S cots made distinct contributions to many areas of endeavour in the heyday of the British Empire. One area of expertise in which Scots had notable influence across the Anglophone world was in the environmental professions, such as plant collecting, botany, geology, and exploration. A range of environmental and social conditions caused Scotland to develop a particularly notable interest in the environment, and, consequently, Scots contributed in myriad ways to the environmental professions in the various lands of the Empire and even further abroad.

Beyond this, however, as writers and artists, Scots also observed and recorded the seemingly strange countries in which they found themselves and, furthermore, they played an active role in changing the very landscapes they colonised as partners of the British Empire. Australia, often considered at the time one of the strangest of the lands Britain colonised, is a perfect example of Scottish interactions with the environments of Empire.

Benjamin Wilkie explores the contribution made by Scottish migrants in developing scientific understanding of the Australian continent from the 17th century onwards, through discoveries and achievement in fields including medicine, botany, geology and engineering training in Scotland, reflecting traditions in continental Europe, was connected with botanical interests and the possibilities of plants and the environment for health. An understanding of the botanical world was essential to medical training, and most Scottish doctors were well trained in the dissection, analysis, and identification of plants. Many public health problems were connected with environmental solutions.

Since Scotland over-produced medical professionals, it is not surprising that many of them expanded their environmental interests during their tenure abroad in the colonies. Scottish missionaries

**Scots, Empire, and the Australian Environment**

Botanical Gardens, Sydney, established in 1816, is one of many botanical gardens around the world established or maintained by Scots.
Since Scotland over-produced medical professionals, it is not surprising that many of them expanded their environmental interests during their tenure abroad in the colonies.

of botanic gardens abroad. Robert Melville, a graduate of both Edinburgh and Glasgow Universities, founded one of the earliest of these on the island of St Vincent in the Caribbean during the late 18th century. In 1787, Scot Robert Kyd convinced the East India Company to establish a botanic garden in Calcutta. Kyd's successor at the Calcutta botanic garden was William Roxburgh, who was a key figure in identifying jute, which would become integral in the industry and economy of Dundee. Robert Wight from Edinburgh took over a botanic garden at Madras in 1823, and introduced some 3000 Indian plants to Britain, while James Anderson was an important figure at the Bombay botanic garden. In New Zealand, Edinburgh-born James Hector, a geologist, established botanic gardens at Wellington in 1865. John Davidson from Aberdeen founded a garden in British Columbia, which is now Canada's oldest surviving botanic garden.

Wealthy landowners were deeply involved in landscape and garden design as a matter of aesthetics and social standing, but were also key figures in the development of forestry. Various industries had contributed to the almost-total deforestation of Scotland by the 1600s and landowners, concerned about the effect of this on a range of timber-related industries, helped to make forestry a Scottish speciality. They also saw tree planting as a potential business opportunity.

In the 1700s, some of the largest estates in Scotland became involved in tree planting, which was understood to add value to land that was otherwise unproductive; timber could be sold for house construction, packaging, shipbuilding, and furniture making. This was not limited to native Scottish species, especially after the expansion of the British Empire. The dukes of Atholl and Argyll, for example, were passionate about exotic trees from across the globe, and thus required experts who could adapt these new, alien species to the Scottish environment. This new knowledge of environmental conditions meant that Scotland became known as a hotspot for advanced agronomy, in which even humble farm servants were skilled and literate.

It was the field of forestry in which Scots made a particularly large contribution in the 19th century. Estate owners in Scotland, particularly in Argyll, Perthshire, and on the Moray coast, learnt and established new forestry techniques and became experts at both tree planting and agronomy. Scottish expertise in forestry aided the development, via the East India Company, of forestry departments and plantations in throughout India. In one example, Angus-born East India Company surgeon Alexander Gibson was concerned with the destruction of forests in various parts of India, and in 1838 became superintendent of the Dapuri garden in Bombay, and was later the Bombay Forest Department's Conservator of Forests from 1847 to 1860. Similarly, Hugh Cleghorn from Fife was Professor of Botany at Madras College from 1852, and in 1855 was a founder of the Madras Forest Department. He became its Conservator of Forests in 1856, and later was advisor for forest developments in Punjab and Bengal, in addition to supporting an all-

James Stevenson Hamilton, the first warden of what would become Kruger National Park in South Africa
Enlightenment thinkers had a great deal of interest in the environment and climate and their relationship to the development of different human civilisations across the world. When doctors, botanists, geologists, and other professionals went abroad, many took with them the idea that the civilisations and cultures they encountered were products of biology and the environment. Although not limited to Scotland or the British Isles, such ideas contributed in some ways to now-discredited notions of 'race' and racial hierarchies.

