

A baseline survey of the indigenous bird values of the Hawke's Bay coastline

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Environmental Science

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Version

A baseline survey of the indigenous bird values of the Hawke's Bay coastline.

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Cover Image: A view of Puapua / Flat Rock looking northwards towards Te Kauwae-a-Māui / Cape Kidnappers.

- Executive Summary

Hawke's Bay Regional Council (HBRC) is one of several agencies that have statutory responsibilities relating to the sustainable management of the natural values of the Hawke's Bay coastline, including its indigenous bird values. To discharge these responsibilities as efficiently and effectively as possible, HBRC needs to build and maintain a detailed and up-to-date picture of the spatial distribution of indigenous bird values along the Hawke's Bay coast. Existing knowledge of patterns in the distribution and abundance of coastal birds in the Hawke's Bay region was incomplete however, so to fill this knowledge gap, a complete region-wide coastal bird survey was carried out in January 2021.

A total of 321 km of the Hawke's bay coastline was traversed either by foot or by boat, and the presence and number of all species of birds and marine mammals encountered was recorded for each separate 1 km section of coastline surveyed to enable spatial patterns in the relative abundance of key species to be mapped to a 1 km resolution.

A total of 79 bird species and two marine mammal species were detected during this survey. 57 bird species (72%) are native or endemic to New Zealand, and 28 of species (35%) are ranked as either Nationally Threatened or At Risk under the New Zealand Threat Classification System. Local indigenous species diversity was highest at estuaries, river mouths and coastal lagoons, on inshore islands and along sections of coastline with mixed rocky shore and sandy beach habitats. Maungawhio Lagoon and the eastern coast of Māhia Peninsula, Te Whanganui-a-Orotū / Ahuriri Estuary and the Pōrangahau Estuary are nationally and regionally important habitats for a range of Arctic-breeding and endemic shorebird species, including kuaka / bar-tailed godwit, ruddy turnstone, pohowera / banded dotterel and ngutu pare / wrybill. Highlights from this survey include the discovery that tūturiwhatu / New Zealand dotterels have experienced a substantial increase in population size and breeding range along the Hawke's Bay coastline since 2011, and the re-discovery of breeding hākoako / sooty shearwaters on Te Motu-o-Kura Island. We recommend changes to the regional threat status of twelve coastal bird species encountered during this survey, including four species that have become less threatened and six species that have become more threatened since the last threat assessment carried out in 2014.

We recommend that this regional coastal bird survey be repeated at five-yearly intervals to enable HBRC to maintain a complete, detailed and up-to-date picture of the indigenous bird values of the Hawke's Bay coastline, and to begin building an understanding of the regional population trends of regionally threatened coastal bird species. We also recommend that the results of this survey be used to re-assess HBRC's network of coastal Significant Conservation Areas (SCAs) to ensure that the SCA network includes coastal habitats that support internationally, nationally and regionally significant indigenous bird populations and communities.

Version

Keywords: Coastal bird survey, Hawke's Bay Regional Council, Maritime New Zealand, mobile species, National Policy Statement for Indigenous Biodiversity, New Zealand Threat Classification System, oiled wildlife response, Resource Management Act (1991), Significant Conservation Area

1. Introduction

The 361 km of coastline in the Hawke's Bay region supports a high diversity of indigenous bird species, many of which are ranked as either Nationally Threatened or At Risk under the New Zealand Threat Classification System (NZTCS) (Robertson et al, 2017). A number of these species are highly mobile and are heavily reliant on habitats within the Hawke's Bay coastal marine area for foraging, roosting and breeding either year-round, or during key parts of their annual lifecycles. Furthermore, many of these species are particularly vulnerable to human activities that result in the disturbance, degradation or destruction of these habitats (Woodley, 2012; Gartrell et al, 2019).

Hawke's Bay Regional Council (HBRC) is one of several agencies that have statutory responsibilities relating to the sustainable management of the natural values of the Hawke's Bay coastline, including its indigenous bird values. To discharge these responsibilities as efficiently and effectively as possible, HBRC needs to build and maintain a detailed and up-to-date picture of the spatial distribution of indigenous bird values along the Hawke's Bay coast. At present however, information describing the indigenous bird values of the Hawke's Bay coastline is very patchy. Detailed data is available to describe the indigenous bird values of known high-value coastal sites such as Te Whanganui-a-Orotū / Ahuriri Estuary and the Pōrangahau Estuary, sites which are usually surveyed up to three times a year as part of Birds New Zealand's [National Wader Survey](#). Additional bird occurrence data for other sections of the Hawke's Bay coastline can also be sourced from the [New Zealand eBird](#) database, an online open-access database containing several hundred thousand bird observations collected by skilled citizen scientists from throughout the country (eBird, 2021). However, eBird occurrence data for the Hawke's Bay coastline tend to be concentrated along easily accessible stretches of coast close to Napier, Hastings or smaller outlying coastal settlements, leaving large sections of coastline for which little or no bird occurrence data is available.

To fill this knowledge gap, HBRC carried out a complete and systematic survey of the indigenous bird values of the Hawke's Bay coastline in January 2021, to create a regional-scale baseline measure of the diversity, distribution and abundance of indigenous birds inhabiting the Hawke's Bay coastline, against which future changes in distribution and population size can be measured. The resulting dataset will contribute towards informing regional- and local-scale natural resource management policy and conservation management decision-making in the following areas:

1. Updating the identification and spatial mapping of Significant Conservation Areas along the Hawke's Bay coastline

Regional Councils in New Zealand have a statutory responsibility under the Resource Management Act 1991 (RMA) to sustainably manage coastal environments in New Zealand. Under the RMA, all regional councils are required to prepare a Regional Coastal Plan that gives effect to the New Zealand Coastal Policy Statement (NZCPS) (DOC, 2010). The purpose of these plans is to assist councils in achieving the sustainable management of their coastal environments, by outlining objectives, policies and rules that govern which activities councils will allow, control or prohibit in the coastal environment.

Section 6(c) of the RMA provides a mechanism that contributes to the sustainable management of coastal sites with high natural values, by directing HBRC's Regional Coastal Environment Plan to "identify ecosystems and habitats with significant biodiversity values".

To meet this requirement, HBRC has identified a network of Significant Conservation Areas (SCAs) along the Hawke's Bay coastline, based on work carried out by the Department of Conservation (DOC) in the early 1990s (HBRC, 2014a; Lundquist et al, 2020). Given the changes that have occurred to coastal habitats and in the distribution and abundance of coastal indigenous bird species in Hawke's Bay over the intervening years, the spatially explicit dataset created by this survey will create a timely opportunity to review and update the indigenous bird values of existing SCAs along the Hawke's Bay coastline, and to identify additional SCAs that now meet relevant selection criteria.

2. Improving regional Maritime New Zealand Oiled Wildlife Response preparedness

Under Sections 283 and 284 of the Maritime Transport Act (1994), Maritime New Zealand (MNZ) is required to create and update a New Zealand Marine Oil Spill Readiness and Response Strategy, outlining how MNZ and its partners will respond to a marine oil spill incident in New Zealand (MNZ, 2018). As part of this strategy, MNZ has signed Memoranda of Understanding with local government agencies to build national- and regional-scale capability and infrastructure to respond to marine oil spill incidents. Under its MOU with MNZ, HBRC has committed to contribute expertise, equipment and other resources to respond to both Tier 2 and Tier 3 oil spills – those spills that occur at a scale or for a duration that is beyond the capability of the individual operator to respond to (HBRC, 2014b; MNZ, 2018).

By creating the first complete picture of the spatial distribution of indigenous bird values along the Hawke's Bay coastline, the results of this survey will greatly improve HBRC and MNZ's capability to predict the location and severity of oiled wildlife incidents associated with marine oil spills, and as a result these agencies will be able to mount a much more rapid and efficient response to such incidents. This baseline measure of the distribution and abundance of coastal indigenous bird species will also provide a comprehensive benchmark against which any adverse impacts of future marine oil spills, and the effectiveness of efforts to control, contain or manage the impacts of these spills, can be quantified. This outcome aligns with one of the four principles of MNZ's Marine Oil Spill Readiness and Response Strategy, namely to "use information, research and expertise as key enablers", and in turn aligns with Objective 2.4 of the Strategy, namely to "undertake study and research and gather data to improve the environmental and technical knowledge needed to maintain and enhance New Zealand's readiness and response system" (MNZ, 2018).

3. Informing regional threat classification rankings

HBRC and DOC have been working together in recent years to develop a system for assigning regional threat classification rankings to all of Hawke's Bay's bird species, using New Zealand Threat Classification System criteria that have been modified to be applicable at a regional, rather than national, scale (Townsend et al, 2008; HBRC, unpublished data). Regional threat rankings are increasingly being used by regional councils to inform regional conservation management priorities, as they provide a more accurate representation of the regional threat status of bird species which may be faring better or worse in a particular region than they are at a national scale. To assign appropriate regional threat rankings to Hawke's Bay's bird species, accurate estimates of both regional population sizes and trends are required. One further outcome of this coastal bird survey is that it will enable HBRC to create baseline

regional population size estimates for several bird species that are either entirely, or partly, restricted to coastal habitats in the Hawke’s Bay region. These population estimates will therefore allow more accurate and evidence-based regional threat rankings to be assigned to these species, leading to improvements in the sustainable management of these species and their habitats in the Hawke’s Bay region.

4. Implementing the Proposed National Policy Statement for Indigenous Biodiversity

The Ministry for the Environment (MFE) has prepared a [Proposed National Policy Statement for Indigenous Biodiversity](#) (PNPSIB), which has recently been released for public consultation. This proposed National Policy Statement sets out objectives and policies for local government agencies to manage natural and physical resources in order to maintain indigenous biodiversity as required by the Resource Management Act (1991). Although the PNPSIB does not strictly apply to indigenous biodiversity found in the coastal marine area, Policy 13 of the PNPSIB does require local government agencies to “identify the possible presence of, and manage, highly-mobile fauna” (MFE, 2019). More specifically, the PNPSIB requires each regional council to work with local territorial authorities “to survey and record areas outside Significant Natural Areas where highly mobile fauna have been, or are likely to be, sometimes present” and to “include objectives, policies or methods in their policy statements and plans for managing the adverse effects of subdivision, use and development in highly mobile fauna areas, as necessary to maintain viable populations of highly mobile fauna across their natural range” (MFE, 2019).

Many of the indigenous bird species present along the Hawke’s Bay coastline meet the PNPSIB definition of being “highly-mobile fauna¹”. These include endemic shorebird species such as the pohowera / banded dotterel (*Charadrius bicinctus*) and tōrea / South Island pied oystercatcher (*Haematopus finschi*), which migrate annually between inland breeding grounds in the spring and summer months to coastal non-breeding sites in the autumn and winter (Heather & Robertson, 2015). By mapping the distribution and abundance of these mobile species along the Hawke’s Bay coastline during summer, this survey will fill substantial gaps in HBRC’s knowledge of the regional distribution of these mobile bird species during the summer months in Hawke’s Bay, therefore partially implementing Policy 13 of the PNPSIB.

This report provides a summary of the results of this first complete survey of the bird values of the Hawke’s Bay region coastline and provides a number of recommendations for how the information gained can be used to update the mapping of Significant Conservation Areas, to improve regional oiled wildlife response preparedness, to update regional threat rankings and to contribute towards the implementation of the PNPSIB. This report also includes recommendations for further survey and monitoring work required to ensure that HBRC continues to maintain and improving its knowledge of the spatial distribution, population trends and threats facing the Hawke’s Bay region’s coastal bird fauna.

¹ Under the PNPSIB, highly mobile fauna are those tax that are “highly mobile, where some individuals move between different environments during their lifecycle...and for the purposes of [the] PNPSIB, include only threatened or at-risk species.

2. Methods

- 2.1 Survey area

A bird survey was carried out along a total of 321 km of coastline in the Hawke's Bay region between the 5th and 22nd of January 2021. The majority of the mainland coastline was surveyed on foot, whereas the Napier Port foreshore and Te Motu-o-Kura / Bare Island were both surveyed by boat. Waikawa / Portland Island was surveyed by DOC staff during November 2020 (Figure 2.1).

Due to access issues, 39.6 km of the Hawke's Bay region coastline could not be traversed during this survey. Two kilometres of coastline between Mahanga Beach and the northern boundary of the Hawke's Bay region, and 1.6 km of the coastline between the Whangaehu River mouth and the southern boundary of the region could not be surveyed due to the presence of steep cliffs falling directly into the sea. A further 20 km of the western coastline of Māhia Peninsula could not be surveyed due to landowners refusing access, and 16 km of coastline between Waimārama Beach and the Te Apiti Stream mouth could not be surveyed due to a combination of steep cliffs and unfavourable tides (Figure 2.1).

Each of the sections of coastline that were missed during this survey are comprised of either sheer cliffs or a narrow, rocky shoreline, so provide relatively poor-quality habitat for coastal-breeding bird species. For this reason, the exclusion of these shoreline sections is unlikely to have resulted in many coastal-breeding birds being missed, with the possible exception of gulls and shags. This being the case, we do not consider it to be cost-effective for the short sections north of Mahanga Beach or south of the Whangaehu River mouth to be surveyed by boat during future surveys. Similarly, we do not consider it cost effective to conduct a standalone boat survey of the coastline between Waimārama Beach and the Te Apiti Stream mouth, however it may be worthwhile combining a boat survey of this section of coastline with a boat survey of Te Motu-o-Kura / Bare Island. A boat survey along the western coastline of Māhia Peninsula may be worthwhile during future coastal bird surveys, however the presence of rocks and rocky wave platforms off this coast may make it difficult for a boat to approach close enough to shore to carry out a sufficiently thorough and systematic survey.

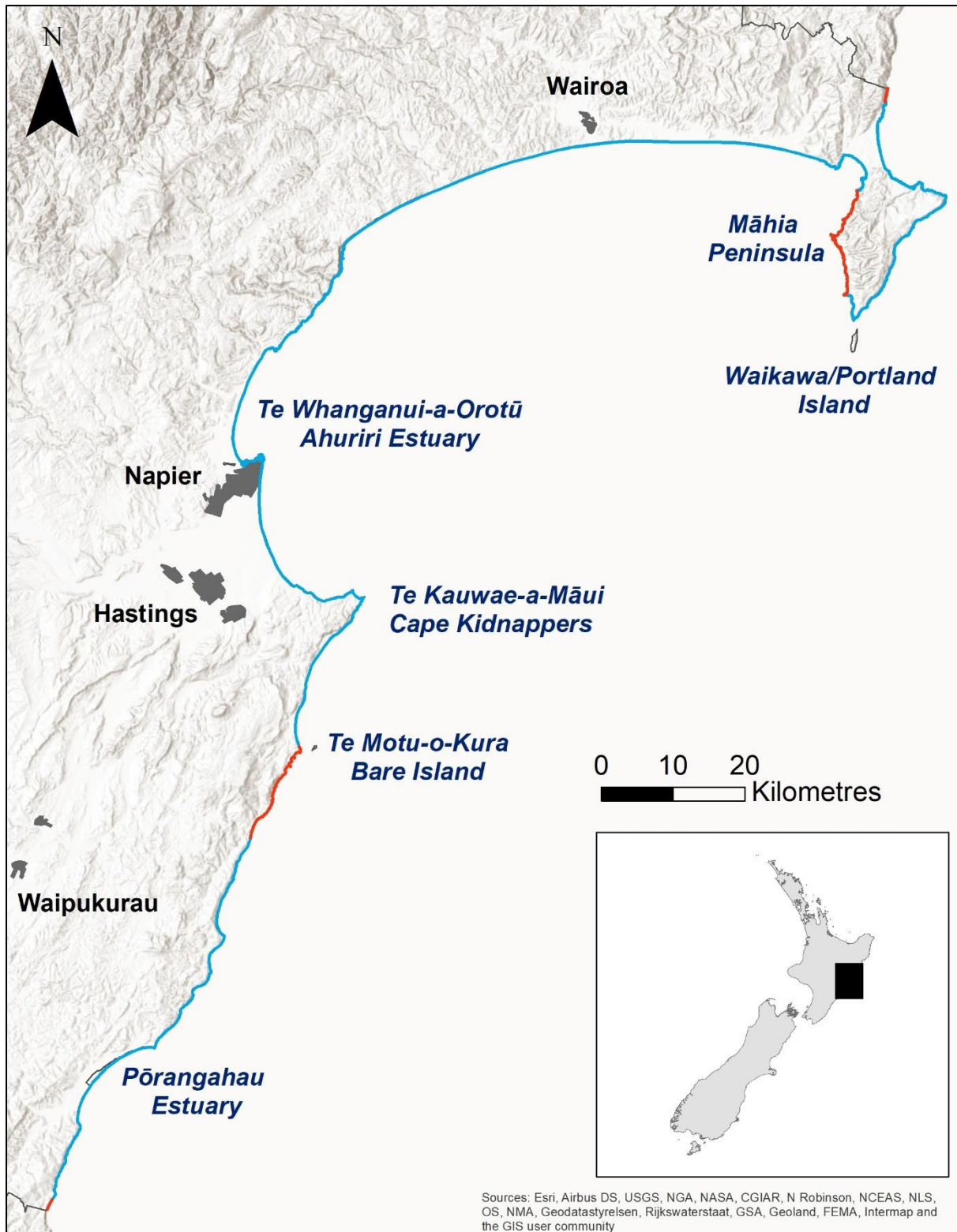


Figure 2.1: Extent of the Hawke's Bay region coastline surveyed in January 2021 (blue coastline section). Sections of coastline that were not surveyed are marked in red and the northern and southern boundaries of the Hawke's Bay region are marked with a dark grey line.

- 2.2 Field methods

This survey was carried out during the shorebird breeding season, at a time of year when the majority of a number of coastal-breeding shorebirds were occupying established breeding territories and were 'anchored' to active nests or broods of chicks. Carrying out these surveys at a time of year during which a number of these species were relatively sedentary therefore minimised the risk of double-counting birds that would be more likely to disperse over larger distances along the coastline in other seasons. All surveys were carried out during fine weather, and in relatively calm sea conditions.

When surveying the mainland coastline, one or two observers walked along the foreshore, usually near the high tide mark, recording the identity and numbers of all birds and marine mammals seen or heard, including any birds or marine mammals encountered on the foreshore as well as any detected either offshore or further inland. Any birds seen flying overhead were also counted, provided they were flying in a direction perpendicular or opposite to the direction of travel of the observer(s). Birds flying in the same direction that the observer(s) were travelling in were not counted, to minimise the risk of double-counting birds. Special care was taken to systematically scan all areas of dry, un-vegetated gravels or sand on the foreshore, and any muddy backwaters, seepages, ponds, lagoons, rock pools, rock platforms, rocky islands and rock outcrops encountered along the coast to minimise the risk of missing key shorebird taxa such as dotterels, oystercatchers, gulls, terns and herons. Separate counts were recorded for each 1 km section of coastline traversed, so that spatial patterns in the distribution and relative abundance of coastal birds could be mapped to a 1 km spatial resolution. These 1 km sections were mapped out in advance of the survey and were aligned with the point on the Hawke's Bay coastline where the northern boundary of the Hawke's Bay region meets the coast. In addition to conducting a separate bird count for each 1 km section of shoreline traversed, individual bird counts were also carried out at a pre-defined network of 65 estuaries, river mouths, coastal lagoons and wetlands along the Hawke's Bay coastline.

To survey the foreshore of Te Motu-o-Kura / Bare Island, several observers circumnavigated the island in a small boat at a speed of approximately five knots, recording the identity and numbers of all bird species seen and heard on the island or flying offshore. The survey vessel circumnavigated the island at a distance of 50 m - 100 m from the shoreline, however this distance was occasionally extended to up to 200 m, in order to avoid navigational hazards such as submerged rocks. Two observers also landed on Motu-o-Kura Island for a period of two hours to search for evidence of burrow-nesting seabirds. The foreshore of Waikawa / Portland Island was not surveyed during January 2021, because DOC staff had already carried out a comprehensive bird survey around the island's foreshore during the preceding November and had kindly made these data available to us for inclusion in this report.

In addition to counting all birds that were detected, the locations of any active nests or nesting colonies, and any dependent chicks or recently fledged young encountered along the coastline were recorded using handheld GPS devices.

- 2.3 Data analysis

These survey data were double-entered into a Microsoft Excel™ spreadsheet for two-pass data verification, and the verified dataset was then used to calculate total and mean bird counts for individual survey sections and for the entire region. Raw bird count data was also imported into ArcMap version 10.8.1, which was then used to construct the bird and marine mammal distribution maps included in this report.

A copy of the Microsoft Excel™ data spreadsheet containing these survey data, together with scanned copies of the field datasheets, have been provided to HBRC. A copy of this dataset has also been uploaded to the [New Zealand eBird](#) database, an open-access bird observation database jointly maintained by [Birds New Zealand](#) and the [Cornell Lab of Ornithology](#).

3. Results

- 3.1 Spatial patterns in species diversity

Seventy-nine bird species and 32,660 individual birds were detected during this survey of the Hawke’s Bay region coastline (see Appendix One). 57 of these species (72%) are native to New Zealand and the remaining 22 species (28%) are introduced and naturalised species.

Twenty-eight of the bird species detected (35%) are ranked as either Nationally Threatened or At Risk under the New Zealand Threat Classification System (Figure 3.1), including four species ranked as Nationally Critical, one species ranked as Nationally Endangered, four species ranked as Nationally Vulnerable, eight species ranked as At Risk, Declining, two species ranked as At Risk, Relict, four species ranked as At Risk, Recovering and five species ranked as At Risk, Naturally Uncommon (Robertson et al, 2017; Table 3.1).

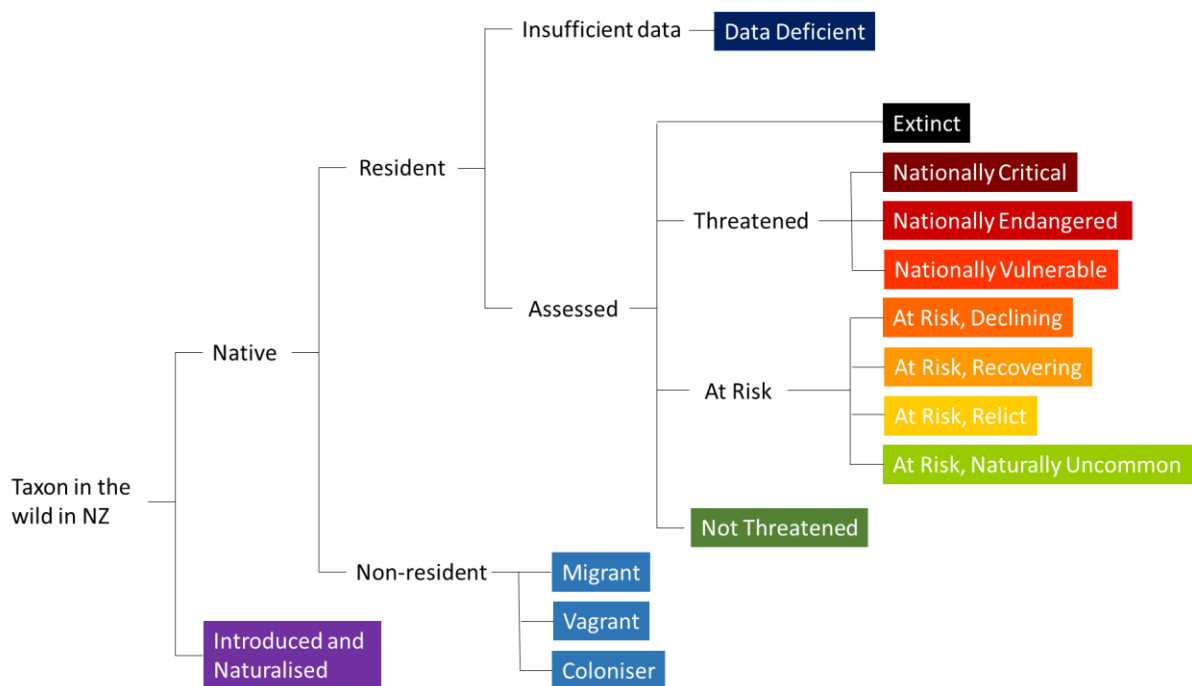


Figure 3.1: New Zealand Threat Classification System national threat rankings (adapted from Townsend et al, 2008).

Table 3.1: List of bird species detected during this survey that are ranked as Nationally Threatened or Nationally At Risk under the New Zealand Threat Classification System.

NZTCS national threat ranking	Species detected during this survey
Nationally Critical	pārera / grey duck, matuku hūrepo / Australasian bittern, tuturuatu / shore plover, tarāpuka / black-billed gull
National Endangered	matuku moana / reef heron
Nationally Vulnerable	huahou / lesser knot, pohowera / banded dotterel, ngutu pare / wrybill, taranui / Caspian tern
At Risk, Declining	Kororā / little penguin, hākoako / tītī / sooty shearwater, kuaka / bar-tailed godwit, tōrea / SI pied oystercatcher, tarāpunga / red-billed gull, tara / white-fronted tern, koroātito / fernbird, pīhoihoi / NZ pipit
At Risk, Relict	pakahā / fluttering shearwater, takahikare / white-faced storm petrel
At Risk, Recovering	Weweia / NZ dabchick, kāruhiruhi / pied shag, tōrea pango / variable oystercatcher, tūturiwhatu / NZ dotterel
At Risk, Naturally Uncommon	Buller's shearwater, kawau / black shag, kawau tūi / little black shag, kotuku ngutupapa / royal spoonbill, black-fronted dotterel

Nineteen of the bird species detected (24%) are ranked as Regionally Threatened, and none are ranked as Regionally At Risk in the Hawke's Bay region under the New Zealand Threat Classification System (Figure 3.2), including 12 species ranked as Regionally Critical, three species ranked as Regionally Endangered and four species ranked as Regionally Vulnerable (HBRC, unpublished data; Table 3.2).

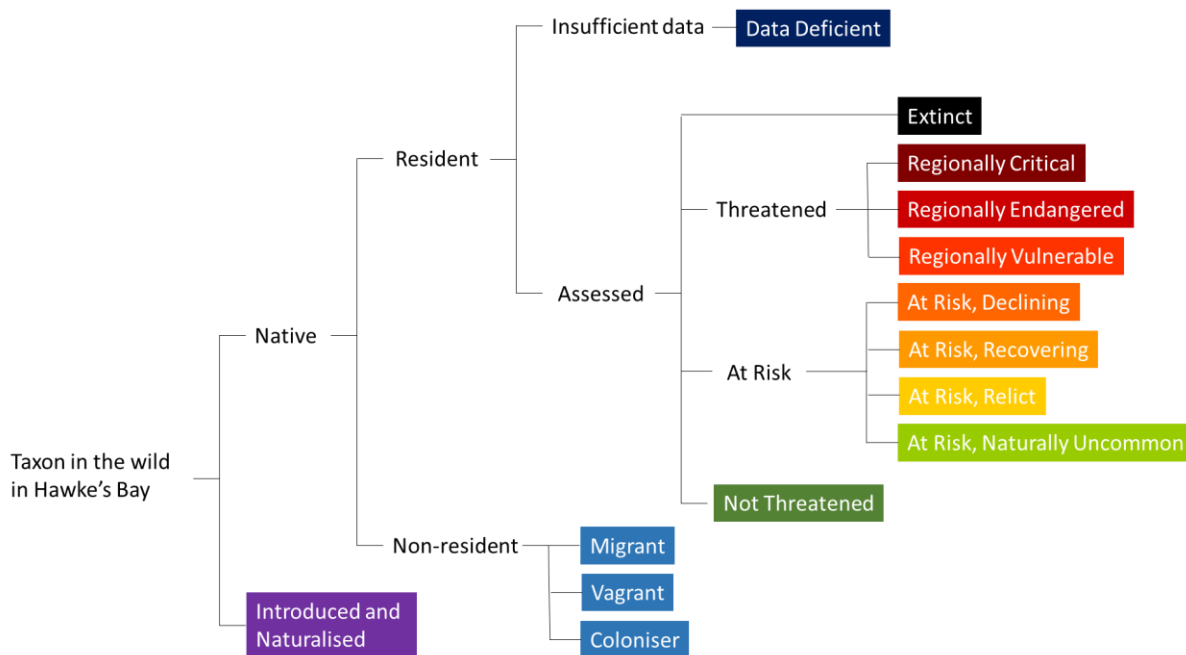


Figure 3.2: New Zealand Threat Classification System regional threat rankings (adapted from Townsend et al, 2008).

Table 3.2: List of bird species detected during this survey that are ranked as Regionally Threatened under the New Zealand Threat Classification System.

NZTCS national threat ranking	Species detected during this survey
Regionally Critical	pārerā / grey duck, black-winged petrel, takahikare / white-faced storm petrel, matuku moana / reef heron, matuku hūrepo / Australasian bittern, kotuku ngutupapa / royal spoonbill, tōrea pango / variable oystercatcher, tōrea / SI pied oystercatcher, tūturiwhatu / NZ dotterel tuturuatu / shore plover, tarāpuka / black-billed gull, taranui / Caspian tern
Regionally Endangered	weweia / NZ dabchick, kawau paka / little shag, kuaka / bar-tailed godwit
Regionally Vulnerable	matuku moana / white-faced heron, poaka / pied stilt, pohowera / banded dotterel, tarāpunga / red-billed gull

The local diversity of indigenous bird species varied considerably along the Hawke’s Bay coastline. Larger estuaries and river mouths were hotspots of high species richness, including the Maungawhio Lagoon, Wairoa Estuary, Mohaka River estuary, Te Whanganui-a-Orotū / Ahuriri Estuary, the Ngaruroro and Tukituki River Estuaries and the Pōrangahau Estuary. The network of coastal lagoons to the east of Wairoa, including Paraoa and Whakaki Lagoons were also regional hotspots of high species diversity, as were Hawke’s Bay’s two inshore islands, Waikawa / Portland Island and Te Motu-o-Kura / Bare Island. Stretches of the mainland coastline that possessed a heterogeneous mix of

habitats including a mix of sandy or shingle beaches and intertidal rock platforms also supported a higher diversity of indigenous bird species, including the eastern coastline of Māhia Peninsula, the coastline between Tangoio and the Moeangiāngi River, and the coastline between Pōrangahau and Purerere beaches. In contrast, stretches of the mainland coastline that possessed homogenous stretches of uninterrupted sandy and shingle beaches supported a relatively low diversity of indigenous bird species (Figure 3.3).

