

Birds observed and collected by the Austrian Novara Expedition when in New Zealand, 1858–1859

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Abstract: Birds collected and reported by the Austrian Novara Expedition while in northern New Zealand in December 1858 and January 1859 are described. These included birds collected at sea east of Northland and Auckland, and birds seen and collected between the Auckland isthmus and Waikato River during 18 days that SMS *Novara* was at Auckland. Notable records include the earliest known specimen of Pycroft's petrel (*Pterodroma pycrofti*), and the earliest record of Kermadec petrel (*Pt. neglecta*) from near the New Zealand mainland. Scientists from the *Novara* encountered many species that are now rare or absent near Auckland city and northern Waikato, including brown teal (*Anas chlorotis*), long-tailed cuckoo (*Eudynamis taitensis*), New Zealand falcon (*Falco novaeseelandiae*), kākā (*Nestor meridionalis*), red-crowned parakeet (*Cyanoramphus novaeseelandiae*), yellow-crowned parakeet (*C. auriceps*), bellbird (*Anthornis melanura*), whitehead (*Mohoua albigilla*), and North Island robin (*Petroica longipes*), and possibly also North Island saddleback (*Philesturnus rufusater*) and the extinct North Island piopio (*Turnagra tanagra*). Other specimens obtained in Auckland (of uncertain provenance) included North Island kokako (*Callaeas wilsoni*) and hihi (*Notiomystis cincta*). All these species became much scarcer or extinct following the introduction of ship rats (*Rattus rattus*) and stoats (*Mustela erminea*) and other mammalian predators to New Zealand after 1859.

Braund, J.; Miskelly, C.M. 2025. Birds observed and collected by the Austrian Novara Expedition when in New Zealand, 1858–1859. *Notornis* 72(2): 107–116, <https://doi.org/10.63172/065535fcugrw>

Keywords: Austria, bird specimens, Novara Expedition, museum collection, New Zealand

INTRODUCTION

On 30 Apr 1857, SMS *Novara*, a 2030-ton wooden sail frigate, departed from Trieste on what would become a 28-month voyage round the world and the first circumnavigation of the globe to be completed by an Austrian naval vessel (Scherzer 1861a & b, 1862; Basch-Ritter 2008). Intended as a flag-waving exercise for the Austrian empire, and with the proposed construction of the Suez Canal very much in mind, the Novara Expedition had the investigation of trade opportunities in the Far East as one of its primary objectives, while the acquisition of overseas territories in the region was an ulterior consideration as well (Weiss &

Schilddorfer 2010). Scientific exploration was a further major objective of the Novara Expedition, and to expedite this, a small but capable scientific team of seven men (referred to officially as a 'commission') was assembled to accompany the mission. It comprised Karl Scherzer (geographer and ethnographer), Ferdinand Hochstetter (geologist), Georg Frauenfeld (zoologist), Johann Zelebor (zoological collector and taxidermist), Eduard Schwarz (botanist), Anton Jelinek (plant collector), and Joseph Selleny (artist). Frauenfeld and Hochstetter had been selected by Austria's Kaiserliche Akademie der Wissenschaften (Imperial Academy of Sciences) as the expedition's principal naturalists, with Zelebor and Jelinek as their assistants (Anon. 1857: iv). Besides their primary

Received 13 December 2024; accepted 3 April 2025

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responsibilities for zoology and geology respectively, Frauenfeld and Hochstetter had initially been entrusted with the mission's botany as well. However, this task was subsequently delegated to Schwarz, who was one of the *Novara's* surgeons (Riedl-Dorn 2012a). Before departure, the naturalists were given, each according to their individual duties, a list of instructions relating to the collection and preservation of specimens, as well as a wish-list of items to be obtained at various stations of the voyage. As far as New Zealand avifauna was concerned, the naturalists were given specific directions to try to obtain specimens of kiwi (*Apteryx* spp.) and kākāpō (*Strigops habroptilus*) (Anon. 1857: 58–59).

The *Novara* arrived in Auckland late in the afternoon of 22 Dec 1858, and departed in the morning of 8 Jan 1859 after 16 days of hectic scientific and ethnographic activity in and around the young colonial capital. A particular highlight of the visit was an excursion undertaken by several members of the expedition along with a few interested settlers to the south Auckland and northern Waikato area over the period from 28 Dec 1858 to 2 Jan 1859 (Anon. 1859a & b). The primary purpose of this fieldtrip was for Hochstetter to survey a recently discovered coalfield in the Drury and Hunua districts. However, the excursion also provided encounters with New Zealand birds in virgin forest south of Drury and during a canoe ride down the Mangatāwhiri and Waikato Rivers as far as Tuakau. Brief though the *Novara's* visit was, it resulted in the collection of a considerable body of material across a variety of disciplines, and has led to the expedition being described as the only visiting scientific expedition to have left a substantial local impact in New Zealand in the 50 years between the surveys of HMS *Acheron* (1848–51) and the end of the nineteenth century (Andrews 1986: 158). General awareness of the *Novara's* visit has been largely dominated within New Zealand by the achievements of Hochstetter, who stayed behind at the request of the colonial government for nine months after the frigate's departure, to conduct pioneering geological surveys of Auckland and Nelson Provinces (Hochstetter 1959; Johnston & Nolden 2011). However, our research indicates that members of the Novara Expedition, assisted by local residents, also made an important but otherwise little-known contribution to mid-nineteenth-century New Zealand ornithology.