Broadly speaking, then, Scottish professionals had a great deal of interest in the environment and climate and their relationship to the development of different human civilisations across the world. When doctors, botanists, geologists, and other professionals went abroad, many took with them the idea that the civilisations and cultures they encountered were products of biology and the environment. Although not limited to Scotland or the British Isles, such ideas contributed in some ways to now-discredited notions of 'race' and racial hierarchies.
Northern American fur trades, while many of the most famous hunter-explorers were Scots, including Mungo Murray, Denis Lyell, and Roualeyn Gordon Cumming. Indeed, settlement in the colonies removed Scots from the social and legal strictures of hunting in Britain, and hunting became one of the freedoms of colonial life.

Hunters often became interested in ideas of conservation, which became a prominent movement in the late-19th and early-20th centuries. James Stevenson-Hamilton was a famous hunter in South Africa, and eventually established nature reserves in what was then the Transvaal, including the Sabi reserve and the Kruger National Park.

John Muir, perhaps the most famous Scottish conservationist, was born in 1838 at Dunbar and was a pioneering naturalist and environmentalist in the United States. In the late-1890s, he helped to create legal security for natural parks, including the Yosemite Valley and Sequoia National Park in the Sierra Nevada mountains of California. In April 2014, the John Muir Way, a 215-kilometre walking route between Helensburgh and Dunbar, was officially opened, while there are numerous commemorative sites throughout the United States. Muir’s dedication to environmentalism inspired many other Scots. In New Zealand, for example, James Glenny Watson, Thomas Noble Mackenzie, and John McKenie, took his lead and were notable in a range of environmental issues, including conservation, forestry, land redistribution, and pastoralism.

Scots therefore had a remarkable influence at home and across the worlds of the British Empire in the environmental professions. More broadly, however, Scottish painters and writers depicted the natural environment of the British Empire in notably ‘Scottish’ ways. Their reactions to the Australian environment – seemingly the strangest and most otherworldly of the British colonies – were recorded in words and illustrations throughout the late-18th and early-19th centuries.

Encountering Australia

Thomas Watling was born at Dumfries in 1762. As an adult, he was an accomplished artist and teacher. In 1788, Watling was accused of forging guinea notes, and transported to New South Wales for fourteen years in 1792. He was assigned to work for the surgeon-general and passionate naturalist, John White. As most convicts did, under White – and later the judge-advocate David Collins – Watling continued to ply his trade in the Australian colonies. Artistic skills such as his were in high demand in the colonies and, in the end, he made a remarkable contribution to documenting the landscapes and towns, plant and animal life, and Indigenous inhabitants – the Eora people – of the early settlement at Sydney Cove in the 1790s.

Watling’s example demonstrate the ways in which convict skills were valued and put to use in the fledgling Australian colonies, but his output also provides rich insights into how European colonists tried to understand the strange land in which they found themselves. Scottish migrants ‘arrived in a country offering little that reminded them of their homeland,’ write historians Edward Cowan and Lizanne Henderson, ‘a place where their expectations of the Antipodes were met almost literally, in the sense that everything seemed to be the opposite of the norm.’

In a letter to his aunt in Dumfries during 1791, Watling remarked that ‘the whole appearance of nature must be striking in the extreme to the adventurer, and at first this will seem to him to be a country of enchantments. The generality of the birds and the beasts sleeping by day, and singing or catering in the night, is such an inversion in nature as is hitherto unknown.’ He continues:

The air, the sky, the land, are objects entirely different from all that a Briton has been accustomed to see before. The sky clear and warm; in the summer very seldom overcast, or any haze discernable in the azure; the rains, when we have them, falling in torrents, & the clouds immediately dispersing. Thunder, as said, in loud contending peals, happening often daily, & always within every two or three days, at this season of the year. Eruscations and flashes of lightning, constantly succeeding each other in quick and rapid succession. The land, an immense forest, extended over a plain country, the maritime parts of which, are interspersed with
rocks, yet covered with venerable majestic trees, hoary with age, or torn with tempests. In a word, the easy, liberal mind, will be here filled with astonishment, and find much entertainment from the various novel objects that every where present themselves.

