Psalm

Dr Hamish Foote and Annabel Pretty

Psalm – a sacred song or poem used in worship especially: one of the biblical hymns collected in the Book of Psalms .[1]

Introduction

Psalm[2] was the title of an exhibition in 2019, of sculptures by Bronwynne Cornish and paintings by Hamish Foote. Both artists reference the native biota of Aotearoa New Zealand, and aim to draw attention to the transformation of landscape, in particular habitat loss and a shrinking gene pool. This paper, which concentrates on Foote's paintings, discusses the relationship of art and science, the role of art as means of communication and, finally, the underpinning content of the images: the topical and critical issue of genetic bottlenecks within the endemic avian community. These collected works are a psalm, of sorts, that speaks of this perilous situation in the hope of raising awareness.

Art and Science

Art and science have enjoyed a lengthy association. The origins of this relationship can be traced back to ancient times. Botanical, zoological and landscape representation appear in the wall paintings of Pompeii. Exquisite manuscript illustrations followed, such as the botanical illustrations generated around 512 CE, which accompany a copy of the text *De Materia Medica* by the Greek physician Pedanius Dioscorides (40–90 CE).[3] In the sixteenth century, *The History of Animals*, a five-volume study illustrated with nearly twelve hundred woodcuts, was published by the Swiss naturalist Conrad Gessner (1516–1565). More recently and closer to the Antipodes, the naturalist Joseph Banks (1743–1820), artist George Stubbs (1724–1806)[4] and the eminent French natural scientist Jean-René Constant Quoy (1790–1869),[5] continued this tradition during the

1. Merriam-Webster.com Dictionary, s.v. "psalm," accessed September 17, 2020, https://www.merriam-webster.com/dictionary/psalm.
2. Hamish Foote (Artist) and Bronwynne Cornish (Artist), *Psalm* (Artis, Auckland, 2019), August 13–September 2, 2019.
3. Marilyn Stokstad, Marion Spears Grayson, and Stephen Addiss, *Art History* vol. 1 (Upper Saddle River, NY: Harry N. Abrams, 1995), 319.
4. Basil Taylor, *Stubbs* (London: Phaidon, 1971). Passim.
5. Christine A. Hemming, *The Art of the French Voyages to New Zealand 1769-1846* (Auckland: Heritage Press, 2000). Passim.

Figure 1. Piero della Francesca (1416/17–1492), The Duke and Duchess of Urbino, Federico da Montefeltro and Battista Sforza *(detail), 1473–1475, oil on wood, Uffizi Galleries Collection, Florence.*

Voyages of Discovery.[6] Although the relationship has changed somewhat due to advances in technology, art continues this involvement with the sciences to the present day. Drawing, for example, continues to be a vital component of science and medical education in fields such as botany and orthopaedics, and painted depictions of birds feature in contemporary ornithological field guides and textbooks.

Art and Influence

In the manner of art's service to science, images have been harnessed, over the ages, to promote, define, educate and on occasion, as a means to win hearts and minds. The murals and mosaics of ancient Greece and Rome were status symbols for Emperors and aristocracy alike. During the Renaissance the work of Italian artists such as Giotto di Bondone (ca. 1267–1337) were used to elevate the status of their wealthy patrons. Giotto's frescoes in the Arena Chapel, for example, were an attempt on the part of the patron Enrico Scrovegni (–1336) to secure a favourable afterlife; to atone for his sins, or perhaps those of his father (usury); to move to the 'right hand' of God.[7] Piero della Francesca (1415–1492) performed a similar function for his patron the Duke of Montefeltro, Federico da Montefeltro (1422–1482). His scenes of allegorical triumph in *The Duke and Duchess of Urbino, Federico da Montefeltro and Battista Sforza* (Figure 1) (ca. 1465), in the Galleria degli Uffizi, Florence, depict the Duke with a variety of mythical characters. The Duke travels in a Roman chariot like an Emperor of antiquity, before an elaborate depiction of his realm.

