

Scottish archaeological islands: a historiographical analysis and the legacy of antiquarian research

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<MH> Scottish Archaeological Islands: A historiographical analysis and the legacy of antiquarian research

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<A> Abstract

Crannogs, enigmatic artificial islands dotting the landscapes of Scotland and Ireland, have been subjects of intrigue and debate for centuries. These complex sites exhibit a remarkable time-depth of use, often revealing multiple phases or periods, coupled with a great diversity in their structural forms and settings. Moreover, the extensive yet fragmented early historiography of crannog research has left a lasting legacy on our modern understandings and interpretations of these sites. Adding to the complexity is the more recent discovery of Neolithic crannogs, which has pushed back the accepted date for these sites by over 3000 years.

In our pursuit to shed light on this newest piece of the enigma, we embarked on a systematic study, departing from the simple replication of existing databases. Instead, we focused on mining and extracting information from articles published in the *Proceedings of the Society of Antiquaries of Scotland*, which represent a substantial portion of early crannog research. While generating descriptive statistics is useful, true knowledge advancement comes from contextualising the data and the ideologies that shaped their generation. Our meticulous data mining and information extraction analysis allowed us to understand the historiography of Scottish crannogs in new ways. By analysing terminologies used through time, we identified

inconsistencies, biases and even geographic discrepancies in site classifications. Through additional refinement of this database and subsequent fieldwork, we were able to identify new, previously unrecorded, sites and question the validity of some 'known' sites.

To address ambiguities surrounding island origins and classification inconsistencies, we expanded our focus to include all 'archaeological islands'. This broadened scope has deepened our understanding of site types and their differential visibility in the national heritage record. To avoid interpretative dissonance, future insights must be integrated with national datasets, ensuring that the archaeological record continues to foster innovation and accommodate expanding knowledge.

<A> Introduction

Archaeology is a discipline in which knowledge gradually accrues through time. In this, it is far from unique. The nature of the subject, however, with its comparatively small community but extensive geographical and temporal scope, means that historically generated insights from the late 19th and early-20th century can often remain the most recent knowledge for a given site or artefact. In national datasets, this information persists alongside more recently generated records. This can lead to interpretative dissonance as the rationale, language, threshold for confidence and ideologies behind these data points changes through time, but each record remains frozen at its last point of observation. With early ontologies co-existing alongside contemporary national records, any attempt to create regional synthesis under currently accepted classificatory schemes must bridge this interpretive divide, understanding the process through which data has been either included or excluded from previous records through time.

In this paper, we explore the challenges this poses for our knowledge of crannogs (or ‘archaeological islands’) in Scotland, as well as potential routes to resolving them and the opportunities they reveal. Using information extraction (IE) methods we track how information about sites has been variously gathered, classified and considered, with a view to re-appraising the record we hold. While the focus of this paper is on crannogs, its implications reach much further, to any archaeological research looking to draw on equivalent digital site records to understand the past. It must be emphasised that the variable quality of the national record of the historic environment is flagged in user guides (<https://canmore.org.uk/content/resources>), but its implications, how to overcome them and how to improve them are not.

<A> Motivation

Crannogs, or artificial islands, are an enigmatic and multifaceted site type found in the many lochs, rivers and estuaries of Scotland and Ireland. They have been the subject of investigation for over a century, with early antiquarian research forming a particularly extensive and intensive period of work. These complex structures are described by the Canmore thesaurus as having been built from prehistory to the medieval period, often exhibiting multiple phases and periods of use. Research over the past thirty years has attempted to address this chronological complexity, revealing predominately Iron Age origins (Crone 1993; 2010; Henderson 1998a; Cavers et al 2011; Stratigos & Noble 2018; Henderson et al 2021). However, the discovery of dateable Neolithic materials from several artificial islands in the Outer Hebrides has pushed the date for the construction and use of some islands back by more than 3000 years (Copper and Armit 2018; Garrow & Sturt 2019; Blankshein et al 2023a). Given that the majority of these sites were thought to be Iron Age in origin, this growing body of evidence in the Outer Hebrides creates a need to re-appraise the record more broadly to ensure that previous observations of pre-Iron Age activity have not been overlooked or dismissed elsewhere. Judiciously, this re-evaluation must begin with the extensive antiquarian period of crannog research.