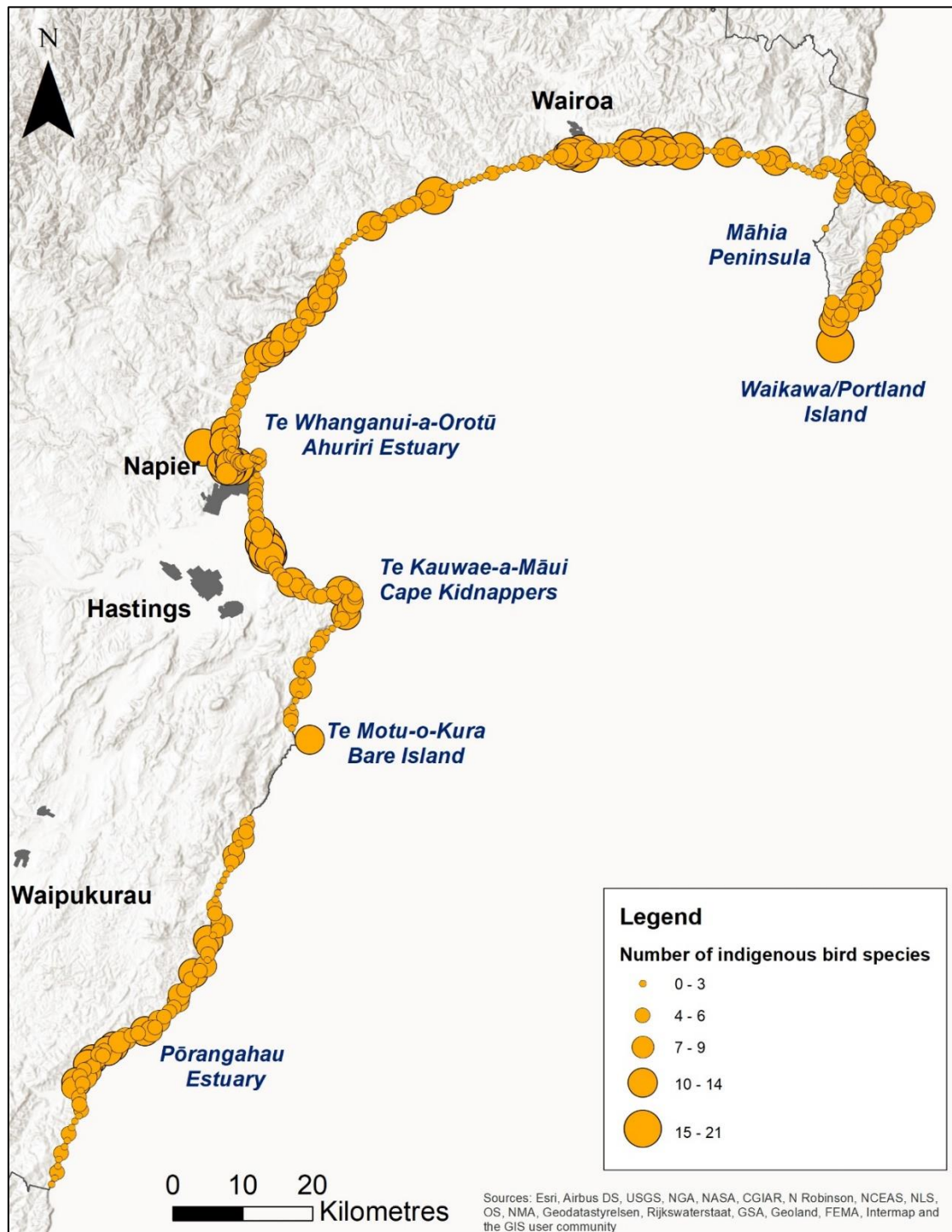


Figure 3.3: Spatial patterns in the species richness of indigenous bird species along the Hawke's Bay coastline.

Among the 65 estuaries and coastal lagoons surveyed, Te Whanganui-a-Orotū / Ahuriri Estuary supported the highest diversity of indigenous birds with 33 species and 3,356 individuals counted. The Pōrangahau Estuary supported the second highest number of indigenous bird species, with 24 species and 1,311 individuals counted, and the Maungawhio Lagoon supported the third highest number of species, with 22 species and 420 individual birds counted (Table 3.3). An average of 7.9 indigenous bird species and 177 individual birds was counted at each of the 65 estuaries and coastal lagoons surveyed.

Table 3.3: List of Hawke’s Bay estuaries and coastal lagoons surveyed in January 2021, ranked in descending order according to the number of indigenous bird species encountered at each site.

Rank	Site Name	Number of indigenous species counted	Total number of indigenous birds counted
1	Te Whanganui-a-Orotū / Ahuriri Estuary	33	3,356
2	Pōrangahau Estuary	24	1,311
3	Maungawhio Lagoon	22	420
4	Tukituki Estuary	19	404
5	Mohaka River estuary	19	219
6	Wairoa River estuary	18	482
7	Paraoa Lagoon	17	839
8	Muddy Creek	17	268
9	Whakaki Lagoon	16	282
10	Nuhaka River mouth	15	92
11	Punakarau Stream mouth	13	39
12	Whakaki Beach Road lagoon	12	154
13	Oepoto Stream mouth	12	214
14	Whakaki Lagoon outlet	11	44
15	Waitangi Estuary (Ngaruroro River estuary)	11	1047
16	Waikari River mouth	11	20

Rank	Site Name	Number of indigenous species counted	Total number of indigenous birds counted
17	Pakuratahi Stream mouth	11	36
18	Aropaoanui River mouth	11	98
19	Tahaenui River mouth	10	76
20	Pourerere Stream mouth	10	81
21	Waipapa Stream mouth	9	16
22	Waikaraka Stream mouth	9	43
23	Ngamotu Lagoon	9	258
24	Haunui Stream mouth	9	118
25	Whakamahi Lagoon	8	41
26	Ohuia Lagoon south	8	75
27	Maraetotara River mouth	8	32
28	Whangawehi Stream mouth	7	16
29	Waimahaki Stream mouth	7	50
30	Unnamed wetland between Wairau and Paraoa Lagoons	7	153
31	Waitupatu Stream mouth	6	39
32	Waiotia Stream mouth	6	16
33	Moeangiangi River mouth	6	18
34	Esk River mouth	6	233
35	Waitaha Stream mouth	5	39
36	Wainui Stream mouth	5	27
37	Waingongoro Stream mouth	5	18
38	Waikoukou Stream mouth	5	22
39	Tawapata Stream mouth	5	15
40	Ponui Stream mouth	5	27

Rank	Site Name	Number of indigenous species counted	Total number of indigenous birds counted
41	Orait Stream mouth	5	14
42	Ohuia Lagoon north	5	438
43	Mangakuri River	5	115
44	Whangaehu River mouth	4	15
45	Wairau Lagoon	4	17
46	Waihua River mouth	4	7
47	Waihakeke Stream mouth	4	5
48	Taiwananga Stream mouth	4	15
49	Puhokio Stream mouth	4	18
50	Waiopine Stream mouth	3	9
51	Waikokopu Stream mouth	3	4
52	Taiporutu Stream mouth	3	54
53	Opoutama Stream mouth	3	27
54	Kowhiro Stream mouth	3	13
55	Kapikaraka Stream mouth	3	6
56	Waipia Stream mouth	2	6
57	Karaka Stream mouth	2	2
58	Wainuiorangi Stream mouth	1	6
59	Waikekeno Stream mouth	1	4
60	Tangawa Stream mouth	1	3
61	Petipeti Stream mouth	1	2
62	Opoho Stream mouth	1	1
63	Kahotea Stream mouth	1	2
64	Waingaroa Stream mouth	0	0
65	Waianiwaniwa Stream mouth	0	0

- 3.2 Spatial patterns in species abundance

In the following sections of the report, we have mapped spatial patterns in the abundance of 23 of the 57 native bird species that were detected along the Hawke's Bay coastline. These species have been chosen either because they are entirely restricted to coastal habitats (e.g., tūturiwhatu / New Zealand dotterel and matuku moana / reef heron), or because these coastal survey data can be combined with other regional-scale datasets (e.g., pohowera / banded dotterel) to estimate the total regional population size and map the regional distribution of these species.

- 3.2.1 Pohowera / banded dotterel (*Charadrius bicinctus*)



Image courtesy of Rebecca Bowater/NZ Birds Online

National conservation status:

Nationally Vulnerable (Robertson et al, 2017)

Regional conservation status:

Regionally Vulnerable (HBRC, unpublished data)

A total of 395 adult pohowera / banded dotterels were counted during this survey, occupying 50 (15%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.4). Pohowera / banded dotterels were not uniformly distributed along

the coastline, instead the majority of birds were clustered within four short sections of coastline. One hundred and ten birds (28% of the regional coastal breeding population) were encountered along the northern and eastern coastlines of Māhia Peninsula and on Pukenui Beach. A further 36 birds (9% of the regional coastal breeding population) occurred at the Wairoa and Mohaka River mouths; 139 birds (35% of the regional coastal population) were found on the shingle beaches between Bay View and Haumoana, and 90 birds (23% of the regional coastal breeding population) were found at the Pōrangahau Estuary and at Aramoana (Figure 3.4). This highly clustered distribution is similar to that found recently along the Wairarapa and Wellington coastlines, and appears to be a consequence of the preference of pohowera / banded dotterels for breeding on sections of coastline that have comparatively wide expanses of unvegetated gravel or sand (McArthur et al, 2019; McArthur 2020a). These habitats tend to occur at river mouths, estuaries and on headlands, however one feature of the distribution of pohowera / banded dotterels along the Hawke's Bay coastline is the comparatively large number of birds that were found breeding along long uninterrupted sections of wide shingle beach between Bay View and Haumoana. Most of these birds were not associated with river mouths, estuaries or headlands, and were experiencing very high levels of disturbance by recreational beach users.

Over the past two summers, HBRC has also carried out census counts of breeding pohowera / banded dotterels along the Tutaekuri and Ngaruroro Rivers and the Tukituki River and its tributaries. During

October – November 2020, a total of 2,564 adult pohowera / banded dotterels were counted on these three rivers (McArthur et al, 2021). By combining the results from these river surveys with the results from this coastal survey, we estimate that the Hawke’s Bay region currently supports a population of 2,959 adult pohowera / banded dotterels. Given that the national/global pohowera / banded dotterel population is estimated to be around 19,000 birds (Hansen et al, 2016), we estimate that the Hawke’s Bay region supports approximately 16% of the global population of this species. By comparison, the Greater Wellington region is currently estimated to support a population of 741 pohowera / banded dotterels², which represents approximately 4% of the global population (McArthur, 2020a).

Because this is the first survey to generate a pohowera / banded dotterel population estimate for the entire Hawke’s Bay coastline, the population trends of coastal breeding pohowera / banded dotterels in the Hawke’s Bay region are unknown. However, census surveys carried out on Hawke’s Bay rivers suggest that populations of riverbed-breeding pohowera / banded dotterels in the region have been either stable or increasing over the past 60 years (McArthur et al, 2021). Applying this new regional population estimate of 2,959 pohowera / banded dotterels to the NZTCS criteria and assuming a stable population trend, we confirm that the pohowera / banded dotterel should continue to be ranked as Regionally Vulnerable in the Hawke’s Bay region based on criterion B(1/1): 1000-5000 mature individuals; stable $\pm 10\%$ (Townsend et al, 2008). We recommend that this ranking be given the qualifiers CD (Conservation Dependent), CI (Climate Impacts) and DPT (Data Poor Trend) according to the qualifier definitions provided by Rolfe et al, (2021).

² Comprising 346 birds breeding along the Greater Wellington region coastline, a further 344 birds breeding on riverbeds in the Ruamāhanga and Opouawe River catchments in the Wairarapa, and an additional 51 birds breeding on the bed of the Ōtaki River (McArthur, 2020a).

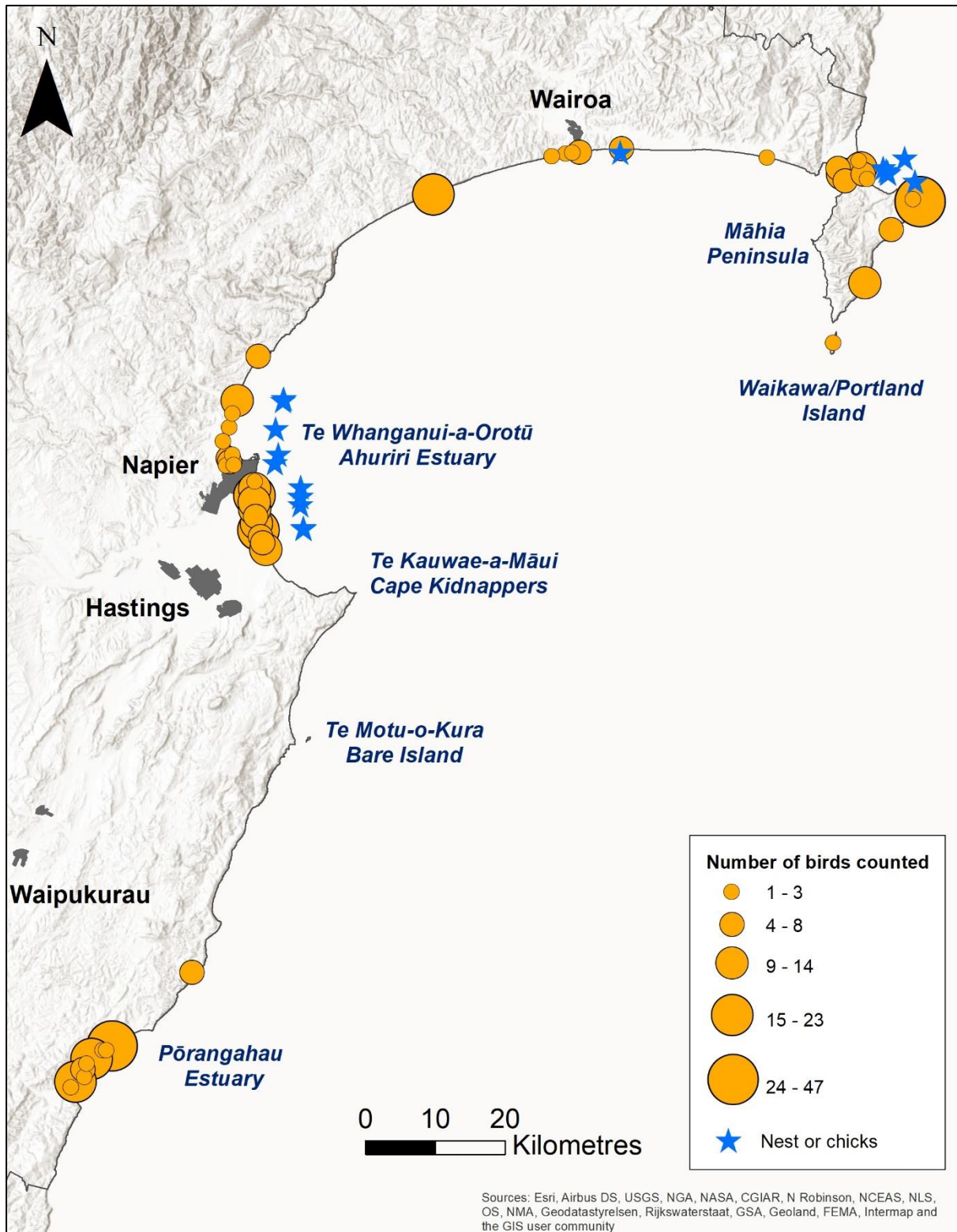


Figure 3.4: Distribution, relative abundance and breeding observations of pohowera / banded dotterels along the Hawke's Bay coastline. Note, the blue star symbols on the map have been offset to the right of the locations at which pohowera / banded dotterels were observed breeding, for the sake of clarity.

- 3.2.2 Kuaka / bar-tailed godwit (*Limosa lapponica*)



Image courtesy of Phil Battley/NZ Birds Online

National conservation status: At Risk, Declining (Robertson et al, 2017)

Regional conservation status:

Regionally Endangered (HBRC, unpublished data)

A total of 1,218 kuaka / bar-tailed godwits were encountered during this survey, occupying 50 (15%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.5). Kuaka / bar-tailed godwits were not uniformly distributed along

the coastline, instead all of the birds were clustered within four short sections of coastline. Three hundred and sixty-one birds (30% of the regional population) were encountered along the northern and eastern coastlines of Māhia Peninsula, on Pukenui Beach, Maungawhio Lagoon and on Waikawa / Portland Island. A further 71 birds (6% of the regional population) occurred at the Wairoa River mouth; 184 birds (15% of the regional population) occurred at Te Whanganui-o-Orotū / Ahuriri Estuary, and 601 birds (49% of the regional population) were found between Kairakau Beach and the Whangaehu River mouth, including the Pōrangahau Estuary (Figure 3.5). The majority of these birds were encountered at estuaries and rivermouths, though significant numbers also occurred on intertidal rock platforms and on sandy beaches on the eastern coastline of Māhia Peninsula and along the southern Hawke's Bay coastline between Kairakau Beach and the Whangaehu River.

The vast majority of the kuaka / bar-tailed godwits that visit New Zealand each summer breed in Alaska and undertake a remarkable non-stop, trans-Pacific migration to spend the southern hemisphere summer at coastal sites in eastern Australia and New Zealand. On their return northward migration, these birds reach Alaska via stop-over sites in eastern Asia, particularly the estuaries of the Yellow Sea (Higgins & Davies 1996). The kuaka / bar-tailed godwit is the most common Arctic-breeding shorebird species that occurs in New Zealand, however the number of birds visiting New Zealand each summer has declined by 6% since the early 1980s (Riegen & Sagar, 2020). Between 1983 and 1993 an average of 83,133 birds were counted during Birds New Zealand summer wader surveys each year, whereas an average of 77,796 birds were counted during surveys carried out between 2005 and 2019 (Riegen & Sagar 2020). Coastal mudflats on the shores of the Yellow Sea are an important stopover habitat for this species during migration, so it is likely that recent extensive losses of these habitats due to large-scale land reclamation projects in China and South Korea is the leading cause of the substantial decline observed in this species (Studds et al, 2017; Riegen & Sagar, 2020). The majority of the kuaka / bar-tailed godwits that occur in New Zealand each year are found on the harbours and estuaries of Northland, Auckland, the Bay of Plenty and Tasman regions, with relatively small numbers present in the lower North Island (Riegen & Sagar, 2020). In February 2020, the first dedicated census of kuaka / bar-tailed godwits to be carried out in Australasia resulted in 81,549 birds being counted in New Zealand and a further 34,897 birds were counted in Australia (Schuckard et al, 2020). Based on this

national population estimate, the 1,218 kuaka / bar-tailed godwits observed during this survey therefore represents 1.5% of the national summer population of this species.

Applying a regional population estimate of 1,218 kuaka / bar-tailed godwits to the NZTCS criteria and assuming that Hawke's Bay populations are declining at a similar rate to the national population, we recommend that the kuaka / bar-tailed godwit should be ranked as Regionally Vulnerable in the Hawke's Bay region based on criterion C(1/1): 1000-5000 mature individuals, predicted decline 10-50% (Townsend et al, 2008). We also recommend that this ranking be given the qualifiers CI (Climate Impacts) and TO (Threatened Overseas) according to the qualifier definitions provided by Rolfe et al, (2021).

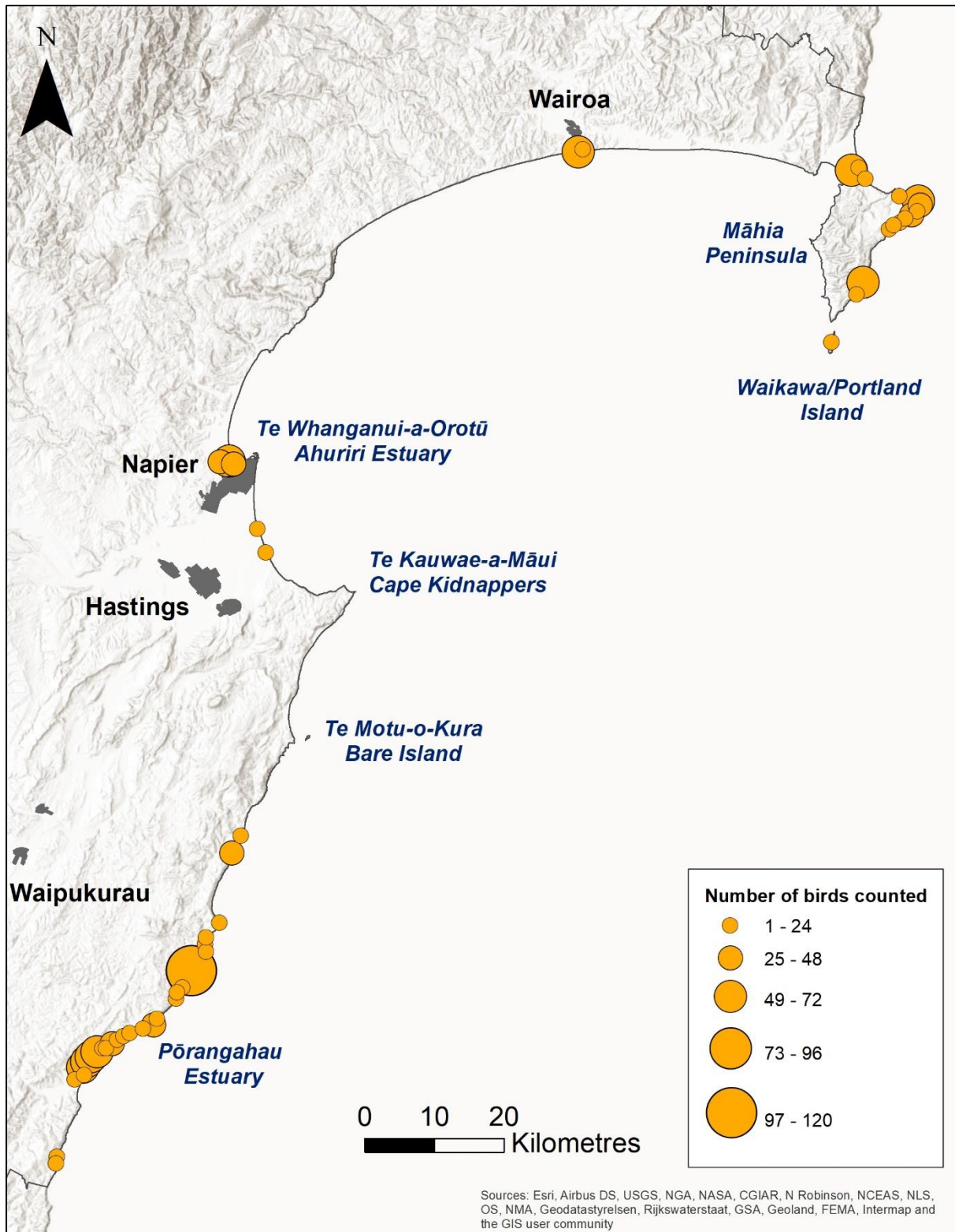


Figure 3.5: Distribution and relative abundance of kuaka / bar-tailed godwits along the Hawke's Bay coastline.

- 3.2.3 Kawau / black shag (*Phalacrocorax carbo*)



Image courtesy of Ormond Torr/NZ Birds Online

National conservation status:

At Risk, Naturally Uncommon (Robertson et al, 2017)

Regional conservation status:

Data Deficient (HBRC, unpublished data)

A total of 500 kawau / black shags were counted during this survey, occupying 75 (22.5%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.6). Kawau / black shags were fairly uniformly distributed along the Hawke's Bay coastline, with the exception of the eastern coastline of the Māhia Peninsula where this species was largely absent (Figure 3.6). In contrast, kāruhiruhi / pied shags are comparatively common

along the eastern coastline of Māhia Peninsula and scarce elsewhere (Figure 3.15), suggesting that the distribution of these two shag species along the Hawke's Bay coastline are largely mutually exclusive. This pattern has also been observed along the coastline of the Greater Wellington region in recent years, indicating that colonising kāruhiruhi / pied shags may be displacing kawau / black shags from coastal habitats in both regions as a result of some form of competitive exclusion between these two species (McArthur et al, 2019). Local concentrations of kawau / black shags along the Hawke's Bay coastline occurred at the larger estuaries including Te Whanganui-o-Orotū / Ahuriri Estuary and the Ngaruroro River estuary at Waitangi, and on coastal lagoons including Paraoa and Whakaki Lagoons (Figure 3.6). Three small breeding colonies were also located along the Hawke's Bay coastline during this survey, one near the Moeangiāngi River mouth, one near the Waihua River mouth and one at Whakaki Lagoon (Figure 3.6).

In the Hawke's Bay region, kawau / black shags are known to occupy a range of habitats including the coastline, rivers, freshwater wetlands, lakes and ponds (Heather & Robertson, 2015; eBird, 2021). One hundred and twelve kawau / black shags were counted along 286 km (4240 ha) of braided river habitat in the Tutaekuri, Ngaruroro and Tukituki River catchments during October-November 2020 (McArthur et al, 2021), suggesting that at least 577 kawau / black shags were present on the braided rivers and the Hawke's Bay coastline during the 2020-2021 breeding season³ (McArthur et al, 2021). The regional population of kawau / black shags has previously been estimated to be between 250 and 1,000 birds (HBRC, unpublished data). Although it is currently difficult to estimate the number of birds likely to be breeding on inland lakes, ponds and wetlands, based on the results of these surveys we consider it likely that the regional population continues to be somewhere between 250 and 1,000 birds.

Applying a regional population estimate of 250-1,000 adult birds to the NZTCS criteria and assuming a stable population, we recommend that this species should be ranked as Regionally Endangered based on criterion B (1/1) 250–1000 mature individuals, stable population (Townsend et al, 2008). We also recommend that this ranking be given the qualifiers DPS (Data Poor Size), DPT (Data Poor Trend),

³ The 35 kawau / black shags counted at the Tukituki River estuary during this survey are likely to have been counted during both the Oct-Nov 2020 Hawke's Bay river survey and this coastal bird survey, so this total has been calculated by adding together the kawau / black shag counts from these two surveys, then subtracting 35 to account for the double-counting of birds at this estuary.

Version

Sp (Biologically Sparse) and SO (Secure Overseas) according to the qualifier definitions provided by Rolfe et al, (2021).

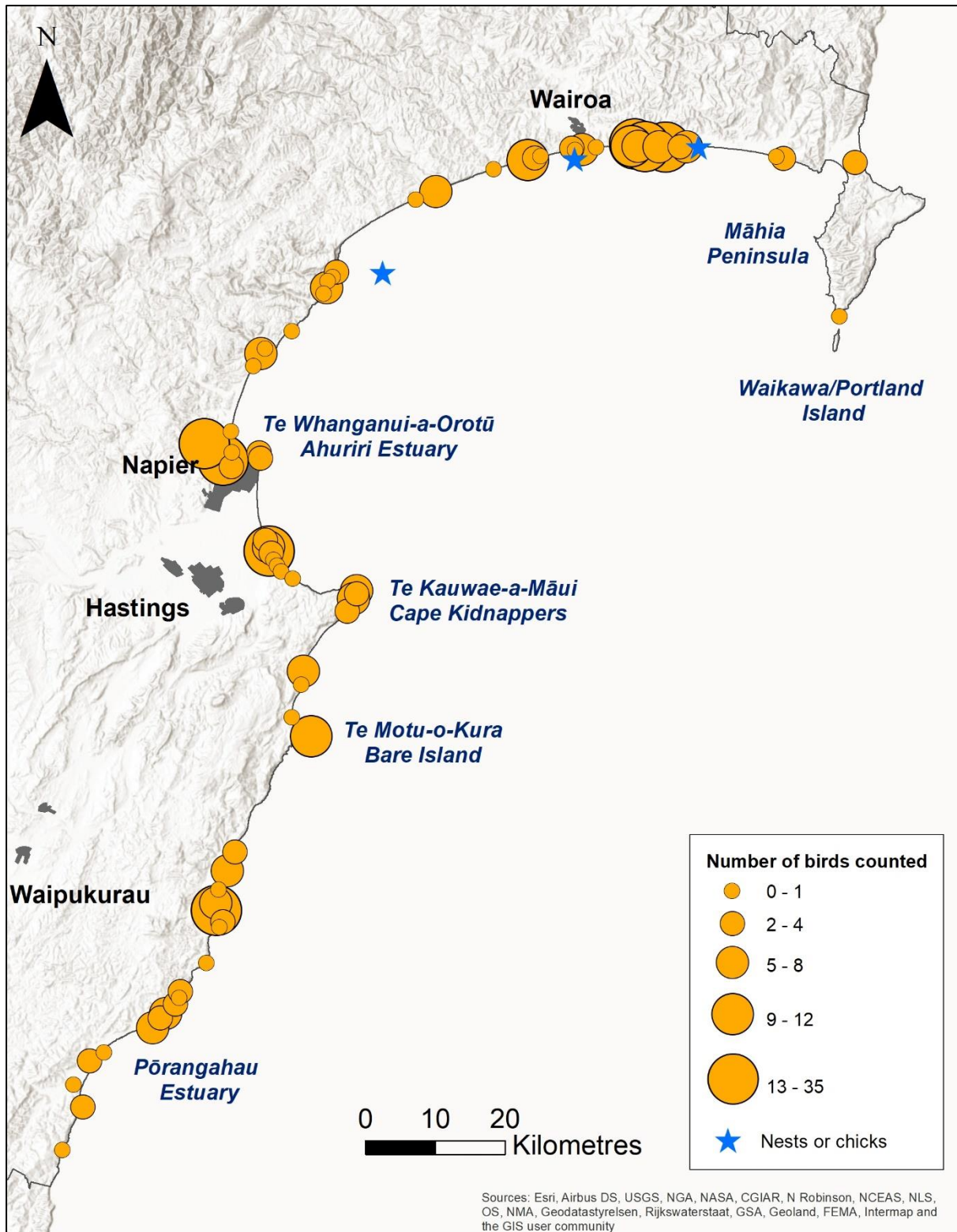


Figure 3.6: Distribution, relative abundance and breeding observations of kawau / black shags along the Hawke's Bay coastline. Note, the blue star symbols on the map have been offset to the right of the locations at which kawau / black shags were observed breeding, for the sake of clarity.

