




Romanticism on the Net

A Coastal Knowledge Ecology and Aesthetics of Data: Environmental Science, J. M. W. Turner, and the Bass Rock

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Abstract

This article is concerned with the fluid boundaries that challenged artists, natural philosophers, writers, reviewers, and readers to understand Scotland and its coastal, inshore environment in radically new ways. Those boundaries are material and disciplinary, existing, on the one hand, where land meets sea and, on the other hand, where the arts and sciences interact. My enquiry explores developing forms of knowledge pertaining to the Bass Rock and its surrounding coastal waters. The Scottish marine paintings of J. M. W. Turner provide a lens for that enquiry, embodying the imaginative curiosity that characterized Romanticism while visualizing innovative understanding in the natural sciences (geology, oceanography, meteorology, botany, zoology).

Interest in the Bass Rock from natural philosophers, writers, and artists during the late eighteenth and early nineteenth centuries embodied what we now regard as interdisciplinary approaches to knowledge. Examples include geologist James Hutton's literary-scientific prose, while palaeontologist Hugh Miller vividly imagined prehistoric sea creatures swimming around the Bass. This article argues that interacting categories of understanding emerge: a "knowledge ecology" and an "aesthetics of data," each denoting advances in forms of understanding.

Biographical Note

Susan Oliver is Professor of Literature at the University of Essex. She is the author of *Walter Scott and the Greening of Scotland: Emergent Ecologies of a Nation* (Cambridge UP, 2021) and *Scott, Byron and the Poetics of Cultural Encounter* (Palgrave Macmillan, 2005), for which she was awarded the 2007 British Academy's Rose Mary Crawshay Prize. Susan's many articles on environmental, transatlantic, and Scottish Romanticism include the recent "Better Lore of the Romantic Coast: Maritime Ecologies and Cultural Infrastructure from England, Scotland, and Beyond" (*ERR*, 2023), cowritten with Samuel Baker, Alex Dick, Eric Gidal and Gerard McKeever. She edited *The Yearbook of English Studies* issue titled *Walter Scott: New Interpretations* (2017); published "Reading Walter Scott in the Anthropocene" in *Walter Scott at 250: Looking Forward* (2021); a chapter on "Gender, Genre and Lives" that looks at Susan Ferrier, Mary Brunton, and Elizabeth Grant as contemporaries of Scott and Byron in *The International Companion to Nineteenth-Century Scottish Literature* (2022); and "Transatlantic Magazines and the Rise of Environmental Journalism" in the *Edinburgh Companion to Atlantic Literary Studies* (2016). Susan's current research includes an ecocritical project on fields of war and an investigation into

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the rise of a transatlantic magazine culture that led to the kind of fine, critical journalism that is now under threat.

1. This article is concerned with fluid boundaries that challenged artists, natural philosophers, writers, reviewers, and readers to understand Scotland and its coastal, inshore environment in radically new ways. Those boundaries are material, aesthetic, and disciplinary—existing, on the one hand, where land meets sea and, on the other, where art and science interact. The enquiry that follows explores different branches of knowledge that coalesce in connection with investigations of the Bass Rock, a small but culturally and scientifically significant island on the southeastern section of Scotland's coastline. Interest in that location among scientists, writers, and artists during the late eighteenth and early nineteenth centuries makes possible the kind of interdisciplinary study that is my aim, leading then as now to new understandings of how knowledge about Scotland's coastal environment developed.
2. J. M. W. Turner was one of the best-known artists working in Britain in the early nineteenth century, as well as, arguably, the most influential. However, he left little in the way of writing other than a small body of poetry. The main archival sources that we have are his paintings, drawings, and around three hundred sketchbooks. Twenty-one of the sketchbooks record visits that he made to Scotland between 1797 and 1834, including four that relate to the period 1818–1824. Several contain drawings of the Bass Rock.¹ These sketchbooks and paintings constitute a vivid visual account of Turner's interpretation of Scotland's coastal environment, providing a lens through which to consider the interaction

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of a range of knowledge systems. Those systems are based in the arts, humanities, and sciences. During the late eighteenth-century Scottish Enlightenment, advances in geology saw long-accepted ideas about the age and structure of the earth challenged and overturned (Heringman, *Deep Time*; Furniss). Natural philosophers explored thresholds where people, animals, birds, and plants competed for survival in hostile marine contexts, drawing on Linnaean taxonomies while developing alternative models of classification that better accounted for anomalies.² In every case, prehistory and history haunted the present, and together all three cast a shadow over the future. At the time of writing this article, the world's largest colony of Northern Gannets (once commonly called Solan Geese), which breeds on the Bass Rock between March and the end of October, faces devastation from an epidemic of the highly pathogenic avian flu strain H₅N₁.³ In the period with which my enquiry is concerned, it was demand for the birds as a luxury food that threatened their existence. Victorian day trippers later shot gannets from boats for fun (Smout and Stewart 201–223). Other species that were rare in the 1790s and early 1800s, particularly some plants, are thriving on the Bass while some historically common species have disappeared. There are no immediately discernible gannets in J. M. W. Turner's paintings of the Bass Rock, although the white pigment used to depict the island's flat surface could be understood to reference their presence. In his watercolour sketches and painting of Tantallon Castle, the Bass appears as a translucent presence that evades close scrutiny. The fact that with all the Bass paintings viewers are drawn to look for the birds suggests the agency of combined ecological knowledge and aesthetic affect to inspire thought about absence and extinction.

Scotland as a Marine Nation

3. David Worthington remarks in his *New Coastal History* that wherever you stand in Scotland “salt water is never more than fifty miles away” (3). Coastlines are fluid zones, continually changing shape due to erosion, tides, sea levels, and currents. That observation was as true in the late eighteenth and early nineteenth centuries as it is now. The Scottish Parliament directorate Marine Scotland states that more than nine hundred islands contribute to a coastline that extends to around 18,743 kilometres. Under the “Scottish Zone” definition in the *Scotland Act 1988*, based on fishing rights in an economic framework, Scotland’s defined sea territory is nearly six times the size of its land mass. The Scottish Zone extends into the Atlantic Ocean to the west and the Norwegian and North seas to the north and east (“Facts”).⁴ By contrast with this statistical cartographic sublimity, Scotland’s border with England, its only land border, is just 154 kilometres long. These environmental and geopolitical data put commonplace images of a land of mountains and mists into dialogue with a nation that is, and always has been, overwhelmingly coastal, marine, maritime, and archipelagic.⁵

4. Conceptually and theoretically, thinking archipelagically illuminates the importance of Scotland’s coastal and marine environments, focusing attention on connections around margins, including those that link land masses with coastlines and seas. Attention is directed toward the mobile, shapeshifting character of edges instead of upon the gravitational force of centres of political power. Nicholas Allen and Fiona Stafford helpfully define archipelagic thought as “a turn towards the coast, the sea, and the endless

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declension of water as the matter, embodied and imaginary, of shifting relations” (6).⁶ The Firth of Forth, in the southeastern outer reaches of which the Bass Rock is situated, exemplifies such an environment. It consists of more than just a sea, to include from its outermost reaches inward to Craigforth, just northwest of Stirling (where it ceases to be tidal), sixty miles of “inlet on the east coast of Scotland, with a fertile coastal plain and backing of hills” (Smout 49; Smout and Stewart 1). Michelle Stephens and Yolanda Martínez-San Miguel have argued that archipelagoes reconcile fragments and require a reappraisal of the relationships between geography and history, providing a way of engaging in interdisciplinary conversations about how “space and time are resignified” (3). When recognized as part of an archipelago, even Scotland’s mountain ranges connect with, rather than separate, its coasts and seas.

5. An aesthetics of data emerges as a category of knowledge in which the vastness of Scotland’s coastline and its surrounding sea, especially when read together with meteorological records of sea states, evokes a sense of awe and astonishment consistent with eighteenth-century and Romantic models of the sublime. The Beaufort wind and sea states scale, a statistical and observational classification system still used in Met Office marine forecasts including the Shipping Forecast, was a Romantic-period innovation that correlated wave height and swell with wind direction and intensity.⁷ Invented by Irish admiral and hydrographer Sir Francis Beaufort in 1805, these measurements quickly became standard so that by 1831 all British naval vessels were required to record Beaufort sea scale conditions in their logs. The numerical wind force and sea state classifications in the scale are each accompanied by textual description that uses analogy, metaphor, and

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simile. For example, Force 0 “Calm” conditions can be recognized by a “Sea like a mirror,” while at Storm force 10, “The resulting foam, in great patches, is blown in dense white streaks along the direction of the wind. On the whole surface, the sea takes on a white appearance. The tumbling of the sea becomes heavy and shock-like” (“Beaufort Wind Force Scale”; “Beaufort Wind Scale”). Aesthetics come to the foreground as a necessary consideration here alongside empirically produced data, giving rise to an interdisciplinary “knowledge ecology” that evolved out of visual art, scientific thinking, and literature. In consequence, this knowledge ecology can correspondingly be thought of, as I have suggested, as an aesthetics of data arising as a complex system of interacting factual and representational understanding.

6. By *knowledge ecology* I mean a body of coexisting, disciplinarily different ways of thinking about and understanding a place and all that it comprises. Ecologies are heterogenous systems, and while they do not begin to imply harmonious relations between their component species (the analogy with a natural system includes predators and competition), they involve complex interdependences. The coastal knowledge ecology with which this article is concerned is vibrantly inter- and multidisciplinary. That condition of existence and development was helped by the Enlightenment and Romantic periods preceding the establishment of a more acutely discipline-specific approach to research that has prevailed since the Victorian period. Many of the writers and thinkers that I refer to worked in more than one, and often multiple, fields. Turner is an exception in being almost entirely a visual artist, although he wrote poetry that is not part of the present discussion. My case for his contribution to a wider knowledge ecology is that his paintings add in

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extraordinary ways to both scientific and nonscientific understandings of a marine environment. One way of understanding the importance of the period, in terms of how a knowledge ecology works, is to see it as another example of a fluid boundary: in this instance, a boundary in time that relates to ways of seeing, discovering, and communicating understanding.