Apart from his letters, Watling also produced hundreds of drawings of Australian flora and fauna, along with depictions of the Eora people and illustrations of the European settlement at Sydney Cove. While he claimed they were ‘done faithfully upon the Spott, from Nature’, Watling observed Australian nature and landscapes through pre-Darwinian European eyes, and art historians note that his depictions are often inaccurate and exaggerated. Nevertheless, his representations and perception of the Australian environment demonstrate how one Scottish convict in the late-18th century tried to respond and understand this strange new country.

In addition to convict artists, however, the Scottish contributions to imperial environmental professions placed them in numerous official positions that provided them with opportunities to observe and represent the natural world of the Antipodes. Perhaps the earliest Scot to work in such an official capacity was the botanical artist Sydney Parkinson, born in 1745 in Edinburgh. Parkinson accompanied the botanist Joseph Banks on Captain James Cook’s expeditions in search of Terra Australis Incognita (the ‘unknown southern land’) in the late 1760s and early 1770s.

On the final voyage, Parkinson produced 1300 drawings of flora and fauna, eventually published in Banks’ *Florilegium* in the 1980s and 1990s, and a journal of the expedition published in 1773 after his death from dysentery on the return voyage in 1771. His illustration of Eora men warning off Cook’s expedition would become a famous representation of first contacts between Europeans and Indigenous Australians.

Beyond plant collecting and botanical illustration, Scots were important in the establishment of botanic gardens in Australia, as they were in other parts of the Empire. Charles Fraser from Perthshire founded Sydney’s botanic gardens. Early Scottish superintendents were brothers Richard and Allan Cunningham, as well as ex-convict James Kidd from Fife. Another Scot, Charles Moore, whose brother David was an important figure at botanic gardens in Ireland, became superintendent at Sydney and stayed in the position for 48 years.

Scots were also well-represented among geologists and surveyors. One famous example is Sir Thomas Mitchell. Mitchell served in the British army from 1811, where he developed a special talent for map-making, and went to New South Wales in Australia during 1827 to eventually become the Surveyor General of the colony. As well as being responsible for roads and bridges, he lead numerous expeditions into the interior of New South Wales in the 1830s, discovering the rich grasslands of ‘Australia Felix’ in modern-day Victoria and mapping much of the southern parts of the colony.

Drawing attention to Indigenous land management practices, Mitchell famously observed during his expeditions that ‘Fire, grass, kangaroos, and human inhabitants, seem all dependent on each other for existence in Australia; for any one of these being wanting, the others could no longer continue.’

Among other Scots in positions of officialdom and authority to remark on the Australian environment was John Hunter, who had come to Australia as Second Captain of the First Fleet’s lead ship, HMS Sirius. Hunter was a keen natural historian and artist, and would later take the role of Governor of New South Wales from 1795 to 1801. During his early years in the colony, Hunter kept a sketchbook in which he observed:

*There are a great variety of birds in this country; all those of the parrot tribe, such as the macaw, cockatoo, lory, green parrot and parroquets of different kinds and sizes, are clothed with the most beautiful plumage that can be conceived; it would require the pencil of an able limner to give a stranger an idea of them ... The vast variety of beautiful plants and flowers, which are to be found in this country, may hereafter afford much entertainment to the curious in the science of botany; but I am wholly unqualified to describe the different*
Hunting would eventually fill his sketchbook with dozens of remarkable paintings of various species of unique Australian flora and fauna, especially plants and birds, which would become an important source of early European depictions of the Australian continent.

So vivid were Hunter's written descriptions of Australian animals and plants that *The Scots Magazine* in Edinburgh reprinted sections of his *Historical Journal* at length in 1793, noting that even though similar publications existed, Hunter's account of 'the animals and plants of this newly explored country is at once new and strange … [therefore] we shall lay it before our readers.' Readers at home were enthusiastic to see and hear about discoveries in the Antipodes.

**Changing the landscape**

As the 19th century progressed, however, the majority of Scottish migrants were no longer convicts nor officials – they were free settlers who had come to Australia in search of opportunities, escaping the conditions of an industrialised Scotland. Many of them journeyed out of the main urban settlements to become pastoralists and landholders, smaller parts of an imperial network of commerce and trade that extended from Scotland across the world.