<A> Scottish crannogs: an early historiography

Scottish crannogs were first formally recorded in the *Old and New Statistical Accounts of Scotland* – essentially 18th and 19th century demographic surveys of every Scottish parish. In 1781 a paper delivered to the Society of Antiquaries of Scotland mentioned the discovery of a crannog during the drainage of Loch of Forfar (Canmore ID [33851](#)) (Jamieson 1822; Wilson 1865: 377). The receding waters slowly revealed a multifaceted islet structure formed of vast piles of oak and covered in large quantities of stone and earth, the formation of which ‘must have required very great labour and expence’ (Jamieson 1822: 19).

Crannogs again make an appearance in 1857, when Joseph Robertson delivered a paper to the Society detailing several sites in Scotland. Although this paper went unpublished, it ‘at once attracted attention, and stimulated so much further inquiry on the part of the members, that, at the very next meeting of the Society, another contribution on the subject was read’ (Munro 1882: 17). In less than a century, Stuart (1866), drawing on the work of Robertson and others, compiled the first inventory of all known crannogs in Scotland.

The peak of crannog fervour was characterised by the systematic work of Dr Robert Munro, who oversaw the excavation of numerous crannogs, primarily focused on southwest Scotland, and offered advice on the investigation of many others. He compiled his work and that of others into *Ancient Scottish Lake-Dwellings or Crannogs* (1882). Due to the waterlogged nature of these sites, antiquarian investigations yielded a wealth of materials: well-preserved bone and wood implements, ceramics and lithics, metal objects and watercraft (eg, Grigor 1864; Wilson 1865; Stuart 1866; Munro 1882). However, early understandings were limited by the very conditions that made these sites so archaeologically fruitful. Their partially submerged nature made excavation through the entire sequence challenging, the result being often partial or limited comprehension of a given site.

The other key figure in early crannog research was Reverend Odo Blundell, who began his investigations in the early 20th century. Blundell took a more inclusive approach aimed at understanding the setting and distribution of these islands, including the neglected Highlands and Islands. Realising the advantages afforded by standard diving-dress, Blundell (1909) undertook one of the earliest underwater archaeological investigations in the world. His accounts provide the first detailed description of a crannog underwater while also demonstrating the intrepid nature of his approach, given the challenges of working underwater at that time.

The first descent was made in about 12 feet of water on the west side of the island, but, owing to the inexperience of the amateurs at the air-pump, little serious work was done. The excess of air which was supplied to me had the effect of making me so buoyant that I was floating over the tops of the stones instead of stepping firmly on them, and that despite the two lead weights of 56 lbs. each attached to the already very heavy helmet and boots (Blundell 1909: 161).

Despite these initial challenges, Blundell (1910) went on to investigate several crannogs underwater. He also sought to discover new sites in more diverse geographies. In an appeal to the public for notification of potential artificial islands, over 40 new sites were revealed, many in areas where few had been previously recorded such as the Highlands and Islands (Blundell 1913; Fraser 1917: 48). Blundell's research, as well as crannog studies more broadly, was cut short by the First World War.

Following on from Munro and Blundell, few investigations took place in the mid-20th century; one exception was Peggy Piggott's (1953) excavation of Milton Loch crannog, during which time she lamented the current state of crannog literature. It was not until the 1970s that interest in Scottish crannogs increased once again, fuelled by the nascent discipline of maritime archaeology and the development of underwater survey and excavation techniques (Dixon 1991: 3). This period of burgeoning modern interest is marked by Morrison's (1985) *Landscape with Lake Dwellings: the crannogs of Scotland*, which offered a review of the current state of knowledge and the many avenues of new research 'that invite exploration'. This book followed on from underwater survey work conducted in Loch Awe (McArdle and McArdle 1973) and Loch Tay (Dixon 1983) and marked the beginning of a new era of crannog research, one that involved through- and in-water surveys along with environmental sampling to better establish the chronology and taphonomy of these structures (eg Crone 1993; Henderson 1998a; Cavers et al 2011; Stratigos & Noble 2018; Jones et al

2022). This modern research has been well synthesised elsewhere (Morrison 1985; Dixon 2004; Midgley & Sanders 2012) and will not be elaborated upon here.