Published sources

The ornithological results of the Novara Expedition's visit to New Zealand over the summer of 1858–59 are scattered across a variety of published sources, the most important of which are listed here.

The most immediate source, at least in a chronological sense, for parts of the ornithological fieldwork conducted by expedition members while in New Zealand is a manuscript diary kept by the zoologist Georg Frauenfeld. The New Zealand section of this was not published until comparatively recently (Riedl-Dorn 2012b), though it clearly formed the basis for part of a much earlier paper reporting on the *Novara's* visit to Australia, New Zealand and Tahiti that was read to a session of the Austrian Imperial Academy of Sciences on 13 Oct 1859 and published the following year (Frauenfeld 1860). Taken together, the diary and paper provide a substantive record of the many New Zealand birds that Frauenfeld and his companions observed while in New Zealand.

A further first-hand account of the expedition members' excursion to south Auckland and northern Waikato can be found in a series of newspaper articles relating the *Novara's* visit to New Zealand which were written by Julius Haast under the pseudonym of Julius Hanf, and which appeared in the *Wiener Zeitung*, the leading Viennese daily and official Austrian government newspaper of the time (Hanf

1859a–h). Clearly intended for a popular audience, these articles are more descriptive and livelier in tone than the account that emerges from Frauenfeld's diary and Academy paper, and they occasionally provide more ornithological detail. A highly abridged version of Haast's account can be found in the New Zealand section of the official narrative of the *Novara's* voyage (Scherzer 1862: 143–156; English version: Scherzer 1863: 155–169).

Ferdinand Hochstetter's monograph on New Zealand, which appeared first in German in 1863 and then in an English version in 1867, contains further notes on New Zealand birds met with by members of the Novara Expedition, most of which can be found in the chapter devoted to the country's fauna (Hochstetter 1863: 431–433; Hochstetter 1867: 165–168). The fauna chapter was written by Frauenfeld with a few footnotes being added later by Hochstetter, though the initial footnote stating the precise authorship was left out of the English version of the monograph (compare Hochstetter 1863: 426, with Hochstetter 1867: 160). The relevant section of the chapter contains references to several birds which Frauenfeld did not see while in New Zealand (e.g. kākāpō), based on information that he drew from other sources. However, in places it expands somewhat on his observations of New Zealand birds that he mentions in both his diary and his address to the Imperial Academy of Sciences.

By far the most important published source for the ornithological fieldwork of the Novara Expedition is the overview of the mission's ornithology written by the Austrian ornithologist August von Pelzeln. This was presented in the first of the eight zoological volumes of the 21-volume official publication series arising from the frigate's voyage (von Pelzeln 1865). Drawing heavily on manuscript notes supplied by the expedition's assistant zoologist Johann Zelebor, von Pelzeln provided notes on individual specimens collected over the course of the voyage, including 29 New Zealand species. In the account, von Pelzeln lists more bird species than the above sources combined, and in doing so casts a great deal of light not only on what was collected, but also on who contributed the specimen in question and whether it was obtained by shooting, donation, or, in one case, purchase.

Key locations

Members of the Novara Expedition observed and collected birds at four principal locations during their visit to New Zealand.

The first of these was an area off the eastern Northland coast traversed during the frigate's approach to Auckland. A boat was lowered on 19 Dec 1858 at a point recorded as 35° S, 175° 5' E (about 110 km north-east of the Poor Knights Islands), allowing Frauenfeld and the expedition's commander, Commodore Bernhard von Wüllerstorff-Urbair, to shoot seabirds; specimens of at least three petrel species and an albatross were obtained on this occasion (Riedl-Dorn 2012b: 171; von Pelzen 1865: 144, 146, 148). A boat was lowered again the following day near Great Barrier Island, to allow Frauenfeld and the *Novara's* captain, Friedrich von Pöck, to shoot more seabirds, though this time without the same success as the previous day (Riedl-Dorn 2012b: 172).

A second and more general area of ornithological activity was the Auckland isthmus in the vicinity of Auckland township (i.e. the area corresponding roughly to the present-day central business district of Auckland), around which individual naturalists and other members of the expedition ranged during the *Novara's* visit. Examples of land birds observed or taken in or near Auckland township, for which a relatively precise location is given, include a New Zealand falcon (*Falco novaeseelandiae*) and New Zealand pipits (*Anthus novaeseelandiae*) observed by Frauenfeld as he

moved over the then fern-clad terrain between Mt Eden and Onehunga on 24 Dec 1858 (Frauenfeld 1860: 734), as well as a red-crowned parakeet (*Cyanoramphus novaeseelandiae*) and a yellow-crowned parakeet (*C. auriceps*) collected by Frauenfeld and Zelebor respectively at a location given on the collection labels as 'Auckland Council' – likely referring to the former Auckland Provincial Council assembly building then located near the southern end of present-day Anzac Avenue in central Auckland. Mention of several sea and shore birds by von Pelzeln (1865) – a red-billed gull (*Chroicocephalus novaehollandiae*), a pied shag (*Phalacrocorax varius*), and a little shag (*Microcarbo melanoleucos*) – suggests that some of the specimens collected by (or possibly for) members of the Novara Expedition were found on the adjoining shorelines of the Waitematā Harbour. It is worth adding here that Australasian gannets (*Morus serrator*) and flocks of a small petrel had been seen on the harbour on 22 Dec 1858 as the *Novara* arrived in Auckland (Frauenfeld 1860: 733), and that gannets were sighted on those waters again as the frigate departed on 8 Jan 1859 (Riedl-Dorn 2012b: 175).