7. Turner's 1824 finished watercolour and gouache painting of *The Bass Rock* (fig. 1), his two circa 1824 watercolour sketches of the Bass (figs. 4 and 5), and a representative example (fig. 2) from the dozens of pencil and wash drawings in his sketchbooks demonstrate how this exchange of understanding works. The sketchbook drawings vary in terms of what is included. Most are outline drawings, although some show more detail including boats at sea, with fishing crews, against a backdrop of the Bass. Others show the Rock from different angles or in relation to other topographical features. A few, significant for what they record by way of Turner's interest in comparing topographical features and views, are composites that bring together a range of locations on the same page. The sketch from 1818 depicting two fishing boats and their catch, is one of the most detailed (fig. 2). While it is not possible to include more images from the sketchbooks here, much of their content has been digitally reproduced in high resolution and can be viewed online at the Tate's research website. Turner's recording of so many images of the Bass, across thirty-seven years, testifies to his interest in the Rock and its surrounding area. How did his paintings and drawings interact with Scottish Enlightenment enquiry into the Bass Rock's geology, fauna, and flora? What did they add to that body of knowledge, and how? To answer these questions, I compare Turner's paintings with other works by him, with three

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significant engravings of the Bass Rock from the late seventeenth century (see figs. 5, 6, and 7), and with scientific essays by Edinburgh geologist and natural philosopher James Hutton (1726–1797), natural historian John Walker (1731–1803), self-taught geologist and palaeontologist Hugh Miller (1802–1856), and ichthyologist and physician Richard Parnell (1810–1882). To a lesser extent, I refer to Walter Scott’s role in Turner’s Scottish marine art through his ten-part serially published, two-volume *Provincial Antiquities and Picturesque Scenery of Scotland: with Descriptive Illustrations* (1818–1826), for which Turner’s main painting of the Bass and eight of his other paintings were commissioned. Turner also provided title page designs included in both volumes. The Bass Rock is Turner’s only contribution to the *Provincial Antiquities* that has a natural rather than an architectural subject (Thomson; Imms; Brown).⁸

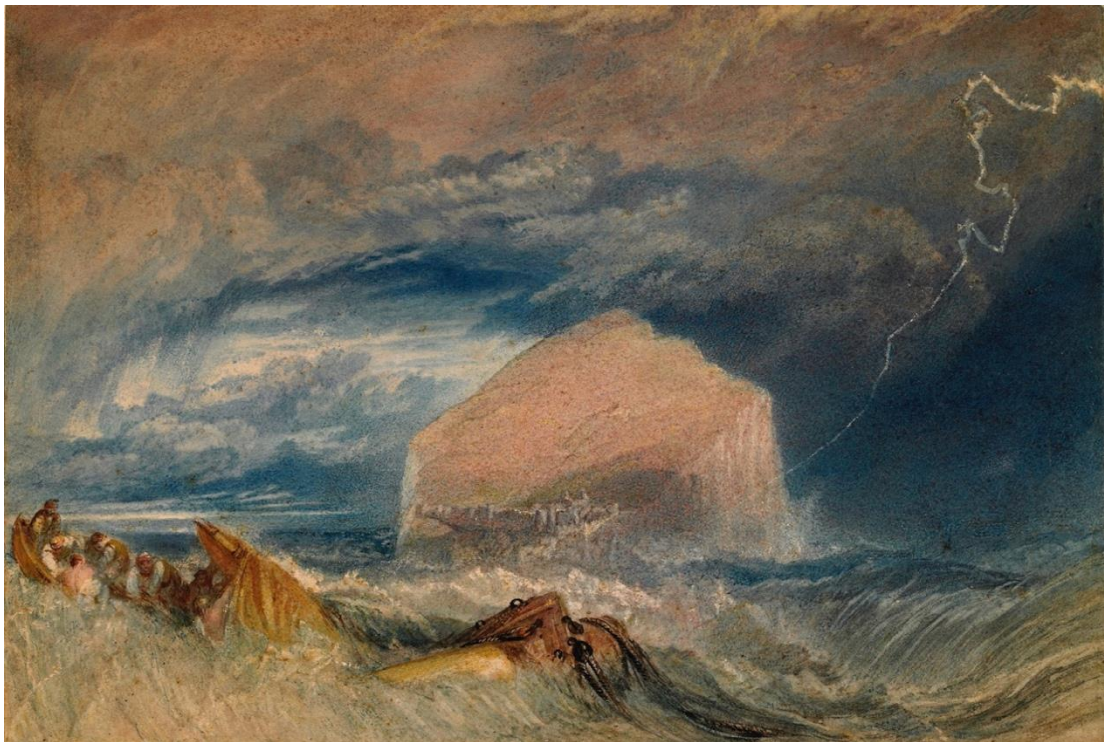


Fig. 1. J. M. W. Turner, *The Bass Rock*, 1824, Lady Lever Galley, Liverpool, © National Museums Liverpool. Watercolour, gouache, and pencil on paper, 16.5 x 24.6 cm.

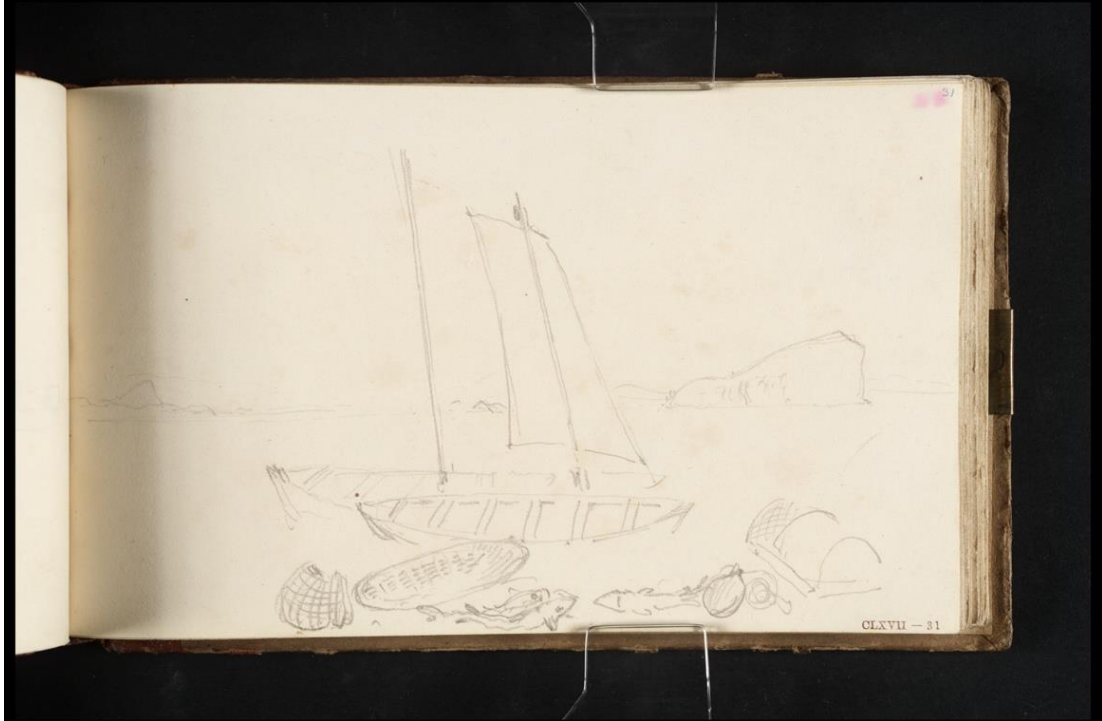


Fig. 2. J. M. W. Turner, “Fishing Boats on the Shore and the Bass Rock,” *Scotch Antiquities Sketchbook*, Turner Bequest, © Tate, London.

The Bass Rock

8. Anyone who has travelled along the coastline between Edinburgh and the Scottish border with England at Berwick-upon-Tweed will be familiar with the volcanic intrusion of phonolitic trachyte that rises out of the sea just a mile from the East Lothian shore southeast of North Berwick.⁹ At 350 feet high and just a mile in circumference, the Bass Rock in the outer southern margins of the Firth of Forth has long provided a navigational marker for inshore boats and ships along Scotland’s North Sea coastal waters (Northern Lighthouse Board). Still operational, the Bass lighthouse was not built until 1902 and is, therefore, not included in Turner’s paintings. But it adds to an architectural history that goes back at least to the sixth century AD, parts of which Turner includes in the finished painting for Scott’s

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Provincial Antiquities. The Bass lighthouse is also a visible reminder of the submerged rocky reefs in channels of the Firth.

9. Where bird life is concerned, the Bass is home to the world's largest single breeding colony of northern gannets. Seasonal migrants between March and late October or early November, these birds are as integral to the island's history as they are to Scottish and global ornithology. St. Kilda currently hosts more gannets, but they nest on three separate stacs. Tim Dee's description of the Bass Rock's "teeming gannetries of fish-stew and aggro" (398) captures the raucous cacophony and avian overcrowding in summer. His account, in turn, suggests an aural or musical sublime that is both contemporary to the twenty-first century and a reminder of the cries of seabirds that feature prominently in James Macpherson's late eighteenth-century, audio-sensory Ossian poems. Romantic fascination with Ossian and the controversy over the poems' authenticity peaked during the period with which much of this essay is concerned, and during which Turner lived and painted. Kathleen Jamie senses a more fragile, endangered beauty in "the shaken snow-dome effect of so many gannets in flight, the coming and going and hanging in the air," noting that avian flu hit the colony at the peak of the 2022 breeding season (37). As Jamie points out, the virus is threatening these and other bird species all around Scotland's islands. The whiteness of the Bass has been commented on throughout history, with the colour of the rock's appearance from a distance made whiter by the gannets' presence during the nesting season and by guano deposits during their absence. The rock itself is light grey in colour, participating in a sympathetic palette that is ecological because it comprises the birds and the habitat on which they depend.