In the context of Aotearoa and our more recent history, artists have performed a vital role in the definition and communication of an emerging national identity. In 1964, for example, one newspaper reviewer wrote:

The search for a New Zealand identity is something that is now influencing all the arts in this country.... Work last year showed that Toss Woollaston and Colin McCahon continue to contribute to it, but after them, who else? My choice would be Don Binney, whose first one-man show showed an understanding of the peculiar rhythms that go to make the New Zealand landscape. [8]

Don Binney (1940–2012) also had a passionate interest in the bird life of Aotearoa and was one of the first in this country to focus his, and a growing art audience, attention on the threat posed by habitat loss[9] (Figure 2). Birds feature prominently in the practice of another local artist, the contemporary painter Bill Hammond, who has made a similar and ongoing contribution to our understanding of place. Hammond used allegory, in the manner of Piero della Francesca, in his 1994 painting *Buller's Tablecloth.*[10]

6. Tony Rice, *Voyages of Discovery: Three Centuries of Natural History Exploration* (London: Scriptum Editions in association with the Natural History Museum, 2000). Passim.
7. Frederick Hartt and David G. Wilkins, *History of Italian Renaissance Art: Painting, Sculpture, Architecture* (London: Thames and Hudson, 2011), 77.
8. "Fatbird | Collections Online – Don Binney [Artist], 1964, Auckland," Museum of New Zealand Te Papa Tongarewa, https://collections.tepapa.govt.nz/object/574375.
9. Warwick Brown and Peter Simpson, "Don Binney, La Chute d'Icare, Pureora: Last Flight of the Kokako," Webb's Auction Portal, 2017, https://auctions.webbs.co.nz/m/lot-details/index/catalog/45/lot/5223/DON-BINNEY-La-Chute-d-Icare-Pureora-Last-Flight-of-the-Kokako.
10. W. D. Hammond, "Buller's Table Cloth | Auckland Art Gallery," Auckland Art Gallery Toi o Tāmaki, https://www.aucklandartgallery.com/explore-art-and-ideas/artwork/8069/bullers-table-cloth?q=%2Fexplore-art-and-ideas%2Fartwork%2F8069%2Fbullers-table-cloth.

Figure 2. Don Binney, La Chute d'lcare, Pureora: Last Flight of the Kokako*, 1979, oil on board, 2110 x 910mm. Image courtesy of the Estate of Don Binney*

The result is an unequivocal statement regarding the butchery of nineteenth-century scientific practice in Aotearoa. On a more positive note, artists have recently been enlisted in the fight against kauri dieback, through The Kauri Project: Poster Series.[11] The power of images to raise awareness is a form of social marketing that is becoming increasingly prevalent. A growing utilisation of brochure and poster campaigns by the Ministry of Primary Industries[12] reflects this trend. The collected works that comprise the exhibition *Psalm* continue this tradition, and are yet another manifestation of the ongoing and fertile intersection of art and science.

Figure 3. Hamish Foote, Leucism III, II *and* I*, 2019, egg tempera on gessoed kauri panel, 115 x 115mm.*

Paintings and Content

Hamish Foote's paintings highlight the chromatic aberration[13] of the kiwi (in the genus *Apteryx*, Latin for flightless), its predator the ermine (toriura, *Mustela erminea*), the fairy tern (tara iti, *Sternula nereis*, listed as vulnerable) and the black petrel (tāiko, *Procellaria parkinsoni*).

Based within the paradigm of historical, zoological representation and painted with either egg tempera on gessoed kauri panels or watercolour, these works interrogate complex issues: genetic bottlenecks, which arise from small genetic populations within species sets; and the impact of predation and human enterprise. An interest in citizen science and the evidence of leucism or partial albinism[14] is manifest in the series of three paintings (*Leucism I, II, II*) of the kiwi. Leucism[15] is a genetic condition with numerous factors, on multiple genes, the resultant form being either a partially white-feathered kiwi or a totally white bird; both states obviously *detrimental* within the open countryside. Leucistic animals are not albino, as they have pigmentation in their eyes.[16]