The third main area of collection and observational activity was in south Auckland and northern Waikato during the excursion to Drury mentioned above. Frauenfeld's diary mentions falcons (between Papakura and Drury, 28 Dec 1858), ducks and shags (unnamed cove on the southeast Manukau Harbour west of Drury, 29 Dec 1858), and tūi (*Prosthemadera novaeseelandiae*) and fantails (*Rhipidura fuliginosa*) in forest south of Drury on 30 Dec 1858 (Riedl-Dorn 2012b: 173–174), while his address to the Imperial Academy of Sciences also mentions pūkeko (*Porphyrio melanotus*), bitterns (*Botaurus poiciloptilus*), ducks, a shoveler (*Spatula rhynchotis*), and shags along the Mangatāwhiri and Waikato Rivers on 31 Dec 1858 (Frauenfeld 1860: 736). Haast supplied further details in his newspaper piece describing the visit to the forest on 30 Dec 1858, in which he mentions the shooting by excursion members of tūi, red-crowned parakeets, and a long-tailed cuckoo (*Eudynamis taitensis*) (see Hanf 1859e). Frauenfeld, in both his paper read to the Academy of Sciences and in his chapter in Hochstetter's monograph, provides further generic descriptions of forest birdlife which are clearly based on first-hand observation and which, while giving neither a precise date nor a location, can only refer to forest south of Drury (Frauenfeld 1860: 739–740; Hochstetter 1863: 431–432). Frauenfeld's recollections of forest birdlife in his chapter in Hochstetter's monograph are especially intriguing. The English version of his chapter contains a passage which reads as follows: 'Of the *Certhiparus* species among the real warblers [i.e. 'Sänger', or 'songbirds', in the earlier German version], likewise of the New Zealand thrush (*Turnagra crassirostris*), and the starlings *Aplonis* and *Creadion*, I am not able to say, whether and how they sing' (Hochstetter 1867: 166). At the corresponding point in the German original, however, the sentence had continued with a remark that can be translated as: 'as I did observe and shoot them several times, but never heard them sing' (Hochstetter 1863: 432). Species referred to here were most likely whitehead (*Mohoua albicilla*) = '*Certhiparus*', North Island piopio (*Turnagra tanagra*) and North Island saddleback (*Philesturnus rufusater*) = '*Creadion*', with *Aplonis* included in Frauenfeld's New Zealand list erroneously following Quoy & Gaimard (1832: 190). The fate of the piopio and saddleback specimens that Frauenfeld alludes to here is unknown.

The fourth and final area of collecting activity was in west Auckland. The same day that Hochstetter and his companions returned to Auckland from their excursion to Drury (2 Jan 1859), a smaller party consisting largely of *Novara* crew members went on a day trip to view kauri forests in north Titirangi, where they visited the farm of

local timber-miller Captain Hibernicus (or Hibernia) Smyth (referred to as 'Smith' in the official narrative of the voyage – Scherzer 1862b: 138; cf. Bonny *et al.* 2011). Wüllerstorff-Urbair and Zelebor shot a tūi and a North Island robin (*Petroica longipes*) respectively at a location we interpret as corresponding to present-day Glendale Road, Glen Eden (von Pelzeln 1865), while Wüllerstorff-Urbair may also have shot kererū (*Hemiphaga novaeseelandiae*) there (unpublished manuscript diary of Karl Scherzer, State Library of New South Wales).

Key personnel

New Zealand bird specimens in the *Novara* Expedition's ornithological collection were largely obtained by several key figures.

Georg Frauenfeld (1807–1873; from 1860: von Frauenfeld) was the expedition's lead zoologist (Stolz-Fechner 1994). He was a highly competent scientific autodidact who, despite lacking a university education, had risen from humble career beginnings as a postal worker to become one of Vienna's leading zoologists. A co-founder (in 1851) and long-term secretary of the Zoologisch-Botanische Gesellschaft (Zoological-Botanical Society) in Vienna, Frauenfeld found employment in the K. K. Zoologisches Hof-Cabinet (Imperial-Royal Zoological Court Cabinet, i.e. one of the three official natural history museums that existed in the Austrian capital from the early 1850s to the mid-1880s) in 1852. At the time the *Novara* began its circumnavigation of the globe in late April 1857, he held the position of 3rd Assistant Curator. Frauenfeld's movements around Auckland and its environs in late December 1858 and early January 1859 are based on his diary (Riedl-Dorn 2012b). While he is known to have shot several birds during his visit to New Zealand, his primary scientific interests lay in invertebrates and, as he had done throughout the voyage, he left the collection of bird specimens largely to his assistant Zelebor (von Pelzeln 1865: i). After the *Novara*'s return to Europe, Frauenfeld, became 1st Assistant Curator of the Zoological Court Cabinet in 1861. Following a restructuring in 1867, he assumed the title of Curator, a rank he held until his death 6 years later.