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10. Physician, pioneering circulatory anatomist, and keen amateur ornithologist William Harvey (1578–1657) recorded in 1653 that “the whole island appears of a brilliant white colour to those who approach it,—all the cliffs look as if they consisted of the whitest chalk,” which he attributed to the gannets and guano that he describes in detail in his treatise, recalling in a vivid prose that the Bass was heavily populated by birds:

The superficies of this *Island* (in the moneths of *May* and *June*) is almost covered quite over with Nests, Egges, and Young-Ones, that for their infinit abundance, you can scarce set your foot in a spare place, and such a mighty flock hovereth over the *Island*, that (like thick clouds) they darken and obscure the day: and such a cry, and noise they make, that you can hardly hear those that stand next you. If you look down into the Sea beneath you (as from a steep Tower, or Precipice) you shall see it all spread over with several sort of fowle, swimming to and fro, in pursuit of their Prey. Just at the rate, as some ditches and lakes in the Spring time, are paved with *Frogs*; and open Hills, and steep mountains, are stuck and embossed with flocks of sheep, and Goats. If you saile round the *Island*, and look up into the several Clifts, and Cavernes of it, you shall finde them all peopled and inhabited with several colonies of Birds and Fowle, of distinct Kinde, and magnitude: more indeed, then in a clear night, when the Moon is absent, there are Starres to be discerned in the Firmament. (Harvey 53–54)

Harvey’s description is as thick with fine detail as the much later paintings by Turner are devoid of it. Yet in many respects his is the representation of the Bass Rock that, for force

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of perception and imaginative integration of what he actually saw, most approximates to the power of Turner's achievement. Like other commentators on the Bass, but using similes that extend to an environment that is cosmic in its scope, he writes an extraordinary description of an island and seas that jostle and heave with life. On the one hand, he communicates a proto-Burkean sense of grandeur, while on the other, he anticipates Turner's vision of a total sensory environment. Since he is best known for his discovery of the human body's system for the circulation of blood, interest in movement as a primary force of life runs central to Harvey's approach to scientific enquiry. Moreover, like Tim Dee and Kathleen Jamie, he invokes a soundscape that is integral to such an ecology. Turner's paintings imply sound, too, in their depiction of a turbulent marine and atmospheric environment: it is impossible that the sea and Bass Island that he represents would be silent, given the colour, brushstrokes, and meteorological conditions that he depicts. The sublime aural qualities of Turner's Bass paintings will be discussed in due course.

11. The white appearance of the Bass is a prominent feature of Turner's paintings as well. But whereas in recent memory gannets have covered almost the entire rock during their residence, that was not always the case. The surface colour of the island has changed over time. A flock of sheep that was valued for the flavour of its meat was maintained on the sloping surface from the early seventeenth until the late nineteenth century (Smout and Stewart 220–21). Sheep must have meant there was pasture and therefore a green surface for at least much of the year. Also, the years of human habitation restricted the number of gannets, not just because of farming and general activity disruptive to the birds, but also

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because they were eaten. Records of flora have identified a continuous presence of several plant species that further testify to some green colouring, now mostly restricted to the area around the ruined buildings. The *Gazetteer*, published from 1803 to 1901, drew heavily in the early decades of the nineteenth century on Francis Grose's *Antiquities of Scotland* (1789), recording the flock of twenty or so sheep and "a small warren for rabbits," noting "there is a spring of excellent [fresh] water on the top of the rock."¹⁰ Sir John Sinclair's *Statistical Account of Scotland* includes the Bass Rock only briefly in the report on North-Berwick in 1793, in which the respondent Reverend Henry Hill numbers the sheep at twenty to thirty and comments on "the immense flocks of sea birds," including the gannets, but makes more of the island's convenience as a stronghold for the group of Jacobites who seized it in the 1690s (444–45). A more detailed report with a section on "Zoology" is included in Robert Graham's account for the 1845 *New Statistical Account*, identifying gannets, gulls, kittiwake, guillemot, puffin, razorbill, an unnamed species of falcon or hawk, raven, eider duck, cormorant, and "innumerable flocks of smaller birds not peculiar to the Bass" (321–22).

12. The Reverend Dr. John Walker (1731–1803), a founder of the Royal Society of Edinburgh and Regius Professor of Natural History at the University of Edinburgh, recorded several bird species that anticipate those listed later in the *New Statistical Account*, including gannet ("Solan goose"), puffin ("marrot"), guillemot, kittiwakes ("cattiwaiks"), several species of gull, and cormorant (306–11). What makes his account particularly interesting is his sense of an interdependent Bass biosphere that goes beyond a mere inventory of species. Walker's detailed description of the Solan goose records the bird's connection

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through a seasonal food chain with two likewise seasonally migrant fish species: sprat and herring. He notes that the gannets feed at first on “garvies” or sprats, then, in July, on shoals of herring that “are known to be peculiar to the British seas, and especially those of North Britain” (309). His catalogue of rare and common plants growing on the Bass describes an abundant surrounding ecology of marine life that was particularly rich where tides advanced and receded on the rocks. Walker noted a “very beautiful species of fucus,” a brown algal seaweed, and up to four species of jewel-like corallines that thrive around low tide level. On the part of the rock above sea level, he identified several plants that depend on a salt air environment, including sea-tree-mallow for which the Bass Rock is still a well-known habitat and which he considers to be “one of the finest plants in Europe”; and *Crambe Maritima*, or sea Cole-wort, whose “large, tender and succulent leaves” he describes as delicious when cooked and dressed (289, 296).

13. Walker puts the plants of the Bass Rock into a global healthcare context by concluding that “the great number of plants, which in different parts of the world are confined to the shores of the ocean, appear in general, to be of a salubrious [health-giving] nature” (297). The comparisons that he makes with earlier reports of flora and fauna valuably contribute to records of a developing ecological history in which some earlier mentioned species have disappeared. Walker’s noting the loss of the Bass sea-turtle dove, a local bird species believed to have been distinguishable by its black feet, is an example of past-present-future environmental haunting, since the once-common ordinary turtle dove is currently the fastest declining British bird species, its population having fallen by ninety-eight percent since 2017.¹¹ I include Walker here because his imaginatively written account of a naturally

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vibrant Bass Rock biosphere raises a key question about Turner's paintings of that location, with their contrastingly few direct references to bird, fish, or plant life. Attributing the absence of gannets in Turner's works to his having visited Scotland out of their season does not seem like a sufficient explanation: his experimental approach to depicting a total environment in which only intrusive species need to be clearly demarcated is more plausible. Turner's interest in sea birds and fish is documented in the many detailed sketches and watercolour drawings that he made, including an 1818 pencil drawing in his "Scotch Antiquities Sketchbook" (see fig. 2, made during a visit in preparation for his contributions to Scott's *Provincial Antiquities*) of two fishing boats and their catch of dogfish along with crab or lobster creels, with the Bass Rock visible behind them.

14. Turning to geology, James Hutton used the Bass Rock as an empirical example in his controversial *Theory of the Earth*, arguing that the volcanic island acquired its shape from a continuous action of natural forces in the form of volcanic activity followed by marine and wind erosion. Hutton's *Theory of the Earth* was originally delivered as lectures in 1785 when J. M. W. Turner was just thirteen. He cites the Bass, along with its west coast counterparts of Staffa and Ailsa Craig, as examples of igneous intrusion, where already solidified rock formed by extreme heat and pressure deep inside a volcanic cone is forced upward through the earth's surface by accumulating pressure of molten magma beneath it. The outer rock of the exposed composite plug is then slowly eroded, leaving the core. This account of the Bass Rock's formation enabled Hutton to demonstrate that Scotland's coastline had been shaped by a series of extremely violent, elemental events: "What I would infer . . . is, that this whole coast has undergone considerable changes . . . rendered

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broken and irregular by some violent convulsion of nature” (2: 282).¹² Siccar Point, moreover, where Hutton discovered the most important example of angular unconformity, for which he is renowned, is just twenty miles further south (“Siccar Point”).

15. The Bass exemplified for Hutton how coastal and marine geological processes connected with inland geomorphology in a cycle of production, erosion, and massively changing sea levels. *Theory of the Earth* argued that fossilized seashells and marine animals could be found in rocks at the tops of mountains and on dry, inland locations because of those turbulent processes, in which tensions between the formation of rock and its dissolution by water and wind are always resolved by erosion and return to the sea. The importance of Hutton’s argument for this essay is his conception of a continuously moving earth in which any perceived permanence is illusory. Fredrik Albritton Jonsson captures the radical agency in which, “For Hutton, the rocks themselves participated in the great drama of natural history” (82). Jeffrey Cohen has argued that Hutton experienced a view of deep time, pointing out that stone is always moving in what he calls “lithic time,” mostly imperceptibly slowly to human eyes but with dramatic moments that are the opposite (78, 80–81). Cohen describes that experience as “reading a disanthropocentric story,” the narrative of which discloses a worldly yet also otherworldly prehuman narrative, radically unsettling perspectives on time that are based on presumptions of human centrality (188–89, 192, 202). Hutton’s theory, which explicitly foreshadows Cohen’s, was based upon the incessant movement of the earth’s geology:

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We are not to look for nature in a quiescent state; matter itself must be in motion, and the scenes of life a continued or repeated series of agitations and events. . . .

The heights of our land are thus levelled with the shores; our fertile plains are formed from the ruins of the mountains; and those travelling materials are still pursued by the moving water, and propelled along the inclined surface of the earth. These moveable materials, delivered into the sea, cannot, for a long continuance, rest upon the shore; for, by the agitation of the winds, the tides and currents, every moveable thing is carried farther and farther along the shelving bottom of the sea, towards the unfathomable regions of the ocean. (1: 1)

Thirty years after Hutton's book, Turner's paintings capture the elemental essence of the Bass Rock as something that is at once ancient and modern, a key part of a turbulent and mobile coastal marine environment against which humans had long struggled to gain a living and survive.

16. The Rock features in a more socially oriented composition in Turner's painting of *Tantallon Castle* (1824; see fig. 3), also produced for engraving as an illustration for Scott's *Provincial Antiquities*. That painting shows a woman wearing a plaid shawl with a man and a dog on rocks in the foreground, an open basket containing fish and oysters at her bare feet. The man clings to rocks with one hand while filling a jug with seawater, presumably to keep their catch fresh. A crab or lobster creel sits on the rocks by the woman's basket, and limpets are also visible in the foreground. The Bass Rock looms white against the sea and sky in the right distance of the painting, a symbol of ancient endurance facing human

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mutability in the form of the deserted and partly ruined castle of the title. The painting illustrates its subject using this and other conventions of the sublime, while suggesting the precarity and hardship of human life compared with the force and vast time scales of the natural world.¹³ Whereas *Tantallon Castle* is representational in style, two of Turner's three Bass Rock watercolours prioritize colour over form in more experimental, impressionistic ways to capture the incessant nature of movement and change. I will come to those paintings shortly.