These migrants, too, recorded their encounters with the Australian environment in diaries, letters, and journals. However, they not only described and observed the continent in which they found themselves. Across an ever-shifting frontier throughout the 19th century, Scottish pastoral lease holders were particularly numerous in Moreton Bay, where over half were Scots, Port Phillip (over 40 percent), and New England and Darling Downs, where around a third of pastoralists were Scottish. In some regions of the colonies they were particularly dominant, such as in the Western District of Victoria.

The activities of Scottish and other pastoralists had a dramatic impact on the Australian environment. An early account of soil erosion and land degradation as a result of European activities in Australia comes from the John G. Robertson, who was a botanist in Scotland before migrating to Australia to take up land in Victoria’s Western District in the early 1850s. He was thus in a good position to remark on changes to the landscape.

Writing to Governor Charles La Trobe in September 1853, Robertson said: ‘When I arrived [in March 1840] through the thick forest-land from Portland to the edge of the Wannon country, I cannot express the joy I felt at seeing such a splendid country before me where my little all that I was driving before me was to feed … the grasses were about four inches high, of that lovely dark green; the sheep had no trouble to fill their bellies.’

But, for Robertson and many other pastoralists in the 19th century, overgrazing and insufficient understanding of land management in the Australian context caused the land to undergo significant change. In his letter to La Trobe, Robertson goes on to observe that native vegetation had begun to disappear, the soil had become like clay, and hundreds of land slips had occurred in the three years he had occupied the area. ‘I will not be able to keep beyond plant collecting and botanical illustration, Scots were important in the establishment of botanic gardens in Australia, as they were in other parts of the Empire.
the number of sheep the run did three years ago,’ he laments, ‘and as a cattle station it will be still worse; it requires no great prophetic knowledge to see that this part of the country will not carry the stock that is in it at present.’ Robertson left the property soon after sending his letter to La Trobe.

Pastoralism changed the landscape in other ways, too. Having remarked on Indigenous Australian land management practices he had encountered on his expeditions, in 1841 Thomas Mitchell – in a rare application of true Scottish Enlightenment curiosity – described the ways in which Europeans had altered the Australian environment.

Observing that fire had been utilised to variously hunt, control vegetation, and reduce the intensity of bushfires, Mitchell saw that the arrival of pastoralists had disrupted this practice and, therefore had also had adverse affects on the Indigenous people of those parts of Australia that had been occupied by the late-1830s. He wrote that:

> the introduction of livestock is by itself sufficient to produce the extirpation of the native race, by limiting their means of existence; and this must work such extensive changes in Australia as never entered into the contemplation of the local authorities... The omission of the annual periodical burning by natives, of the grass and young saplings, has already produced in the open forest lands nearest to Sydney, thick forests of young trees, where, formerly, a man might gallop without impediment, and see whole miles before him. Kangaroos are no longer to be seen there; the grass is choked by underwood; neither are there natives to burn the grass, nor is fire longer desirable there amongst the fences of the settler.

Mitchell continued to note in his journals that the European colonisation of Australia seems thus to involve, as an inevitable result, the extirpation of the aborigines; and it may well be pleaded, in extenuation of any adverse feelings these may show towards the white men, that these consequences, although so little considered by the intruders, must be obvious to the natives, with their usual acuteness, as soon as cattle enter on their territory ... Silently, but surely, that extirpation of aborigines is going forward in grazing districts, even where protectors of aborigines have been most active...

**Conclusion**

Scottish migrants, along with other European colonists, were thus participants in not only the vast transformation of Australia’s landscape into agricultural and pastoral property, but also in the dispossession of Indigenous Australians who had made the land productive enough to support a civilisation for tens of thousands of years. Very few colonists, however, recognised or understood this at the time. Although it would be decades before appropriate land managements practices in Australia were developed, Scots also contributed to the development of scientific understanding of this new continent in the late-18th and 19th centuries in important ways. Scottish artists and writers, from convicts to governors, also left behind rich records of how they saw and understood the Australian landscape. It was, perhaps, the prominence of environmental concerns in Scotland at the time that provided them with a sense of curiosity and wonderment that the Australian continent seemed to pique in many Scottish migrants.

Benjamin Wilkie is a historian and lecturer at Deakin University, Australia. His book, ‘The Scots in Australia 1788-1938’, will be published later this year.

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**FURTHER READING**

*Seeds of Blood and Beauty: Scottish Plant Explorers*, Ann Lindsay (Edinburgh, 2008)


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