Johann Zelebor (1815–1869) came, like Frauenfeld, from a humble background (von Pelzeln 1889: 604–605; Dafert 2021). Beginning his working life as a carpenter, Zelebor was an enthusiastic self-taught collector of natural history specimens who had found employment, initially as a servant and then as a taxidermist, in the Imperial-Royal Zoological Court Cabinet some years before Frauenfeld. At the time of his appointment to the *Novara* Expedition, he held the position of Assistant. Although troubled by poor health in the weeks before the *Novara*'s arrival in Auckland, Zelebor was an active collector during the frigate's visit and ultimately contributed more bird specimens to the expedition's collection during this period than anyone else. As was the case with the other naturalists of the *Novara*, most of his collecting seems to have been done on short trips in the immediate vicinity of Auckland township (Hanf 1859a: 338). He did not participate in the excursion to Drury due to illness (Hanf 1859b: 343), and the only extended trip he made into the field that is documented was the excursion to north Titirangi on 2 Jan 1859 (unpublished manuscript diary of Karl Scherzer, State Library of New South Wales). After his return to Austria, Zelebor was appointed 4th Assistant Curator in the Zoological Court Cabinet in 1860, and advanced to 3rd Assistant Curator the following year. In 1867, like Frauenfeld, he assumed the title and rank of Curator (Stolz-Fechner 1994: 276, 283, 338). Zelebor was given responsibility for the Cabinet's mammal collection in 1861 and in this capacity wrote up the mammalogical results of the *Novara* Expedition for the voyage's official

publication series (Zeilebor 1868). He held this position until his death in 1869.

A small but significant number of New Zealand birds were shot by Bernhard von Wüllerstorff-Urbair (1816–1883), the commander of the Novara Expedition (Wurzbach 1889; Regele 2004). Wüllerstorff-Urbair had been a serving naval officer since 1836 and later served a term as Austria's Minister of Trade (1865–67). He had a strong scientific background and outlook, and can be credited with persuading Archduke Ferdinand Maximilian, the commander-in-chief of the Austrian navy, to entrust the Novara Expedition with a scientific dimension from the outset. Wüllerstorff-Urbair was himself responsible for the expedition's astronomy, meteorology and hydrography, and in discharging these duties during the voyage he was assisted by various ensigns and cadets (Basch-Ritter 2008: 47). He was also an enthusiastic hunter, and contributed examples of some 40 different bird species to the voyage's collection (von Pelzeln 1865). The practice of naval officers providing their naturalists with bird specimens, often in the course of what might be described as gentlemanly sport, is an old one, and in a New Zealand context calls to mind the example seen in the visit of HMS *Resolution* to Dusky Sound in 1773 (Hoare 1982: 243–267).

A less expected contributor to the Novara Expedition's collection of New Zealand birds was the mission's geologist, Ferdinand Hochstetter (1829–1884; from 1860: von Hochstetter), who stayed behind in New Zealand after the frigate left Auckland in January 1859, while remaining an official member of the expedition. Born in the southwestern German town of Esslingen, Hochstetter had studied theology and natural history in nearby Tübingen before being recruited by Austria's K. K. Geologische Reichsanstalt (Imperial-Royal Geological Survey) to undertake fieldwork in western Bohemia in the early 1850s. After returning to Europe from New Zealand in early 1860, he would eventually rise through Austrian scientific circles to be appointed, in 1876, the first director of what is now the Naturhistorisches Museum in Vienna. The most widely known instance of Hochstetter obtaining a specimen of an extant New Zealand bird is his receipt while in Nelson of two live kiwi (*Apteryx* sp.), one of which escaped and the other of which he kept in his hotel room before having it preserved in spirits (Hochstetter 1863: 444, 445; see also Hochstetter 1959: 267). Hochstetter went on to provide some notable early scientific intelligence on this iconic bird for both German- and English-speaking readerships, often in conjunction with moa (*Dinornithiformes*), which he considered to be related to kiwi (Hochstetter 1860–61, 1863, 1867; Sclater & Hochstetter 1861). Von Pelzeln's report of birds collected by the Novara Expedition credited Hochstetter with contributing specimens of four New Zealand birds to the mission's collection: a red-crowned parakeet, a weka (*Gallirallus australis*), a red-billed gull, and a little shag (von Pelzeln 1865). We do not include reference to birds that Hochstetter encountered after the departure of the *Novara* from Auckland.

Von Pelzeln (1865) also acknowledged Auckland resident Dr Fischer as having provided the Novara Expedition with bird specimens. Dr Carl Frank Fischer was a high-profile German-born homeopathic doctor, who lived in Auckland from 1853 or 1854 to 1869 and who hosted receptions for members of the frigate's crew during its visit (von Pelzen 1865: ii; Belgrave 1990; Riedl-Dorn 2012b: 173, 175). Fischer was a keen amateur naturalist, and Haast wrote that his thorough knowledge of natural science made the task of collecting much easier for the *Novara*'s scientists, in that he not only acquainted them with the best places to find things, but also made his own collections available to them with the greatest readiness (Hanf 1859a: 338). Von Pelzen (1865) credited Fischer with providing specimens of a North Island kiwi (*Apteryx mantelli*), a pūkeko, and a little

penguin (*Eudyptula minor*). Hochstetter, in a footnote in his monograph, suggests that Fischer provided Frauenfeld and Zeilebor with kiwi skins during the *Novara*'s visit to Auckland, as well as sending a further set of kiwi specimens to Vienna on a subsequent occasion. One of the latter was given live to the ship's captain, but died during the voyage (Hochstetter 1863: 443, n. 1).