- 3.2.4 Tarāpuka / black-billed gull (*Larus bulleri*)



Image courtesy of Steve Attwood/NZ Birds Online

National conservation status: Nationally Critical (Robertson et al, 2017)

Regional conservation status: Regionally Critical (HBRC, unpublished data)

A total of 826 tarāpuka / black-billed gulls were counted during this survey, occupying 82 (24.6%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.7). The vast majority of the tarāpuka / black-billed gulls occurred along three relatively

short sections of coastline. Ninety-one birds (11% of the total number counted along the coastline) were counted along the northern Hawke’s Bay coastline between the Wairoa River mouth and Mahanga Beach. A further 642 birds (78% of the total number of coastal birds) were counted between the Tukituki River mouth and Tangoio and 89 birds (11% of the total number of coastal birds) were encountered at the Pōrangahau Estuary (Figure 3.7).

Tarāpuka / black-billed gulls were found to be breeding at three locations along the Hawke’s Bay coastline, namely at Te Whanganui-o-Orotū / Ahuriri Estuary, Napier Port and at the Pōrangahau Estuary (Figure 3.7). Each of these nesting colonies was associated with two of the three local concentrations of adult tarāpuka / black-billed gulls counted along the Hawke’s Bay coastline during this survey. The presence of a concentration of adult birds between the Wairoa River mouth and Mahanga Beach that was not apparently associated with a local nesting colony therefore suggests that a fourth nesting colony may have been present in northern Hawke’s Bay during the 2020-2021 breeding season that was not detected during this survey. The most likely locations where this colony may have occurred are Waikawa / Portland Island where tarāpuka / black-billed gulls have been known to breed in previous seasons (e.g., Foreman, 2019), or on the shingle spit at the Wairoa River mouth, where a relatively large number of (non-breeding) adult tarāpuka / black-billed gulls were encountered during this survey.

The majority of the nests in the three nesting colonies found had either hatched or failed by the time this survey was carried out and/or were too inaccessible to carry out accurate counts of the number of occupied nests present, hampering our efforts to generate an accurate estimate of the regional breeding population of this species by multiplying the total number of occupied nests by a factor of two. However, we recorded a total of 334 adult birds at these three colonies, which is likely to provide a reasonable approximation of the regional breeding population during the 2020-2021 season. The largest breeding colony was situated at Te Whanganui-o-Orotū / Ahuriri Estuary, where 208 adult birds (62% of the regional breeding population) and 265 chicks and fledglings were counted. The second-largest breeding colony was situated at Napier Port, where 90 adult birds (27% of the regional breeding population) were counted (Napier Port, unpublished data). The Pōrangahau Estuary colony was the third-largest nesting colony in the Hawke’s Bay region, with 38 adult birds (11% of the regional population), 34 chicks and eight occupied nests counted. Tarāpuka / black-billed gulls also regularly

breed on both the Ngaruroro and Tukituki Rivers, and a colony comprising 77 newly constructed nests attended by 281 adult birds was located on the upper Ngaruroro River on the 30th of October 2020. This colony was likely destroyed during a flood that occurred on the 10th of November however, with the adult gulls subsequently re-nesting at Te Whanganui-o-Orotū / Ahuriri Estuary where they were counted during this survey (McArthur et al, 2021).

Despite substantial year-to-year fluctuations, numbers of tarāpuka / black-billed gulls breeding in the Hawke’s Bay region appear to have been relatively stable since the mid-1990s, with a mean of 355 breeding birds counted each summer between 1995 and 1998 in comparison to the 334 breeding birds counted during the 2020-2021 breeding season (Table 3.4; Powlesland, 1998; Mischler, 2018). With an estimated national population of 120,512 breeding birds (Mischler, 2018), the 334 breeding birds counted in the Hawke’s Bay region during the 2020-2021 season represents 0.3% of the national tarāpuka / black-billed gull population.

Table 3.4: Hawke’s Bay tarāpuka / black-billed gull population estimates, 1995-2021.

Year	Population estimate (No. Breeding adults)	Source
1995-1996	74	Powlesland (1998) via Mischler (2018)
1996-1997	492	Powlesland (1998) via Mischler (2018)
1997-1998	500	Powlesland (1998) via Mischler (2018)
2014-2015	106	Mischler (2018)
2015-2016	300	Mischler (2018)
2016-2017	38	Mischler (2018)
2020-2021	334	This survey

Applying a regional population estimate of 334 breeding tarāpuka / black-billed gulls to the NZTCS criteria and assuming a stable population trend, we recommend that the tarāpuka / black-billed gull should be ranked as Regionally Endangered in the Hawke’s Bay region based on criterion B (1/1) 250–1000 mature individuals, stable population (Townsend et al, 2008). We also recommend that this ranking be given the qualifier CI (Climate Impacts) according to the qualifier definitions provided by Rolfe et al, (2021).

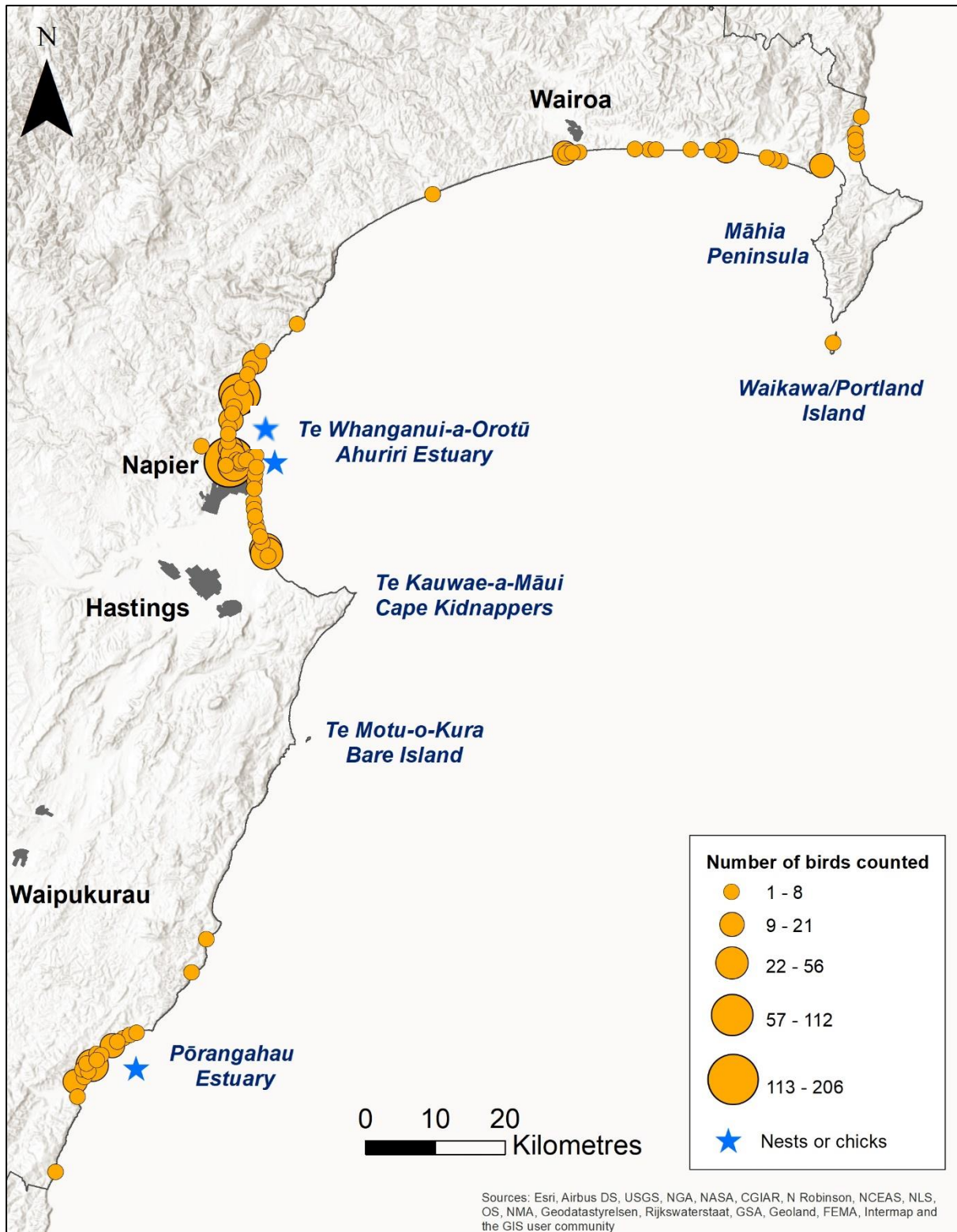


Figure 3.7: Distribution, relative abundance and breeding observations of tarāpuka / black-billed gulls along the Hawke’s Bay coastline. Note, the blue star symbols on the map have been offset to the right of the locations at which tarāpuka / black-billed gulls were observed breeding, for the sake of clarity.

- 3.2.5 Taranui / Caspian tern (*Hydroprogne caspia*)



Image courtesy of Les Feasey/NZ Birds Online

National conservation status:

Nationally Vulnerable (Robertson et al, 2017)

Regional conservation status:

Regionally Critical (HBRC, unpublished data)

A total of 145 adult taranui / Caspian terns were counted during this survey, occupying 56 (16.8%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.8). Taranui / Caspian terns were fairly uniformly distributed along the

Hawke's Bay coastline, with local hotspots occurring at many of the larger estuaries including the Mohaka and Tukituki River estuaries, Te Whanganui-o-Orotū / Ahuriri Estuary, Aramoana and the Pōrangahau Estuary. Taranui / Caspian terns were found to be breeding at two locations in the Hawke's Bay region, on Waikawa / Portland Island and on Bird Island in the Pōrangahau Estuary (Figure 3.8). On Waikawa / Portland Island, four adult birds and one chick were observed in November 2020 by Department of Conservation staff (Helen Jonas, *personal communication*), and during the same month a further 44 adult birds were counted at the Bird Island nesting colony in the Pōrangahau Estuary (Kelly, 2020). In January 2021, 30 adult birds and at least 14 well-grown chicks were observed at the Bird Island colony during this coastal bird survey.

Taranui / Caspian terns are a cosmopolitan species that is sparsely distributed throughout Eurasia, Africa, Australasia and North and Central America (Higgins & Davies, 1996). In New Zealand, Caspian terns are widespread around the mainland coastline, and are regularly encountered well inland on larger rivers, lakes and hydroelectric dams (Heather & Robertson, 2015; eBird, 2021). Caspian terns have nested regularly at the Pōrangahau Estuary since at least the early 1990s (Bell & Bell, 2008), and during the 2020-2021 breeding season, it was the only known nesting colony on the east coast of the North Island south of Matakana Island (Tauranga Harbour) (Eagles, 2021). With an estimated national population of between 2600-2800 breeding adults (Bell & Bell, 2008), the 48 breeding birds recorded in the Hawke's Bay region during the 2020-2021 breeding season represents 1.7 - 1.8% of the national population of this species.

Applying a regional population estimate of 48 breeding taranui / Caspian terns to the NZTCS criteria and assuming a stable population, we confirm that the taranui / Caspian tern should be ranked as Regionally Critical in the Hawke's Bay region based on criterion A(1): <250 mature individuals (Townsend et al, 2008). We recommend that this ranking be given the qualifiers Sp (Biologically Sparse), CI (Climate Impacts) and SO (Secure Overseas) according to the qualifier definitions provided by Rolfe et al, (2021).

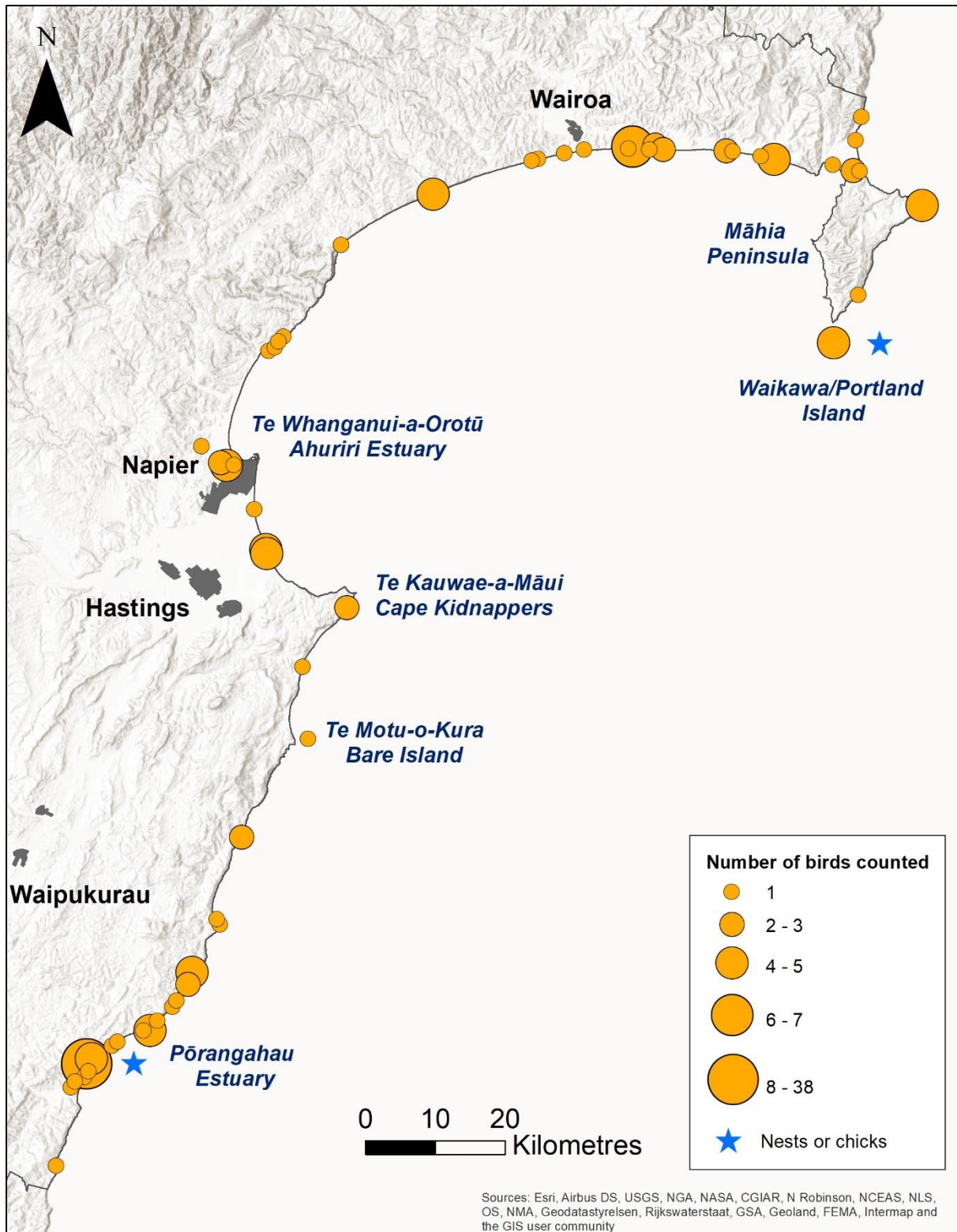


Figure 3.8: Distribution, relative abundance and breeding observations of taranui / Caspian terns along the Hawke’s Bay coastline. Note, the blue star symbols on the map have been offset to the right of the locations at which taranui / Caspian terns were observed breeding, for the sake of clarity.

- 3.2.6 Huahou / lesser knot (*Calidris canutus*)



Image courtesy of Phil Battley/NZ Birds Online

National conservation status: Nationally Vulnerable (Robertson et al, 2017)

Regional conservation status: Migrant (HBRC, unpublished data)

Three lesser knots were encountered during this survey, all at the Pōrangahau Estuary (Figure 3.9). A flock of five lesser knots were also encountered at the Ngaruroro River mouth at Waitangi during river bird surveys carried out in November 2020 (McArthur, 2020b), though no birds were encountered at this location during this coastal survey carried out two months later.

The huahou / lesser knots that visit New Zealand each summer breed in Arctic and sub-arctic tundra habitats in eastern Siberia, on the Chukotka Peninsula and the New Siberian Islands, and migrate to south-east Asia and Australasia for the southern hemisphere summer (Higgins & Davies 1996). The huahou / lesser knot is the second most common Arctic-breeding shorebird that occurs in New Zealand, however the number of birds visiting New Zealand each summer has declined by 37% since the early 1980s (Riegen & Sagar, 2020). Between 1983 and 1993 an average of 51,227 birds were counted during Birds New Zealand summer wader surveys each year, whereas an average of 32,080 birds were counted during surveys carried out between 2005 and 2019 (Riegen & Sagar 2020). As with bar-tailed godwits, coastal mudflats on the shores of the Yellow Sea are an important stopover habitat for this species during migration, so it is likely that recent extensive losses of these habitats due to large-scale land reclamation projects in China and South Korea is the leading cause of the substantial decline observed in this species (Studds et al, 2017; Riegen & Sagar, 2020). The majority of huahou / lesser knots that are present in New Zealand each summer are concentrated at a relatively small number of sites including the Kaipara and Manukau Harbours, the Firth of Thames and Farewell Spit (Riegen & Sagar, 2020). Huahou / lesser knots have been comparatively rare in the Hawke's Bay region since at least the 1950s (Brathwaite, 1955) and the three lesser knots observed during this survey represents only 0.01% of the national summer population of this species.

Applying a regional population estimate of three huahou / lesser knots to the NZTCS criteria, we recommend that the huahou / lesser knot should be ranked as Regionally Critical in the Hawke's Bay region based on criterion A(1): <250 mature individuals (Townsend et al, 2008). We also recommend that this ranking be given the qualifiers CI (Climate Impacts) and TO (Threatened Overseas) according to the qualifier definitions provided by Rolfe et al, (2021).

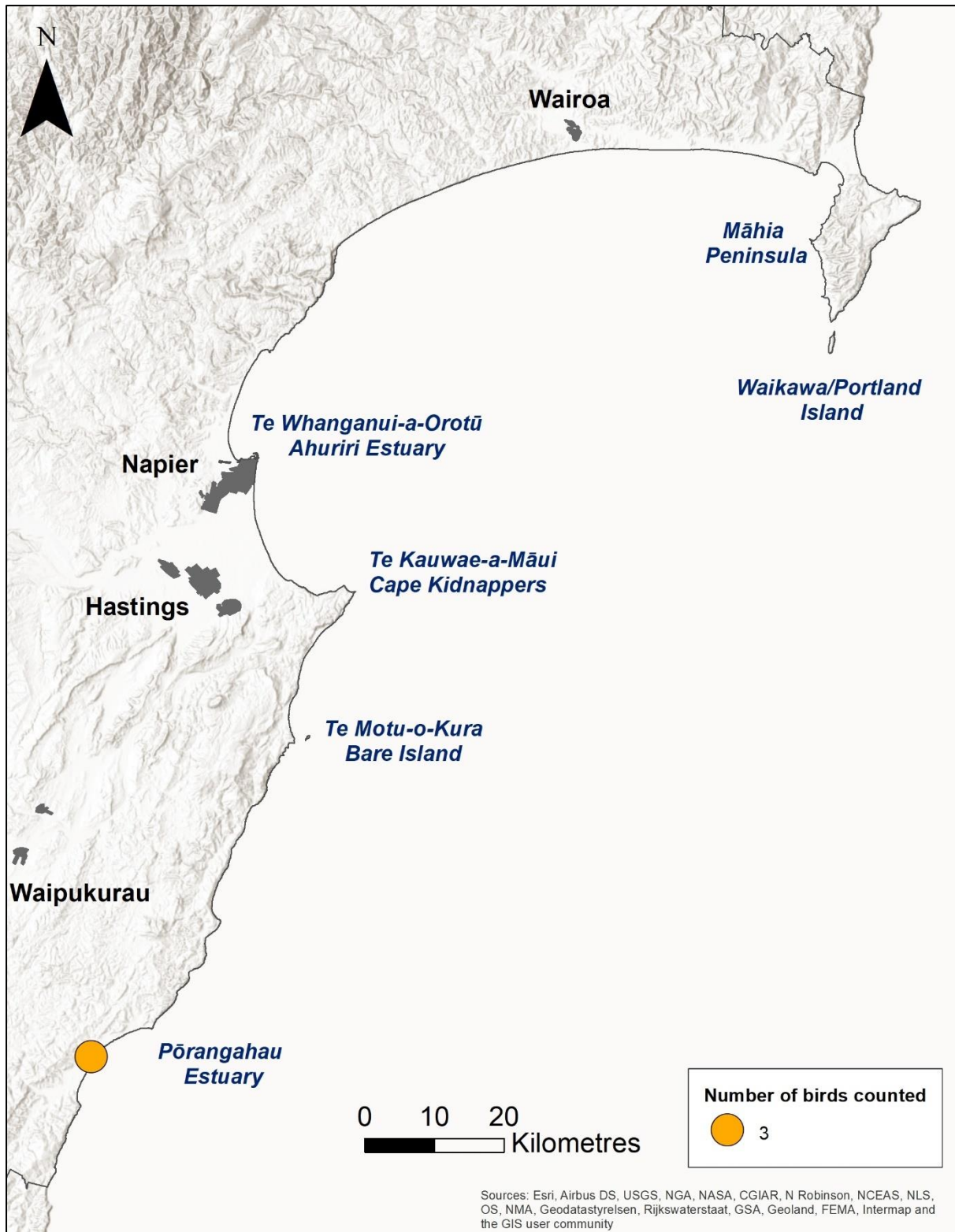


Figure 3.9: Distribution and relative abundance of huahou / lesser knots along the Hawke's Bay coastline.

- 3.2.7 Kawau paka / little shag (*Phalacrocorax melanoleucos*)



Image courtesy of Ormond Torr/NZ Birds Online

National conservation status: Not Threatened (Robertson et al, 2017)

Regional conservation status: Regionally Endangered (HBRC, unpublished data)

A total of 56 kawau paka / little shags were counted during this survey, occupying 28 (8.4%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.10). Kawau paka / little shags were sparsely distributed along the Hawke's Bay coastline, with local concentrations of birds encountered on southern Māhia Peninsula, at Paraoa Lagoon and at Te Whanganui-o-Orotū / Ahuriri Estuary (Figure 3.10).

In the Hawke's Bay region, kawau paka / little shags are known to occupy a range of habitats including the coastline, rivers, freshwater wetlands, lakes and ponds (Heather & Robertson, 2015; eBird, 2021). Sixty-seven kawau paka / little shags were counted along 286 km (4240 ha) of braided river habitat in the Tutaekuri, Ngaruroro and Tukituki River catchments during October-November 2020 (McArthur et al, 2021), suggesting that at least 123 kawau paka / little shags were present on the braided rivers and Hawke's Bay coastline during the 2020-2021 breeding season (McArthur et al, 2021). The regional population of kawau paka / little shags has previously been estimated to be between 250 and 1,000 birds (HBRC, unpublished data). Although it is currently difficult to estimate the number of birds likely to be breeding on inland lakes, ponds and wetlands, based on the results of these surveys we consider it likely that the regional population continues to be somewhere between 250 and 1000 birds.

Applying a regional population estimate of 250-1000 adult birds to the NZTCS criteria and assuming a stable population, we confirm that this species should be ranked as Regionally Endangered based on criterion B (1/1) 250–1000 mature individuals, stable population (Townsend et al, 2008). We recommend that this ranking be given the qualifiers DPS (Data Poor Size) and DPT (Data Poor Trend) according to the qualifier definitions provided by Rolfe et al, (2021).

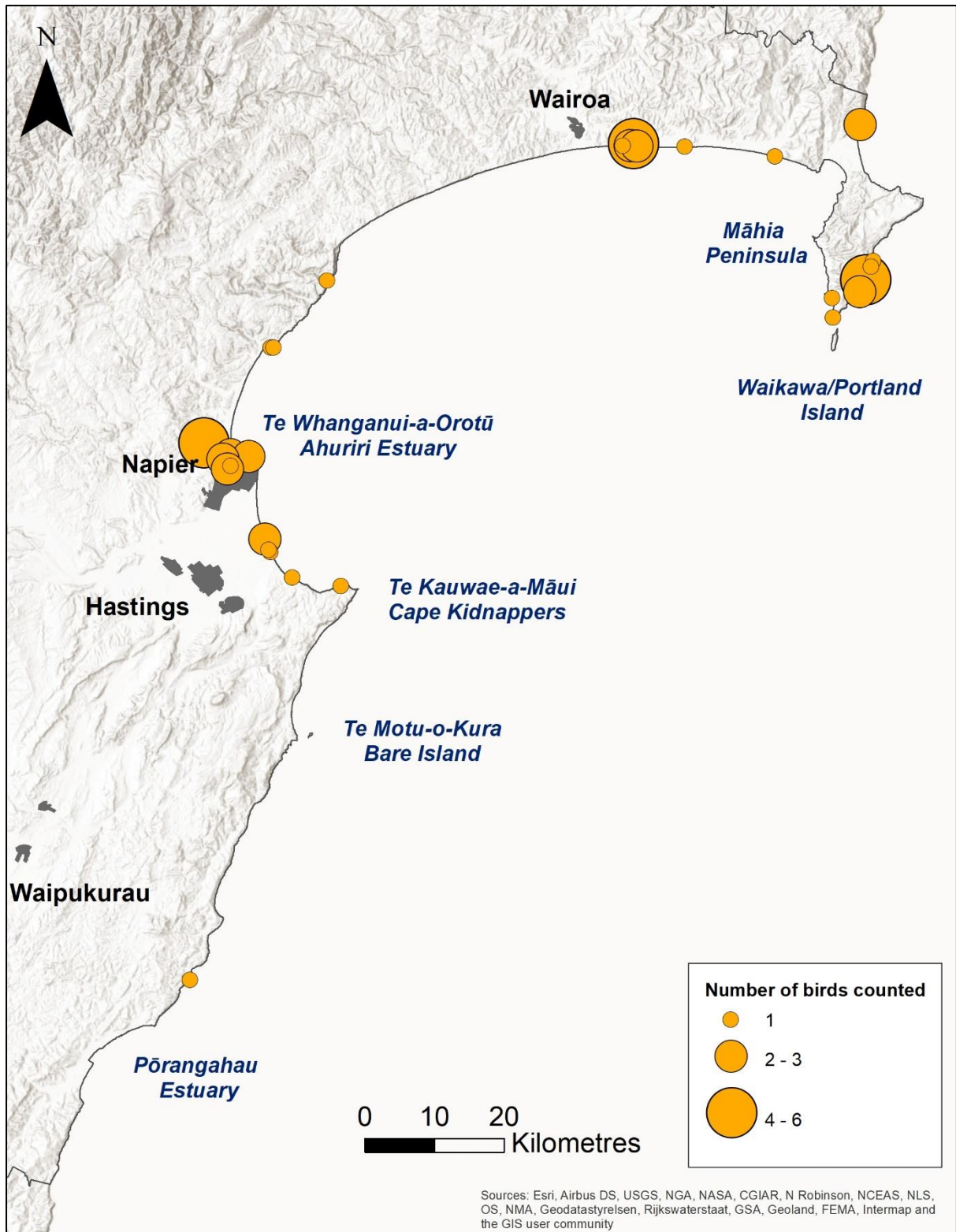


Figure 3.10: Distribution and relative abundance of kawau paka / little shags along the Hawke's Bay coastline.

- 3.2.8 Tūturiwhatu / New Zealand dotterel (*Charadrius obscurus aquilonius*)



Image courtesy of Bruce Buckman/NZ Birds Online

National conservation status: At Risk, Recovering (Robertson et al, 2017)

Regional conservation status: Regionally Critical (HBRC, unpublished data)

A total of 222 adult tūturiwhatu / New Zealand dotterels were counted during this survey, occupying 37 (11%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.11). Tūturiwhatu / New Zealand dotterels were not uniformly distributed along the coastline, but instead were highly clustered at estuaries, river mouths and stretches of wide, sandy beaches (Figure 3.11). Six stretches of coastline in particular supported the majority of the tūturiwhatu / New Zealand dotterels encountered, namely: Pukenui Beach, the eastern coastline of Māhia Peninsula and Waikawa / Portland Island (84 birds; 38% of the regional population); the Wairoa River mouth (11 birds; 5% of the regional population); Tangoio, Waipatiki Beach and the Aropaoanui River mouth (20

birds; 9% of the regional population); the Te Kauwae-a-Māui / Cape Kidnappers coastline (26 birds; 12% of the regional population); Aramoana and Pourerere Beach (34 birds; 15% of the regional population) and the Pōrangahau Estuary (44 birds; 20% of the regional population). At all of these sites, the presence of nests, broods of chicks and fledglings indicated that these local populations were experiencing relatively good nest survival, hatching and chick survival rates (Figure 3.11).

