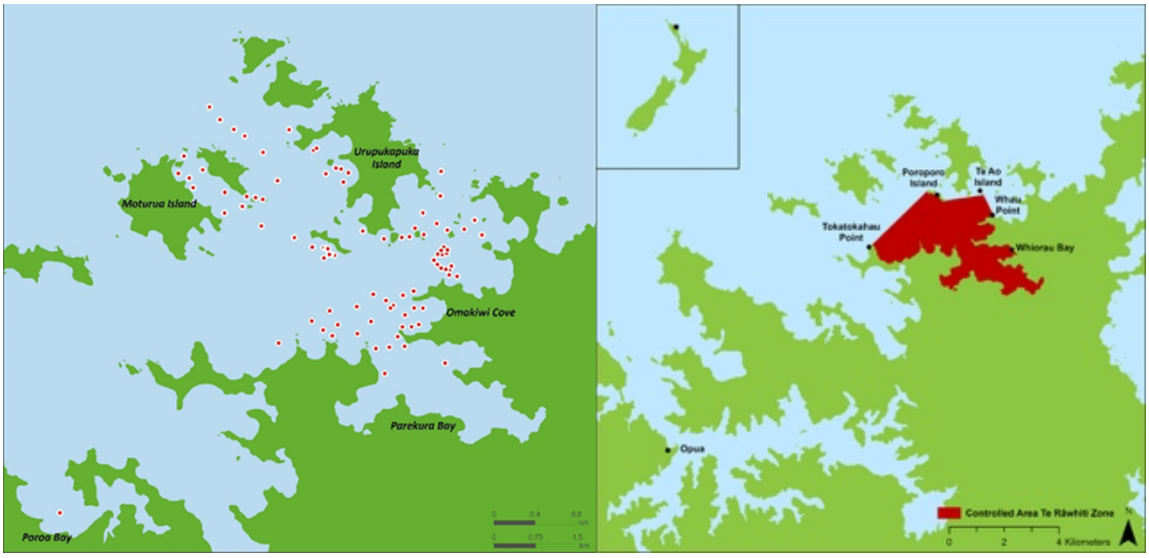

Figure 1: Location of exotic Caulerpa and CAN in Bay of Islands

9. It is uncertain what the extent of exotic Caulerpa in the Bay of Islands will ultimately be, but the Ipipiri Platform (where the main group of islands in the Bay of Islands is located) would appear particularly conducive to further spread. This area has shallow, sheltered waters and clear, well-mixed seawater.[9] It also has very high biodiversity and fisheries values. It provides a rare habitat dominated by coralline red-algae turf interspersed with subtidal seagrass beds.[10] The extensive beds of coral-like algae are unique in New Zealand and possibly the world.[11] There are also nine subtidal seagrass beds around the islands (an increasingly rare habitat)[12] which provide important juvenile habitat for snapper, parore, trevally, piper, leatherjacket and pipefish.[13] The sandy substrate (until recently) supported important scallop beds.[14]

10. The exotic Caulerpa species are fragile plants which are easily broken up by wave action, anchoring or other activities which disturb the seafloor. The fragments (as small as 1-2 mm) that disperse on currents can form new plants that infest additional areas through asexual vegetative reproduction. They can also reproduce sexually through mass spawning events.[15]

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[9] Booth J D, R Griffiths, W E Booth, R D'Archino, W A Nelson, V C Kerr and R S Willoughby, 2023, *Characterising the shallow, soft-seafloor biomes of northern New Zealand's Bay of Islands*, New Zealand Aquatic Environment and Biodiversity Report No 310, at 3

[10] Booth J D, 2018, 'Recent (post-1930) changes to the extent of subtidal seagrass (*Zostera muelleri*) beds of the eastern Bay of Islands, New Zealand', *New Zealand Journal of Marine and Freshwater Research*, 53(1), 113-127

[11] Booth J D, R Griffiths, W E Booth, R D'Archino, W A Nelson, V C Kerr and R S Willoughby, 2023, *Characterising the shallow, soft-seafloor biomes of northern New Zealand's Bay of Islands*, New Zealand Aquatic Environment and Biodiversity Report No 310, at 14

[12] Ibid, at 12

[13] Morrison M, 2021, Statement of evidence (marine ecology) Topic 14 – Marine Protected Areas, Northland Regional Coastal Plan, 19 March, at para 15

[14] Booth J D, R Griffiths, W E Booth, R D'Archino, W A Nelson, V C Kerr and R S Willoughby, 2023, *Characterising the shallow, soft-seafloor biomes of northern New Zealand's Bay of Islands*, New Zealand Aquatic Environment and Biodiversity Report No 310

[15] Keeler S, N Barr, M Pinkerton and F Thoral, 2025, *Evaluation of exotic Caulerpa biomass reduction*, NIWA, Wellington, at 7

15. It is not clear how the seaweeds will behave in the Aotearoa New Zealand marine environment over the long term. Since 2024, there have been reports of 'Caulerpa dieback' on soft sandy sediments at Aotea Great Barrier Island and Waiheke Island in the Hauraki Gulf.[16] However, there has been no reported dieback on rocky reefs.

16. Concerningly, the invasive Caulerpa kept expanding over the soft sediment seafloor at Ōmakiwi Cove, during the period where dieback was observed in the Hauraki Gulf. This may be due to warmer seawater temperatures in the Bay of Islands which are more favourable to exotic Caulerpa.