Genetic bottlenecks are a factor evidently at work, and can be caused by a multitude of variables: artificial selection, such as in pedigree breeding; partial extinction, due to introduced species predating on the creature; or a reduction in population size, which increases the likelihood that an uncommon or *deleterious allele* will become fixed within the population due to random chance. The five species of kiwi[17] (tokoeka, *Apteryx australis*; Okarito brown kiwi, *Apteryx rowi*; little spotted kiwi, *Apteryx owenii*; North

11. "The Kauri Project: Poster Series," Keep Kauri Standing, https://www.kauridieback.co.nz/more/news-and-updates/2014/the-kauri-project-poster-series/.
12. "Brown Marmorated Stink Bug – If You Find One of These on the Ship," Ministry for Primary Industries Manatū Ahu Matua, http://www.gard.no/Content/25886580/MPI_ship%20BMSB%20poster.pdf.
13. Michael Cieslak, Monika Reissmann, Michael Hofreiter, and Arne Ludwig, "Colours of Domestication," *Biological Reviews* 86, no. 4 (November 1, 2011): 885–99, https://doi.org/10.1111/j.1469-185X.2011.00177.x.
14. Lucía Izquierdo et al., "Factors Associated with Leucism in the Common Blackbird Turdus Merula," *Journal of Avian Biology* 49, no. 9 (September 1, 2018): e01778, https://doi.org/10.1111/jav.01778.
15. Matt Rayner, "White Kiwi, French Poodles, and the Problem of a World in Pieces – Explore Topics – Auckland War Memorial Museum," Auckland War Memorial Museum – Tāmaki Paenga Hira, 2019, https://www.aucklandmuseum.com/discover/collections/topics/white-kiwi-french-poodles.
16. Lucy Peters et al., "Born Blonde: A Recessive Loss-of-Function Mutation in the Melanocortin 1 Receptor is Associated with Cream Coat Coloration in Antarctic Fur Seals," *Ecology and Evolution* 6, no. 16 (July 22, 2016): 5705–17, https://doi.org/10.1002/ece3.2290.
17. Barbara Taborsky and Michael Taborsky, "Spatial Organization of the North Island Brown Kiwi Apteryx Australis Mantelli: Sex, Pairing Status and Territoriality," *Ibis* 134, no. 1 (January 1, 1992): 1–10, https://doi.org/10.1111/j.1474-919X.1992.tb07222.x.

Figure 4. Hamish Foote, Ermine*, 2019, egg tempera on gessoed kauri panel, 115 x 290mm.*

Figure 5. Hamish Foote, Leucism I*, 2019, egg tempera on gessoed kauri panel, 115 x 115mm.*

Island brown kiwi, *Apteryx mantelli*; roroa, great spotted kiwi, *Apteryx haastii*) account now for only ~68,000 birds throughout Aotearoa. This small population suffers an estimated loss of 2 percent per year, or twenty birds a week, through predation from rats (kiore, *Rattus exulans*; Norway rat, *Rattus norvegicus*; ship rat, *Rattus rattus*); cats (*Felis catus*) and particularly from stoats, otherwise known as ermine. Depicted with its white winter coat, this deadly predator appears in Foote's painting *Ermine*, looping back to the leucistic white coats of the kiwi. The introduction of ermine in the late 1800s to control rabbits (rāpeti, *Oryctolagus cuniculus*) has devastated the endemic avian species, and Foote's paintings allude to this: the lonely kererū (*Hemiphaga novaeseelandiae*) feather in the foreground; the desiccated bones of kiwi; broken and empty egg shells; and the islands in the mid-ground, alluding to those in the Hauraki Gulf and further afield, which are gradually being cleared of non-endemic species.

The device of large, deep, white frames around almost miniaturised images acts as a leucistic surrounding: a barrier within which the image becomes a metaphorical island, on the wall of either gallery or home. The two watercolours however, have a differing and distinct discourse: one addresses the ecology of the fairy tern and the other the black petrel. The former considers the finality of the last breeding pairs of the fairy tern – the last thirty-seven pairs – and the latter the manifest way in which black petrels are by-catch in the fishing industry.