Tūturiwhatu / New Zealand dotterels were present along the Hawke’s Bay coastline until the late 19th century, having been recorded as “formerly present” on Waikawa / Portland Island (Brathwaite, 1955) and included among a list of birds recorded between the Tutaekuri and Mohaka River mouths by Hamilton (1885). Tūturiwhatu / New Zealand dotterels were apparently locally extinct along the Hawke’s Bay coastline for the majority of the 20th Century, until two pairs were found breeding in northern Hawke’s Bay in November 1990; one pair with a chick at the northern end of Waikawa / Portland Island and a second pair with three chicks at the southern end of Pukenui Beach (Foreman, 1991). Since 1990, tūturiwhatu / New Zealand dotterels have successfully re-colonised the Hawke’s Bay coastline and have undergone a spectacular population increase over the following 30 years, increasing from an estimated population of four adult birds in 1990 to the 222 adult birds recorded during this survey (Table 3.5).

This population increase is due to the implementation of a highly successful species recovery plan that has been in operation since the mid-1980s, with conservation management activities now being implemented at dozens of sites throughout Northland, Auckland, the Bay of Plenty and Hawke’s Bay. Since 1989, the total number of tūturiwhatu / New Zealand dotterels has increased by 50%, from an estimated population of 1,320 birds in 1989 to 2,130 birds in 2011 (Dowding, 2020). This population increase has coincided with a major southward expansion in the breeding range of tūturiwhatu / New Zealand dotterels in the North Island, with the species now breeding as far south as the Waikanae River on the western coast of the North Island, and the Pahaoa River mouth in southeastern Wairarapa

(McArthur et al, 2019; Dowding, 2020). Local conservation management initiatives being carried out in the Hawke’s Bay region, including the eradication and control of mammalian predators on Waikawa / Portland Island and along the Te Kauwae-a-Māui / Cape Kidnappers coastline are also likely to be contributing to local population increases in the region.

Table 3.5: Hawke’s Bay tūturiwhatu / New Zealand dotterel population estimates, 1990-2021.

Year	Population estimate (No. adult birds)	Source
1990	4	Foreman (1991)
1996	<24 ¹	Dowding (2020)
2004	<62 ¹	Dowding (2020)
2011	<86 ¹	Dowding (2020)
2021	222	This survey

¹ Note: these totals represent counts carried out between the Waiapu River and Baring Head, so will include birds counted in the Gisborne District, the Manawatū-Whanganui region and Greater Wellington region. The total number of birds counted in the Hawke’s Bay region during these years will be lower than the totals listed here.

Assuming that the rate of population increase observed between 1989 and 2011 has continued to the present time, Dowding (2020) estimates that the global population of tūturiwhatu / New Zealand dotterels will have reached 2,600 birds by 2020. This being the case, we estimate that the Hawke’s Bay region currently supports approximately 9% of the global population of this subspecies. Applying this new regional population estimate of 222 tūturiwhatu / New Zealand dotterels to the NZTCS criteria, we confirm that this subspecies should continue to be ranked as Regionally Critical in the Hawke’s Bay region based on criterion A(1): <250 mature individuals (Townsend et al, 2008). We recommend that this ranking be given the qualifiers CD (Conservation Dependent), CI (Climate Impacts) and INC (Increasing) according to the qualifier definitions provided by Rolfe et al, (2021). Although this subspecies continues to be ranked as Regionally Critical in the Hawke’s Bay region, it should be noted that at its current rate of increase, the Hawke’s Bay tūturiwhatu / New Zealand dotterel population is likely to exceed 250 mature individuals within the next few years. When this occurs, its regional threat ranking can be downgraded to Regionally Vulnerable based on the criterion A(1/1): 250-1000 mature individuals, predicted increase >10%. When it occurs, this downgraded ranking will represent a significant milestone in the recolonisation and recovery of this previously locally extinct coastal bird species.

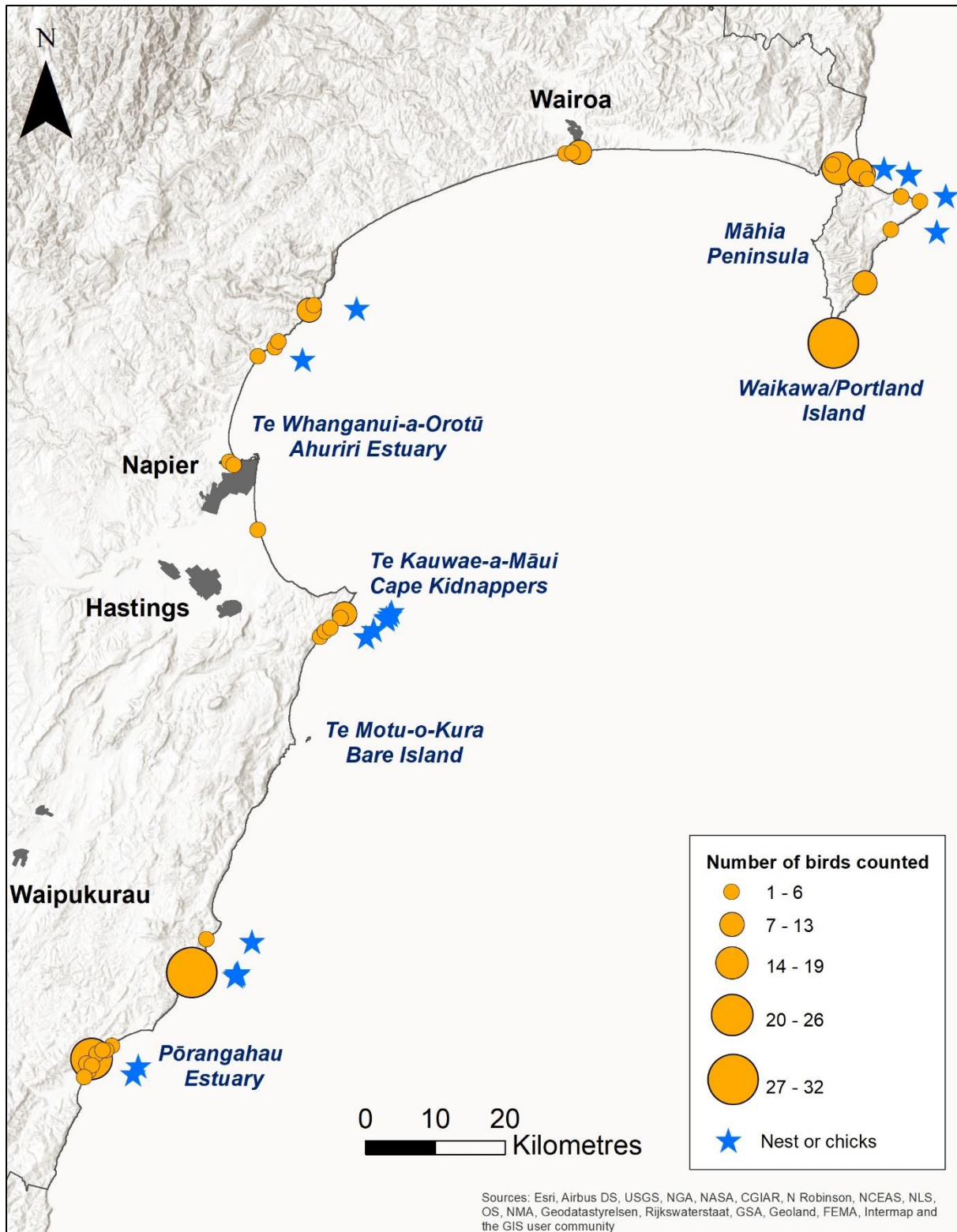


Figure 3.11: Distribution, relative abundance and breeding observations of tūturiwhatu / New Zealand dotterels along the Hawke's Bay coastline. Note, the blue star symbols on the map have been offset to the right of the locations at which tūturiwhatu / New Zealand dotterels were observed breeding, for the sake of clarity.

- 3.2.9 Pīhoihoi / New Zealand pipit (*Anthus novaeseelandiae*)



Image courtesy of Duncan Watson/NZ Birds Online

National conservation status: At Risk, Declining (Robertson et al, 2017)

Regional conservation status: Not Threatened (HBRC, unpublished data)

A total of 35 adult pīhoihoi / New Zealand pipits were counted during this survey, occupying 27 (8.1%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.12). Pīhoihoi / New Zealand

pipits were very sparsely distributed along the coastline, with higher densities present along the eastern coastline of Māhia Peninsula, at the Wairoa River mouth and at Te Kauwae-a-Māui / Cape Kidnappers (Figure 3.12).

The small numbers of pīhoihoi / New Zealand pipits encountered during this survey is consistent with the low numbers of birds encountered during other recent coastal bird surveys carried out in central New Zealand. For example, only 80 pīhoihoi / New Zealand pipits were recorded along 460 km of the Greater Wellington region coastline during 2017-2018 (McArthur et al, 2019), and no pīhoihoi / New Zealand pipits were recorded along 428 km of the Nelson-Tasman coastline in 2020 (Tasman District Council, unpublished data; Nelson City Council, unpublished data). These results are surprising, considering the large areas of apparently suitable habitat that were searched during these surveys, and may indicate that pīhoihoi / New Zealand pipits are much less common in these regions than previously assumed.

In the Hawke's Bay region, pīhoihoi / New Zealand pipits occupy a range of habitats including the coastline, riverbeds, rough pasture, felled exotic forest compartments and subalpine tussock and herbfields (eBird, 2021). Pīhoihoi / New Zealand pipits are not common in any of these habitats however, for example a total of 113 birds were counted during a systematic survey of 286 km (4240 ha) of braided river habitat in the Tutaekuri, Ngaruroro and Tukituki River catchments during October-November 2020 (McArthur et al, 2021). Assuming that approximately 50% of the total land area of the Hawke's Bay region provides suitable habitat for pīhoihoi / New Zealand pipits, and assuming that the density of birds counted along Hawke's Bay rivers and coastline (approximately 0.025 birds per ha) is representative of the mean regional population density of this species, we estimate that the Hawke's Bay region supports a population of approximately 35,280 birds. Applying this regional population estimate, and an assumed rate of decline of 10-50% per three generations, to the NZTCS criteria, we recommend that this species be ranked as regionally At Risk, Declining based on criterion B(1/1) 20,000–100,000 mature individuals, predicted decline 10–50% (Townsend et al, 2008). We also recommend that this ranking be given the qualifiers DPS (Data Poor Size), DPT (Data Poor Trend), CI (Climate Impacts) and CR (Conservation Research Needed) according to the qualifier definitions provided by Rolfe et al, (2021).

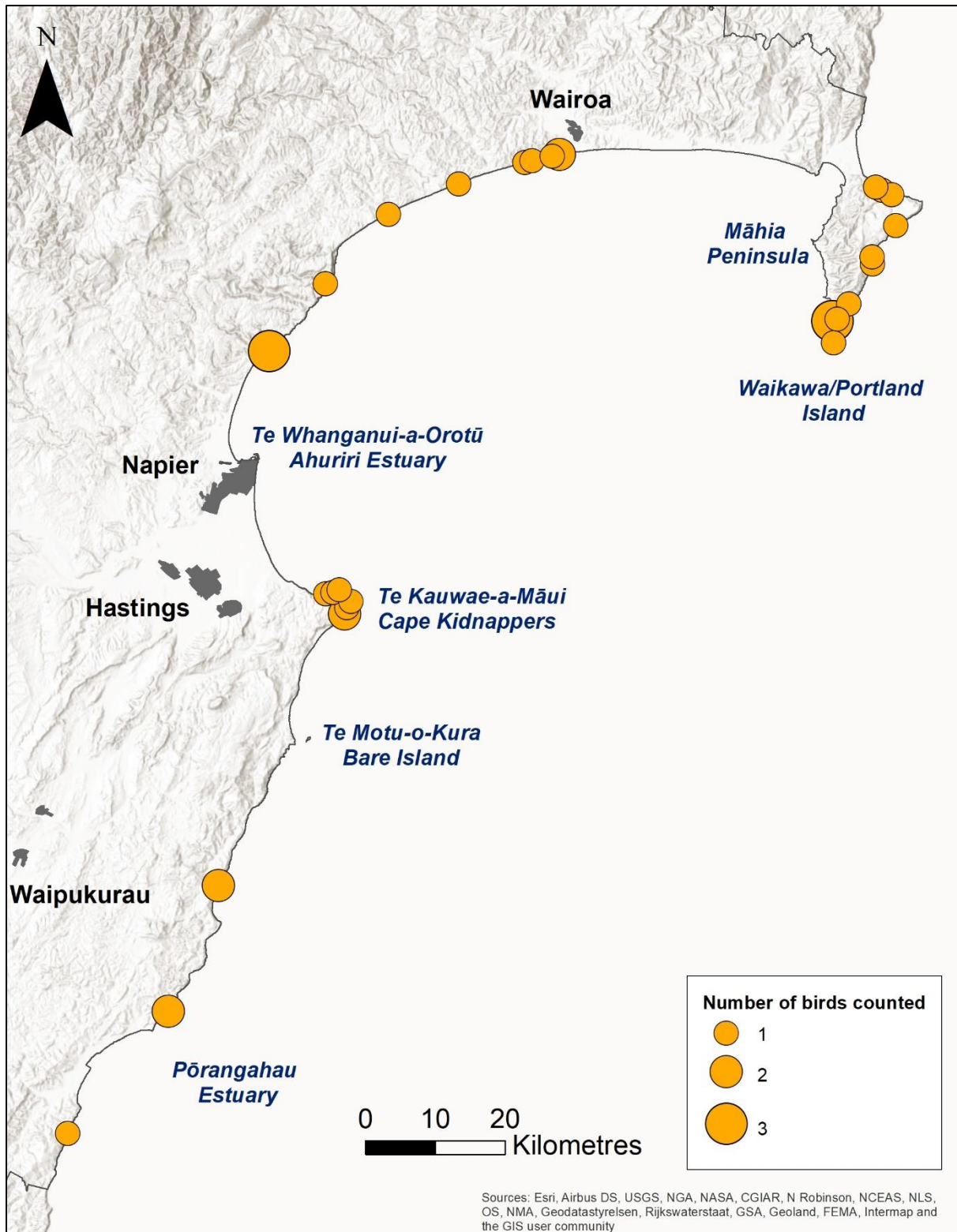


Figure 3.12: Distribution and relative abundance of pīhoihoi / New Zealand pipits along the Hawke's Bay coastline.

- 3.2.10 Kuriri / Pacific golden plover (*Pluvialis fulva*)



Image courtesy of Duncan Watson/NZ Birds Online

National conservation status: Migrant (Robertson et al, 2017)

Regional conservation status: Migrant (HBRC, unpublished data)

Nine kuriri / Pacific golden plovers were encountered during this survey, including four birds counted on the Ngamotu Lagoon (Wairoa River mouth) and five birds counted at Te Whanganui-o-Orotū / Ahuriri Estuary. (Figure 3.13).

Kuriri / Pacific golden plovers breed in Arctic and sub-arctic tundra habitats in Siberia and western

Alaska and migrate to southern hemisphere coastlines in East Asia, Australasia and the Pacific for the southern hemisphere summer (Higgins & Davies 1996). The kuriri / Pacific golden plover is the fourth most common Arctic-breeding shorebird that occurs in New Zealand, however the number of birds visiting New Zealand each summer has declined by 60% since the early 1980s (Riegen & Sagar, 2020). Between 1983 and 1994 an average of 466 birds were counted during Birds New Zealand summer wader surveys each year, whereas an average of 181 birds were counted during surveys carried out between 2005 and 2019 (Riegen & Sagar 2020). Kuriri / Pacific golden plovers are less reliant than other Arctic-breeding shorebird species on the estuarine habitats on the shores of the Yellow Sea during migration, so are considered to be less vulnerable to habitat loss associated with recent large-scale land reclamation projects in the area. This being the case, the cause(s) for the substantial decline in kuriri / Pacific golden plovers observed in New Zealand since 1983 are poorly known at present (Riegen & Sagar, 2020). In New Zealand, kuriri / Pacific golden plovers show a clear preference for northern and eastern harbours and estuaries. Only seven sites in New Zealand supported an average of >10 kuriri / Pacific golden plovers each summer between 2005 and 2019, one of which is Te Whanganui-a-Orotū / Ahuriri Estuary (Riegen & Sagar 2020). We estimate that the nine kuriri / Pacific golden plovers counted in the Hawke’s Bay region during this survey represents approximately 5% of the national summer population of this species.

Applying a regional population estimate of nine kuriri / Pacific golden plover to the NZTCS criteria, we recommend that the kuriri / Pacific golden plover be ranked as a Vagrant in the Hawke’s Bay region based on the criterion that the kuriri / Pacific golden plover is a taxon “whose occurrences, though natural, [is] sporadic and typically transitory, or [a migrant] with fewer than 15 individuals visiting per annum” (Townsend et al, 2008). We also recommend that this ranking be given the qualifiers CI (Climate Impacts), CR (Conservation Research Needed) and SO (Secure Overseas) according to the qualifier definitions provided by Rolfe et al, (2021).

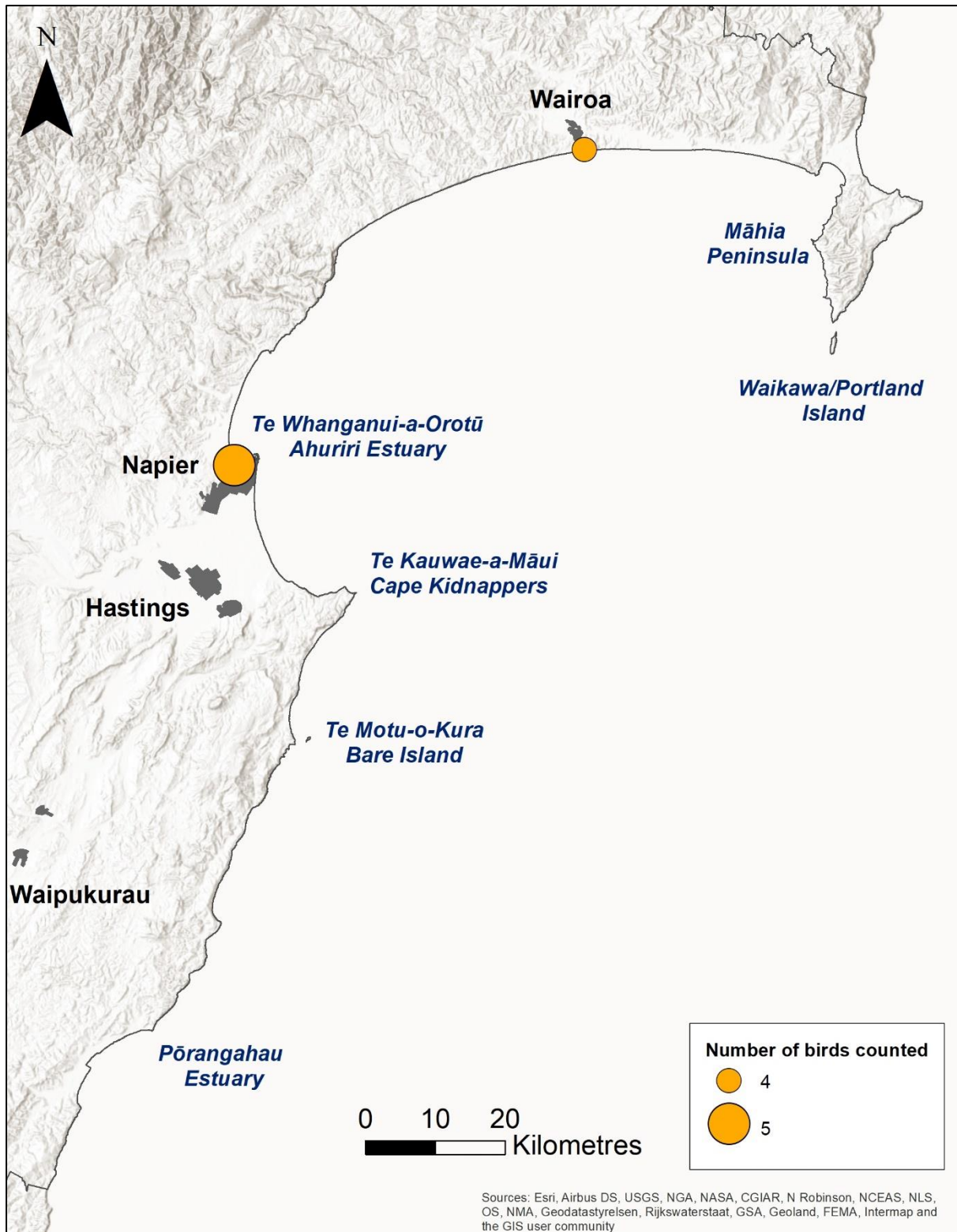


Figure 3.13: Distribution and relative abundance of kuriri / Pacific golden plovers along the Hawke's Bay coastline.

- 3.2.11 Pectoral sandpiper (*Calidris melanotos*)



Image courtesy of Steve Attwood/NZ Birds Online

National conservation status:

Vagrant (Robertson et al, 2017)

Regional conservation status:

Vagrant (HBRC, unpublished data)

Two pectoral sandpipers were encountered during this survey, both birds were observed at the Southern Marsh at Te Whanganui-o-Orotū / Ahuriri Estuary among a flock of seven sharp-tailed sandpipers (Figure 3.14 and see [Section 3.2.17](#)).

Pectoral sandpipers breed in northern Siberia, Alaska and in Northern Canada and migrate to South America and Australasia for the southern hemisphere summer. Relatively small numbers reach Australasia each year, with less than 20 birds typically recorded in New Zealand each summer (Higgins & Davies 1996). In New Zealand, pectoral sandpipers occur regularly at eastern estuaries, lakes and lagoons including Te Whanganui-o-Orotū / Ahuriri Estuary, Lake Wairarapa, Lake Ellesmere, Wainono Lagoon and Te Whanga Lagoon (Chatham Island), but are seldom recorded elsewhere (Heather & Robertson 2015). At Te Whanganui-o-Orotū / Ahuriri Estuary, 1-2 pectoral sandpipers are typically recorded each summer (eBird, 2021), but a record high count of four birds was recorded by R.H.D. Stidolph on the 23rd of November 1952 (Stidolph, 1952) and more recently, three birds were observed by Margaret Twydle on the 30th of November 2019 (Twydle, 2019). These results indicate that Te Whanganui-o-Orotū / Ahuriri Estuary is a nationally significant habitat for this rare Arctic-breeding migrant, supporting 5-20% of the national summer population of this species each year.

Applying a regional population estimate of two pectoral sandpipers to the NZTCS criteria confirms that the pectoral sandpiper should continue to be ranked as a Vagrant in the Hawke's Bay region based on the criterion that the pectoral sandpiper is a taxon "whose occurrences, though natural, [is] sporadic and typically transitory, or [a migrant] with fewer than 15 individuals visiting per annum" (Townsend et al, 2008). We recommend that this ranking be given the qualifiers CI (Climate Impacts) and SO (Secure Overseas) according to the qualifier definitions provided by Rolfe et al, (2021).

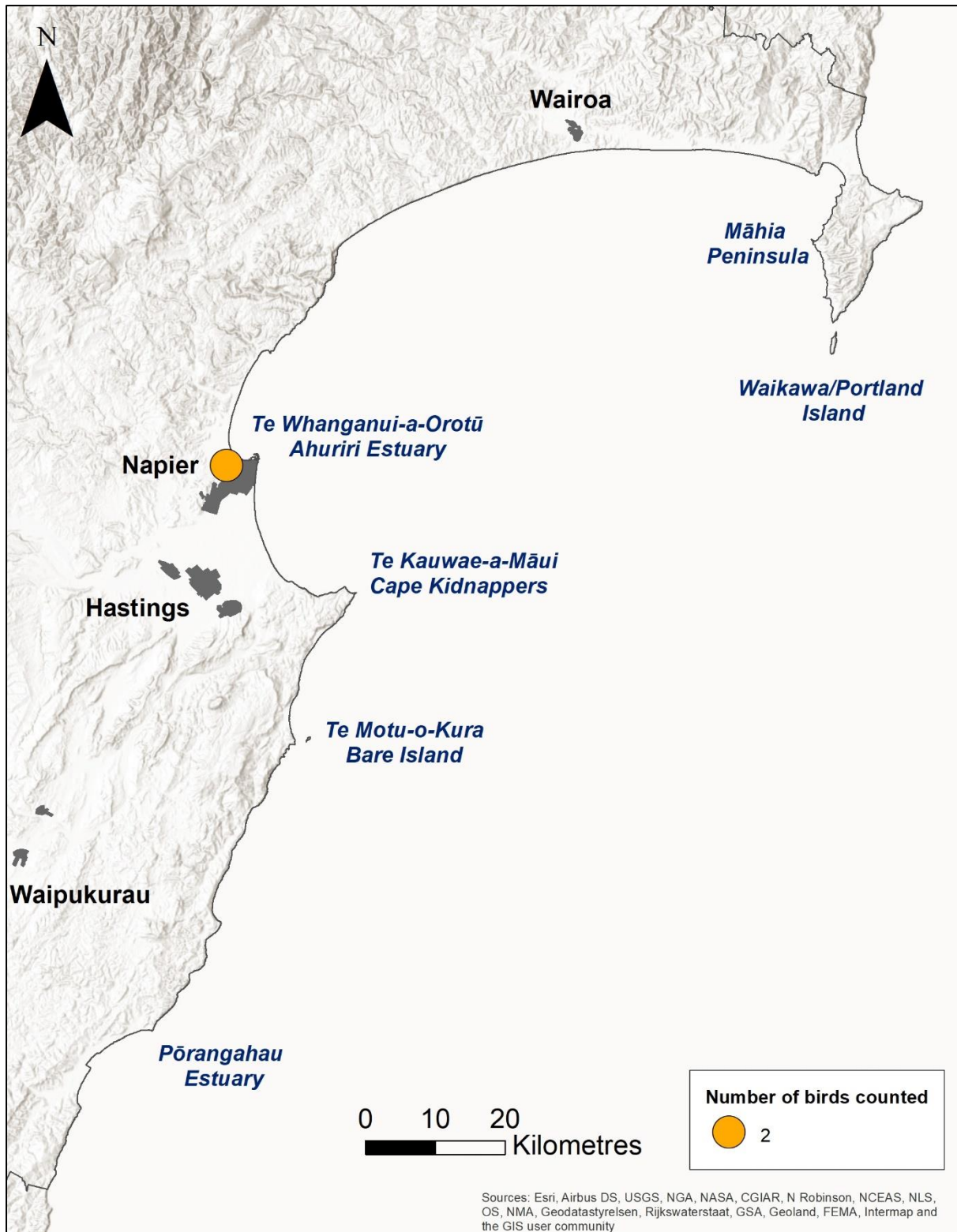


Figure 3.14: Distribution and relative abundance of pectoral sandpipers along the Hawke's Bay coastline.

- 3.2.12 Kāruhiruhi / pied shag (*Phalacrocorax varius*)



Image courtesy of Peter Reese/NZ Birds Online

National conservation status: At Risk, Recovering (Robertson et al, 2017)

Regional conservation status:
Vagrant (HBRC, unpublished data)

A total of 185 kāruhiruhi / pied shags were counted during this survey, occupying 31 (9.3%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.15). Kāruhiruhi / pied shags were restricted to

the northern Hawke's Bay coastline, with the vast majority of birds encountered along the eastern coastline of Māhia Peninsula and the southernmost birds occurring at the Moeangiāngi River mouth. Two unoccupied kāruhiruhi / pied shag colonies were encountered, both along the eastern coastline of Māhia Peninsula. (Figure 3.15).

Kāruhiruhi / pied shags have a disjunct distribution in New Zealand, with a southern breeding population in the southern South Island and Stewart Island, a central breeding population in the northern South Island and Wellington, and a northern breeding population in Northland, Auckland, Bay of Plenty, East Cape and northern Hawke's Bay (Robertson et al, 2007; Bell, 2013). This northern population appears to have expanded into northern Hawke's Bay comparatively recently, as no breeding colonies appear to have been recorded on Māhia Peninsula prior to 2013 (Bell, 2013). Two colonies had established on the peninsula by 2017 however, with 45 and 32 adult birds counted at each colony (Cannings 2017a; Cannings 2017b). One of these colonies was detected during this survey, while a third previously unrecorded colony was also detected.

The 'central' New Zealand breeding population of kāruhiruhi / pied shags has undergone a similar range expansion in recent decades, with the species colonising the Wellington region as recently as 1996 (Powlesland et al, 2008; Bell, 2013). Kāruhiruhi / pied shags are now common and widespread along the Wellington City and Kāpiti District coastlines but are still comparatively rare in the Wairarapa. Kawau / black shags in contrast are comparatively common along the Wairarapa coastline but are rare along the Wellington City and Kāpiti District coastlines. This almost mutually exclusive distribution suggests that the colonising kāruhiruhi / pied shags are displacing kawau / black shags from coastal habitats in the Wellington region, indicating some form of competitive exclusion may exist between these two species (McArthur et al, 2019). In the Hawke's Bay region, kawau / black shags are comparatively uniformly distributed along the entire coastline with the exception of the east coast of Māhia Peninsula, which supports the majority of the regional population of kāruhiruhi / pied shags (Figures 3.6 and 3.15). This suggests that colonising kāruhiruhi / pied shags may be in the early stages of displacing kawau / black shags from coastal habitats in northern Hawke's Bay.

Assuming that the 185 kāruhiruhi / pied shags counted during this survey are all locally-breeding birds, according to the NZTCS criteria, we recommend that this species should be ranked as Regionally Critical in the Hawke's Bay region based on criterion A(1): <250 mature individuals (Townsend et al, 2008). We also recommend that this ranking be given the qualifier INC (Increasing) according to the qualifier definitions provided by Rolfe et al, (2021). Given that it is likely that the regional population of kāruhiruhi / pied shags is going to continue to increase for the foreseeable future, the population

is likely to exceed 250 mature individuals within the next few years. When this occurs, its regional threat ranking can be downgraded to Regionally Vulnerable based on the criterion A(1/1): 250-1000 mature individuals, predicted increase >10%.