Fig. 3. J. M. W. Turner, *Tantallon Castle*, 1821, Manchester Art Gallery, accession number 1998.40, © Manchester Art Gallery. Watercolour on paper, 17.9 x 26.1 cm.

17. Though no-one now lives on the Bass, it contributes to a Scottish social history of isolation, persecution, confinement, and rebellion. The Rock served as a Christian hermitage, reputedly for St. Baldred during the sixth century; as a prison for Covenanter religious and

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political prisoners in the Restoration years of the late seventeenth century; briefly as Jacobite barracks in the 1690s; and throughout as a disputed parcel of land rich in strategic advantage and natural resources. Folklore has arisen around that history and continues to inspire historical, adventure, and gothic fiction. Ruined buildings remain on the now uninhabited island as a sign of human abandonment, adding to the gothic aesthetic manifest in its appearance. Moreover, together with the remains of Tantallon Castle, the Bass Rock has recently appeared in Bollywood romantic comedy films, continuing a maritime link between Scotland and India that began during the British expansion of trade and Empire in the late eighteenth and early nineteenth centuries (*Kuch Kuch Hota Hai*; *Dhaal Akshar Prem Ke*). The films promote India's international economic and cultural success, such that their use of imagery of the island as a must-visit Scottish natural location for young couples travelling to the United Kingdom serves also as an instance of reverse appropriation, not unlike sites "collected" in the form of experience by wealthy British eighteenth- and early nineteenth-century Grand Tourists. In literature, the Bass and its nearby mainland coastline feature in Walter Scott's historical romance *The Bride of Lammermoor* (1819), Robert Louis Stevenson's similarly historical *Catriona* (1893) with its interpolated gothic Covenanter prisoner "Tale of Tod Lapraik," Jane Lane's Jacobite thriller *Fortress in the Forth* (1950), James Robertson's Jacobite crime drama *The Fanatic* (2000), and Evie Wyld's tense feminist indictment of misogynistic violence, *The Bass Rock* (2020). Each of these fictional engagements draws on recorded history while imaginatively exploring the capacity of the Bass Rock to compel curiosity and generate anxiety.

Turner's Scottish Marine Paintings: Islands and Technology

18. The shortage of written material from Turner makes it problematic to ascribe his curiosity about the Bass to any particular features of the location. However, the number of drawings in his sketchbooks from the period before Scott commissioned the painting for *Provincial Antiquities* suggests a sustained interest. Throughout his life, he painted the sea and its changing weather conditions. While there is plenty of evidence that his rival John Constable was actively interested in meteorological and nascent climate science in the early nineteenth century, leading to his prolific cloud and often annotated sky studies during the 1820s, Turner left only his paintings, drawings, and imagery of weather in some of his poems.¹⁴ However, produced in the third decade of the nineteenth century, when British maritime expansion around the globe was approaching its height, Turner's Bass Rock and other Scottish marine paintings add interpretatively to an already vivacious textual and illustrated scientific dialogue. The power of weather and water that fills his seascapes draws attention to the struggle against conditions not conducive to human survival, in a total environment where sea, sky, rock, animals, birds, and plants are configured through relationships of colour and form that convey continuous energy and motion rather than conventional representational detail. The finished Bass Rock painting features a dark, stormy sky with a flash of lightning that connects with the island and sea. All his paintings of the Bass question how the human eye and imagination perceive boundaries between sky, sea, and land (see figs. 1, 3, 4, and 5).

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Fig. 4. J. M. W. Turner, *The Bass Rock*, circa 1824, Turner Bequest, © Tate, London. Watercolour on paper, 20 x 26.4 cm.



Fig. 5. J. M. W. Turner, *The Bass Rock*, circa 1824, Turner Bequest, © Tate, London. Watercolour on paper, 21.9 x 29.4 cm.

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19. Air, water, and rock in these paintings are represented by a predominantly blue, white, and grey palette that suggests a turbulent natural harmony rather than discord, with no colour asserting dominance, and the whole a swirl of constant movement. That movement synaesthetically has the effect of suggesting the sublime in another art form discussed earlier in this article: music. The implied sound is more suggestive of the ancient, mystical Pythagorean music of the spheres than of the composed classical harmonies of Turner's time, although Felix Mendelssohn's 1830 overture *The Hebrides* has affinities with Turner's subsequent painting *Staffa: Fingal's Cave* (discussed later; see fig. 11). The effect is a synthesis of the elements, life forms, and light that capture a total, sensory ecology of the Bass and its surrounding sea. Whether they appear, as they do in the finished painting, or are implied, people inhabit these paintings as an alien species, their separateness from marine life forms and the sea environment epitomized through a vivid distinctiveness of form and colour as much as through their imperilled circumstances or technological confrontation with the power of the sea. In the finished Bass Rock painting, they are figured using a brown and red palette that is at odds with the blue, green, cream, and white used in the rest of the composition. The Bass Rock itself rises as a monolith in the centre of the composition, its cream, grey, and white colour reflecting its phonolytic trachyte mineral form and the guano of the gannets, if not the birds themselves. Of the three paintings of the Bass Rock, only this finished version (see fig. 1) produced for a full-page engraving in Scott's *Provincial Antiquities*, includes a clear visual representation of people, and they are in the life-threatening situation of a shipwreck. The watercolour sketches hint at human alienation through their absence. On the one hand, the views without people can be interpreted as conforming to a Romantic aesthetic in which wildness produces an idealised

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form of the sublime. In such a case, a sense of natural vastness and awe at the power of the environment is enhanced by the artist's and viewer's distanced, imagined isolation. The pleasure of participating in an "unpeopled view" creates a frisson of excitement at the same time that it dramatizes an insinuation of loneliness. On the other hand, these sketches were preparatory works for the finished painting that depicts people on the verge of disappearance. In that painting, the artist and viewer experience a different kind of sublime premised on terror arising from watching at a distance while people struggle against being consumed by the sea. Arguably, the lack of clear depictions of bird or other animal life in these paintings is because they are included by implication in what I have already referred to as a total environment or seascape.

20. Earlier representations of the Bass from the late seventeenth century depicted a thriving, diverse bird population along with a busy shipping industry, as in Francis Barlow's *The Bass Island: Soland Goose; Heron; Sea Gull; Wild Duk; Curlew* (fig. 6) and John Slezer's two images in *Theatrum Scotiae*, "The Prospect of ye Bass from ye South Shore" and "The East Syde of the Bass" (1693; see figs. 7 and 8; see also Todman).

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Fig. 6. After Francis Barlow, *The Bass Island: Soland Goose; Heron; Sea Gull; Wild Duck; Curlew*, part of *Various Birds and Beasts Drawn from the Life*, circa 1680, Oppé Collection, purchased with assistance from the National Lottery through the Heritage Lottery Fund 1996, © Tate, London. Engraving and etching on paper, 20.1 x 29.6 cm.

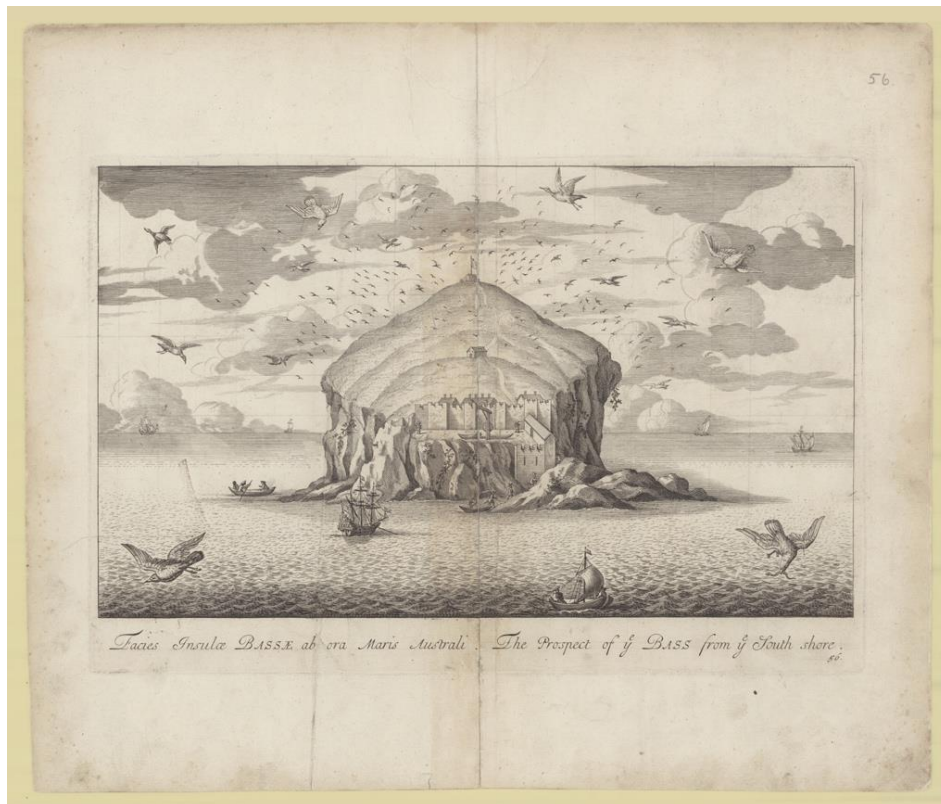


Fig. 7. John Slezer, "The Bass Rock from the South Shore," *Theatrum Scotiae*, 1693, © National Library of Scotland.



Fig. 8. John Slezer, "The East Syde of the Bass," *Theatrum Scotiae*, 1693, © National Library of Scotland.

21. Barlow's drawing identifies still more bird species as inhabitants of the Rock; shellfish including a scallop, cockle, whelk, and mussel; and ten seagoing sailing ships. The two plates in Slezer's *Theatrum Scotiae* (1693; see figs. 7 and 8) dramatize the Bass as a site of considerable activity, with the view from the south shore showing five sea ships, two landing boats, foliage on the rock, grass, gannets, and other sea birds. Buildings including the castle, which, as mentioned above, had by then been used as a prison and Jacobite garrison, are shown in good repair. The sea is calm. Slezer's plate of the Bass from its east side depicts only one sea ship, but four smaller boats including one in the cave that runs through the island. The Rock in this instance is shown with several perched gannets, while others are in flight. These are just three among many illustrations that attend to the biodiversity of the Bass Rock. The attention to Solan[d] Geese contributes to a microhistory

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that extends to a wider historical and European interest in Scotland's natural history. As early as *Beowulf*, the North Sea is configured as the "ganotes bæð," or "gannet's bath," across which sea trade and communication takes place (127). Swiss naturalist and physician Conrad Gessner included a description of the "Solendguse" in his mid-sixteenth-century *Historiæ Animalium*, with an illustration showing a single bird perched on the Bass Rock (158).¹⁵ Linnaeus catalogued the gannet in his 1758 *Systema Naturae*, identifying the species with the Bass Rock by naming it *Morus bassanus*, after initially classifying it as a Scottish species of pelican that he named *Pelecanus bassanus* (1: 824).