17. After Cyclone Tam hit the area, in April 2025, there was an almost 100 per cent decline at depths of 6-7 m. This did not appear to be from storm disturbance as exotic Caulerpa plants observed shortly after the event appeared healthy.[17] Potential triggers of the decline are thought to have been light limitation, sedimentation and reduced salinity as a result of the storm.[18] If this is the case they could be expected to recover.

18. Although BNZ has invested in trialling removal methods, complete elimination is now not thought possible, given the extent of the incursion, and the fast rate of spread. Most people we talked to in the Bay of Islands feared this could result in an ecological calamity. The marine environment there is already under severe pressure due to sedimentation, fishing impacts and climate change and this could be the last straw.

19. At the same time there is much at stake. The area has extraordinary biodiversity. It likely has the most diverse array of molluscs (shellfish, snails and octopuses) of any similar sized area in the country, with 551 species recorded in the 1990s.[19] There is also a wide variety of fish. The relatively steep sloping reefs along the sheltered west coast of the long finger of land leading out to Cape Brett, have clear, deep waters which are a hotspot for subtropical species. They support "some of the highest diversity of reef fish in Northland, second only to Poor Knights Islands".[20] A total of 93 fish species has been recorded there, of which over a third are subtropical or tropical.[21]

20. Given the current fragility of the Bay of Islands ecosystems the incursion could potentially drive the extinction of local indigenous species. Invasive species are more likely to take hold

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[16] AoteaGBI.News, 2025, 'Exclusive: Exotic Caulerpa mysteriously dying off across New Zealand waters', *AoteaGBI.News*, Aotea
[17] Keeler S, N Barr, M Pinkerton and F Thoral, 2025, *Evaluation of exotic Caulerpa biomass reduction*, NIWA, Wellington, at 20-21
[18] Ibid, at 57
[19] Morley M S and B W Hayward, 1999, 'Inner shelf mollusca of the Bay of Islands, New Zealand, and their depth distribution', *Records of the Auckland Museum*, 36, 119-140, at 121-122
[20] Shears N, 2021, Statement of evidence (marine ecology) Topic 14 – Marine Protected Areas, Northland Regional Coastal Plan,19 March, at [16]
[21] Brook F J, 2002, 'Biogeography of near-shore reef fishes in northern New Zealand', *Journal of The Royal Society of New Zealand*, 32(2), 243-272, at 256

where indigenous marine ecosystems are in poor health,[22] highlighting the need for a multi-faceted approach to the response.

Response to proposed CAN Options

23. As noted above, BNZ has presented three options:

    a) Option 1: No CANs and provide the public with information encouraging good biosecurity practices
    b) Option 2: Status quo which is CANs for infested areas that meet certain criteria with varying restrictions
    c) Option 3: Introduce a cross-regional CAN covering the habitable range with stricter controls for high-risk zones.

24. EDS does not consider that the status quo (Option 2) is tenable, as it would be continuing a model that has not worked in the Bay of Islands and elsewhere.

25. Nor does EDS consider Option 1 to be tenable, as only providing the public with information is very unlikely to be sufficient to control spread.

26. EDS favours a modified version of Option 3. Imposing a CAN over the entire area where exotic Caulerpa can survive would serve to alert boat owners and the public to the risk and the need to take precautionary measures. However, this needs to be coupled, as suggested by BNZ, with "stricter controls in specific high-risk zones". Such stricter controls need to go further than the ambit of CANs currently deployed for exotic Caulerpa.

27. We note that the purpose of section 131 of the Biosecurity Act 1993 is as follows (as stated in s131(1)):

    > The purpose of this section is to enable the institution of movement and other controls in order to—
    > **(a)** enable the **limitation of the spread** of any pest or unwanted organism; or
    > **(b) minimise the damage** caused by any pest or unwanted organism; or
    > **(c) protect any area from** the incursion of pests or unwanted organisms; or
    > (d) facilitate the access of New Zealand products to overseas markets; or
    > (e) monitor risks associated with the movement of organisms from parts of New Zealand the pest status of which is unknown. (emphasis added)

28. This means that a CAN can be used to limit spread, minimise damage from an incursion, or protect an area from incursion. The current CANs have been focused on just the first

[22] See Casoli E, G Mancini, D Ventura, A Belluscio and G Ardizzone, 2021, 'Double trouble: Synergy between habitat loss and the spread of alien species *Caulerpa cylindracea* (Sonder) in three Mediterranean habitats', *Water*, 13(10), 1342

element, limiting spread. EDS submits that it is now time to also focus on the second two limbs, minimising damage and protecting areas from incursion.

29. This can be achieved by identifying areas with high biodiversity and/or fishing values that are at risk from an exotic Caulerpa invasion and protecting these areas in advance. This is both to reduce the risk of new infestations as well as to minimise damage through reducing other stressors on the marine system that erode resilience.

30. We urge BNZ to identify high priority areas for strong protections (including excluding fishing activity along with anchoring where necessary). In the first instance we suggest a CAN be established around the entire Ipipiri Platform, to prevent anchoring and fishing, until the exotic Caulerpa invasion in the Bay is under control. This would help address the main source of dispersal (anchoring), as well as the main activity reducing the resilience of marine ecosystems to the seaweed invasion (fishing) there. There will also be other high value areas meriting pre-emptive protection

Conclusion

31. It is clear that the current efforts to contain exotic Caulerpa have not worked. It is therefore important that BNZ look to expand the scope of the regulations deployed within the ambit of section 131 of the Biodiversity Act.

32. EDS supports Option 3 (Cross-regional CAN) if accompanied by strengthened controls in specific high-risk zones, including pre-emptive action to protect areas of high biodiversity which are susceptible and vulnerable to incursion.