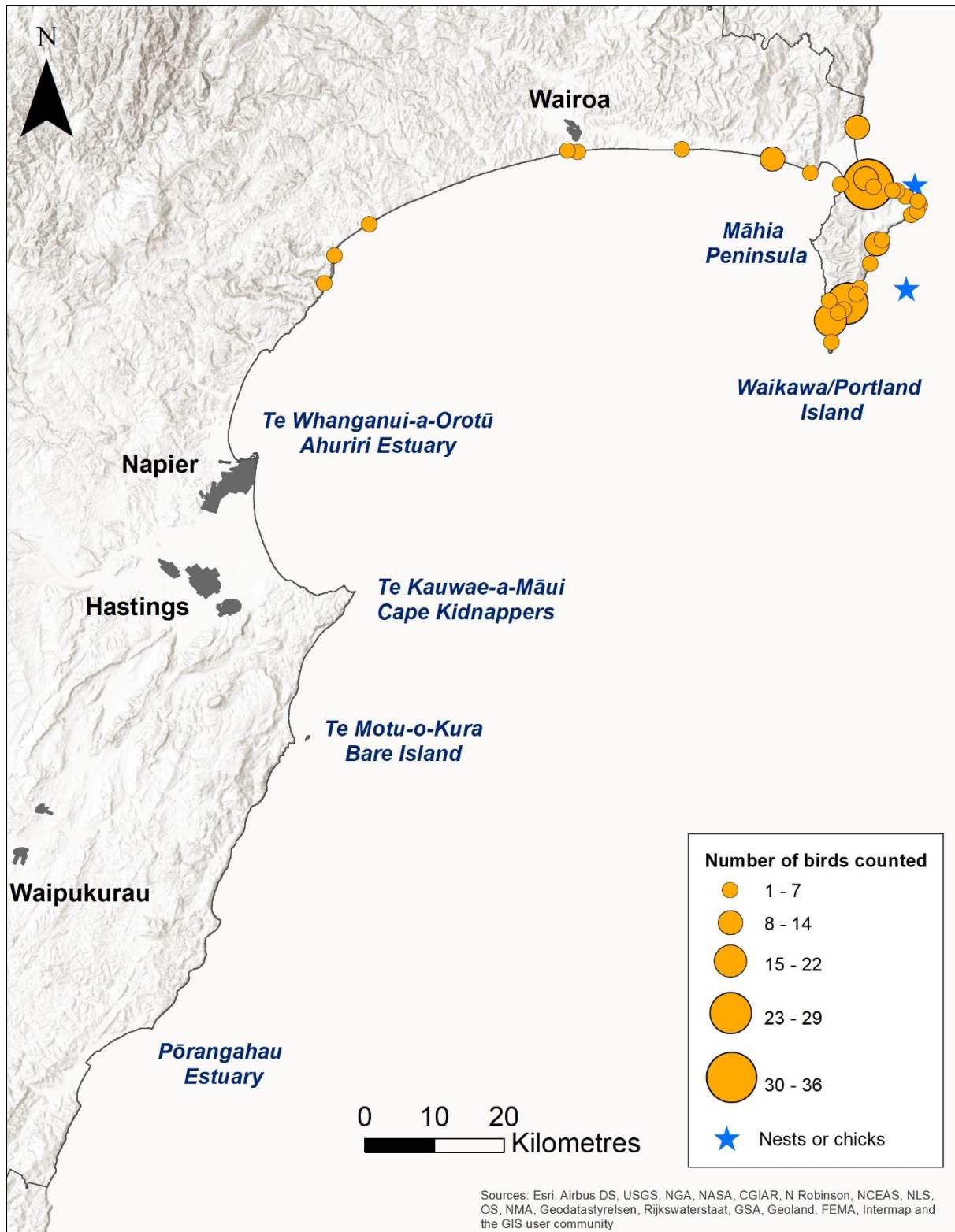


Figure 3.15: Distribution, relative abundance and breeding observations of kāruhiruhi / pied shags along the Hawke’s Bay coastline. Note, the blue star symbols on the map have been offset to the right of the locations at which kāruhiruhi / pied shags were observed breeding, for the sake of clarity.

- 3.2.13 Poaka / pied stilt (*Himantopus himantopus*)



Image courtesy of Tony Whitehead/NZ Birds Online

National conservation status:

Not Threatened (Robertson et al, 2017)

Regional conservation status:

Regionally Vulnerable (HBRC, unpublished data)

A total of 1,606 adult poaka / pied stilts were counted during this survey, occupying 72 (21.6%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.16). The distribution of poaka / pied stilts along the Hawke's Bay coastline is highly clustered, with 83% of the

birds being encountered at only seven sites along the coast. 737 poaka / pied stilts (46% of the total number counted) were found at Te Whanganui-a-Orotū / Ahuriri Estuary, which is a nationally significant site for poaka / pied stilts, being one of only nine sites in the country to support a mean annual population of >500 poaka / pied stilts (Riegen & Sagar, 2020). A further 209 birds (13% of the total number counted) were found at the Tukituki River estuary, another 118 birds (7% of the total number counted) were found at Paraoa Lagoon, 82 birds (5% of the total number counted) were found at the Ngaruroro River estuary at Waitangi, 80 birds (5% of the total number counted) were found at the Pōrangahau Estuary, 54 birds (3% of the total number counted) were found in an unnamed wetland between the Wairau and Paraoa Lagoons and 52 birds (3% of the total number counted) were found in the Maungawhio Lagoon (Figure 3.16).

In the Hawke's Bay region, poaka / pied stilts are known to breed in a range of habitats including on riverbeds and at coastal estuaries and river mouths, but also in freshwater wetlands, on the shores of freshwater lakes and irrigation dams, and in flat, poorly drained paddocks (Heather & Robertson, 2015; eBird, 2021). 1,889 poaka / pied stilts were counted along 286 km (4240 ha) of braided river habitat in the Tutaekuri, Ngaruroro and Tukituki River catchments during October-November 2020 (McArthur et al, 2021), suggesting that at least 3,204 poaka / pied stilts were present on the braided rivers and coastal habitats of Hawke's Bay during the 2020-2021 breeding season⁴. The regional population of poaka / pied stilts has previously been estimated to be between 1,000 and 5,000 birds (HBRC, unpublished data). Although it is currently difficult to estimate the number of birds likely to be breeding on inland lakes, ponds, wetlands and wet pasture, we consider it likely to be no more than 500 to 1,500 birds. This being the case, we now estimate the regional population of poaka / pied stilts in the Hawke's Bay region to be between 3,704 and 4,704 adult birds, representing 15-20% of the estimated national population of 24,000 birds (Riegen and Sagar, 2020).

⁴ The 291 poaka / pied stilts counted at the Tukituki and Ngaruroro River estuaries during this survey are likely to have been counted during both the Oct-Nov 2020 Hawke's Bay river survey and this coastal bird survey, so this total has been calculated by adding together the poaka / pied stilt counts from these two surveys, then subtracting 291 to account for the double-counting of birds at these two estuaries.

Because this is the first survey to generate a poaka / pied stilt population estimate for the entire Hawke's Bay coastline, the population trends of poaka / pied stilts in the Hawke's Bay region are poorly known. However, census surveys carried out on Hawke's Bay rivers since the early 1960s suggest that populations of riverbed-breeding poaka / pied stilts in the region (comprising 40-51% of the regional population) have been stable over the past 60 years (McArthur et al, 2021). Applying a regional population estimate of 3,704 - 4,704 adult birds to the NZTCS criteria and assuming a stable population, we therefore confirm that this species should be ranked as Regionally Vulnerable based on criterion B (1/1) 1000–5000 mature individuals, stable population (Townsend et al, 2008). We also recommend that this ranking be given the qualifiers DPT (Data Poor Trend), CI (Climate Impacts) and SO (Secure Overseas) according to the qualifier definitions provided by Rolfe et al, (2021).

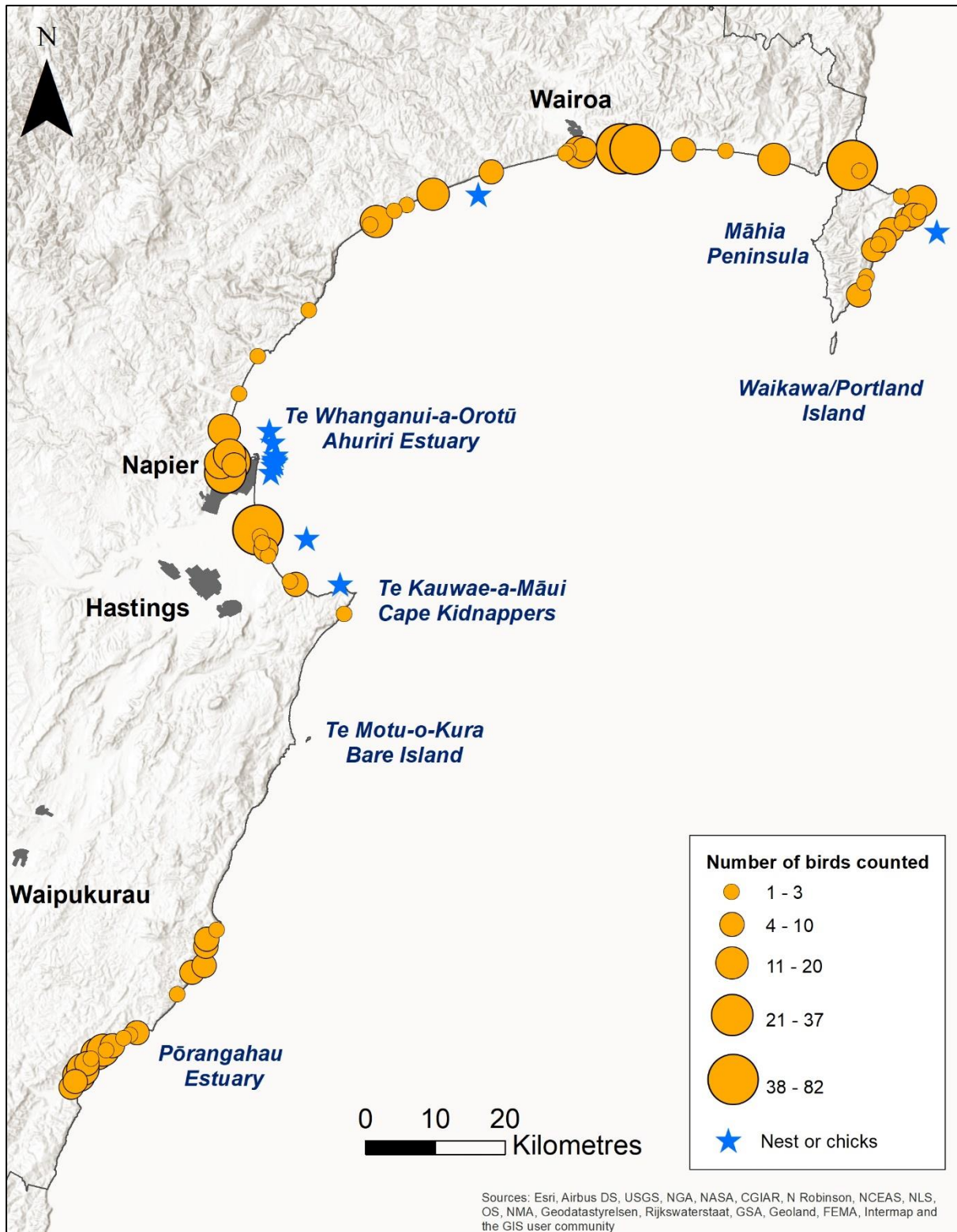


Figure 3.16: Distribution, relative abundance and breeding observations of poaka / pied stilts along the Hawke's Bay coastline. Note, the blue star symbols on the map have been offset to the right of the locations at which poaka / pied stilts were observed breeding, for the sake of clarity.

• 3.2.14 Tarāpunga / red-billed gull (*Larus novaehollandiae*)



Image courtesy of Alan Tennyson/NZ Birds Online

National conservation status: At Risk, Declining (Robertson et al, 2017)

Regional conservation status: Regionally Vulnerable (HBRC, unpublished data)

A total of 1,877 tarāpunga / red-billed gulls were counted during this survey, occupying 165 (49.4%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.17). Tarāpunga / red-billed gulls were fairly uniformly distributed along most of the Hawke's Bay coastline but were largely absent from the northern Hawke's Bay coastline between Waipatiki and Māhia Beaches, perhaps because this stretch of coastline was a relatively large distance from the nearest active nesting colony.

Tarāpunga / red-billed gulls were found to be breeding at five locations along the Hawke's Bay coastline, namely Waikawa / Portland Island, Napier Port, Te Kauwae-a-Māui / Cape Kidnappers, Te Motu-o-Kura / Bare Island and the Pōrangahau Estuary, and at all of these sites they were breeding in mixed colonies with tara / white-fronted terns (Figures 3.17 and 3.25). A number of these colonies were too inaccessible to carry out accurate counts of the number of occupied nests or chicks present, hampering our efforts to generate an accurate estimate of the regional breeding population of this species by multiplying the total number of occupied nests by a factor of two. However, we recorded a total of 656 adult birds at these five colonies, which is likely to provide a reasonable approximation of the regional breeding population during the 2020-2021 season. The largest breeding colony was situated on Te Motu-o-Kura / Bare Island, where 308 adult birds (46% of the regional breeding population) were counted. The second-largest breeding colony was situated at Napier Port, where 141 adult birds (21% of the regional population) were counted (Napier Port, unpublished data). The Waikawa / Portland Island colony was the third-largest nesting colony in the Hawke's Bay region, with 113 adult birds (17% of the regional population) counted during November 2020 (Helen Jonas, *personal communication*). The fourth-largest colony was situated at Te Kauwae-a-Māui / Cape Kidnappers, where 82 adult birds (12% of the regional population) were counted during this survey, and the fifth-largest colony was situated at the Pōrangahau Estuary, where 12 adult birds (2% of the regional population) were counted during this survey.

This is the first regional census count of tarāpunga / red-billed gulls that has been carried out along the entire Hawke's Bay region coastline, so no information on regional population trends is currently available. The national population has declined by at least 25% since the early 1960s however, from an estimated 80,000 breeding birds in 1960 (Gurr & Kinsky, 1965) to between 55,662 and 60,000 breeding birds in 2014-2016 (Frost & Taylor, 2018). The current national NZTCS ranking for this species is based on an assumption that the species is declining at a rate of between 10 and 50% over three generations (Robertson et al, 2017). Assuming a national breeding population of 55,662 – 60,000

birds, the 656 adult tarāpunga / red-billed gulls encountered at nesting colonies along the Hawke's Bay region coastline during this survey represents 1% of the national population.

Applying a regional population estimate of 656 breeding tarāpunga / red-billed gulls to the NZTCS criteria and assuming that the population is declining at a rate of between 10 and 50% every three generations, we recommend that the tarāpunga / red-billed gull should be ranked as Regionally Endangered in the Hawke's Bay region based on criterion A (1/1) 250–1000 mature individuals, predicted decline 10–50% (Townsend et al, 2008). We also recommend that this ranking be given the qualifiers DPT (Data Poor Trend) and CI (Climate Impacts) according to the qualifier definitions provided by Rolfe et al, (2021).

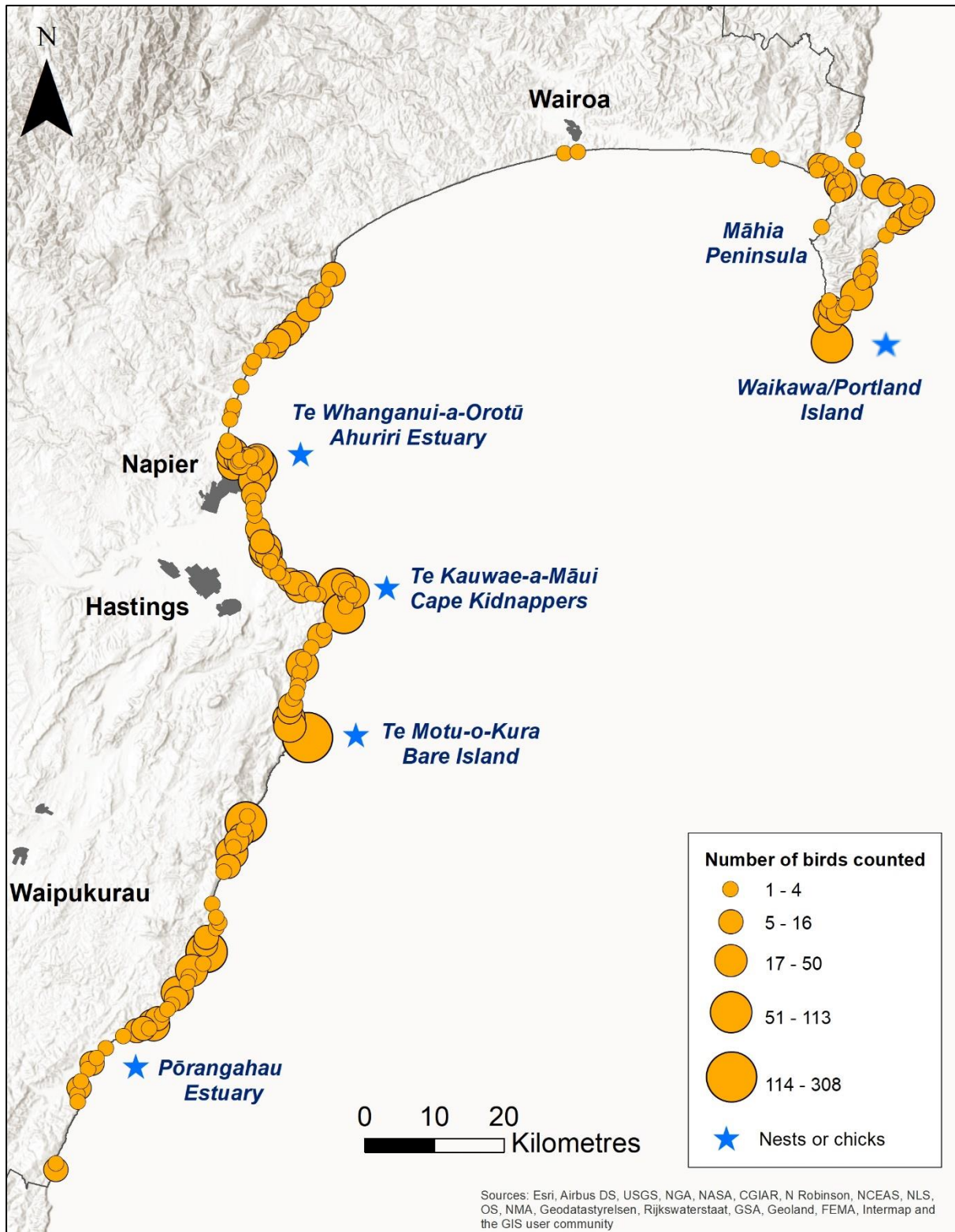


Figure 3.17: Distribution, relative abundance and breeding observations of tarāpunga / red-billed gulls along the Hawke’s Bay coastline. Note, the blue star symbols on the map have been offset to the right of the locations at which tarāpunga / red-billed gulls were observed breeding, for the sake of clarity.

- 3.2.15 Matuku moana / reef heron (*Egretta sacra*)



Image courtesy of Duncan Watson/NZ Birds Online

National conservation status:

Nationally Endangered (Robertson et al, 2017)

Regional conservation status:

Regionally Critical (HBRC, unpublished data)

A total of nine adult matuku moana / reef herons were counted during this survey, occupying 8 (2.4%) of the 333 1 km sections of coastline surveyed (Figure 3.18). Matuku moana / reef herons were restricted to three sections of the Hawke's Bay coastline. At least

six birds (67% of the regional population) were present along the eastern coastline of Māhia Peninsula and on Waikawa / Portland Island, one further bird (11% of the regional population) was encountered near Puapua / Flat Rock just south of Te Kauwae-a-Māui / Cape Kidnappers and two birds (22% of the regional population) were observed on Te Motu-o-Kura / Bare Island (Figure 3.18).

Matuku moana / reef herons appear to be exceedingly rare along the central New Zealand coastline, with only 15 birds counted along 460 km of coastline in the Greater Wellington region in 2017-2018 (McArthur et al, 2019) and 16 birds counted along 428 km of the Nelson-Tasman coastline in 2020 (Tasman District Council, unpublished data; Nelson City Council, unpublished data). A further 57 matuku moana / reef herons were counted along the 1,500 km coastline of the Marlborough Sounds in 2006 (Bell, 2010). Matuku moana / reef heron numbers appear to have declined in the greater Wellington region during the 20th Century (McArthur et al, 2019). Given the apparently large amount of suitable rocky shore habitat present along the Hawke's Bay coastline, the number of matuku moana / reef herons counted during this survey appears to be unnaturally low. This in turn suggests that one or more as yet unidentified environmental factors have caused the Hawke's Bay region matuku moana / reef heron population to decline to a critically low level.

Based on an estimated regional breeding population of just nine adult birds, the matuku moana / reef heron is currently one of the rarest breeding bird species present in the Hawke's Bay region. Applying this regional population estimate of nine birds to the NZTCS criteria, we confirm that this species should be ranked as Regionally Critical in the Hawke's Bay region based on criterion A(1): <250 mature individuals (Townsend et al, 2008). We recommend that this ranking be given the qualifiers CD (Conservation Dependent), CI (Climate Impacts), CR (Conservation Research Needed) and SO (Secure Overseas) according to the qualifier definitions provided by Rolfe et al, (2021).

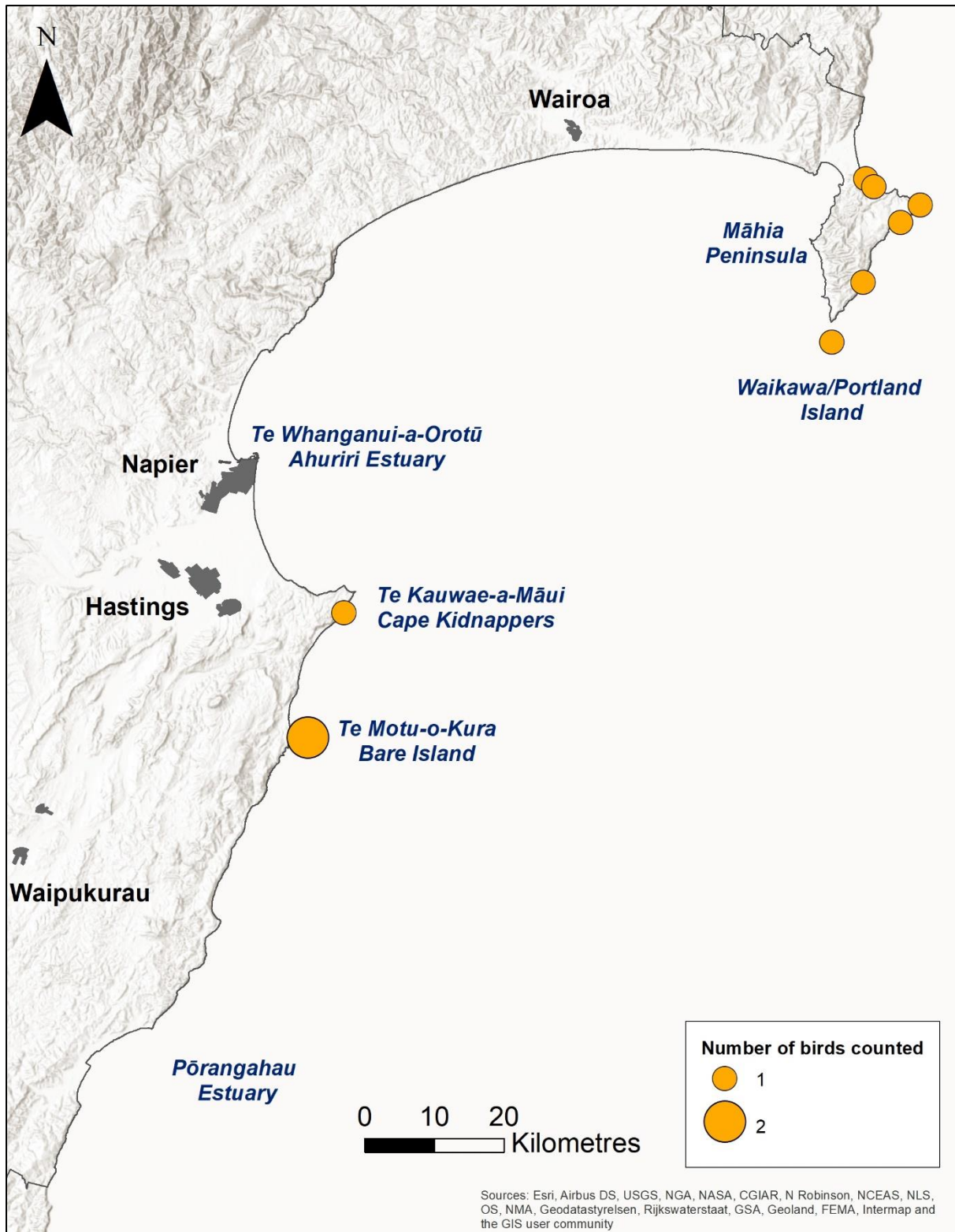


Figure 3.18: Distribution and relative abundance of matuku moana / reef herons along the Hawke's Bay coastline.

- 3.2.16 Ruddy turnstone (*Arenaria interpres*)



Image courtesy of Duncan Watson/NZ Birds Online

National conservation status:

Migrant (Robertson et al, 2017)

Regional conservation status:

Migrant (HBRC, unpublished data)

Eighty-nine ruddy turnstones were encountered during this survey, occupying four (1.2%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.19). Seventy-six of these birds (85%) were encountered in two separate flocks along

the eastern coastline of Māhia Peninsula, a further 12 birds (13%) were recorded on Waikawa / Portland Island and a single bird was encountered at Te Whanganui-a-Orotū / Ahuriri Estuary (Figure 3.19).

Ruddy turnstones breed in Arctic and sub-arctic tundra habitats in northern Eurasia and North America and migrate to southern hemisphere coastlines including Australasia for the southern hemisphere summer (Higgins & Davies 1996). The ruddy turnstone is the third most common Arctic-breeding shorebird that occurs in New Zealand, however the number of birds visiting New Zealand each summer has declined by 61% since the early 1980s (Riegen & Sagar, 2020). Between 1983 and 1993 an average of 4,227 birds were counted during Birds New Zealand summer wader surveys each year, whereas an average of 1,654 birds were counted during surveys carried out between 2005 and 2019 (Riegen & Sagar, 2020). Ruddy turnstones are less reliant on muddy estuarine habitats than other Arctic-breeding shorebird species, so are considered less vulnerable to habitat loss associated with recent large-scale land reclamation projects in the Yellow Sea. This being the case, the cause(s) for the substantial decline in ruddy turnstones observed in New Zealand since 1983 are poorly known at present (Melville et al, 2020; Riegen & Sagar, 2020). Birds New Zealand's summer wader counts are carried out at 72 coastal harbours, estuaries, lakes and lagoons throughout New Zealand, but do not include the Māhia Peninsula coastline or Waikawa / Portland Island (Riegen & Sagar, 2020). The 88 birds counted at these two sites during this survey are therefore unlikely to have been counted during recent Birds New Zealand summer wader counts. By adding these 88 birds to the average of 1,654 ruddy turnstones counted in New Zealand between 2005 and 2019, we estimate that the 89 ruddy turnstones counted in the Hawke's Bay region represents 5% of the national summer population of this species.

Applying a regional population estimate of 89 ruddy turnstones to the NZTCS criteria, we confirm that the ruddy turnstone should be ranked as a Migrant in the Hawke's Bay region based on the criterion that the ruddy turnstone is a taxon that "predictably visit[s] New Zealand seasonally as part of [its] normal life cycle (a minimum of 15 individuals known or presumed to visit per annum) but [does] not breed here" (Townsend et al, 2008). We recommend that this ranking be given the qualifiers CI (Climate Impacts), CR (Conservation Research Needed) and SO (Secure Overseas) according to the qualifier definitions provided by Rolfe et al, (2021).