22. Turner's paintings replace all this activity with meteorological drama and shipwreck. As early as 1853, in his third Lecture on Art and Architecture delivered in Edinburgh, titled "Turner and his Works," John Ruskin remarked that where Shakespeare had "unsealed" human nature, Turner had "lifted the veil from the face of nature," using art to produce deep interpretation rather than a surface-level record. Before him "the majesty of the hills and forests had received no interpretation, and the clouds passed unrecorded from the face of the heaven which they adorned" (128–29). Ruskin cites Walter Scott as a creative precursor for Turner because of his "peculiar passion for what is majestic or lovely in *wild* nature" (121). But unlike Scott's detailed word pictures and the supporting notes that grew with each edition of his poems and novels, the environments of Turner's marine paintings invite curiosity in proportion to the degree of conventional pictorial detail that they withhold.



Fig. 9. J. M. W. Turner, *The Shipwreck*, exhibited 1805, Turner Bequest, © Tate, London. Oil on canvas, 170.5 × 241.6 cm.

23. Christine Riding reminds us that Turner “painted the sea more than any other subject,” reflecting his artistic vision as well as aligning with what Sam Baker identifies as the political and cultural maritime character of his time (11). Riding points out that while Ruskin’s comparison of *The Wreck of a Transport Ship* (circa 1810) with the calmness of *Dort, or Dordrecht: the Dort Packet-Boat from Rotterdam Becalmed* (1818) aimed to demonstrate, retrospectively, the agility with which Turner had contributed to maritime painting by capturing extremes of terror and repose, those paintings also suggest the degree of his commitment to continental Europe. A striking feature of the finished Bass Rock painting and engraved versions thereof in Scott’s *Provincial Antiquities* is the compositional resemblance between its distressed boat and sailors and the struggling boat and crew in *The Wreck of a Transport Ship*, and vessels and

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sailors in Turner's earlier, 1805 painting *The Shipwreck* (fig. 9). Turner's coastal and inshore marine paintings of Scotland capture that aesthetic vision of a terror of drownings in a wild sea not far from shore, establishing a dialogue with literature and scientific writing that was both locally Scottish and international in reach. All these paintings emphasize the smallness of human subjects against the vastness of the sea (Venning; Edwards). Two of Turner's other Scottish marine paintings, *The Bell Rock Lighthouse* (1819) and *Staffa, Fingal's Cave* (1831–32), are known particularly for their contribution to Romanticism's maritime sublime. But what do they say about actual coastal environments of the Firth of Forth and how do they fit with a corpus that includes the Bass Rock paintings? Neither includes the mainland, and nor do the Bass Rock compositions. Each foregrounds a combative relationship between a contemporary human world of accelerating technological time and a sea that implies timelessness.



Fig. 10. J. M. W. Turner, *The Bell Rock Lighthouse*, 1819, purchased with the aid of funds from the National Heritage Memorial Fund and the Pilgrim Trust, © National Galleries Scotland. Watercolour and gouache on paper, 30.6 x 45.5 cm.

24. The *Bell Rock Lighthouse* painting (fig. 10) establishes a counterpoint between the state-of-the-art technology of Robert Stevenson's lighthouse, built between 1807 and 1811 at the northernmost edge of the Firth of Forth, and the sea. Waves lash this first modern example of a rock-anchored lighthouse, while sailing ships pass behind it against the backdrop of a bruised indigo and buff stormy sky that repeats the colour of the sea. Flecks of salt spray, thrown upward from the sea, intermingle and become indistinguishable from precipitation falling from the clouds. Water and air in this painting confound any idea that they might be separate elements, contrasting with the clearly delineated lighthouse and sailing ships, one of which includes a human figure.¹⁶ In the foreground, fragments of wood from a wrecked ship or jagged parts of a reef protrude from the waves. The power and presence of the lighthouse is the central feature of the composition. The Bass Rock

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paintings, by contrast with this portrait of the *Bell Rock Lighthouse*, show no human presence in the case of the two sketches, and in the finished painting, only the outlines of ruined buildings on the island together with the foregrounded foundering ship and its crew.

25. *Staffa, Fingal's Cave* (fig. 11), on the other hand, painted seven years after the Bass Rock watercolours, has both stylistic and cultural connections with the Bass Rock paintings. All these paintings depict a seascape in continuous motion, and none includes as much as a glimpse of a mainland shore. Representative imagery of flora and fauna is minimal almost to the point of absence. Turner's 1831 visit to Staffa was part of a sketching trip designed to produce illustrations for a new edition of Walter Scott's 1815 historical romance poem *Lord of the Isles*, set in the Hebrides of the early fourteenth century and based around the heroic national figure of Robert the Bruce. Furthermore, Scott had written *Lord of the Isles* after his own 1814 tour of Scotland's lighthouses with the Commissioners for the Northern Lighthouse Service, which included visits to Orkney and Shetland as well as to the Hebridean islands.¹⁷ Turner's *Staffa* includes up-to-the-moment technology in the form of a steamship, while the Bass Rock paintings only include the wreckage of a sailing boat (probably a fishing vessel). *Staffa, Fingal's Cave* visually engages with Romantic interest in James Macpherson's *Ossian* poems as well as with Walter Scott's *Lord of the Isles* to suggest a relationship between environmental deep time and "long" literary time. *Ossian*, originally published in the 1760s as purported translations from ancient manuscripts, continued to draw attention to Irish and Scottish Celtic culture into and beyond the 1820s, despite a general acceptance by the early nineteenth century that Macpherson had created

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the poems himself, basing them on older legends and folk tales (Leask, *Stepping Westward* 82–85, “Fingalian Topographies” 183–96, and “Fingal’s Cave”).¹⁸



Fig. 11. J. M. W. Turner, *Staffa, Fingal's Cave*, 1831–1832, Paul Mellon Collection, Yale Center for British Art. Oil on canvas, 90.8 x 121.3 cm.

26. How does Turner engage with these islands as sites of geological and deep historical interest? As already mentioned, James Hutton included Staffa with the Bass Rock and Ailsa Craig as examples of how igneous intrusions had been formed, disproving earlier conclusions that they were magma thrust upward through the sea and cooled. Before Hutton, topographical accounts of Staffa included the well-known journal entry by naturalist and explorer Joseph Banks, which captures the author’s wonder at Fingal’s Cave following his visit in 1772. That account was published in its entirety two years later in

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Banks's friend Thomas Pennant's *Tour in Scotland 1772* (Leask, *Stepping Westward* 82–85, “Fingalian Topographies” 183–96, and “Fingal’s Cave”). Banks writes of “a cave, the most magnificent, I suppose, that has ever been described by travellers,” adding, “The mind can hardly form an idea more magnificent than such a space” (Pennant 301).¹⁹ Turner does not delineate the hexagonal basalt columns for which the cave had become famous, unlike James Miller, whose engraved plate illustrating Banks’s account in Pennant’s *Tour* makes the columns its main feature. Rather, he depicts an island whose magnificence lies in its mystery and resistance to scrutiny, shrouded by rain and low cloud, and washed by the sea. The viewpoint is exceptionally low, from wave level, and looking upward to draw attention to a heavy-swell sea state that would be on the border between strong gale and storm on the Beaufort scale. A gannet, absent in detailed form from all the Bass Rock paintings, is pictured in the foreground, identifiable by its outline shape and the black tips to its long wings (a mature gannet has a six-foot wingspan). It appears to be carrying a fish. A steamship passes from left to right across the middle distance, its smokestack emitting a black pall that diffuses into the air. Does smoke from carbon fuel consumption in this painting indicate anything other than technology making its mark on an older natural world, perhaps looking toward a future of human domination? It stands to reason that there was no awareness of impending climate change due to carbon emissions, or of an Anthropocene epoch in the form that we now understand it, when Turner executed this painting. However, Tess Somervell has recently shown how attempts to reconcile biblical and historical interpretations of the Deluge with the discovery of fossils had led to a nascent, but powerful, understanding that catastrophic climate crises indeed result in extinction events. That connection of extinction with climate change emerged and grew as fossilized shells

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from marine animals were discovered at the tops of Scottish mountains; as preserved bones and other remains of large prehistoric animals were exhumed during the draining of bogs; or when petrified skeletons of exotic prehistoric sea creatures were discovered elsewhere in cliffs along Britain's shorelines. Noah Heringman has responded to multiple theories of geological and evolutionary life processes that grew out of these discoveries by showing how the *longue durée* of deep time is far from being as separate from human history as has generally been imagined. He (*Deep Time*) and Jeremy Davies (15–40) have each persuasively argued that humans were, and are, living in a narrative version of deep time that is ongoingly historical.²⁰

27. Where fossils and prehistory are concerned, Hugh Miller provided what remains one of the most extraordinary nineteenth-century accounts of the Bass Rock. Self-taught in geology and palaeontology, a stonemason by trade, and an evangelical Christian who believed the earth to be immensely old, Miller wrote his "Geology of the Bass" around 1847, after a visit that included an overnight stay on the island. His intention was to incorporate the account into a more extensive geology of Scotland, but he did not finish that project. Miller's geological work nevertheless made a substantial contribution to knowledge, and he is now acknowledged as a pioneer of Quaternary science, glacial and marine erosion, and palaeontology (Knell and Taylor 85–98). His personal collection of around 6,500 fossils formed the basis for the collection in the National Museum of Scotland, where it is still held. Miller's essay on the Bass is remarkable for its speculation of how extinct life forms might have appeared in the sea surrounding the rock. The highly imaginative account, prompted by his contemplation of the Bass's ancient structure in a Huttonian

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context, takes the form of a reverie between evening twilight and the following dawn. Miller's subject is the Paleozoic period, between 541 and 252 million years ago, when life on Earth went through the Cambrian explosion, and before the Permian-Triassic extinction which he acknowledged as fact. He imagines the sea teeming with brachiopods, swimming animals, and corals:

But mark how brightly the depths gleam with the mirror-like reflection of scales,— scales resplendent with enamel, that owe their name—*ganoid*, or glittering— to their brilliancy. How strangely uncouth the forms of these ancient denizens of the deep, and, in some instances, how monstrous their size! Yonder, swimming leisurely a few feet under the surface, as if watching the play of a distant shoal of diplopteri [fish], is the ponderous asterolepsis. . . its body tiled over with oblong scales. . . . The numerous flights of pterichthyes, with their compact bodies, spread wings, and rudder-like tails, resemble flocks of marine birds. (“Geology of the Bass Rock,” 328–29)

This interpolation of a deep historical animation of scientific knowledge into a geological travelogue is typical of Miller's individualistic style. His prose is spectacular and adjectival. Born and raised in another Firth environment, in Cromarty on Scotland's northeastern coast, his interest in rocks and fossils developed through exploration on Scotland's coastal margins. In *The Old Red Sandstone*, a study of rock formations and the fossils contained in them, he confesses to have been

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an explorer of caves and ravines—a loiterer along sea-shores—a climber among rocks—a labourer in quarries. My profession was a wandering one, passing direct, on one occasion, from the wild western coast of Ross-shire, where the Old Red Sandstone leans at a high angle against the prevailing Quartz Rock of the district, to where, on the southern skirts of Mid-Lothian, the Mountain Limestone rises amid the coal. I have resided one season on a raised beach of the Moray Frith. (45)

28. Writing in 1847, twenty-three years after Turner painted *The Bass Rock*, at a time of heightened interest in the earth's deep historical flora and fauna, Miller shares with the artist an ability to communicate a sense of natural mystery and wonder that eludes either standard forms of scientific writing or more directly representational forms of art. His prehistoric seascape, like the marine environment in Turner's Bass Rock paintings, is a place of shimmering colour and moving, evanescent forms. It requires the reader to exercise a vividly visual imagination, rather than just reading skills, and there again is common ground with Turner, whose paintings make passive viewing difficult. Both men require of their audience an interactive engagement with their work and its relationship to knowledge about the Bass Rock as a subject. Moreover, their evocation of long geological and environmental time through the subjectivity of the Bass shows how apposite is Michelle Stephens and Yolanda Martínez-San Miguez's point, referred to at the beginning of this essay, about archipelagoes reconciling fragments and prompting thought about the resignification of space and time.

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29. While Miller's highly unusual account of prehistoric sea life around the Bass Rock imagines and animates an ecological deep time, the most important study of living fish species in those coastal waters during the period under consideration in this article is Richard Parnell's "Prize Essay on the Fishes of the District of the Firth of Forth." Parnell identified and described in detail, with sixty-seven illustrations on twenty-eight plates, 125 species of fish that lived in the Forth. The Wernerian Natural History Society awarded him their Gold Medal Prize in 1837, publishing his essay the following year. Christopher Smout and Mairi Stewart speculate that he must have visited Edinburgh's fish market to obtain specimens and travelled with fishermen on boats, noting that one or two of the species that he lists are not scientifically recognized today. Indeed, Parnell comments on several species that he observed in Edinburgh's and other towns' fish markets. The oceanic and sea species that he catalogues as being found around the Bass Rock include mackerel, garfish (a form of needlefish that he observes only to be found around the Bass and Isle of May), halibut (only found around the Bass and Inchkeith), sole, skate, and, notably, the sprats, sand eels, and herring on which the gannets and other sea birds feed. Parnell includes the dogfish, a commonplace species, that Turner included in his sketchbook drawing of fishing boats and the Bass Rock. His essay was economically as well as scientifically timely, given the rapid growth of the Scottish fishing industry during the 1820s and 1830s, providing a comprehensive picture of the Firth of Forth as a marine environment with a thriving ecology of many types of fish.



Fig. 12. J. M. W. Turner, *Stormy Sea with Dolphins*, circa 1835–40, Turner Bequest, © Tate. Oil on canvas, 90.2 × 121.3 cm.

30. In Turner's Bass Rock paintings, no fish are immediately identifiable, but all three compositions hint at their presence. In the finished painting, the struggling vessel is, as has already been suggested, almost certainly a fishing boat since it is not large enough to be an ocean-going or long-distance coastal vessel. To that extent, it captures the precariousness of fishing as a profession. Of the two watercolour sketches, the brush strokes used for the sea (see fig. 1) feasibly include fish as well as waves. This is plausible when the painting is compared to another of Turner's works, his late *Stormy Sea with Dolphins* (1835–40; see fig. 12). While the roughness of the sea is immediately evident, viewers have to work hard to see the dolphins in the waves that define their element. In all these instances, Turner creates a total environment: fish, as well as birds and flora, are implied in a natural world

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that is represented through colour and brushstroke rather than direct form. His is a very different kind of realism from that usually seen in artists' engagements with science during the Romantic and early- to mid-Victorian periods, most of which strove to illustrate by showing physiognomic detail. Aesthetics are part of that realism; Turner's painting posits them as a means to knowledge about the character and spirit of a place. In each case, the Bass Rock is a central presence, shimmering in shades of white, blue, grey, and cream through spray and clouds. The viewpoints are low, as in *Staffa: Fingal's Cave*, giving viewers the impression that they are looking up at the rock from the level of the sea's surface (Wilton 46). That perspective has the effect of increasing the sense of awe, but also of bringing the viewer closer to the marine environment with its unseen life forms below the surface of the water.

Conclusion: The Bass Rock and the World

31. This article has explored Turner's paintings within a context of selected scientific and other forms of writing, showing how those paintings interacted with and added to understanding of the Bass Rock and Scotland's coastal—particularly its east coast—environments. Turner depicted the Bass as something permanent and mysterious, always there but sufficiently distant from the shore to compel curiosity. His paintings question the capacity for science adequately to decode the deeper meaning of place, much as Percy Shelley had argued, in his "Defence of Poetry," that it is impossible to explain a violet or a rose by isolating their constituent physical components (514, 531). Turner painted unconventionally for his time, but nevertheless upheld a key Enlightenment and Romantic principle: that enquiry is

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premised on curiosity, and that both require adventure through the exercise of imagination.²¹ He did not deny the importance of science, but through example showed how imagination added to enquiry in necessary ways. That is why his paintings contribute valuably to a knowledge ecology that is both inter- and multidisciplinary. John Ruskin, as we have seen, recognized the originality of Turner's powerfully interpretative approach to the natural, nonhuman world. The Bass Rock's offshore presence is sufficiently close to land to ensure that it remains visible except in conditions of heavy rain, snow, or fog. In her recent eponymous novel, Evie Wyld describes how "the rain coming down like a lace veil . . . made the edges blend into the clouds," commenting also that sometimes the Bass seems close to shore and at other times more distant (26, 73, 289, 420), suggesting a sinister elemental animism. Its near-vertical cliffs and steeply sloping surface mean that the island remains relatively inaccessible to humans. If, as I have argued, people are an alien species in Turner's versions of the Bass, they are equally so in other *longue durée* accounts of the island because they have always only been temporary inhabitants in a place where other life forms have evolved over hundreds, indeed billions of years. Fossils found in the Earth's most ancient and rare rocks, analysed using advanced biochemistry and dating technology, indicate that life began in water, and possibly in connection with volcanically active, hydrothermal conditions, approximately 3.7 billion years ago.²²

32. Turner's seascapes convey a sense of the incessant motion that underpins the natural condition of marine environments. Yet the setting sun to the left in his watercolour sketch of the Bass painted from the east (see fig. 3), one of the few viewpoints where the unusual phenomenon of the sun setting at sea can be seen on that side of Scotland, indicates

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connection with a more universal motion beyond the earth. The same can be deduced from his other watercolour sketch (see fig. 2), painted from the south side of the island, in which the sun at its midday zenith appears as four fragmented brush strokes of red paint. I have shown how Turner's sense of incessant environmental motion in these paintings follows on from James Hutton's theory of an earth where geology is always moving. Hugh Miller, later, almost anticipates cinema in his vividly technicolour, imagined account of a sea alive with prehistoric marine creatures that were long gone except for the evidence left by the fossils that he had collected.

33. Much of the focus on science in this article has been concerned with birds and geology, with some attention to fish and other fauna and flora. It is easy to see why gannets and igneous rock have over centuries come to define the character of the Bass, given their prominent visibility. Even the volatile population statistics of the gannets contributes to the theme of movement that has been central to my enquiry. Christopher Smout wrote in 2017 that the gannets that “now number well over 50,000 pairs and cover the entire island, numbered about 10,000 in the seventeenth and eighteenth centuries and were restricted to the cliff edge” (50). While eating the young birds fell out of fashion during the nineteenth century, by 1910 shooting them for fun, mentioned earlier, meant that only 3000 breeding pairs remained (Smout 50). Kathleen Jamie wrote in her August 2022 “Diary” entry for the *LRB* that sightseeing boats have been suspended in an attempt to prevent the spread of avian flu among the most recent count of 150,000 breeding pairs, which indicates a further increase in the population that is likely, by now, to have fallen (37). The size of the gannet colony is inherently mobile, participating in the theme of coastal movement that underpins

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my enquiry and perhaps supporting my interpretation that Turner's three Bass paintings include the birds in the enigmatic white palette used for the rock and in brushstrokes that skim the surface of the waves.

34. A knowledge ecology and corresponding aesthetics of data constituted by studies in the natural and social sciences, arts, and literature implies a condition of multiplicity and vitality arising out of coexistence and interaction between those disciplinary areas. Analogy with ecological systems in the natural world makes possible that ecological concept. It also highlights the damage to wider and developing understanding that follows when forms of enquiry such as the humanities and imaginative arts become starved of support or cease to be regarded as sufficiently important. Turner depicted a vibrant marine world, driven by motion. His seascapes compel viewers to look at the dangers and alienating properties of the nonhuman world. It is difficult, if not almost impossible, to browse past a Turner painting without stopping and looking more carefully to see what is there by way of content, beauty, and, often, violence. His style, eschewing straightforward representation, does not encourage passive thought.