Julius Haast (1822–1887; from 1875: von Haast) arrived in Auckland as an immigration agent the day before the *Novara*, and went on to achieve fame as a provincial surveyor and museum director (von Haast 1948). Haast was both a participant in and chronicler of the excursion to South Auckland. While he is not known to have personally collected any specimens for the *Novara*'s naturalists while they were in Auckland, he nevertheless provides an important ornithological footnote to the expedition. Haast corresponded intermittently with Frauenfeld for several years after the frigate's return to Austria (Stolz-Fechner 1994: 221), and he also despatched two large consignments of New Zealand bird specimens to Vienna. The first was 39 skins, in 1866 (von Pelzeln 1867), followed by 60 mounted birds of 35 species plus three moa skeletons that were exhibited in the New Zealand court of the Vienna International Exhibition of 1873 (AJHR 1873: Appendix p. 9–10). Haast was knighted in 1886.

August von Pelzeln (full surname: Pelzel von Pelzeln; 1825–1891) was the Austrian ornithologist who wrote up and published the ornithological results of the *Novara*'s voyage round the world (Kohl 1891; Bauer 1978). Born into a noble family and possessed of a deep interest in natural history from his earliest years, von Pelzen had initially studied law before gaining a position as an intern in Vienna's Imperial-Royal Zoological Court Cabinet in 1851 and becoming an assistant there the following year (Stolz-Fechner 1994: 55, 63). Appointed 4th Assistant Curator in 1857, he was given responsibility for the Cabinet's bird collection at the same time and, after rising through the ranks to the position of Curator (Stolz-Fechner 1994: 159, 275, 283, 338), was also given responsibility for the Cabinet's mammal collection on the death of Zeilebor in 1869. He retained those responsibilities until ill-health forced his retirement in 1888. Aside from his work on the birds collected by the Novara Expedition, von Pelzeln holds a notable place in nineteenth-century New Zealand ornithology by being first to describe the New Zealand rock wren (*Xenicus gilviventris*) (see Verry *et al.* 2019; cf. von Pelzeln 1867: 316). He was also the author of an early study of the birds of Norfolk Island, some of which he suggested were related to New Zealand species (von Pelzeln 1860).

The *Novara*'s bird specimens after the voyage

The *Novara* returned to Trieste on 26 Aug 1859. Over the course of the expedition's voyage round the world, its scientific team collected over 26,000 zoological specimens in addition to several thousand geological and ethnographic items (Scherzer 1862: 410) – and this raised immediate questions about where to store and exhibit such a large body of material. A temporary solution was found in the establishment of the so-called Novara Museum, which was directed by Frauenfeld and occupied two buildings in the Augarten public park in Vienna (Anon. 1860a–c; Stolz-Fechner 1994: 240–251). The museum opened to the public on 1 May 1860. A catalogue of its exhibits produced by Frauenfeld reported that 30 mounted New Zealand bird specimens were among the thousands of natural history items on display, including a tūī, a kererū, a pūkeko, and 'some parrots' (Frauenfeld 1863). The Novara Museum remained open to members of the Viennese public until it was closed in early 1865, whereupon its zoological items (including the New Zealand birds from the Novara Expedition) went to the Zoological Court Cabinet, while



Figure 1. Pycroft's petrel (NHMW 48835, above) and Cook's petrel (NHMW 48837) collected by the Novara Expedition shortly before arriving in Auckland in December 1858. Image courtesy of Naturhistorisches Museum, Vienna, prepared for publication by Jean-Claude Stahl (Te Papa).

everything else was placed in storage. The Zoological Court Cabinet closed in 1885 along with the other two Court Cabinets (Botanical and Mineralogical) so that their respective collections could be transferred to the recently completed K. K. Naturhistorisches Hofmuseum (Imperial-Royal Natural History Court Museum, now the Naturhistorisches Museum in Vienna), and at that point all the *Novara* material ceased to be accessible to the general public (Fischer *et al.* 1976: 11; Riedl-Dorn 2004: 318). Many *Novara* Expedition specimens remain in the Naturhistorisches Museum Wien (NHMW), as listed below (courtesy of Hans-Martin Berg, NHMW, *pers. comm.* to CMM). Some of the specimens retain their original collection labels (see Miskelly & Braund 2025, Figs 1 & 2).

SYSTEMATIC ACCOUNT

Pelagic seabirds

Antipodean albatross *Diomedea antipodensis*

Two specimens shot by Wüllerstorff-Urbair and Frauenfeld north-east of the Poor Knights Islands on 19 Dec 1858 (NHMW 13647 & 13668) were referred to *D. exulans* by von Pelzeln (1865), and are now identified from photographs as *D. antipodensis* (CMM, *pers. obs.*). An additional skeleton of '*D. exulans*' from New Zealand, attributed to Zelebor, (NHMW 1487) was not mentioned by von Pelzeln (1865).

Kermadec petrel *Pterodroma neglecta*

Four specimens shot north-east of the Poor Knights Islands on 19 Dec 1858 (NHMW 48830, 48832, 48833 & 48834) are the earliest known record of this species from near the New Zealand mainland (Miskelly & Braund 2025). The specimens were misidentified as *Procellaria mollis* (now *Pterodroma mollis* = soft-plumaged petrel) by von Pelzeln (1865), and the error was promulgated by Finsch (1875) and Buller (1905).