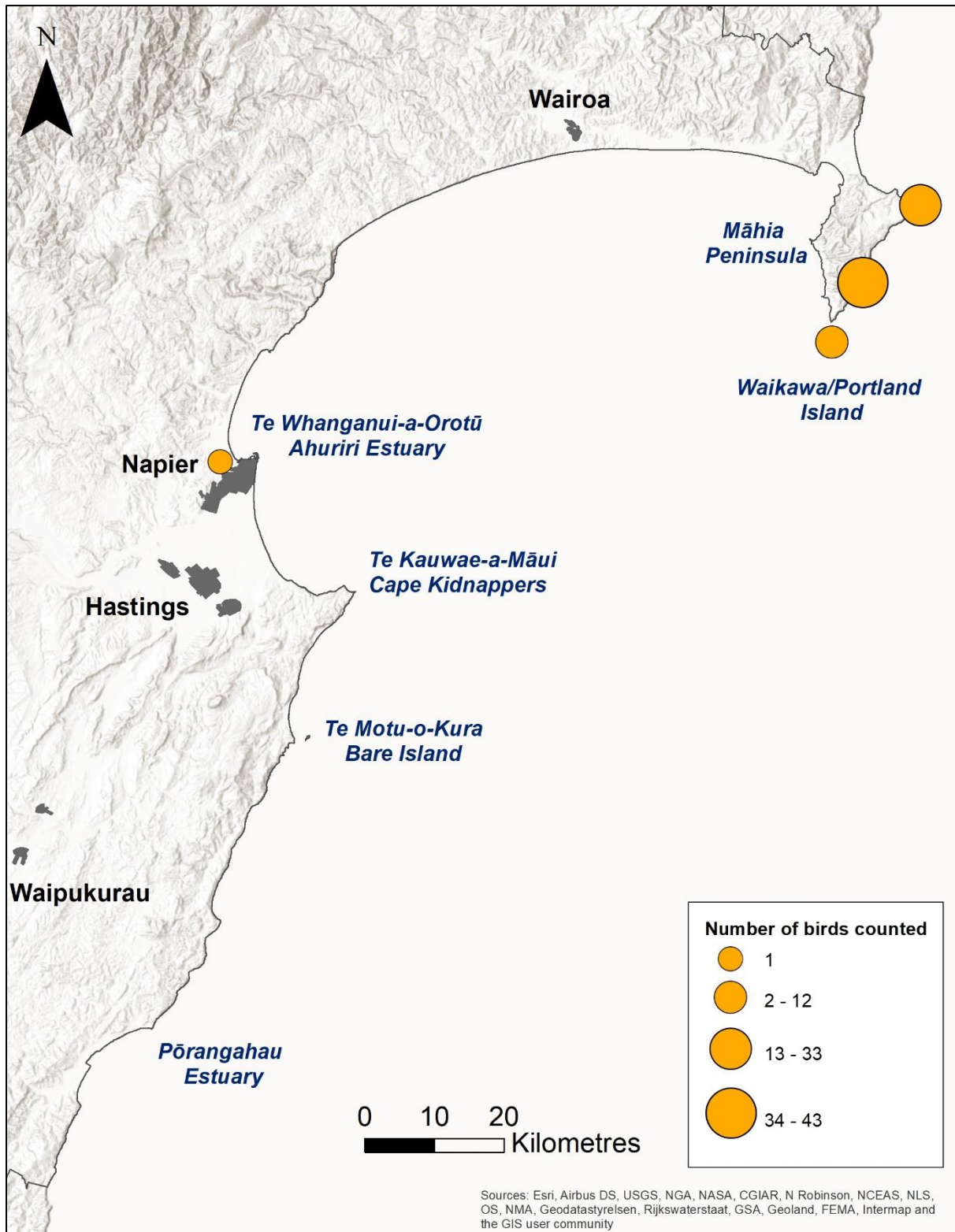


Figure 3.19: Distribution and relative abundance of ruddy turnstones along the Hawke's Bay coastline.

- 3.2.17 Sharp-tailed sandpiper (*Calidris acuminata*)



Image courtesy of Tony Whitehead/NZ Birds Online

National conservation status:

Migrant (Robertson et al, 2017)

Regional conservation status:

Migrant (HBRC, unpublished data)

Seven sharp-tailed sandpipers were encountered during this survey, all of which were observed in a single flock at the Southern Marsh at Ahuriri Estuary in the company of two pectoral sandpipers (Figure 3.20 and see [Section 3.2.11](#)).

Sharp-tailed sandpipers breed in northern Siberia and migrate to Australasia and the western Pacific for the southern hemisphere summer (Higgins & Davies 1996). The number of sharp-tailed sandpipers visiting New Zealand each summer has declined by 72% since the early 1980s, possibly due to the extensive reclamation of coastal mudflats on the shores of the Yellow Sea, which is an important stopover habitat for this species during migration (Heather & Robertson 2015). Between 1983 and 1994 an average of 68 birds were counted during Birds New Zealand summer wader surveys each year, whereas an average of 19 birds were counted during surveys carried out between 2005 and 2019 (Riegen & Sagar 2020). Sharp-tailed sandpipers tend to prefer eastern estuaries, lakes and lagoons in New Zealand. Between 2005 and 2019 only six sites surveyed during Birds New Zealand summer wader surveys supported average counts of >1 sharp-tailed sandpiper, namely: the Manukau Harbour, Firth of Thames, Te Whanganui-a-Orotū / Ahuriri Estuary, Pōrangahau Estuary, Lake Grassmere and Lake Ellesmere (Riegen & Sagar 2020). At Te Whanganui-a-Orotū / Ahuriri Estuary, up to five sharp-tailed sandpipers are typically recorded each summer (eBird, 2021), but a record high count of nine birds was recorded by Ian Armitage on the 5th of March 2005 (Armitage, 2005). These results indicate that Te Whanganui-a-Orotū / Ahuriri Estuary is a nationally significant habitat for this rare Arctic-breeding migrant, supporting 26-47% of the national summer population of this species each year.

Applying a regional population estimate of seven sharp-tailed sandpipers to the NZTCS criteria, we recommend that the sharp-tailed sandpiper should be ranked as a Vagrant in the Hawke's Bay region based on the criterion that the sharp-tailed sandpiper is a taxon "whose occurrences, though natural, [is] sporadic and typically transitory, or [a migrant] with fewer than 15 individuals visiting per annum" (Townsend et al, 2008). We also recommend that this ranking be given the qualifiers CI (Climate Impacts) and SO (Secure Overseas) according to the qualifier definitions provided by Rolfe et al, (2021).

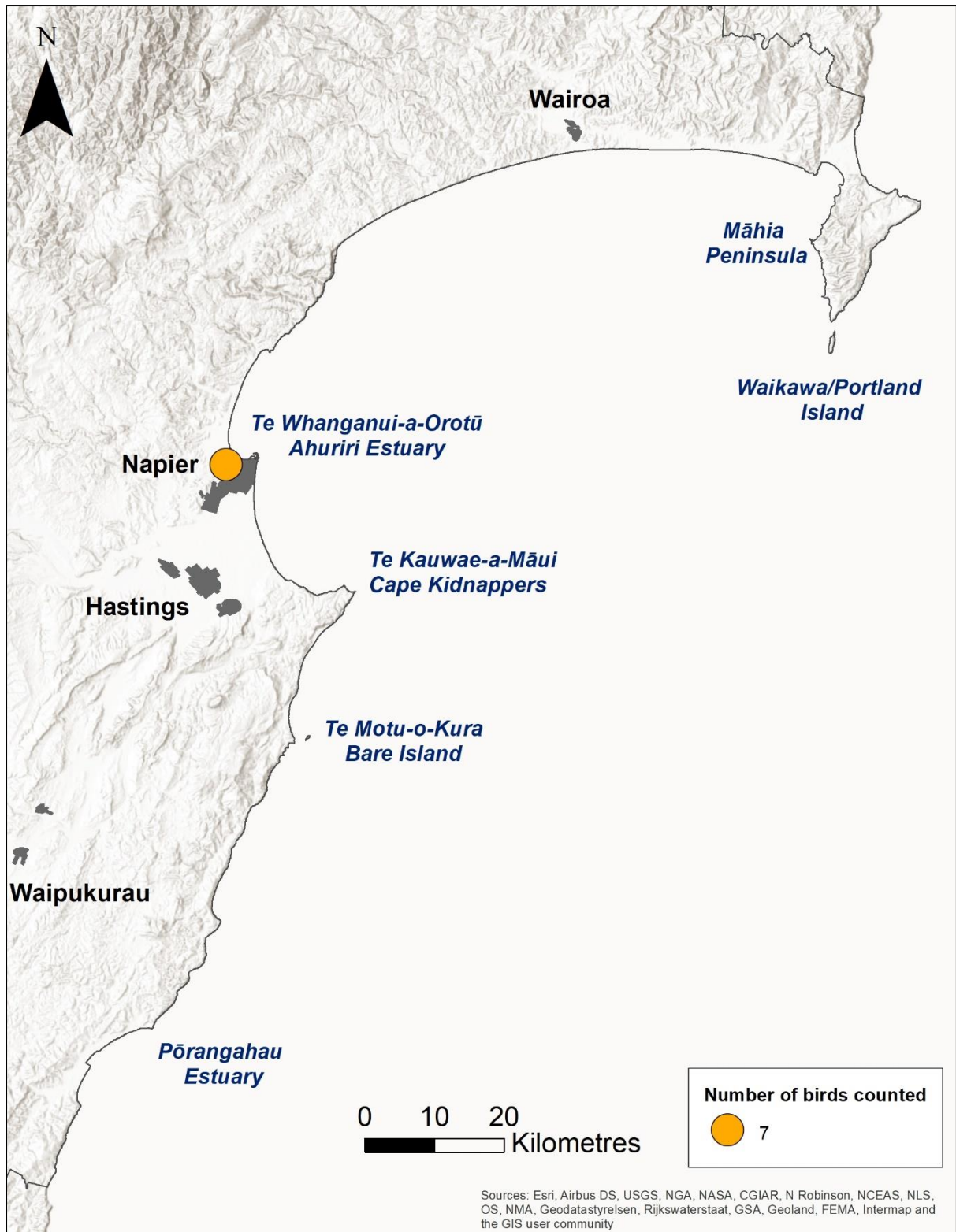


Figure 3.20: Distribution and relative abundance of sharp-tailed sandpipers along the Hawke's Bay coastline.

- 3.2.18 Tuturuatu / shore plover (*Thinornis novaeseelandiae*)



National conservation status: Nationally Critical (Robertson et al, 2017)

Regional conservation status: Regionally Critical (HBRC, unpublished data)

No tuturuatu / shore plovers were encountered during this survey however 70 birds (including 31 breeding pairs) were present on Waikawa / Portland Island during the 2020/2021 breeding season (Figure 3.21; Helen Jonas, *personal communication*).

The global population of tuturuatu / shore plovers is currently less than 250 birds, with the largest (and only natural) population occurring on Rangatira Island in the Chatham Islands (Dowding, 2016). The reintroduced tuturuatu / shore plover population on Waikawa / Portland Island is currently the second-largest breeding population of this species, representing approximately 35% of the global population. Individually marked birds from this population are occasionally reported from the southern and eastern coastline of Māhia Peninsula (Helen Jonas, *personal communication*), are regularly reported from Te Whanganui-a-Orotū / Ahuriri Estuary (eBird, 2021), and have been recently reported from the Ngaruroro River estuary at Waitangi (Twytle, 2016), and from Waimarama Beach (Adams, 2019).

Applying a regional population estimate of 70 tuturuatu / shore plover to the NZTCS criteria, we confirm that this species should be ranked as Regionally Critical in the Hawke's Bay region based on criterion A(1): <250 mature individuals (Townsend et al, 2008). We recommend that this ranking be given the qualifiers CD (Conservation Dependent), CI (Climate Impacts) and RR (Range Restricted) according to the qualifier definitions provided by Rolfe et al, (2021).

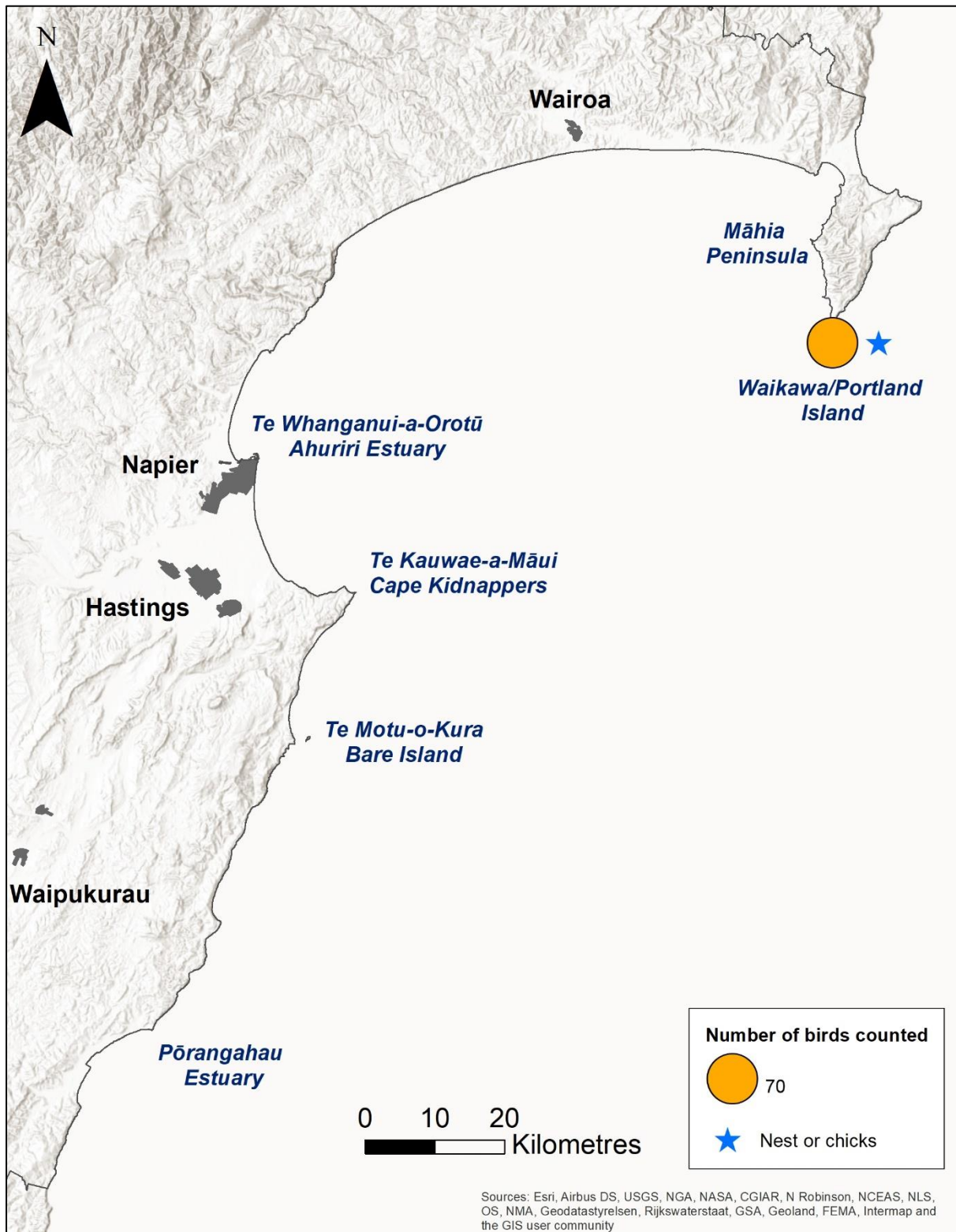


Figure 3.21: Distribution, relative abundance and breeding observations of tuturuatu / shore plovers along the Hawke's Bay coastline. Note, the blue star symbols on the map have been offset to the right of the locations at which tuturuatu / shore plovers were observed breeding, for the sake of clarity.

- 3.2.19 Hākoakoa / tītī / sooty shearwater (*Puffinus griseus*)



Image courtesy of Graeme Taylor/NZ Birds Online

National conservation status: At Risk, Declining (Robertson et al, 2017)

Regional conservation status: Data Deficient (HBRC, unpublished data)

A single hākoakoa / adult sooty shearwater was encountered during this survey, occupying an active breeding burrow on Te Motu-o-Kura / Bare Island. (Figure 3.22). As this was an active nest, we confirm that there were at least two

adult hākoakoa / adult sooty shearwater occupying the island at the time of this survey.

Hākoakoa / sooty shearwaters were formerly common on the island and tītī / sooty shearwater chicks were being harvested for food by the island's Ngāti Kahungunu owners until at least the 19th Century (Walls, 1988). The number of hākoakoa / sooty shearwaters breeding on the island steadily declined from the late 1930s onwards however, following the accidental introduction of Norway rats (*Rattus norvegicus*) to the island in 1936 (Walls, 1998). By November 1960, only 100 occupied burrows were estimated to be present on the island (Merton, 1961), declining to 20 occupied burrows in 1988 (Walls, 1988) and only five occupied burrows by 1998 (Walls, 1998). Norway rats were eradicated from Te Motu-o-Kura / Bare Island during the winter of 1990 (Walls, 1998) and the island apparently remains rat-free (N. McArthur, *personal observation*). Hākoakoa / sooty shearwater numbers do not appear to have recovered during the 30 years since however, either because the population is now so small that it has little potential to recover, or because one or more other environmental factors continue to limit the survival and productivity of the remaining birds.

Our encounter with a breeding hākoakoa / sooty shearwater on Te Motu-o-Kura / Bare Island during this survey confirms that this species continues to breed on Te Motu-o-Kura Island, over 20 years since the last observation of this species on the island in 1998. Coincidentally, at least two further breeding pairs were also found to be breeding within the Cape Sanctuary at Te Kauwae-a-Māui / Cape Kidnappers in early 2021, having been attracted to artificial nest boxes in the sanctuary using broadcasted calls⁵. With a known regional breeding population of just six adult birds, the hākoakoa / sooty shearwater is currently the rarest breeding bird species present in the Hawke's Bay region. Applying this new regional population estimate of six hākoakoa / sooty shearwaters to the NZTCS criteria, we recommend that this species should be ranked as Regionally Critical in the Hawke's Bay region based on criterion A(1): <250 mature individuals (Townsend et al, 2008). We also recommend that this ranking be given the qualifiers CD (Conservation Dependent), CI (Climate Impacts), CR (Conservation Research Needed) and SO (Secure Overseas) according to the qualifier definitions provided by Rolfe et al, (2021).

⁵ <https://www.nzherald.co.nz/hawkes-bay-today/news/petrel-power-two-sooty-shearwater-petrel-chicks-hatch-at-hawkes-bay-sanctuary/GVABCPAKQEGC3UYMRXUG5C6XKQ/> (accessed 5th July 2021).

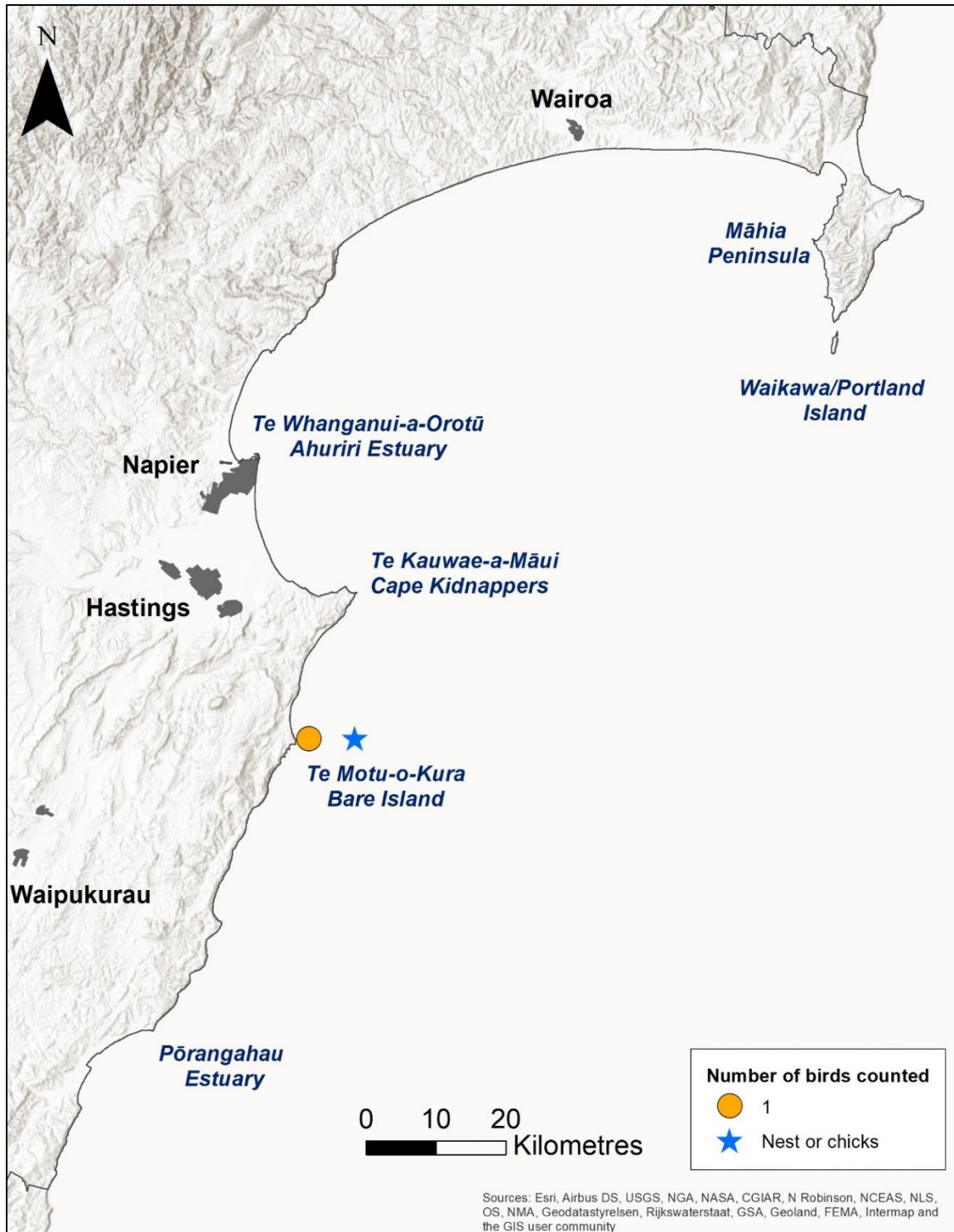


Figure 3.22: Distribution, relative abundance and breeding observations of hākoako / tītī / sooty shearwaters along the Hawke's Bay coastline. Note, the blue star symbols on the map have been offset to the right of the locations at which hākoako / tītī / sooty shearwaters were observed breeding, for the sake of clarity.

- 3.2.20 Tōrea pango / variable oystercatcher (*Haematopus unicolor*)



Image courtesy of Rebecca Bowater/NZ Birds Online

National conservation status: At Risk, Recovering (Robertson et al, 2017)

Regional conservation status: Regionally Critical (HBRC, unpublished data)

A total of 516 adult tōrea pango / variable oystercatchers were counted during this survey, occupying 137 (41%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.23). Tōrea pango / variable oystercatchers are one of the most

widespread coastal bird species encountered during this survey and are relatively uniformly distributed along the Hawke's Bay region coastline. Particularly high densities of birds were encountered along the eastern coastline of Māhia Peninsula, at Te Whanganui-a-Orotū / Ahuriri Estuary and along the southern Hawke's Bay coastline including Aramoana and the Pōrangahau Estuary. Along the length of this coastline, the presence of nests, broods of chicks and fledglings indicated that the regional tōrea pango / variable oystercatcher population was experiencing relatively good nest survival, hatching and chick survival rates (Figure 3.23).

Tōrea pango / variable oystercatcher densities along the Hawke's Bay coastline are similar to those found along the Greater Wellington and Marlborough Sounds coastlines. A total of 712 tōrea pango / variable oystercatchers were counted along 460 km of the Greater Wellington region coastline during 2017-2018 (McArthur et al, 2019), and 730 birds were counted along 1,500 km of the Marlborough Sounds coastline in 2006 (Bell, 2010). In contrast, much higher densities of tōrea pango / variable oystercatchers occur along the Nelson-Tasman coastline, with 1,758 birds counted along 428 km of coastline in 2020 (Tasman District Council, unpublished data; Nelson City Council, unpublished data). The much higher number of tōrea pango / variable oystercatchers in the Nelson-Tasman region is likely due to the much larger area of intertidal mudflat habitats present in this region, in comparison to the coastlines of the Hawke's Bay and Greater Wellington regions and in the Marlborough Sounds.

This is the first regional census count of tōrea pango / variable oystercatchers that has been carried out in Hawke's Bay, so no information on regional population trends is currently available. Nationwide however, tōrea pango / variable oystercatcher numbers have increased steadily in recent decades. The mean number of tōrea pango / variable oystercatchers recorded during Birds New Zealand winter wader counts increased by 77% between 1983-1994 and 2005-2019, from a mean of 1,393 birds recorded annually during nationwide counts carried out between 1983-1994 to a mean of 2,802 birds recorded annually during counts carried out between 2005-2019 (Riegen & Sagar, 2020). Some of this recent increase in numbers is likely to be a consequence of the improved management of New Zealand dotterel breeding habitats in the northern North Island, although similar increases have also been observed in other parts of New Zealand, including the Nelson-Tasman region (Riegen & Sagar, 2020). Applying this new regional population estimate of 516 adult tōrea pango / variable oystercatchers to the NZTCS criteria and assuming that the regional population is increasing at a rate of >10% over three generations, we recommend that the tōrea pango / variable oystercatcher should be ranked as Regionally Vulnerable in the Hawke's Bay region based on criterion A(1/1): 250–1000 mature

Version

individuals, predicted increase >10% (Townsend et al, 2008). We also recommend that this ranking be given the qualifiers CI (Climate Impacts) and INC (Increasing) according to the qualifier definitions provided by Rolfe et al, (2021).

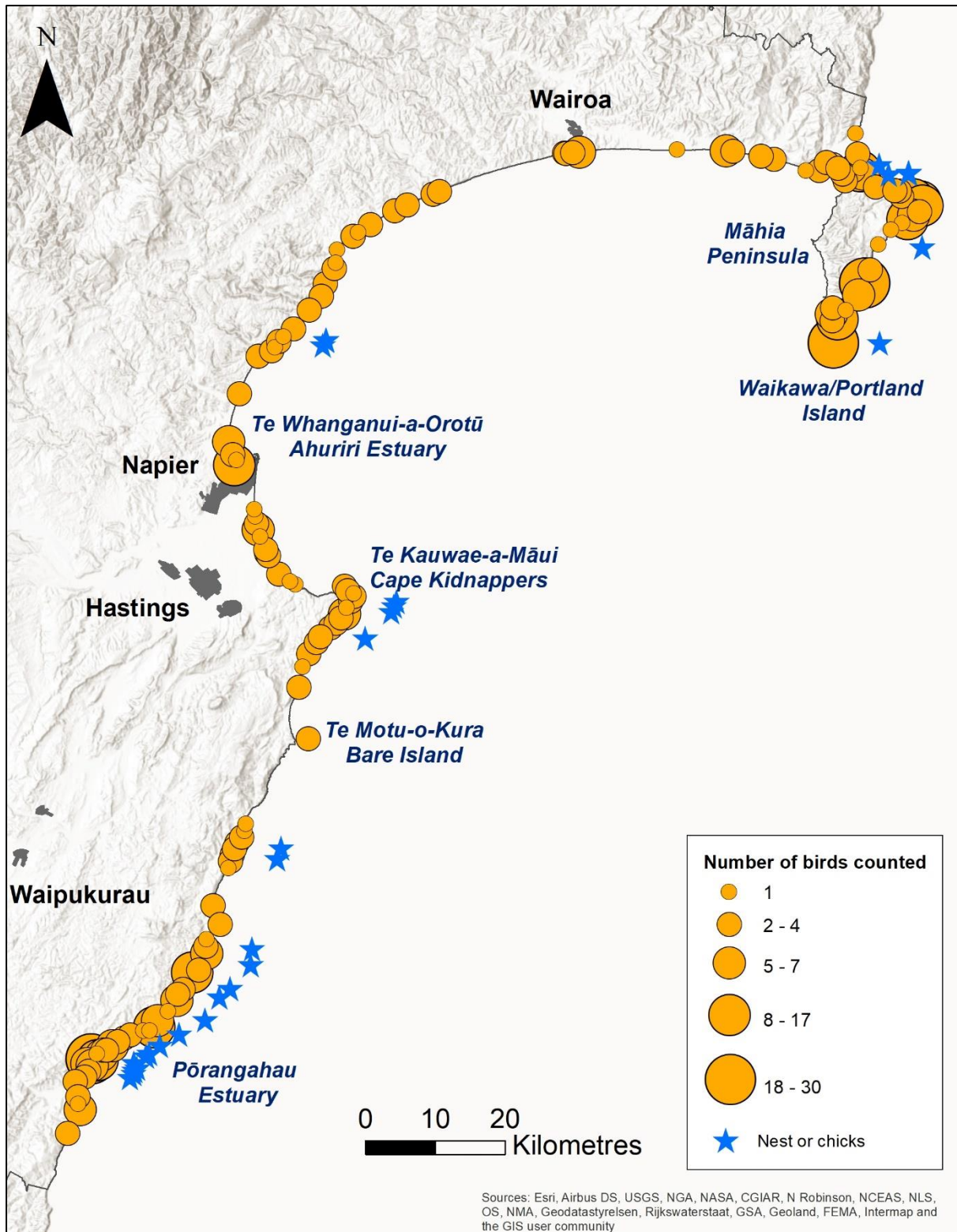


Figure 3.23: Distribution, relative abundance and breeding observations of tōrea pango / variable oystercatchers along the Hawke's Bay coastline. Note, the blue star symbols on the map have been offset to the right of the locations at which tōrea pango / variable oystercatchers were observed breeding, for the sake of clarity.

- 3.2.21 Whimbrel (*Numenius phaeopus*)



Image courtesy of Scott Brooks/NZ Birds Online

National conservation status: Migrant
(Robertson et al, 2017)

Regional conservation status: Vagrant
(HBRC, unpublished data)

Eight whimbrels were encountered during this survey, including seven birds counted on the Maungawhio Lagoon at Māhia Peninsula and a single bird encountered at Te Whanganui-a-Orotū / Ahuriri Estuary (Figure 3.24).

Whimbrels breed throughout northern Eurasia and North America, with between four and six subspecies recognised. Two of these subspecies migrate to New Zealand for the southern hemisphere summer, Asiatic whimbrels (*N. p. variegatus*) which breed in eastern Siberia and American whimbrels (*N. p. hudsonicus*) which breed in Alaska and northern Canada (Higgins & Davies 1996). The number of whimbrels visiting New Zealand each summer has declined by 65% since the early 1980s, possibly due to the extensive reclamation of coastal mudflats on the shores of the Yellow Sea, which is an important stopover habitat for this species during migration (Heather & Robertson 2015). Between 1983 and 1993 an average of 89 birds were counted during Birds New Zealand summer wader surveys each year, whereas an average of 31 birds were counted during surveys carried out between 2005 and 2019 (Riegen & Sagar 2020). The majority of the whimbrels that occur in New Zealand each summer are found on the estuaries and harbours of Northland, Auckland, Waikato and the Bay of Plenty, and at Farewell Spit. One or two whimbrels are reported at the Maungawhio Lagoon each summer, and whimbrels are regularly recorded at both Te Whanganui-a-Orotū / Ahuriri Estuary and the Pōrangahau Estuary (eBird, 2021). The seven birds encountered at the Maungawhio Lagoon during this survey however is one of the largest flocks to have been recorded in the Hawke's Bay region in recent years, with the eight whimbrel present in the Hawke's Bay region during the 2020-2021 summer representing an estimated 26% of the mean national summer population of this species.