35. Moreover, motion such as Turner captures in the form of visual expression, rather than stagnation, is the underpinning condition of a durable, evolving knowledge environment, just as it is of the physical biosphere of the Bass and its waters. The latter epitomize the fluidity of boundaries, existing where the Firth of Forth, the widest point of the river, merges with the marine expanse of the North Sea. As sea levels alter due to climate instability, the location of the meeting of the River Forth and the sea will almost certainly

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shift, impacting marine life and food chains. The threat posed by climate change to ecosystems locally and globally is well acknowledged, and action to mitigate the damage may be insufficient to avert catastrophe. This article began with some dramatic statistics. As I write, the Greenland ice sheet, which at 1,710,000 square kilometres is the second-largest ice body in the world, and which in global terms is not all that far beyond Scotland's territorial waters, faces imminent collapse. Consequently, the threat of species loss and extinction due to the state of the sea (rather than the meteorological sea states mentioned earlier) including salinity, marine temperatures, deoxygenation, along with toxic pollution, serves analogously as a warning that support for a variety of approaches to understanding is vital to the continued development of a sufficient life-supporting understanding of the world.

36. The geographic focus of this study has been on a limited stretch of Scotland's coastline. The west coast and Highlands have tended to attract more attention than these eastern margins, for reasons that are probably cultural as well as aesthetic. But where geology and the environment are concerned, the Firth of Forth along with its Bass Rock and other islands continues to ensure that a Scottish local knowledge ecology of arts and natural sciences is securely situated in a wider, global world of enquiry and continuing thought. The Firth and the Bass are Sites of Special Scientific Interest (or SSSIs), and thanks to that status protected insofar as protection is possible in a world facing environmental catastrophe. Hutton looked locally to find an explanation for the vast history of the planet. His work resonated globally and became a foundation for modern geology. Turner, whose interests included the many European locations that he also painted, was a British artist

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whose renown also became global. The Bass Rock and its surrounding sea continues to be a subject for artists, natural historians, and geologists. This study, which contends throughout that fluidity of disciplines can help bring about better forms of understanding, asks only that it take its place among others, written and still to come.

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Works Cited

Allen, Nicholas, and Fiona Stafford. *Archipelago: A Reader*. Kindle ed., Lilliput Press, 2021.

Baker, Samuel. "Introduction: Familiar with the Sea." *Written on the Water: British*

Romanticism and the Maritime Empire of Culture, U of Virginia P, 2010, pp. 1–20.

Baker, Samuel, et al. "'Better Lore' of the Romantic Coast: Maritime Ecologies and Cultural

Infrastructure from England, Scotland, and Beyond." *NASSR-BARS 2022: New*

Romanticisms, special issue of *European Romantic Review*, vol. 34, no. 3, June 2023, pp.

303–15, <https://doi.org/10.1080/10509585.2023.2205081>.

"Bass Rock." *Northern Lighthouse Board*, <https://www.nlb.org.uk/lighthouses/bass-rock/>.

Accessed 19 May 2023.

"Beaufort Wind Force Scale." *Met Office*, [https://metoffice.gov.uk/weather/guides/coast-and-](https://metoffice.gov.uk/weather/guides/coast-and-sea/beaufort-scale)

[sea/beaufort-scale](https://metoffice.gov.uk/weather/guides/coast-and-sea/beaufort-scale). Accessed 19 May 2023.

"The Beaufort Wind Scale." *Met Office*, <https://rmets.org/metmatters/beaufort-wind-scale>.

Beowulf. Translated by Seamus Heaney. Norton, 2000.

Brown, David Blayney. *J. M. W. Turner: Sketchbooks, Drawings and Watercolours*. Tate

Research Publications, February 2017. [https://www.tate.org.uk/art/research-publications/jmw-](https://www.tate.org.uk/art/research-publications/jmw-turner/colour-studies-relating-to-walter-scotts-provincial-antiquities-and-picturesque-scenery-of-r1184341#synopsis)

[turner/colour-studies-relating-to-walter-scotts-provincial-antiquities-and-picturesque-](https://www.tate.org.uk/art/research-publications/jmw-turner/colour-studies-relating-to-walter-scotts-provincial-antiquities-and-picturesque-scenery-of-r1184341#synopsis)

[scenery-of-r1184341#synopsis](https://www.tate.org.uk/art/research-publications/jmw-turner/colour-studies-relating-to-walter-scotts-provincial-antiquities-and-picturesque-scenery-of-r1184341#synopsis). Accessed 19 May 2023.

"Cloud Names and Classifications." *Met Office*, [https://metoffice.gov.uk/weather/learn-](https://metoffice.gov.uk/weather/learn-about/weather/types-of-weather/clouds/cloud-names-classifications#:~:text=)

[about/weather/types-of-weather/clouds/cloud-names-classifications#:~:text=](https://metoffice.gov.uk/weather/learn-about/weather/types-of-weather/clouds/cloud-names-classifications#:~:text=). Accessed

19 May 2023.

Cohen, Jeffrey Jerome. *Stone: An Ecology of the Inhuman*. U of Minnesota P, 2015.

Davies, Jeremy. *The Birth of the Anthropocene*. U of California P, 2016.

Romanticism on the Net #79 (Fall 2022)

Dee, Tim. "Neither Sea, nor Land." *Archipelago: A Reader*, edited by Nicholas Allen and Fiona Stafford, Kindle ed., Lilliput Press, 2021, pp. 393–401.

Dhaal Akshar Prem Ke. Directed by Raj Kanwar, performances by Abhishek Bachchan and Aishwarya Rai, Inderjit Films, 2000.

Edwards, Philip. *The Story of the Voyage: Sea-Narratives in Eighteenth-Century England*. Cambridge UP, 1994.

Evans, Mark. *Constable's Skies: Paintings and Sketches by John Constable*. Thames and Hudson, 2018.

"Facts and Figures about Scotland's Sea Area." *Marine Scotland Information*, 12 April 2023, <https://marine.gov.scot/data/facts-and-figures-about-scotlands-sea-area-coastline-length-sea-area-sq-kms>.

Furniss, Tom. *Discovering the Footsteps of Time: Geological Travel Writing about Scotland, 1700–1820*. Edinburgh UP, 2018, <https://doi.org/10.1515/9781474410021>.

Gazetteer of Scotland 1803–1901. National Library of Scotland, <https://digital.nls.uk/gazetteers-of-scotland-1803-1901/archive/97491608>. Accessed 19 May 2023.

Gessner, Conrad. *Historiae Animalium*. 2nd ed., Zurich, 1554–55.

Gidal, Eric. *Ossianic Unconformities: Bardic Poetry in the Industrial Age*. U of Virginia P, 2015.

Graham, Robert Balfour. "North Berwick, Haddington." *The New Statistical Account of Scotland / by the ministers of the respective parishes, under the superintendence of a committee of the Society for the Benefit of the Sons and Daughters of the Clergy*. Edited by John Gordon, vol. 2., Edinburgh, Blackwoods and Sons, 1845, pp. 317–44. *The Statistical*

Romanticism on the Net #79 (Fall 2022)

Accounts of Scotland 1791–1845, https://stataccscot.edina.ac.uk:443/link/nsa-vol2-p317-parish-haddington-north_berwick.

Harvey, William. *Anatomical Exercises on the Generation of Animals, to which are added Particular Discourses of Births and of Conceptions, &c.* London, Printed by James Young, for Octavian Pulleyn, 1653.

Heringman, Noah. *Deep Time: A Literary History*. Princeton UP, 2022.

———. *Romantic Rocks, Aesthetic Geology*. Cornell UP, 2004.

Hill, Henry. “North Berwick, Haddington.” *The Statistical Account of Scotland*, edited by Sir John Sinclair, vol. 5, Edinburgh, Blackwoods and Sons, 1793, pp. 440–45. *The Statistical Accounts of Scotland 1791–1845*, https://stataccscot.edina.ac.uk/link/osa-vol5-p440-parish-haddington-north_berwick. Accessed 19 May 2023.

Hutton, James. *Theory of the Earth: with Proofs and Illustrations*. Edinburgh, William Creech, 1795. 2 vols.

Imms, Matthew. “Colour Studies Relating to Walter Scott’s ‘Provincial Antiquities and Picturesque Scenery of Scotland’ c. 1821–4.” July 2016. *J. M. W. Turner: Sketchbooks, Drawings and Watercolours*, edited by David Blayney Brown, Tate Research Publication, 2017, <https://tate.org.uk/art/research-publications/jmw-turner/colour-studies-relating-to-walter-scotts-provincial-antiquities-and-picturesque-scenery-of-r1184341>.

Jamie, Kathleen. “Diary: Stay Alive! Stay Alive!” *The London Review of Books*, vol. 44, no. 16, 18 August 2022, p. 37.

Jonsson, Fredrik Albritton. “Natural History.” *Old Ways New Roads: Travels in Scotland, 1720–1832*, edited by John Bonehill et al., Birlinn, 2021, pp. 72–89.

Romanticism on the Net #79 (Fall 2022)

- Kelley, Theresa M. *Clandestine Marriage: Botany and Romantic Culture*. Johns Hopkins UP, 2012.
- Knell, Simon A., and Michael A. Taylor. "Hugh Miller: Fossils, Landscape and Literary Geology." *Proceedings of the Geologists' Association*, vol. 117, no. 1, 2006, pp. 85–98.
- Koppes, Steve. "The Origin of Life on Earth, Explained." *UChicago News*, 19 September 2022, <https://news.uchicago.edu/explainer/origin-life-earth-explained#theories>.
- Kuch Kuch Hota Hai*. Directed by Karan Johar, performances by Shah Rukh Khan and Rani Mukerjee, Dharnma Productions, 1998.
- Leask, Nigel. *Curiosity and the Aesthetics of Travel Writing, 1770–1840*. Oxford UP, 2002.
- . "Fingalian Topographies: Ossian and the Highland Tour, 1760–1805." *Journal for Eighteenth-Century Studies*, vol. 39, no. 2, 2016, pp. 183–196. *Science Direct*, <https://doi.org/10.1111/1754-0208.12396>. Accessed 19 May 2023.
- . "Fingal's Cave." *European Romanticisms in Association*, 13 August 2018, <https://www.euromanticism.org/fingals-cave/>.
- . *Stepping Westward: Writing the Highland Tour c. 1720–1830*. Oxford UP, 2020. <https://doi.org/10.1093/oso/9780198850021.001.0001>.
- Linnaeus, Carl. *Systema Naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Editio decima, reformata*. 10th revised ed., Sweden, 1758. 2 vols. *Biodiversity Heritage Library*, <https://www.biodiversitylibrary.org/page/726886>.
- Lockhart, J. G. *Memoirs of the Life of Sir Walter Scott, Bart.* Vol. 3, Edinburgh, Robert Cadell, London, John Murray and Whittaker, 1837–38.