Cook's petrel *Pt. cookii*

Von Pelzeln (1865) referred to two specimens of *Procellaria velox* (= *Pterodroma cookii*) shot by Wüllerstorff-Urbair and Frauenfeld north-east of the Poor Knights Islands on 19 Dec 1858, with field tag numbers 783 & 786. The field tags for these birds were subsequently attached to two sooty shearwater (*Ardenna grisea*) specimens of uncertain provenance (Hans-Martin Berg, *pers. comm.* to CMM, and see sooty shearwater text below). Both Cook's petrels were described in detail by von Pelzeln; however, they are no longer held by NHMW or their data have been lost. One of the Cook's petrel specimens is likely to be NHMW 48837, a specimen with no collection data that was prepared in the same way as Pycroft's petrel NHMW 48835 (Hans-Martin Berg, *pers. comm.* to CMM, and see Fig. 1 and next entry).

Pycroft's petrel *Pt. pycrofti*

The *Novara* Expedition likely collected three specimens of small gadfly petrels (Cook's petrel and Pycroft's petrel) before arriving in Auckland, although the fate of at least one of the Cook's petrel specimens is unknown. In addition to the two specimens collected on 19 December, the frigate's captain, Friedrich von Pöck shot another "*Procellaria*" (not mentioned by von Pelzeln 1865) near Great Barrier Island the following evening (Riedl-Dorn 2012b). Riedl-Dorn's translation referred to Frauenfeld collecting a tick from "one of the *Procellaria* (the white-bellied ones)" earlier on 20 December, implying that at least two specimens then referred to Cook's petrel were collected on 19 December (i.e. matching von Pelzeln's account above). This provides supporting evidence for three specimens being involved.

NHMW 48835 is a Pycroft's petrel collected by von Pöck in the Pacific Ocean on "29 Dec 1858" (Hans-Martin Berg, *pers. comm.* to CMM; Fig. 1). The specimen was registered as a Cook's petrel until it was re-identified by Te Papa bird curator Sandy Bartle during a visit to NHMW in 1997. The collection date is in error (as SMS *Novara* was

at anchor at Auckland on 29 December) and likely should be 20 Dec 1858. It is possible that this specimen was one of the two "*Procellaria velox*" shot north-east of the Poor Knights Islands on 19 Dec 1858; however, von Pöck was not a member of the two-person shooting party on that day (Riedl-Dorn 2012b). We consider that the Pycroft's petrel specimen was most likely collected near Great Barrier Island on 20 Dec 1858.

Black petrel *Procellaria parkinsoni*

Two males shot by Wüllerstorff-Urbair north-east of the Poor Knights Islands on 19 Dec 1858 (NHMW 13623 & 48809) were referred to '*Puffinus parkinsoni*' by von Pelzeln (1865).

Sooty shearwater *Ardenna grisea*

Two specimens currently registered in the NHMW database as part of the Novara collection (NHMW 48800 & 53340) were not mentioned by von Pelzeln (1865). They both have field tags that were originally applied to "*Procellaria velox*" specimens (see under Cook's petrel above), and are best considered as being of uncertain provenance (Hans-Martin Berg, *pers. comm.* to CMM).

Coastal birds and land birds

North Island kiwi *Apteryx mantelli*

Von Pelzeln (1865) referred a specimen gifted by Dr Fischer and an egg gifted by a Mr Graham [likely the leading Auckland citizen Robert Graham] to *A. australis*. Their collection localities are unknown, but are likely to be from the North Island (i.e. *A. mantelli*). The fate of the skin or mount is unknown. The egg is registered as NHMW 34.

Brown teal *Anas chlorotis*

A study skin collected in "Auckland" by Frauenfeld in December 1858 (NHMW 49433; von Pelzeln 1865) may have been collected along the Mangatāwhiri River or Waikato River on 31 Dec 1858 (Frauenfeld 1860; Riedl-Dorn 2012b).

Australasian shoveler *Spatula rhynchotis*

Frauenfeld (1860) reported a shoveler along the Mangatāwhiri or Waikato Rivers on 31 Dec 1858. Not mentioned by von Pelzeln (1865). No specimen collected.

Kererū *Hemiphaga novaeseelandiae*

A specimen collected in December 1858 by Frauenfeld (von Pelzeln 1865; NHMW 48436).

Shining cuckoo *Chrysococcyx lucidus*

A juvenile collected in December 1858 by Zelebor (von Pelzeln 1865; NHMW 50908).

Long-tailed cuckoo *Eudynamis taitensis*

NHMW 50926 collected in December 1858 by Frauenfeld is likely the bird shot in forest near Drury on 30 Dec 1858 (Hanf 1859e).

Pūkeko *Porphyrio melanotus*

Although Frauenfeld (1860) mentioned seeing pūkeko along the Mangatāwhiri or Waikato Rivers on 31 Dec 1858, the specimen retained (NHMW 13696) was attributed to Dr Fischer (von Pelzeln 1865).

Weka *Gallirallus australis*

A juvenile weka was collected by Hochstetter in 'Neu-Seeland' (precise location and date unknown; von Pelzeln 1865). The current location of this specimen (which was later identified as a North Island weka *G. a. greyi*) is unknown (Hans-Martin Berg, *pers. comm.* to CMM).

Red-billed gull *Chroicocephalus novaehollandiae*

Von Pelzeln (1865) referred a specimen collected by Hochstetter in Auckland to *Larus jamesoni*. The current location of this specimen is unknown (Hans-Martin Berg, *pers. comm.* to CMM).