These six artworks interrogate the notion of the imaginary speculative island habitats both as the sublime and seemingly pristine, but, in reality, places of colonialism from the immigrant predators, and ones which have become, 'prison sanctuaries' for the remaining populations of kiwi. Life for these remnant colonies takes a fateful turn, as population declines, and the gene pool shrinks: a genetic bottleneck[18] ensues, and the incidence of leucism increases. This is problematic for the kiwi, which is the ultimate avian nocturnal flâneur, as rates of predation increase exponentially for those with conspicuous white plumage. Each breeding pair needs between two hectares and 100 hectares depending on species. The tokoeka require the largest area – they are also territorial and will aggressively counter any avian incursion on their domain. Once established and breeding, kiwi produce one egg per year, and this is a significant investment and outcome: the egg, containing a very large chick, is 20 percent of the mother's size.[19] These various breeding constraints are exacerbated by other factors particular to the species: kiwi do not mature until between three and five years old; are monogamous for the potentially twenty years or so of their paired life; and have a chick mortality rate of 95 percent. The kiwi bird needs all the songs and prayers (Psalms) we can give them.

Concluding Psalm

The opportunity for a variety of audiences to interact, consume and interpret an unfamiliar discipline, which is mediated through another 'voice' – that of the artist – provides multi-modal ways in which to view, absorb and interact. As the Finnish architect Juhani Pallasmaa notes:

The experienced, remembered, and imagined are qualitatively equal experiences in our consciousness; we may be equally moved by something evoked by the imagined as by anything

18. Ian G. Jamieson, *Loss of Genetic Diversity and Inbreeding in New Zealand's Threatened Bird Species* (Wellington: Department of Conservation Te Papa Atawhai, 2009), https://www.doc.govt.nz/globalassets/documents/science-and-technical/sfc293entire.pdf.
19. Jason T. Weir et al., "Explosive Ice Age Diversification of Kiwi," *PNAS* (*Proceedings of the National Academy of Sciences of the United States of America*) 113, no. 38 (2016): E5580-87, https://doi.org/10.1073/pnas.1603795113.

actually encountered. Art creates images and emotions that are as equally true as the actual encounters of life; fundamentally, in a work of art we encounter our own 'being-in-the-world' in an intensified manner.[20]

This power is aided and abetted by the process of dissemination: exhibitions are public events, supported by written text[21] and sophisticated marketing, that offer an opportunity to communicate and provoke discourse.

There are promising initiatives such as Predator Free 2050[22] that allow us to imagine, a return to the Aotearoa of old: a bush-clad land that prompted Joseph Banks to remark:

This morning I was awakd by the singing of the birds ashore from whence we are distant not a quarter of a mile, the numbers of them were certainly very great who seemd to strain their throats with emulation...[Their] voices were certainly the most melodious wild musick I have ever heard, almost imitating small bells but with the most tuneable silver sound imaginable. [23]

This will be no more than a dream, without the commitment of an engaged and willing population. Raising awareness is the first step. The sixth mass extinction of wildlife on earth is accelerating,[24] and the canary has stopped singing. It is the authors' hope that these works give rise to insistent and increasingly arresting, allegorical and discursive psalms. Psalms that alert a distracted populous to this imminent catastrophe; that allow us to us pause on the brink, redress our activities and perhaps even, in time, hear the return of abundant and mellifluous birdsong.

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20. Juhani Pallasmaa, *Encounters: Architectural Essays*, edited by Peter B. MacKeith (Helsinki: Rakennustieto Oy, 2005), 130.
21. "Right Now: Fragile Ground," *The New Zealand Herald*, August 14, 2019, pressreader, https://www.pressreader.com/new-zealand/the-new-zealand-herald/20190814/282561609809873.
22. Predator Free 2050 Vision," Predator Free NZ, https://predatorfreenz.org/big-picture/pf-2050-vision/.
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24. Gerardo Ceballos, Paul R. Ehrlich, and Peter H. Raven, "Vertebrates on the Brink as Indicators of Biological Annihilation and the Sixth Mass Extinction," *Proceedings of the National Academy of Sciences* 117, no. 24 (June 16, 2020): 13596–602, https://doi.org/10.1073/PNAS.1922686117.

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