Recent research has added an additional thread in the growing awareness of an increased time depth to crannog construction. Armit's (1996) excavation of Eilean Domhnuill (Canmore ID [10069](#)) in 1986–89 demonstrated for the first time that Neolithic people built and used islands as well. Thought to be a settlement, the eleven different phases that spanned nearly a millennium demonstrated a periodic yet persistent use of the site (Armit 1996: 46–50). What once was thought to be a potentially isolated anomaly can now be seen to be part of a broader pattern of activity, with nine crannogs dating to the Neolithic now known in the Outer Hebrides (Blankshein et al 2023a). This presence of Neolithic crannogs poses interesting questions of the broader record. Are they an isolated phenomenon in the Outer Hebrides? Are there indicators in the historical record of crannogs elsewhere that are redolent of these Neolithic sites? Do antiquarian accounts make note of Neolithic activity that was either dismissed or interpreted differently due to predominant ideologies? To address these questions a comprehensive dataset of potential sites and their observations is needed (see also Blankshein et al 2023a).

<A> Constructing a crannog database

It is important to highlight at the start that we are not the first researchers to undertake this complex task, and the differences between various databases demonstrates this complexity well. Generating a thorough record of Scottish crannogs requires navigating several challenges: collating a large and inclusive dataset of hundreds of sites that span thousands of years of construction and use, can be found in a range of milieus and have been subject to investigation by a range of interested parties for over 200 years. Further, given the large and diverse record of 'archaeological islands' (see Blankshein et al. 2023a for a full definition of this term) in Scotland and their long history of research, it is possible that many more

analogous sites exist within national and regional records than just those classified as crannogs or artificial islands (see Cavers 2010: 34; Lenfert 2013; Stratigos & Noble 2018: 148; Blankshein et al 2023a). Combined with this complexity, the unique history of research – characterised by extensive antiquarian activity, a long lull and then a new flourish of research instigated by modern technologies – has led to a number of inconsistencies, errors and uncertainties within the existing record. These also needed to be addressed before a revised database could be generated and any relevant information revealed.

The emphasis on chronologies and taphonomies within recent research suggests that if more Neolithic sites are to be found, they will be discovered through either early crannog literature or field research. This paper focuses on the former – specifically antiquarian reports – using data mining techniques to extract information from relevant papers. This process was adopted as a means of simplifying what could be a complex undertaking. As highlighted by those working with ‘big data’ (Kitchin 2013, 2014; Cooper & Green 2016; VanValkenburgh and Dufton 2020), the term is broad and does not simply refer to the size of the dataset but also to its resolution, exhaustiveness, relationality and scalability. Although the total number of recorded crannogs pales in comparison to other prehistoric site types, ‘in terms of Scottish archaeology, they are amongst the most persistently used types of site, and amongst the most ubiquitous’ (Morrison 1985: 14). For the purposes of this research, big data analytical tools were chosen for their exhaustiveness – the ability to amalgamate and assess the entirety of the known record of crannogs in Scotland – as well as their scalability – the ability to move from an exhaustive database of crannogs down to the minute particulars of each site.

Big data approaches enable a corpus of material to be engaged with from a different perspective. They permit the extraction of summary statistics and information on qualities and quantities of data in an automated fashion. This provides an analytical space in which to step away from some of the biases and assumptions that creep into any selective linear

narrative of a site type. However, as emphasised by Cooper and Green (2016) any advancement of knowledge from this approach is only possible if the associated contextual information regarding the creation of each record is also extracted. Hence, we found a way to allow the record to surprise us, relegating our own biases to the background through an automated data mining process before extracting all contextual information through a more human-centred approach.

 Collating the initial geodatabase

This process began with the national and regional records. The 389 sites classified under the term crannog on Canmore's open access catalogue (in 2020) provided a starting point for the database; however, for reasons just described, there are additional artificial islands recorded on Canmore that are classified under different terms. Hence, the initial geodatabase derived from Canmore also needed to include sites classified as 'artificial island', 'island dwelling', 'causeway', 'fortified island' and (for the Northern and Western Isles) 'dun' and 'broch' (see <https://canmore.org.uk/thesaurus> for definitions).