Romanticism on the Net #79 (Fall 2022)

- Menely, Tobias. *Climate and the Making of Worlds: Towards a Geohistorical Poetics*. U of Chicago P, 2021. <https://doi.org/10.7208/chicago/9780226776316.001.0001>.
- Miller, Hugh. "Geology of the Bass Rock." *Edinburgh and its Neighbourhood, Geological and Historical; with the Geology of the Bass Rock*, edited by Lydia Miller, Edinburgh, William P. Nimmo, 1870, pp. 241–344.
- . *The Old Red Sandstone; or, New Walks in an Old Field, to which is Appended a Series of Geological Papers Read Before the Royal Physical Society of Edinburgh*. Edinburgh, John Johnstone, 1841.
- "The National Turtle Dove Survey." *RSPB*, 2022, <https://national-turtle-dove-survey-rspb.hub.arcgis.com>. Accessed 23 August 2022.
- Oliver, Susan. *Walter Scott and the Greening of Scotland: Emergent Ecologies of a Nation*. Cambridge UP, 2021, <https://doi.org/10.1017/9781108917674>.
- Parnell, Richard. "Dr. Parnell's Prize Essay on the Fishes of the District of the Firth of Forth, with 67 illustrative figures." *Memoirs of the Wernerian Natural History Society for the Years 1831–37*, vol. 7, Edinburgh, Wernerian Natural History Society, 1838, pp. 161–460.
- Pennant, Thomas. *Tour in Scotland and Voyage to the Hebrides, 1772*. 2nd ed., vol. 1, London, Benjamin White, 1776.
- Riding, Christine. "Introduction." *Turner and the Sea*, edited by Christine Riding and Richard Johns, London, Thames and Hudson, 2013, pp. 10–23.
- Ruskin, John. "Text of the Lectures as Published (with additions from the ms. of them as delivered)." *The Works of John Ruskin*, edited by Edward Tyas Cook and Alexander

Romanticism on the Net #79 (Fall 2022)

Wedderburn, *Cambridge Library Collection: Works of John Ruskin*, vol. 12, Cambridge UP, 2010, pp. 13–164.

“Scotland Act 1988.” *Legislation.Gov.UK*, The National Archives,

<https://legislation.gov.uk/ukpga/1998/46/contents>. Accessed 19 May 2023.

Shelley, Percy Bysshe, “A Defence of Poetry.” *Shelley’s Poetry and Prose*, selected and edited by Donald H. Reiman and Neil Fraistat, Norton Critical Edition, 2nd ed., Norton, 2002, pp. 509–35.

“Siccar Point.” *The Geological Society*,

<https://www.geolsoc.org.uk/GeositesSiccarPoint#:~:text=In%201788%2C%20James%20Hutton%20first,the%20processes%20of%20the%20Earth>. Accessed 19 May 2023.

Smout, T. C. “The Firth of Forth: What Drives Change.” *New Coastal History: Cultural and Environmental Perspectives from Scotland and Beyond*, edited by David Worthington, Palgrave Macmillan, 2017, pp. 49–64. https://doi.org/10.1007/978-3-319-64090-7_3.

Smout, T. C., and Mairi Stewart. *The Firth of Forth: An Environmental History*. Birlinn, 2012.

Somervell, Tess. “Jurassic Ark: Coleridge and the Megalosaurus.” New Romanticisms, BARS/NASSR International Conference, Edge Hill U, 4 August 2022.

Stephens, Michelle, and Yolanda Martínez-San Miguez. “Introduction.” *Contemporary Archipelagic Thinking: Toward new comparative methodologies and disciplinary formations*, edited by Stephens and Martínez-San Miguez, Rowman and Littlefield, 2020, pp. 1–44.

Thomson, Katrina. *Turner and Sir Walter Scott: The Provincial Antiquities and Picturesque Scenery of Scotland*. Trustees of the National Galleries of Scotland, 1999.

Romanticism on the Net #79 (Fall 2022)

- Todman, Amy. "A Rock with a View: Re-examining a 1680s View of the Bass Island." *New Coastal History: Cultural and Environmental Perspectives from Scotland and Beyond*, edited by David Worthington, Palgrave Macmillan, 2017, pp. 251–68.
https://doi.org/10.1007/978-3-319-64090-7_15.
- Venning, Barry. "A Macabre Connoisseurship: Turner, Byron and the Apprehension of Shipwreck Subjects in Early Nineteenth-Century England." *Art History*, vol. 8, no. 3, 1985, pp. 303–19, <https://doi.org/10.1111/j.1467-8365.1985.tb00170.x>.
- Walker, John. "A Description of the Basse and its Productions." *Essays on Natural History and Rural Economy*, Edinburgh UP, 1808, pp. 283–311.
- Wilton, Andrew. *Turner and the Sublime*. British Museum Publications, 1980.
- Worthington, David. "Introducing the New Coastal History: Cultural and Environmental Perspectives from Scotland and Beyond." *The New Coastal History: Cultural and Environmental Perspectives from Scotland and Beyond*, edited by David Worthington, Palgrave Macmillan, 2017, pp. 3–30. https://doi.org/10.1007/978-3-319-64090-7_1.
- Wyld, Evie. *The Bass Rock*. iBook ed., Vintage, 2020.

Notes

¹ Turner's sketchbooks are part of the Turner Bequest to the National Gallery, housed at Tate Britain. Much of the collection is accessible digitally at the Tate's website. Other works can be seen by appointment with Tate Britain.

² See Kelley for a study of the movement from Linnaeus toward new and different natural taxonomies, especially in botany.

³ This virus affects wild and domesticated birds. Outbreaks of avian flu are a persistent global and local bird health problem. Jamie discusses its impact on the gannets of the Bass Rock from a perspective of changing ecologies, environmental precariousness and poetic awareness (37).

⁴ Marine Scotland defines inshore territorial waters as coastal waters extending to twelve miles from shore. The "Scottish Zone" means "the sea within British fishery limits (that is, the limits set by or under section 1 of the Fishery Limits Act 1976) which is adjacent to Scotland." See also the "Scotland Act 1988."

⁵ Baker defines *marine*, *maritime*, and *nautical* in the context of the period covered in this essay (5–6).

⁶ Allen and Stafford draw on writing from the journal *Archipelago*, edited by Andrew McNeillie, 2007–2019.

⁷ *Sea state* is the oceanographic term for the statistical condition of the sea including general swell conditions, wind speed, and wave height defined according to the Beaufort Sea State Code. The Shipping Forecast is another example of an aesthetics of data. A daily BBC meteorological forecast for shipping in British waters, it has acquired iconic status and been widely assimilated into literary and creative culture.

⁸ Turner's contributions to *Provincial Antiquities* comprised the title page designs for volumes 1 and 2 and paintings of Borthwick Castle; Crichton Castle; Edinburgh, High Street; Edinburgh, from Calton Hill; Tantallon Castle; Linlithgow Palace; Roslyn Castle; Dunbar; The Bass Rock. They were engraved for publication.

⁹ Phonolytic trachyte is a light-coloured, igneous composite rock consisting of phonolite and trachyte. It is the result of volcanic action. North Berwick Law, a distinctive landmark hill southwest and inland from the Bass Rock, is also formed of it.

¹⁰ For a comparison of reports from different years in the *Gazetteer* see entries for 1806, 1825 and 1838 (28, 38, 43, 81–83).

¹¹ See the 2021 “National Turtle Dove Survey,” although login permission is needed for access. The project is coordinated by the RSPB, Rare Breeding Birds Panel, and Kent Ornithological Society, with support from British Trust for Ornithology.

¹² Hutton continues, “It is demonstrable that such basaltic rock . . . could not have been the eruption of a volcano, consequently those rocks must have been masses protruded in a fluid state, under an immense cover of earth, at the time of their production, and they could not have risen immediately out of the sea, with all their various minerals, their veins and cutters, their faces and angles” (2: 282). For the publication history of *Theory of the Earth* and more detailed discussion of its development see Furniss (155–96) and Heringman, *Deep Time and Romantic Rocks*.

¹³ See Wilton's discussion of Scottish Enlightenment moral philosophers Hugh Blair and Dugald Stewart on the sublimity of weather and continuous motion of the sea as an aid to understanding of Turner's seascapes (46).

¹⁴ See Evans for an account of Constable's interest in meteorology and weather. Constable's cloud studies began in earnest in 1821, so are more or less concurrent with Turner's Bass Rock paintings.

He was influenced by pioneering meteorologist Luke Howard's classification system for cloud types, which is still used in Britain and internationally ("Cloud Names"). There is no firm evidence that Turner read about that system, although it would be reasonable to suppose that he was aware of it.

¹⁵ I am grateful to Anna Pilz for talking with me about Gessner.

¹⁶ See Oliver (167–69) for a discussion of Scott's treatment of similar conditions in his novel *The Pirate*.

¹⁷ See Lockhart (134–277) for Scott's diary from his lighthouse tour.

¹⁸ Gidal provides an excellent exploration of the interdisciplinary relationship between the life sciences, geomorphology, cartography, data science and the Ossian controversy.

¹⁹ Pennant dedicated this publication to Banks, thereby communicating his appreciation of the latter's work.

²⁰ Menely explores how literary form was shaped by geohistory, looking at the nature of relationships connecting poetry with earth-system science and stratigraphy. See also Gidal.

²¹ *Curiosity* was a key word among antiquarians, explorers, travellers, and many Enlightenment and Romantic writers. For its meaning and connection of aesthetics with knowledge as well as with Empire, see Leask (*Curiosity*).

²² Rocks containing fossilized traces of these earliest life forms are rare because of ongoing processes of geologic change that are consistent with Hutton's theory. Scientists currently hypothesize that the first life may have formed in hot water vents close to volcanic activity, or in warm pools of water on a volcanically active planet. See, for example, work by Jack Szostak, Fred Chiesla, Clara Blättler and Jennifer Berger at the University of Chicago (Koppes).