Applying a regional population estimate of eight whimbrels to the NZTCS criteria, we confirm that the whimbrel should continue to be ranked as a Vagrant in the Hawke's Bay region based on the criterion that the whimbrel is a taxon "whose occurrences, though natural, [is] sporadic and typically transitory, or [a migrant] with fewer than 15 individuals visiting per annum" (Townsend et al, 2008). We recommend that this ranking be given the qualifiers CI (Climate Impacts) and SO (Secure Overseas) according to the qualifier definitions provided by Rolfe et al, (2021).

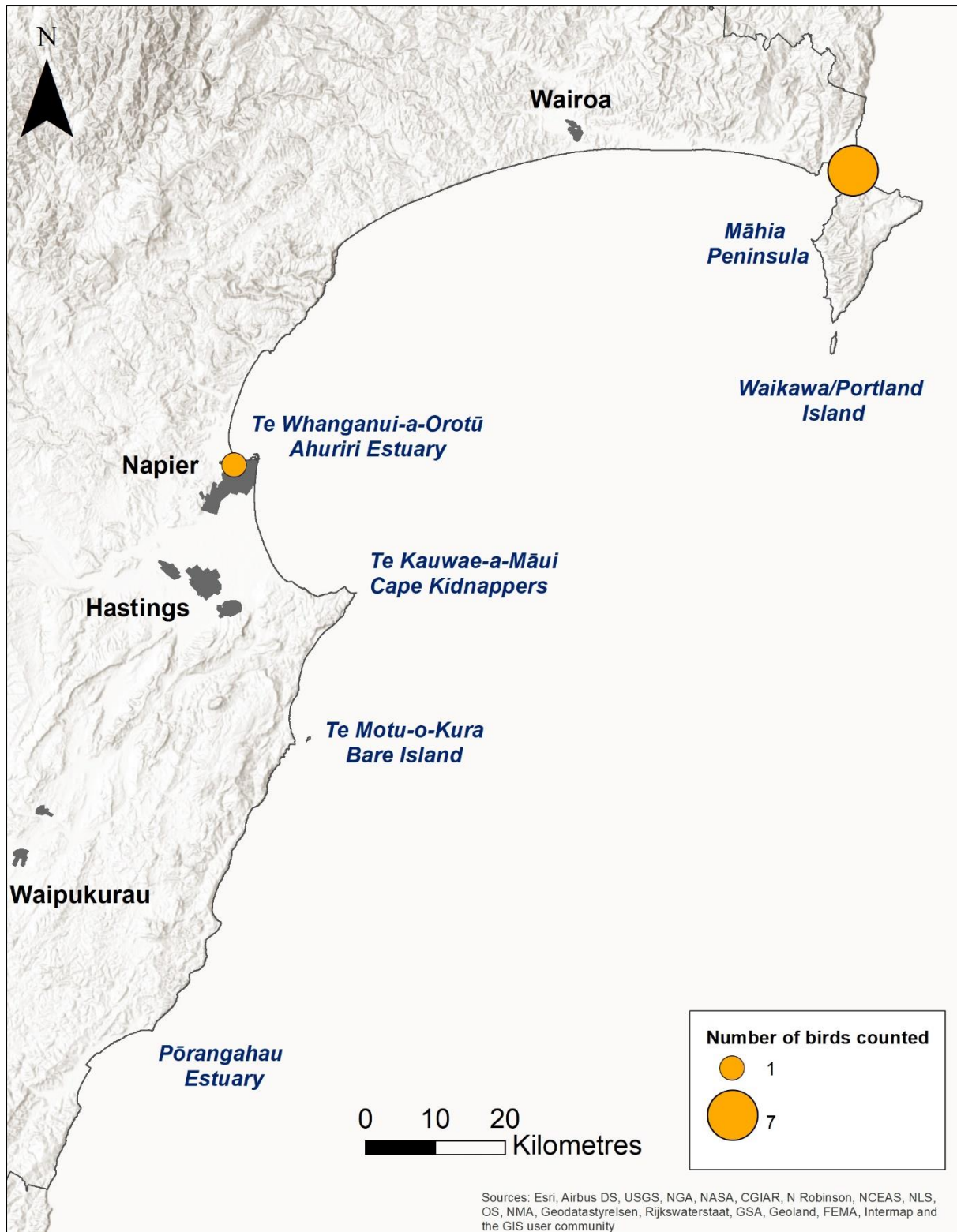


Figure 3.24: Distribution and relative abundance of whimbrels along the Hawke's Bay coastline.

- 3.2.22 Tara / white-fronted tern (*Sterna striata*)



Image courtesy of Rebecca Bowater/NZ Birds Online

National conservation status: At Risk, Declining (Robertson et al, 2017)

Regional conservation status: Not Threatened (HBRC, unpublished data)

A total of 2,088 adult tara / white-fronted terns were counted during this survey, occupying 75 (22.5%) of the 333 1 km sections of coastline and associated estuaries and coastal lagoons surveyed (Figure 3.25). Tara / white-fronted terns were fairly uniformly distributed along the Hawke's Bay coastline, with local hotspots occurring at many of the larger estuaries and at sites supporting nesting

colonies. Tara / white-fronted terns were found to be breeding at five locations along the Hawke's Bay coastline, namely Waikawa / Portland Island, Napier Port, Te Kauwae-a-Māui / Cape Kidnappers, Te Motu-o-Kura / Bare Island and the Pōrangahau Estuary, and at all of these sites they were breeding in mixed colonies with tarāpunga / red-billed gulls (Figures 3.17 and 3.25). A number of these colonies were too inaccessible to carry out accurate counts of the number of occupied nests or chicks present, hampering our efforts to generate an accurate estimate of the regional breeding population of this species by multiplying the total number of occupied nests by a factor of two. However, we recorded a total of 1,117 adult birds at these five colonies, which is likely to provide a reasonable approximation of the regional breeding population during the 2020-2021 season. The largest breeding colony was situated on Waikawa / Portland Island, where 400 adult birds (36% of the regional breeding population) were counted in November 2020 (Helen Jonas, *personal communication*). The second-largest breeding colony was situated at Napier Port, where 287 adult birds (26% of the regional population) were counted (Napier Port, unpublished data). The Pōrangahau Estuary colony was the third-largest nesting colony in the Hawke's Bay region, with 204 adult birds (18% of the regional population) counted during this survey. The fourth-largest colony was situated on Te Motu-o-Kura / Bare Island, where 135 adult birds (12% of the regional population) were counted during this survey, and the fifth-largest colony was situated at Te Kauwae-a-Māui / Cape Kidnappers, where 91 adult birds (8% of the regional population) was counted during this survey.

This is the first regional census count of tara / white-fronted terns that has been carried out in Hawke's Bay, so no information on regional population trends is currently available. Knowledge of the national population size and trend is similarly poor. The national population was estimated to total between 24,000 and 30,000 birds in the late 1990s (Taylor, 2000), however the population appears to have declined over the past several decades (Taylor, 2000; Heather & Robertson, 2015). The current national NZTCS ranking for this species is based on an assumption that the species is declining at a rate of between 10 and 50% over three generations (Robertson et al, 2017). Assuming a national population of 24,000 – 30,000 birds, the 1,117 adult tara / white-fronted terns encountered at nesting colonies along the Hawke's Bay region coastline during this survey represents 4 - 5% of the national population.

Applying a regional population estimate of 1,117 breeding tara / white-fronted terns to the NZTCS criteria and assuming that the population is declining at a rate of between 10 - 30% every three

generations, we recommend that the tara / white-fronted tern should be ranked as Regionally Vulnerable in the Hawke's Bay region based on criterion C(1/1) 1000–5000 mature individuals, predicted decline 10 – 50% (Townsend et al, 2008). We also recommend that this ranking be given the qualifiers DPT (Data Poor Trend), CI (Climate Impacts) and CR (Conservation Research Needed) according to the qualifier definitions provided by Rolfe et al, (2021).

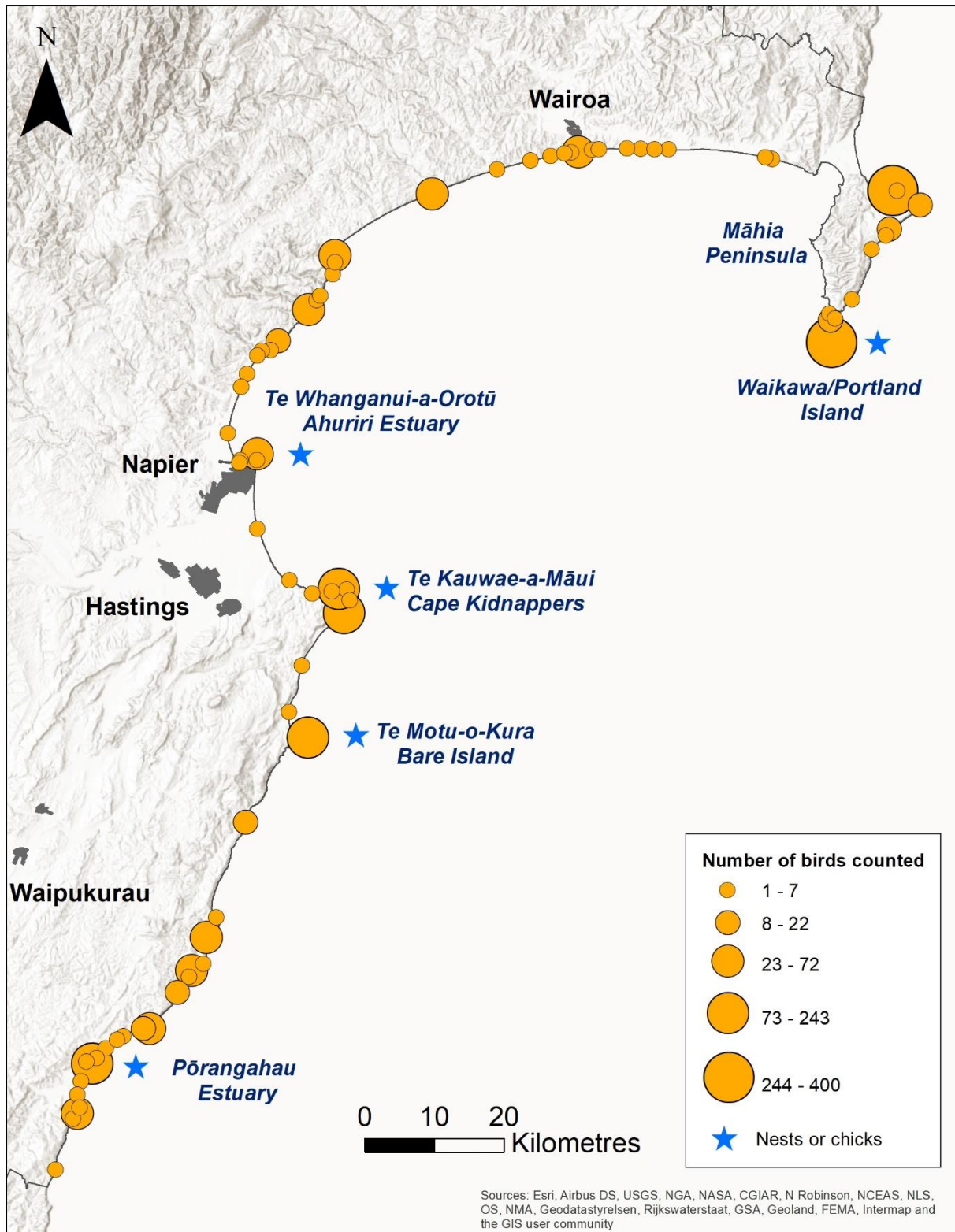


Figure 3.25: Distribution, relative abundance and breeding observations of tara / white-fronted terns along the Hawke’s Bay coastline. Note, the blue star symbols on the map have been offset to the right of the locations at which tara / white-fronted terns were observed breeding, for the sake of clarity.

- 3.2.23 Ngutu pare / wrybill (*Anarhynchus frontalis*)



Image courtesy of Neil Fitzgerald/NZ Birds Online

National conservation status: Nationally Vulnerable (Robertson et al, 2017)

Regional conservation status: Migrant (HBRC, unpublished data)

Forty-two ngutu pare / wrybills were counted during this survey, all of which were encountered at the Pōrangahau Estuary (Figure 3.26).

Ngutu pare / wrybill breed on braided riverbeds in Canterbury and northern Otago, with the majority of birds breeding on the Waimakariri, Rakaia, Rangitata Rivers, and in the upper Waitaki River catchment in the MacKenzie Basin

(Marchant & Higgins, 1993; Heather & Robertson 2015). Following breeding, 90% of the population migrates northwards to spend the non-breeding season on the Kaipara and Manukau Harbours and on the Firth of Thames, with the majority of the remaining 10% overwintering at other North Island estuaries and at Farewell Spit (Heather & Robertson 2015). The Pōrangahau Estuary is a nationally-significant wintering site for ngutu pare / wrybill, being the only estuary on the east coast of the North Island south of Tauranga Harbour and the Maketu and Little Waihi estuaries to support an annual winter flock of >10 ngutu pare / wrybills (Riegen & Sagar, 2020). Indeed, between 2005 and 2019, a mean of 55 ngutu pare / wrybills were counted at the Pōrangahau Estuary during Birds New Zealand winter wader counts, demonstrating that the estuary supports the fifth largest winter flock of ngutu pare / wrybills of any site in the country, representing 1.1% of the global population of this species, which was estimated to be 4,892 birds in 2019 (Riegen & Sagar, 2020).

Applying a regional population estimate of 42 ngutu pare / wrybills to the NZTCS criteria, we confirm that this species should be ranked as a Migrant in the Hawke's Bay region based on the criterion that the ngutu pare / wrybill is a taxon that "predictably visit[s] New Zealand seasonally as part of [its] normal life cycle (a minimum of 15 individuals known or presumed to visit per annum) but [does] not breed here" (Townsend et al, 2008). We recommend that this ranking be given the qualifiers CI (Climate Impacts) and RR (Range Restricted) according to the qualifier definitions provided by Rolfe et al, (2021).

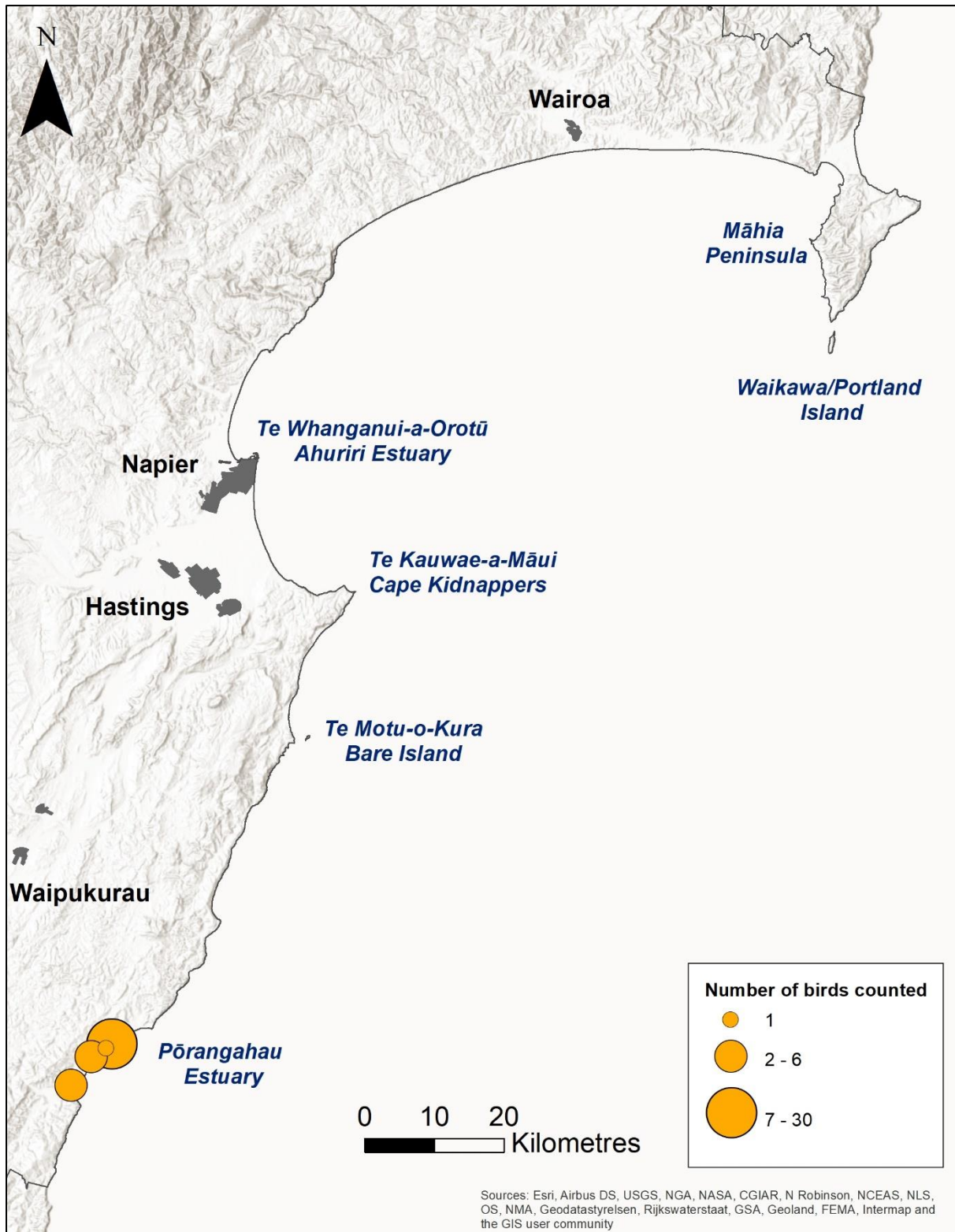


Figure 3.26: Distribution and relative abundance of ngutu pare / wrybills along the Hawke's Bay coastline.

4. Discussion

4.1 Identification and mapping of Significant Conservation Areas

The Hawke's Bay Regional Coastal Environment Plan includes a network of 20 Significant Conservation Areas (SCAs) along the Hawke's Bay coastline which have been identified based on an expert assessment of areas of ecological significance in the Hawke's Bay coastal marine area (CMA) carried out by the Department of Conservation in the early 1990s (HBRC, 2014a; Lundquist et al, 2020). In the 30 years since this work was carried out, no systematic or comprehensive assessment of the avifauna values of Hawke's Bay's coastline has been carried out, hampering HBRC's ability to identify coastal ecosystems and habitats with significant biodiversity values as required under Section 6(c) of the RMA.

The completion of this first systematic survey of the avifauna values of the Hawke's Bay coastline presents HBRC with an opportunity to revise and update its network of coastal SCAs, by using this dataset to apply known avifauna values to a set of criteria designed to identify sites that meet thresholds for "significance".

In recent years, ecological criteria have been used by a number of regional authorities in New Zealand to identify areas of significant indigenous vegetation and significant habitats of indigenous fauna. For example, Greater Wellington Regional Council has developed criteria to identify avifauna values that meet significance thresholds for ecological rarity, diversity and ecological context which have been used to identify a network of 51 coastal and freshwater habitats of significance for indigenous birds in the Wellington region (GWRC, 2015; McArthur, 2020c; Appendix Two). Such criteria will likely need to be region-specific, given biogeographic differences between regions, however given the substantial similarities between the avifauna values of the Greater Wellington and Hawke's Bay regions, the avifauna criteria developed by Greater Wellington Regional Council may already be close to being fit-for-purpose for the Hawke's Bay region, so would make a useful starting point for using available avifauna data to re-assess the location and extent of coastal SCAs in the Hawke's Bay region.

It is clear from the results of this survey that the coastline of the Hawke's Bay region includes sites that provide habitat for internationally, nationally and regionally significant populations of indigenous birds, including those of nationally and regionally threatened species. A number of these sites already fall entirely within existing SCAs, while others do not. For example, Te Motu-o-Kura / Bare Island (part of SCA 8) supports the largest breeding population of kororā / little penguins in the Hawke's Bay region (Anonymous, 1993), 46% of the regional breeding population of tarāpunga / red-billed gulls, at least 33% of the regional breeding population of hākoako / tītī / sooty shearwaters, 22% of the regional population of matuku moana / reef herons and 12% of the regional breeding population of tara / white-fronted terns. On the other hand, the vast majority of the shingle beaches between Bay View and Haumoana do not fall within an existing SCA, despite the fact that 5% of the regional breeding population of pohowera / banded dotterels occur in this area.

To ensure that HBRC's network of coastal SCAs includes significant coastal habitats for indigenous birds, we recommend that HBRC carries out a re-assessment of its coastal SCA network by developing a set of avifauna "significance" criteria that can be applied to available coastal bird survey datasets to identify coastal sites that support internationally, nationally and regionally significant populations or communities of indigenous birds. The avifauna data used in this review can also be used to create

concise and up-to-date descriptions of the avifauna values of each SCA identified in the review, and these descriptions can then be used to develop suitable policies and rules governing the appropriate use of these areas; to inform assessments of environmental effects of activities requiring resource consents, and to develop appropriate resource consent conditions. We suggest that the process and criteria used by Greater Wellington Regional Council to identify “significant habitats for indigenous birds” in the Wellington region would make a useful starting point for conducting a similar review of coastal SCAs in the Hawke’s Bay region.

4.2 Improving regional oiled wildlife response preparedness

The data collected during this regional coastal bird survey provide the most detailed and complete picture of the indigenous bird values of the Hawke’s Bay region coastline ever assembled. In addition to collecting these bird data, our field surveyors also mapped spatial patterns in the abundance of kekeno / New Zealand fur seals (*Arctocephalus forsteri*) and aihe / common dolphins (*Delphinus delphis*), the only two marine mammal species that were detected during the survey (Figure 4.1).

This survey has shown that the diversity of indigenous bird species tends to be highest at estuaries and river mouths, on inshore islands and along sections of coastline with a heterogeneous mix of coastal habitats. This survey has also identified a small network of coastal sites that supports relatively large proportions of the breeding populations of a number of Regionally Threatened or At Risk species. This being the case, we recommend that these high value sites be considered high priority sites at which efforts to control, contain or manage the impacts of an oil spill should be deployed. By using these sites as a means of prioritising an oiled wildlife response, resources will quickly be targeted towards avoiding, minimising or mitigating the adverse impacts of an oil spill on significant populations of the Hawke’s Bay region’s most highly threatened coastal bird species, and at sites that support a relatively high diversity of indigenous bird species.

By measuring spatial patterns in the abundance of coastal bird species along the Hawke’s Bay coastline, this survey also serves as a comprehensive baseline survey against which future changes in local or regional indigenous bird values can be measured. As a result, as well as creating the opportunity to optimise the deployment of resources during an oiled wildlife incident response, this dataset creates the opportunity to measure the adverse impacts of future oil spills that occur in the Hawke’s Bay region’s coastal marine area, and the success or otherwise of any efforts to control, contain or manage the impacts of these incidents. For this reason, we recommend that this Hawke’s Bay region coastal bird survey be repeated at five-yearly intervals, to improve HBRC and Maritime New Zealand’s (MNZ) ability to differentiate other temporal changes in the Hawke’s Bay region’s coastal bird populations from the impacts of oil spill incidents and subsequent oiled wildlife response efforts. We therefore recommend that the next regional coastal bird survey be scheduled to be carried out during the summer of 2025/2026.

This regional coastal bird survey fills some substantial gaps in our knowledge of spatial patterns in the distribution and abundance of coastal bird species in the Hawke’s Bay region, particularly those species that are widespread along the Hawke’s Bay coastline. As a result, the completion of this survey represents a major step forward in our understanding of coastal bird distribution abundance in the Hawke’s Bay region, creating the opportunity for relevant local and central government agencies to make better, evidence-based decisions regarding the sustainable management of the Hawke’s Bay

region's coastline. That said, at least two minor gaps in our understanding of the wildlife values of the Hawke's Bay coastline remain:

1. Burrow-nesting seabirds

Because this regional coastal bird survey was conducted during daylight hours and survey effort was largely restricted to the coastal foreshore, the survey was not fit-for-purpose to capture data describing the distribution and abundance of burrow-nesting seabirds including little penguins (*Eudyptula minor*), petrels and shearwaters due to their nocturnal and burrow-nesting habits on land (Marchant & Higgins, 1990).

Little penguins are highly vulnerable to being adversely impacted by oil spills in the coastal marine area but also respond extremely well to rehabilitation after becoming oiled (Gartrell et al, 2019). For this reason, containing, controlling and managing the impacts of an oil spill on local little penguin populations will likely be a high priority for HBRC and MNZ in the event of an oil spill incident within the Hawke's Bay coastal marine area. Developing a detailed understanding of the abundance and distribution of breeding little penguins along the Hawke's Bay region coastline would greatly improve these agencies' readiness to avoid, minimise or mitigate any adverse impacts on this species.

Similarly, several species of locally-breeding petrels and shearwaters are equally vulnerable to being adversely impacted by oil spills, and in the majority of cases, local breeding populations are very small and are the product of intensive and expensive local re-introduction efforts. For example, only three breeding pairs of sooty shearwaters are known to be present in the Hawke's Bay region, two of which occur within the Cape Sanctuary's seabird restoration site at Te Kauwae-a-Māui / Cape Kidnappers.

To fill this knowledge gap, we recommend that HBRC engages with local groups and agencies including the Department of Conservation, Napier Port, the Cape Sanctuary and Ngāti Kahungunu to carry out a 5-yearly 'stock take' of burrow-nesting seabirds in the Hawke's Bay region. Such a 'stock take' could involve a combination of collating and summarising existing seabird monitoring data from intensively managed sites such as Waikawa / Portland Island, Napier Port and the Cape Sanctuary and targeted surveys of key sites including Waikawa / Portland Island (kororā / little penguins) and Te Motu-o-Kura (kororā / little penguins and hākoakoa / sooty shearwaters) to estimate the population sizes of regionally significant burrow-nesting seabird populations that are not currently being monitored.

2. Kekenō / New Zealand fur seals

This regional coastal survey has done a relatively good job at mapping the distribution and abundance of kekenō / NZ fur seals breeding around the Hawke's Bay region coastline (Figure 4.1), given that this survey was done at a time of year when occupancy rates at local rookeries would have been relatively high (Bradshaw et al., 1999). Counts carried out at seal rookeries are known to provide the best data for consistent estimates of population size, however

because adult occupancy rates at rookeries can vary substantially from day to day, counts of the number of pups present at rookeries provide the best measure of population size, trend and population productivity (Shaughnessy et al., 1994). During the survey reported here, our fieldworkers recorded only total counts of seals encountered per 1 km of coastline and did not record separate counts of the number of seal pups encountered. During future surveys therefore, we recommend that a separate count of the number of seal pups be kept, to provide the most consistent measures of fur seal population size and productivity along the Hawke's Bay coastline. Further to this, non-breeding and post-breeding seals are also known to congregate at non-breeding sites ('haul-outs'), which can be situated at different locations along the coastline to rookeries, and peak occupancy at these haul-outs occurs in July-August (Crawley & Wilson, 1976). To adequately map the spatial distribution in seal abundance during the non-breeding season, we recommend that a regional winter survey of kekeno / NZ fur seal distribution and abundance be carried out, during the same years that the (summer) regional coastal bird survey is carried out. Given that we recommend that the next regional coastal bird survey be carried out during the summer of 2025/2026, we recommend that a regional winter survey of kekeno / NZ fur seal distribution and abundance be scheduled to be carried out in July-August 2026. Should it not be feasible to carry out a winter kekeno / NZ fur seal survey along the entire Hawke's Bay region coastline, sections of coastline with relatively high kekeno / NZ fur seal winter occupancy probabilities could be mapped using pre-existing data sources and these sections of coastline could be targeted as a matter of priority.