Knowing that not all sites within these classifications are artificial (and many duns and brochs are not located on islands), this database had to be filtered. To achieve this, each record was reviewed and its location verified using satellite imagery. This process proved effective for initial filtering yet was also problematic, being complicated by a number of factors. For instance, the large swaths of land that have manipulated by humans through time can impact understandings of loch islands and their contexts. Further, some sites are imperceptible in aerial imagery. This is complicated by the fact that coordinate locations for some records are incorrect. These challenges warn of being too reliant on visual characteristics of sites as they currently exist – for example, a former crannog with a causeway may now appear as a stone structure on a peninsula. Likewise, being too dismissive of a site that does not immediately appear to exist could omit a crannog that has been

submerged, eroded, robbed or all the above. This process also highlighted that, even with imagery of the highest resolution, the nature of artificiality is almost always impossible to determine from the air.

During the filtering process, the information attached to the records on Canmore, as well as that recorded by other researchers in their databases (eg, Holley 2000; Hale 2004; Lenfert 2009; Cavers 2010; Stratigos 2021), was invaluable. Where records accorded, all pertinent information (such as dates/types of investigations, materials/dates recovered and structural form) was amalgamated into the NRHE/HER-based database. In other instances, however, records did not match, and a number of inconsistencies, uncertainties and errors began to be revealed. These discrepancies have led to varying estimations of the total number of crannogs in Scotland, ranging from over 300 to around 600. Our initial collated database included 445 sites, but our broader approach to this diverse site type also allows for the possibility that additional sites are mentioned in the literature under terms different to those used in the NRHE.

 Enhancement of the record through data mining

The *Proceedings of the Society of Antiquaries of Scotland* (hereafter PSAS) has played a key role in the reporting of new sites and investigations within Scotland since it was first published in 1851. This is reflected in the recurrence of PSAS articles in the bibliographies of crannog records on Canmore. An extensive bibliography of Scottish crannog research (Michael Stratigos pers. comm) demonstrates that 35% of all journal articles are from PSAS. When focusing only on publications prior to the mid-20th century, as we aimed to do, PSAS articles account for 72% of all journal articles cited in relation to crannogs. Therefore, if new information is to be found, it is more likely to come from early volumes of PSAS than from any other body of work.

Our information extraction (IE) analysis was conducted on five volumes of *Archaeologia Scotica* (1792–1890) and 148 volumes of PSAS (1851–2015). These publications were not only the most suitable for this analysis but also freely available in digital format – a factor that plays an important role in any data mining process (see Jeffrey et al 2009; Bartschat et al 2019). PDFs of the publications were imported into NVivo, a qualitative data analysis software package. Initially a text search query was conducted beginning with the term crannog and any affix stemmers (crannog*). At its simplest, the results indicate the quantity of occurrences of the term (referred to hereafter as mentions) within the queried publication and highlight where these mentions occur within the text.

As with the Canmore record, a query for only crannog* would omit discussions of relevant sites that use different terminology. This presented a challenge as linguistic information extraction requires clear knowledge of what the most relevant or suitable terms are in order to identify the information of interest (Kintigh 2015). Given the diverse terminology used to describe these sites through time, it was deemed more meaningful to determine additional nomenclature from within the published record.

Orthographic variations or ontological facets in crannog research is not a new concept. In 1866, Stuart suggested a variety of other terms and toponyms perhaps indicative of the existence of a crannog:

It is probable that the sites of crannogs may be traced through similar names in other parts of Scotland. Thus we have Crannach Bog or Crannabog, part of the barony of Carnousie; Cranna and Crannabog, part of the estate of Rothie; Cranbog and Lochlands, part of the barony of Belhelvie,—all in the county of Aberdeen (Stuart 1866: 114).

By analysing the most frequently occurring terms within all the articles identified in the initial mined results, the new terms ‘lake dwelling’, ‘pile structure’, and ‘pile dwelling’ were revealed. These additional terms were subsequently queried and the results added to the initial results. Although many of these mentions were found within articles already revealed through the first search for crannog*, suggesting an overlap in the use of these terms, new references were also revealed. For instance, a search for artificial island* produced three mentions in two volumes published before Mackinlay’s discussion of the term crannog in 1857. The results of the data mining process revealed 3050 mentions of crannogs or related site types, which, after removing duplicates, are contained within 52 PSAS volumes.