Little penguin *Eudyptula minor*

Von Pelzeln (1865) referred a specimen received from Dr Fischer in Auckland to *Spheniscus minor*. The current location of this specimen is unknown (Hans-Martin Berg, *pers. comm.* to CMM).

Australasian gannet *Morus serrator*

Frauenfeld noted gannets in the Hauraki Gulf on 22 Dec 1858 and 8 Jan 1859 (Frauenfeld 1860; Riedl-Dorn 2012b). No specimen collected.

Little shag *Microcarbo melanoleucos*

Von Pelzeln (1865) referred a specimen collected by Hochstetter in New Zealand to *Graculus melanoleucos*. The current location of this specimen is unknown (Hans-Martin Berg, *pers. comm.* to CMM).

Pied shag *Phalacrocorax varius*

A specimen collected in January [1859] by Wüllerstorff-Urbair in a bay near Auckland (von Pelzeln 1865; NHMW 13587).

Australasian bittern *Botaurus poiciloptilus*

Frauenfeld (1860) reported bitterns along the Mangatāwhiri or Waikato Rivers on 31 Dec 1858. Not mentioned by von Pelzeln (1865). No specimen collected.

Ruru *Ninox novaeseelandiae*

Von Pelzeln (1865) listed '*Athene novae zelandiae*' from Auckland, without referring to specimens. Three Novara Expedition specimens are known (NHMW 44033, 49741 & 49742).

New Zealand falcon *Falco novaeseelandiae*

Frauenfeld observed a falcon between Mt Eden and Onehunga on 24 Dec 1858, and several between Papakura and Drury on 28 Dec 1858 (Frauenfeld 1860; Riedl-Dorn 2012b). Not mentioned by von Pelzeln (1865). No specimen collected.

Kākā *Nestor meridionalis*

A specimen collected in December 1858 in Auckland by Zelebor (NHMW 68241). Listed as *Nestor australis* by von Pelzeln (1865).

Red-crowned parakeet *Cyanoramphus novaeseelandiae*

Expedition members encountered red-crowned parakeets near Drury on 30 Dec 1858 (Hanf 1859e) as well as central Auckland. Von Pelzeln (1865) reported two specimens (as



Figure 2. Male hihi (NHMW 50792) obtained by the Novara Expedition in Auckland in December 1858. Image courtesy of Naturhistorisches Museum, Vienna.

Platycercus novae zelandiae) collected by Frauenfeld and Hochstetter, with one of these (NHMW 50370) known to survive.

Yellow-crowned parakeet *C. auriceps*

A specimen collected in December 1858 in Auckland by Zelebor (NHMW 50410). Listed as *Platycercus auriceps* by von Pelzeln (1865).

Bellbird *Anthornis melanura*

Listed by von Pelzeln (1865) without referring to the number of specimens. Three Novara Expedition specimens are known (NHMW 43830, 52247 & 52269), including two collected by Zelebor. Von Pelzeln (1867) subsequently described *Anthornis ruficeps* (a synonym of *A. melanura*) based on a pollen-stained specimen provided by Haast (Finsch in Buller 1871).

Tūi *Prosthemadera novaeseelandiae*

Von Pelzeln (1865) provided details of a tūi specimen (NHMW 52260) collected by Wüllerstorff-Urbair on 2 Jan [1859] at Manukau Forest near Whau Road, 13 miles west of Auckland, (we interpret this as Glen Eden). Three additional Novara Expedition specimens (NHMW 35348, 52258 & 52259) were collected at Auckland by Zelebor in December 1858. Frauenfeld, Hochstetter, and Haast also encountered tūi near Drury on 30 Dec 1858 (Hanf 1859e; Riedl-Dorn 2012b)

Grey warbler *Gerygone igata*

Von Pelzeln (1865) listed *Gerygone igata* from Auckland, and also proposed a new species (*G. aucklandica*) based on NHMW 51161 obtained by Zelebor 'in a bush near Auckland' on 5 Jan [1859]. Finsch (1875) considered the holotype of

G. aucklandica to be a juvenile *G. flaviventris* (the name then in use for grey warbler), and subsequently confirmed that *G. flaviventris* and *G. igata* were the same species (Finsch in Buller 1876). Both *G. aucklandica* and *G. flaviventris* are now treated as synonyms of *G. igata* (Checklist Committee 2022).

North Island kokako *Callaeas wilsoni*

One specimen (NHMW 87862) obtained by Zelebor in Auckland in December 1858. Von Pelzeln (1865) referred to the specimen as 'erhalten' (received), indicating that the specimen was collected by a person unknown. Von Pelzeln (1867) subsequently named *Callaeas olivascens* based on this specimen; however, Buller (1871) considered the differences from '*C. cinerea*' to be inconsequential. *C. olivascens* is now treated as a synonym of *C. wilsoni* (Checklist Committee 2022). This species was not otherwise recorded by the Novara scientists.

North Island saddleback *Philesturnus rufusater*

Frauenfeld (in Hochstetter 1863: 432) implied that he had seen and shot saddlebacks (as *Creadion*). Not mentioned by von Pelzeln (1865), and no specimens exist.

Hihi *Notiomystis cincta*

A male (NHMW 50792) obtained by Zelebor in Auckland in December 1858 (Fig. 2). Von Pelzeln (1865) referred to the specimen as 'gekauft' (bought), indicating that the specimen was collected by a person unknown. This species was not otherwise recorded by the Novara scientists.