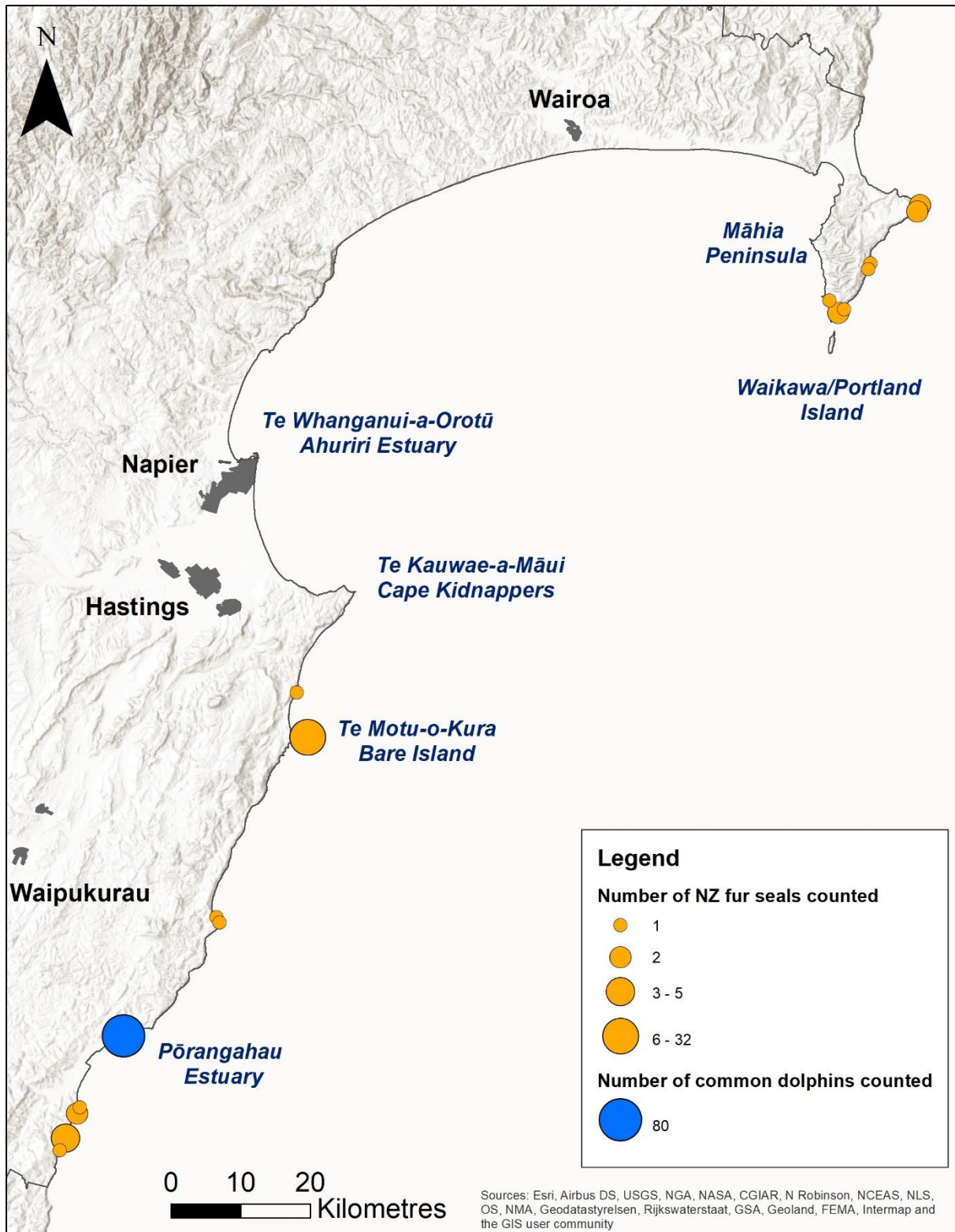


Figure 4.1: Distribution and relative abundance of marine mammals along the Hawke's Bay coastline.

4.3 Reassessment of regional threat rankings of selected coastal bird species

The results of this survey have enabled us to revise the regional NZTCS rankings of 23 indigenous bird species present in Hawke's Bay that are either entirely or partly restricted to coastal habitats in the region. We recommend changes to the regional threat rankings of 12 of the 23 bird species assessed; four species have improved their threat status; six species have a worsening threat status and two species have undergone a neutral status change. Nine of these changes have resulted from an assessment of new data collected during this survey and three changes have resulted from a re-assessment of existing data (Table 4.1).

Twenty of the 23 species that we have re-assessed (87%) have been assigned the new "Climate Impacts" qualifier recently added to the New Zealand Threat Classification System by Rolfe et al, (2021). This new qualifier is designed to identify taxa that are, or are predicted to be, adversely affected by long-term climate trends and/or extreme climatic events, including extended periods of abnormal rainfall or sunshine hours, short-duration extreme weather events, and gradual changes to sea level and average temperatures. Adverse effects of climate change on individual taxa may be direct (e.g., the impacts of extreme weather on populations) or indirect (e.g., increased impacts of predators that have benefitted from climate-change induced environmental changes) (Rolfe et al, 2021).

The assignment of the Climate Impact qualifier to a taxon indicates a need for more in-depth research, ongoing monitoring of climate impacts, and potentially a climate change adaptation plan for the taxon (Rolfe et al, 2021). The fact that 87% of the taxa re-assessed here have been assigned this qualifier highlights therefore the high degree of vulnerability that the majority of Hawke's Bay's indigenous coastal bird species have to the impacts of climate change. For example, the Intergovernmental Panel on Climate Change Fifth Assessment Report estimates that global mean sea levels will rise by up to 0.98 m above current levels by the year 2100, assuming unmitigated growth in carbon emissions over that time (Church et al, 2013). However, a more recent survey of climate scientists has estimated that global mean sea levels could rise by up to 1.32 m over the same period (Horton et al, 2020). Under these scenarios, the Hawke's Bay coastline is likely to become much more prone to flooding in coming decades due to a substantial and rapid increase in the frequency of extreme storm-tide and skew-surge events which in turn may increase rates of coastal erosion (Stephens et al, 2020). These potential future changes to the flooding risk and geomorphology of the Hawke's Bay's coastline pose a substantial long-term risk to the viability of indigenous coastal bird populations due to reductions in productivity (caused by local losses of eggs and chicks to flooding) and local population size (caused by net losses in the total area of available habitat). These future impacts may be sufficiently severe to negate any efforts that have been made in the meantime to reduce the adverse impacts of other threats including mammalian predators, weeds, recreational activities and land-use changes, highlighting an urgent need for HBRC to include consideration of climate change impacts on indigenous coastal bird species into all aspects of the future management of the Hawke's Bay coastline and its avifauna values.

The relatively large number of changes to regional NZTCS rankings proposed here indicates that a full revision of the threat rankings of all of Hawke's Bay's bird species is now due. The first such assessment was carried out in 2014, and re-assessments of national and regional threat rankings are typically carried out every five years, in order to incorporate any new data and recent changes to the NZTCS manual (Robertson et al, 2017; Crisp, 2020). Since the 2014 assessment, Hawke's Bay Regional Council has invested substantial time and resources into surveying the avifauna values of wetlands,

rivers and coastal habitats in the Hawke's Bay region, and the Hawke's Bay region of Birds New Zealand has accumulated several more years of national wader survey and New Zealand Bird Atlas data. Furthermore, since 2014 one full revision of the national NZTCS rankings of New Zealand's birds has been carried out (Robertson et al, 2017), and a second revision is due to be published during the second half of 2021 (Hugh Robertson, *personal communication*). The NZTCS manual is also in the process of being updated with revised sets of threat rankings and qualifiers (Rolfe et al, 2021). To ensure that the regional NZTCS rankings for Hawke's Bay's birds continues to reflect the best available knowledge of the threats and population status of each species, we recommend that a full reassessment of the regional NZTCS rankings of Hawke's Bay's bird species be scheduled for late 2021, once the next national NZTCS rankings re-assessment has been published. This next re-assessment of the Hawke's Bay NZTCS rankings should incorporate the proposed changes included in this report.

Table 4.1: Summary of proposed changes to the regional New Zealand Threat Classification System rankings of selected coastal bird species in Hawke's Bay.

Species	2014 Regional threat ranking (HBRC, unpublished data)	Proposed revised regional threat ranking (this report)	Status change	Reason for change	Proposed qualifiers (Rolfe et al, 2021)
Pohowera / banded dotterel	Regionally Vulnerable	Regionally Vulnerable	No change	NA	CD, CI, DPT
Kuaka / bar-tailed godwit	Regionally Endangered	Regionally Vulnerable	Better	New data	CI, TO
Kawau / black shag	Data Deficient	Regionally Endangered	Neutral	New data	DPS, DPT, Sp, SO
Tarāpuka / black-billed gull	Regionally Critical	Regionally Endangered	Better	New data	CI
Taranui / Caspian tern	Regionally Critical	Regionally Critical	No change	NA	Sp, CI, SO
Huahou / lesser knot	Migrant	Regionally Critical	Worse	Reinterpretation of data	CI, TO
Kawau paka / little shag	Regionally Endangered	Regionally Endangered	No change	NA	DPS, DPT
Tūturiwhatu / New Zealand dotterel	Regionally Critical	Regionally Critical	No change	NA	CD, CI, INC
Pīhoihoi / New Zealand pipit	Not Threatened	At Risk, Declining	Worse	New data	DPS, DPT, CI, CR
Kuriri / Pacific golden plover	Migrant	Vagrant	Worse	Reinterpretation of data	CI, SO
Pectoral sandpiper	Vagrant	Vagrant	No change	NA	CI, SO
Kāruhiruhi / pied shag	Vagrant	Regionally Critical	Better	New data	INC

Species	2014 Regional threat ranking (HBRC, unpublished data)	Proposed revised regional threat ranking (this report)	Status change	Reason for change	Proposed qualifiers (Rolfe et al, 2021)
Poaka / pied stilt	Regionally Vulnerable	Regionally Vulnerable	No change	NA	DPT, CI, SO
Tarāpunga / red-billed gull	Regionally Vulnerable	Regionally Endangered	Worse	New data	DPT, CI
Matuku moana / reef heron	Regionally Critical	Regionally Critical	No change	NA	CD, CI, CR, SO
Ruddy turnstone	Migrant	Migrant	No change	NA	CI, SO
Sharp-tailed sandpiper	Migrant	Vagrant	Worse	Reinterpretation of data	CI, SO
Tuturuatu / shore plover	Regionally Critical	Regionally Critical	No change	NA	CD, CI, RR
Hākoako / tītī / sooty shearwater	Data Deficient	Regionally Critical	Neutral	New data	CD, CI, CR, SO
Tōrea pango / variable oystercatcher	Regionally Critical	Regionally Vulnerable	Better	New data	CI, INC
Whimbrel	Vagrant	Vagrant	No change	NA	CI, SO
Tara / white-fronted tern	Not Threatened	Regionally Vulnerable	Worse	New data	DPT, CI, CR
Ngutu pare / wrybill	Migrant	Migrant	No change	NA	CI, RR

4.4 Implementing the Proposed National Policy Statement for Indigenous Biodiversity

Policy 13 of the Proposed National Policy Statement for Indigenous Biodiversity (PNPSIB) requires local government agencies to “identify the possible presence of, and manage, highly-mobile fauna” (MFE, 2019). More specifically, the PNPSIB requires each regional council to work with local territorial authorities “to survey and record areas outside Significant Natural Areas where highly mobile fauna have been, or are likely to be, sometimes present” and to “include objectives, policies or methods in their policy statements and plans for managing the adverse effects of subdivision, use and development in highly mobile fauna areas, as necessary to maintain viable populations of highly mobile fauna across their natural range” (MFE, 2019).

The PNPSIB does not include a list of taxa that have been defined as “highly mobile fauna”, however it does define “highly mobile fauna” as animals that move frequently between environments, either to find food, safe locations, locate mates, or seek out certain climates. This includes animals that undertake movements over a district, regional, national or international scale, and over timeframes spanning a day, weeks or months. This definition includes migratory species that leave their breeding areas to go somewhere else for a range of reasons (e.g., pohowera / banded dotterel; tarapiroe / black-fronted tern, *Chlidonias albostratus* and ngutu pare / wrybill). It also includes species that use the landscape less predictably, include those that cycle around habitat patches that vary in their suitability and resources over time (e.g., kākā, *Nestor meridionalis* and matuku hūrepo / Australasian bittern, *Botaurus poiciloptilus*) For the purposes of the PNPSIB, only those taxa that are also ranked as National Threatened or At Risk under the New Zealand Threat Classification System are included in this definition of “highly-mobile fauna” (MFE, 2019).

The Department of Conservation (DOC) has also initiated a mobile terrestrial threatened species research programme, with the aim of identifying and describing the spatial and temporal scales at which “mobile” species use, or move through, the landscape. Specifically, the purpose of this research programme is to identify significant flyways and habitat networks that need to be managed over the entire lifespan of mobile species, to ensure their persistence (DOC, 2020). As part of this programme, DOC has adopted a “mobile species” definition very similar to that used by the PNPSIB. Namely, mobile species are:

Species that use the environment at regional and national landscape scales, often moving across rohe, takiwā or territorial authorities’ jurisdictions on a seasonal basis to exploit feeding and breeding resources (DOC, 2020).

Furthermore, DOC has developed a list of Nationally Threatened and At Risk⁶ bird species that meet their definition of being a “mobile species”. This list includes 62 bird taxa, 18 of which have been detected along the Hawke’s Bay coastline during this survey, representing 23% of the 79 bird species recorded during this survey. It should be noted however that up to four additional species recorded during this survey that are ranked as At Risk also meet the PNPSIB “highly-mobile fauna” definition, indicating that up to 22 of the 79 bird species recorded during this survey (28%) should be classified as mobile species under the PNPSIB.

⁶ Only those species ranked as nationally At Risk, Declining or At Risk, Recovering, AND have been given the qualifier CD (Conservation Dependent) have been included in this list.

By carrying out the first ever complete and systematic survey of the indigenous bird values of the Hawke's Bay coastline, and in particular by mapping the distribution and abundance of indigenous birds to a 1-km spatial resolution along the entire Hawke's Bay coastline, HBRC has now mapped the summer distribution of up to 22 mobile bird species that occur within the Hawke's Bay CMA. Combined with the regional-scale river shorebird surveys carried out by the Council in recent years (McArthur et al, 2021), HBRC has already made substantial progress towards implementing Policy 13 of the PNPSIB, namely to "survey and record areas outside Significant Natural Areas where highly mobile fauna have been, or are likely to be, sometimes present."

5. Recommendations

Based on the results described in this report, we suggest that HBRC considers adopting the following recommendations:

- That the Council conducts a re-assessment of its coastal Significant Conservation Areas network, to ensure that the network includes all coastal habitats in the Hawke's Bay region that are known to support nationally and regionally significant populations or communities of indigenous birds. Such a re-assessment should include the development of a standard set of "significance" criteria that can be applied to this coastal bird survey dataset and other available avifauna datasets to identify sites that qualify to be identified as SCAs.
- That the Council repeats this coastal survey once every five years, to maintain an up-to-date understanding of the distribution and abundance of indigenous bird along the Hawke's Bay coastline; to monitor the population trends of Regionally Threatened and At Risk bird species, and to maintain an accurate baseline measure of indigenous bird distribution and abundance against which the impacts of oiled wildlife events and the effectiveness of any response can be accurately measured. We recommend that the next Hawke's Bay coastal bird survey be programmed for the summer of 2025-2026.
- That during future regional coastal bird surveys, separate counts of adult kekeno / NZ fur seals and pups be made within each 1 km section of coastline surveyed, to provide the most consistent measure of kekeno / NZ fur seal population size and productivity.
- That the Council initiates a 5-yearly regional 'stock take' of burrow-nesting seabirds breeding in the Hawke's Bay region, by collating existing monitoring data being collected by groups and agencies including the Department of Conservation, Napier Port, the Cape Sanctuary and Ngāti Kahungunu, and by carrying out targeted surveys of key seabird populations not currently being monitored.
- That the Council carries out a regional winter survey for kekeno / NZ fur seals along the Hawke's Bay region coastline, during the same years in which (summer) regional coastal bird surveys are carried out. Given that we recommend that the next regional coastal bird survey be carried out during the summer of 2025/2026, we recommend the first regional winter kekeno / NZ fur seal survey be carried out in July-August 2026.
- That the Council considers scheduling a re-assessment of the regional NZTCS rankings for Hawke's Bay's birds, timed to be carried out once the next national NZTCS rankings re-assessment has been published. This re-assessment of the regional NZTCS rankings of Hawke's Bay's birds should include the recommended revised rankings included in this report.

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- Appendix One

The following table contains a list of all the bird species encountered during this Hawke's Bay coastal bird survey. Species names and taxonomic order are those listed in Gill et al, (2010), with additional Māori names sourced from the Māori Dictionary Project (<https://maoridictionary.co.nz/>). National threat rankings are those listed in Robertson et al, (2017) and regional threat rankings are from HBRC, unpublished data. IUCN threat rankings have been sourced from <https://www.iucnredlist.org/> (Accessed 18/06/2021).

Māori name	Common name	Scientific name	National NZTCS ranking	Regional NZTCS ranking	IUCN threat ranking	Total number of individuals counted	Number (and percentage) of survey checklists in which species was observed
koera	California quail	<i>Callipepla californica</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	4	1 (0.3%)
peihana	common pheasant	<i>Phasianus colchicus</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	3	3 (0.9%)
pīkau	peafowl	<i>Pavo cristatus</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	5	2 (0.6%)
kakīānau	black swan	<i>Cygnus atratus</i>	Not Threatened	Not Threatened	Least Concern	1235	31 (9.3%)
	greylag goose	<i>Anser anser</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	638	18 (5.4%)
kuihi	Canada goose	<i>Branta canadensis</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	4975	24 (7.2%)

Māori name	Common name	Scientific name	National NZTCS ranking	Regional NZTCS ranking	IUCN threat ranking	Total number of individuals counted	Number (and percentage) of survey checklists in which species was observed
pūtangitangi	paradise shelduck	<i>Tadorna variegata</i>	Not Threatened	Not Threatened	Least Concern	418	20 (6.0%)
tētē moroiti	grey teal	<i>Anas gracilis</i>	Not Threatened	Not Threatened	Least Concern	1050	22 (6.6%)
rakiraki	mallard	<i>A. platyrhynchos</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	522	25 (7.5%)
pāpera	grey duck	<i>A. superciliosa</i>	Nationally Critical	Regionally Critical	Least Concern	10	1 (0.3%)
kuruwhengi	Australasian shoveler	<i>A. rhynchos</i>	Not Threatened	Not Threatened	Least Concern	189	13 (3.9%)
weweia	New Zealand dabchick	<i>Poliiocephalus rufopectus</i>	At Risk, Recovering	Regionally Endangered	Near Threatened	1	1 (0.3%)
kororā	little penguin	<i>Eudyptula minor</i>	At Risk, Declining	Not Threatened	Least Concern	2	2 (0.6%)
	black-winged petrel	<i>Pterodroma nigripennis</i>	Not Threatened	Regionally Critical	Least Concern	Present	1 (0.3%)
	Buller's shearwater	<i>Puffinus bulleri</i>	At Risk, Naturally Uncommon	Migrant	Vulnerable	2	1 (0.3%)

Māori name	Common name	Scientific name	National NZTCS ranking	Regional NZTCS ranking	IUCN threat ranking	Total number of individuals counted	Number (and percentage) of survey checklists in which species was observed
Hākoakoa / tītī	sooty shearwater	<i>P. griseus</i>	At Risk, Declining	Data Deficient	Near Threatened	1	1 (0.3%)
pakahā	fluttering shearwater	<i>P. gavia</i>	At Risk, Relict	Data Deficient	Least Concern	17	2 (0.6%)
takahikare	White-faced storm petrel	<i>Pelagodroma marina</i>	At Risk, Relict	Regionally Critical	Least Concern	Present	1 (0.3%)
tākupu	Australasian gannet	<i>Morus serrator</i>	Not Threatened	Not Threatened	Least Concern	872	91 (27.2%)
kawau paka	little shag	<i>Phalacrocorax melanoleucos</i>	Not Threatened	Regionally Endangered	Least Concern	56	28 (8.4%)
kawau	black shag	<i>P. carbo</i>	At Risk, Naturally Uncommon	Data Deficient	Least Concern	500	75 (22.5%)
kāruhiruhi	pied shag	<i>P. varius</i>	At Risk, Recovering	Vagrant	Least Concern	185	31 (9.3%)
kawau tūi	little black shag	<i>P. sulcirostris</i>	At Risk, Naturally Uncommon	Data Deficient	Least Concern	30	7 (2.1%)
kawau tikitiki	spotted shag	<i>Stictocarbo punctatus</i>	Not Threatened	Migrant	Least Concern	1	1 (0.3%)

Māori name	Common name	Scientific name	National NZTCS ranking	Regional NZTCS ranking	IUCN threat ranking	Total number of individuals counted	Number (and percentage) of survey checklists in which species was observed
matuku moana	white-faced heron	<i>Egretta novaehollandiae</i>	Not Threatened	Regionally Vulnerable	Least Concern	399	110 (32.9%)
matuku moana	reef heron	<i>E. sacra</i>	Nationally Endangered	Regionally Critical	Least Concern	9	8 (2.4%)
matuku hūrepo	Australasian bittern	<i>Botaurus poiciloptilus</i>	Nationally Critical	Regionally Critical	Endangered	3	2 (0.6%)
kotuku ngutupapa	royal spoonbill	<i>Platalea regia</i>	At Risk, Naturally Uncommon	Regionally Critical	Least Concern	115	18 (5.4%)
kāhu	swamp harrier	<i>Circus approximans</i>	Not Threatened	Not Threatened	Least Concern	79	55 (16.5%)
pūkeko	pukeko	<i>Porphyrio melanotus</i>	Not Threatened	Not Threatened	Least Concern	29	13 (3.9%)
huahou	lesser knot	<i>Calidris canutus</i>	Nationally Vulnerable	Migrant	Near Threatened	3	1 (0.3%)
	sharp-tailed sandpiper	<i>C. acuminata</i>	Migrant	Migrant	Least Concern	7	1 (0.3%)
	pectoral sandpiper	<i>C. melanotos</i>	Vagrant	Vagrant	Least Concern	2	1 (0.3%)

Māori name	Common name	Scientific name	National NZTCS ranking	Regional NZTCS ranking	IUCN threat ranking	Total number of individuals counted	Number (and percentage) of survey checklists in which species was observed
	whimbrel	<i>Numenius phaeopus</i>	Migrant	Vagrant	Least Concern	8	2 (0.6%)
kuaka	bar-tailed godwit	<i>Limosa lapponica</i>	At Risk, Declining	Regionally Endangered	Near Threatened	1218	50 (15.0%)
	ruddy turnstone	<i>Arenaria interpres</i>	Migrant	Migrant	Least Concern	89	4 (1.2%)
tōrea pango	variable oystercatcher	<i>Haematopus unicolor</i>	At Risk, Recovering	Regionally Critical	Least Concern	516	137 (41.0%)
tōrea	South Island pied oystercatcher	<i>H. finschi</i>	At Risk, Declining	Regionally Critical	Least Concern	63	7 (2.1%)
poaka	pied stilt	<i>Himantopus himantopus</i>	Not Threatened	Regionally Vulnerable	Least Concern	1606	72 (21.6%)
kuriri	Pacific golden plover	<i>Pluvialis fulva</i>	Migrant	Migrant	Least Concern	9	2 (0.6%)
tūturiwhatu	New Zealand dotterel	<i>Charadrius obscurus</i>	At Risk, Recovering	Regionally Critical	Near Threatened	222	37 (11.1%)
pohowera	banded dotterel	<i>C. bicinctus</i>	Nationally Vulnerable	Regionally Vulnerable	Near Threatened	395	50 (15.0%)

Māori name	Common name	Scientific name	National NZTCS ranking	Regional NZTCS ranking	IUCN threat ranking	Total number of individuals counted	Number (and percentage) of survey checklists in which species was observed
ngutu pare	wrybill	<i>Anarhynchus frontalis</i>	Nationally Vulnerable	Migrant	Vulnerable	42	4 (1.2%)
	black-fronted dotterel	<i>Euseyornis melanops</i>	At Risk, Naturally Uncommon	Coloniser	Least Concern	43	19 (5.7%)
tuturuatu	shore plover	<i>Thinornis novaeseelandiae</i>	Nationally Critical	Regionally Critical	Endangered	70	1 (0.3%)
	spur-winged plover	<i>Vanellus miles</i>	Not Threatened	Not Threatened	Least Concern	441	78 (23.4%)
	Arctic skua	<i>Stercorarius parasiticus</i>	Migrant	Migrant	Least Concern	2	2 (0.6%)
karoro	southern black-backed gull	<i>Larus dominicanus</i>	Not Threatened	Not Threatened	Least Concern	5038	283 (84.7%)
tarāpunga	red-billed gull	<i>L. novaehollandiae</i>	At Risk, Declining	Regionally Vulnerable	Least Concern	1877	165 (49.4%)
tarāpuka	black-billed gull	<i>L. bulleri</i>	Nationally Critical	Regionally Critical	Near Threatened	826	82 (24.6%)
taranui	Caspian tern	<i>Hydroprogne caspia</i>	Nationally Vulnerable	Regionally Critical	Least Concern	145	56 (16.8%)

Māori name	Common name	Scientific name	National NZTCS ranking	Regional NZTCS ranking	IUCN threat ranking	Total number of individuals counted	Number (and percentage) of survey checklists in which species was observed
tara	white-fronted tern	<i>Sterna striata</i>	At Risk, Declining	Not Threatened	Near Threatened	2088	75 (22.5%)
	rock pigeon	<i>Columba livia</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	482	40 (12.0%)
	Barbary dove	<i>Streptopelia roseogrisea</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	1	1 (0.3%)
kererū	New Zealand pigeon (kererū)	<i>Hemiphaga novaeseelandiae</i>	Not Threatened	Not Threatened	Near Threatened	7	3 (0.9%)
pīpīwharau	shining cuckoo	<i>Chrysococcyx lucidus</i>	Not Threatened	Not Threatened	Least Concern	2	1 (0.3%)
kōtare	New Zealand kingfisher	<i>Todiramphus sanctus</i>	Not Threatened	Not Threatened	Least Concern	54	36 (10.8%)
riroriro	grey warbler	<i>Gerygone igata</i>	Not Threatened	Not Threatened	Least Concern	12	11 (3.3%)
korimako	bellbird	<i>Anthornis melanura</i>	Not Threatened	Not Threatened	Least Concern	10	7 (2.1%)
tūi	tūi	<i>Prothemadera novaeseelandiae</i>	Not Threatened	Not Threatened	Least Concern	67	32 (9.6%)
makipai	Australian magpie	<i>Gymnorhina tibicen</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	111	58 (17.4%)

Māori name	Common name	Scientific name	National NZTCS ranking	Regional NZTCS ranking	IUCN threat ranking	Total number of individuals counted	Number (and percentage) of survey checklists in which species was observed
pīwakawaka	New Zealand fantail	<i>Rhipidura fuliginosa</i>	Not Threatened	Not Threatened	Least Concern	18	16 (4.8%)
	rook	<i>Corvus frugilegus</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	59	5 (1.5%)
	skylark	<i>Alauda arvensis</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	645	210 (62.9%)
koroātito	fernbird	<i>Bowdleria punctata</i>	At Risk, Declining	Not Threatened	Least Concern	5	2 (0.6%)
tauhou	silvereeye	<i>Zosterops lateralis</i>	Not Threatened	Not Threatened	Least Concern	156	41 (12.3%)
warou	welcome swallow	<i>Hirundo neoxena</i>	Not Threatened	Not Threatened	Least Concern	552	115 (34.4%)
manu pango	Eurasian blackbird	<i>Turdus merula</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	55	36 (10.8%)
	song thrush	<i>T. philomelos</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	23	17 (5.1%)
tāringi	common starling	<i>Sturnus vulgaris</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	2371	94 (28.1%)

Māori name	Common name	Scientific name	National NZTCS ranking	Regional NZTCS ranking	IUCN threat ranking	Total number of individuals counted	Number (and percentage) of survey checklists in which species was observed
maina	common myna	<i>Acridotheres tristis</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	168	55 (16.5%)
tiu	house sparrow	<i>Passer domesticus</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	984	146 (43.7%)
pīhoihoi	New Zealand pipit	<i>Anthus novaeseelandiae</i>	At Risk, Declining	Not Threatened	Least Concern	35	27 (8.1%)
	dunnock	<i>Prunella modularis</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	51	31 (9.3%)
pahirini	chaffinch	<i>Fringilla coelebs</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	74	47 (14.1%)
	greenfinch	<i>Carduelis chloris</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	163	60 (18.0%)
	goldfinch	<i>C. carduelis</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	180	63 (18.9%)
	common redpoll	<i>C. flammea</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	4	2 (0.3%)
	yellowhammer	<i>Emberiza citrinella</i>	Introduced and Naturalised	Introduced and Naturalised	Least Concern	309	143 (42.8%)

Appendix Two

This table lists the criteria used by Greater Wellington Regional Council to identify coastal and freshwater habitats of significance for indigenous birds in the Wellington region. A full explanation of how these criteria were developed and applied to available avifauna datasets can be found in [McArthur et al, 2015](#) and McArthur, 2020c.

Policy 23 Criteria	(b) Rarity	(c) Diversity	(dii) Ecological Context
Category 1 site (Meets the RPS Policy 23 criteria)	The site provides habitat for: ≥10% of the regional population of a Nationally Critical species; or ≥15% of the regional population of a Nationally Endangered species; or ≥20% of the regional population of a Nationally Vulnerable species; or ≥25% of the regional population of an At Risk species	Seven or more Nationally Threatened or At Risk species are known to be resident at or regularly using the site	The site provides seasonal or core habitat for ≥67% of the regional population of a protected (but not Nationally Threatened or At Risk) species
Category 2 site (Meets the RPS Policy 23 criteria)	The site provides habitat for 5-25% of the regional population of a Nationally Threatened or At Risk species	Between four and six Nationally Threatened or At Risk species are known to be resident at or regularly using the site	The site provides seasonal or core habitat for 33-66% of the regional population of a protected (but not Nationally Threatened or At Risk) species
Category 3 site (Does not meet the RPS Policy 23 criteria)	The site provides habitat for <5% of the regional population of a Nationally Threatened or At Risk species	Less than four Nationally Threatened or At Risk species known to be resident at or regularly using the site	The site provides seasonal or core habitat for <33% of the regional population of a protected (but not Nationally Threatened or At Risk) species

Notes:

1. The threat rankings for bird species mentioned in this review are those listed in Robertson et al, (2017).
2. The term 'protected' refers to any species granted absolute protection under the Wildlife Act (1953).
3. Species were considered 'resident or regularly using' a site if they have been or are likely to be encountered during 50% or more of bird surveys carried out in the appropriate season.
4. Translation criteria categories for Policy 23 criterion (b): Rarity are hierarchical, so that if a site meets the criterion for category one, that takes precedence over category two, and so on. For example, a site that supports 20% of the regional population of a Nationally Endangered species would be placed in category one, but a site supporting 12% of a Nationally Endangered species would be placed in category two.