 Qualitative information extraction

The subsequent extraction of information from the more than 450 relevant papers highlighted through this process was conducted manually. This was simplified, and importantly quickened, by referring to the quantity of mentions within each article, which can reveal how useful that reference may be. For instance, papers with only a few mentions typically could be dismissed as a peripheral reference to a site or associated object – for example, a discussion of Roman Iron Age tools might mention an object found on a crannog. In these instances, the information of relevance, if indeed there was any, could be revealed by skimming the text to deduce the context of the term.

A larger mention count within a paper typically indicated an excavation report, a comprehensive discussion of a group of crannogs or an analysis of materials from them. For example, one article from Volume 6 contains the term ‘crannog’ 127 times, nearly six times more mentions than all previous volumes combined. This indicates not only a lengthy dialogue on the subject – specifically, the first cohesive discussion of a group of crannogs – but also perhaps the unofficial commencement of the primary phase of antiquarian crannog research. Hence, a greater number of mentions indicated a closer reading of the article was

necessary to extract more nuanced information regarding the site(s) and/or associated materials being discussed. In addition to filtering the data mining results for relevancy, this qualitative IE follow-up process was necessary to verify the accuracy of the results. Beyond these specific aims, however, re-engaging with early literature enabled a more enriched understanding of the early historiography of crannog research, moving beyond mere quantitative or geographic outputs.

Throughout this process of constructing an inclusive crannog database a major challenge persisted: the inability to determine whether some sites met the essential definition of a crannog – in other words, exhibiting some form of artificiality. This, along with the many classificatory issues already highlighted, led us to expand our database to include all ‘archaeological islands’ – inland (river, lake or wetland) islands that contain archaeological features or other anthropogenic evidence (Illus 1) (see also Blankshein et al 2023a). This broader classification was essential for a number of reasons, as will become clear, but primarily it enabled our research to encompass a broader range of sites as dictated by the archaeological and historiographical records. This database could be filtered subsequently based on levels of artificiality as well as other distinctions and characteristics yet to be identified. Through this process 582 archaeological islands were documented in Scotland; this is considerably more than the initial Canmore database of 445 crannogs and related classifications but aligns with estimations by other researchers taking a similarly broad perspective on the class (Table 1). This database of Scottish archaeological islands is openly available from the ADS (<https://doi.org/10.5284/1100101>).

Illus 1 here

Table 1 here

<A> Scottish archaeological islands

Whilst our initial aim of re-engaging with the time-depth of these sites was achieved (see Blankshein et al 2023a), numerous insights into the broader crannog record were also revealed through the data mining and IE approach. Although the historiography of crannog

research is well-known within the field, the historiography of record generation is not. Using past literature to guide this process a foundational understanding was generated of the key influences leading to the creation of crannog records and their perpetuation. This was crucial to our research but in comparison to modern databases also imparted insight into the state of the record as it currently stands. With early ontologies co-existing alongside contemporary national records, interpretative dissonance is bound to ensue. Namely, classification inconsistencies, the introduction of clear biases and unintentional errors, a reliance on questionable sources of information, and a tendency to segregate the Outer Hebrides from mainland records all appear to have been inherited from early crannog research and all have hampered a more comprehensive and therefore accurate understanding of these sites.

It is important to acknowledge that in striving to overcome the many complexities of this site type and its historiography, it is inevitable that errors and inconsistencies will creep in; we admit that possibility in our own research. In particular, our geographic focus on the Outer Hebrides, both within digital and field-based research, has skewed our focus and the level of care, detail and resources we have provided towards this archipelago and has now skewed the record of work as well, generating a more accurate picture in this region than in others (Blankshein et al 2023a). However, by striving to solve these issues and shedding light on others, our current knowledge and understanding of Scotland's enigmatic archaeological islands, as well as their various sub-classes, can be furthered together.