Whitehead *Mohoua albigilla*

Von Pelzeln (1865) listed '*Certhiparus albigillus*' from New Zealand, and Frauenfeld (in Hochstetter 1863: 432) implied that he had seen and shot '*Certhiparus*', presumably in forest south of Drury. No specimens are known to exist.

North Island piopio *Turnagra tanagra*

Frauenfeld (in Hochstetter 1863: 432) implied that he had seen and shot piopio (as *Turnagra crassirostris*). Not mentioned by von Pelzeln (1865), and no specimens exist.

New Zealand fantail *Rhipidura fuliginosa*

Listed as *Rhipidura flabellifera* by von Pelzeln (1865). Zelebor provided detail of his observations of fantails, quoted by von Pelzeln (1865), and which we translate as: 'The liveliest bird I have ever observed. With delicate movements that are peculiar to the flycatchers it moves fast even through dense bush, in the manner of the Eurasian wren, and often utters a quiet *tscherr-tscherr* in the process. Like the Eurasian nuthatch it sometimes runs around a trunk or branch while constantly moving its fan-like tail over the back towards its head, more as it seemed to me for amusement than to look for food. I watched this bird for hours with true pleasure and it would perhaps take an equal amount of time to describe the way of life of this happy little animal.'

A study skin (NHMW 51184) and a skeleton (NHMW 1163) remain in the NHMW collection.

Tomtit *Petroica macrocephala*

Listed as *Petroica toitoi* by von Pelzeln (1865), based on a specimen collected by Zelebor (NHMW 43440).

North Island robin *P. longipes*

Listed as *Petroica australis* by von Pelzeln (1865), based on a specimen collected by Zelebor at 'Manukau forest on Mr Smith's farm near Whau Road west of Auckland' [Glen

Eden] on 2 Jan 1859 (NHMW 51176). NHMW holds a second specimen (NHMW 51177) also collected by Zelebor.

New Zealand pipit *Anthus novaeseelandiae*

A single specimen (NHMW 52378) collected by Wüllerstorff-Urbair at Auckland in December 1858 (von Pelzeln 1865). Frauenfeld also observed pipits, among fern between Mt Eden and Onehunga on 24 Dec 1858 (Frauenfeld 1860).

DISCUSSION

The Novara Expedition visited New Zealand early in the nation's colonial period, during the brief interval (1841–1865) that Auckland was the capital. It was one of the last international scientific expeditions to visit New Zealand before collection of native bird specimens began to be regulated by legislation (Miskelly 2014). Although Auckland Museum was founded in 1852 (Gill 2000), there is no record of *Novara* scientists interacting with honorary curator John Smith, or exchanging bird specimens with the museum before the *Novara* departed (Mason 1996; Park 1999). All these factors contributed to the bird specimens that were collected by the expedition being taken back to Austria (von Pelzeln 1865), where many are still held by the Naturhistorisches Museum in Vienna.

The birds seen and collected in and near Auckland by the *Novara* Expedition in 1858–59 are a reminder of the diversity of mainland bird communities before the most harmful introduced mammalian predators became widespread (Thomson 1922; King 1984, 2020; Atkinson 1985, 1996) and before introduced bird species became established (Thomson 1922). Species encountered by the expedition that are now rare or absent near Auckland included brown teal, long-tailed cuckoo, New Zealand falcon, kākā, red-crowned parakeet, yellow-crowned parakeet, bellbird, North Island kokako, hihi, whitehead, and North Island robin, and possibly also North Island saddleback and the extinct North Island piopio. All these species became rare or extinct in the northern North Island following the establishment and spread of ship rats (*Rattus rattus*) and stoats (*Mustela erminea*) in the late nineteenth century (Atkinson 1985; Lee 2005; Innes *et al.* 2010; King *et al.* 2021; Wilmshurst *et al.* 2021). Although expedition members encountered most of these species personally, acquisition of some specimens (notably hihi and North Island kokako) from other parties means there is uncertainty over where these specimens were collected before they were purchased by or gifted to the *Novara* Expedition.

The most notable ornithological findings of the *Novara* Expedition while in New Zealand were among the pelagic seabirds collected during their approach to Auckland. These included the first record of Kermadec petrels from near New Zealand, 74 years before the next specimen washed up on Muriwai Beach west of Auckland (Falla 1933; Miskelly & Braund 2025). The expedition also collected the earliest known specimen of Pycroft's petrel, 22 years before their countryman Andreas Reischek encountered the species on the Chicken (Marotiri) Islands (Reischek 1886; Oliver 1955), and 75 years before the species was recognised as distinct from Cook's petrel (Falla 1933).

ACKNOWLEDGEMENTS

Our grateful thanks to Hans-Martin Berg, Naturhistorisches Museum, Vienna for answering numerous questions about *Novara* Expedition specimens, and for facilitating the taking of images reproduced here. The photographs were taken by Chloe Potter, (NHMW) and prepared for publication by Jean-Claude Stahl (Te Papa). We thank Felix Marx (Te Papa) for suggested translations of portions of original German texts. We also thank James Bade (University of Auckland),

Fiona Drummond (West Auckland Historical Society), and Lisa Truttman (Avondale-Waterview Historical Society) for helping us identify the location of the *Novara* Expedition's collecting activity in Glen Eden. We thank Michael Lee and an anonymous reviewer for comments that improved this manuscript.

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