 Re-engaging with time-depths

With a view to identifying additional Neolithic sites or materials from early work, our re-examination of a corpus of antiquarian literature successfully revealed a number of potential sites for further exploration. For instance, potential Neolithic materials were noted at 15 sites. Through the narratives encapsulating the discovery of these materials, a general dismissal of any possibility of early crannog activity through naivety or oversight was clear (Blankshein et

al 2023a). Despite mounting evidence for earlier origins, interpretations erred towards the strongest opinions, suppressing evidence of earlier island construction practices for a century.

Perhaps more importantly, this process provided insight into the practices and ideologies underpinning antiquarian research and its lasting influence on modern crannog research. Charting the number of mentions of archaeological islands found within the data mining analysis reflects the broad pulse of crannog research (Illus 2). More distinctly this chart highlights the first bursts of antiquarian research and the intervening lull, with exceptional punctuations, that lasted from the 1920s until the 1970s, when crannog fervour once again began to spike along with the inception of modern survey and diving techniques.

Illus 2 here

Yet, what this chart does not show is the type of research being conducted. Focusing solely on excavations, it is important to note firstly that only 15% of archaeological islands have been excavated. Charting excavations through time demonstrates that from the first excavation of a crannog by Grigor (1864) until the 1950s, 42 sites were excavated, which accounts for nearly half of all excavations (Illus 3). With Piggott's (1953) excavation standing at the clear divide between early and modern research, her work would have a lasting impact on modern discourse, somehow both reinforcing biases developed during the antiquarian period as to the date and characteristics of Scottish crannogs (Morrison 1985: 6) and introducing new biases against the value of the corpus of antiquarian work as a whole.

Illus 3 here

Clearly, large advances in our knowledge were generated during these foundational years of crannog research; however, it is important to recognise that not all excavations are of the same calibre. Antiquarian excavations, relying on a local labour force and often coinciding with loch drainage, were extensive but not methodical. In contrast, with a few exceptions – eg, Oakbank crannog (Canmore ID [25024](#)), Dun Bharabhat (Canmore ID [4020](#)), Eilean Domhnuill and Loch Bhorgastail (Canmore ID [359072](#)) – modern excavations have taken the

form of small-scale excavations or test-pitting. With much modern work relying on less invasive and more expeditious methods, such as coring and remote sensing, roughly the same percentage of sites have been absolutely dated in the last 50 years as have been excavated since the antiquarian period. This offers a more precise but less cohesive picture of each site overall.

Hence, antiquarian activities and ideologies persist in modern databases; the statistics demonstrating that for many sites 19th and early-20th century excavations remain the most recent data point. Primarily, however, this database highlights how much more work is needed to truly understand island-building practices in Scotland. Our work, through which the creation of this database was just one part, led to the identification of three new Neolithic sites in the Outer Hebrides, bringing the total number of known Neolithic islands in the archipelago to 11. It is important to note that ten of the Neolithic sites discovered were formerly classified as duns or brochs and/or were attributed to the Iron Age or medieval period (Beveridge 1911; Armit 1996; Garrow et al 2017; Garrow & Sturt 2019; Blankshein et al 2023a, c) – the 11th site not having been recorded in the NRHE/HER at all. In addition, our work has also led to the discovery of Bronze Age activity at four islands, a period that has, until now, remained conspicuously absent from crannog research. This database work, combined with our fieldwork, has demonstrated an even greater quantity and diversity of sites, and within this growing profusion there is the potential to reclassify and reinterpret more sites.

 Terminologies through time

Exploring the statistical outputs through the qualitative information extracted enables a greater understanding of the etymology of various related nomenclature, the ideologies that underpin them and their subsequent influence on modern classifications. The term ‘crannog’ first appeared in the Proceedings in 1857. In his paper on two crannogs in Bute, Mackinlay

(1857) provides an insightful discussion of the etymology of the word, shedding light on its early usage by antiquarians.

In [Irish] Gaelic, the word Crann signifies a tree, a stake, or a post, and Og or Oig is young; so Crann-oig signifies a stockade formed of young trees; consequently it is scarcely a correct use of the term to extend it to insular forts formed of any other material. This is one instance among many of words acquiring a wider meaning than their etymology would strictly warrant; it is, however, convenient to have a general term by which insular forts in lakes may be classified (Mackinlay 1857: 43).

Breaking down the quantity of mentions into the predominate terms in use through time reveals the emergence of the term ‘crannog’ around the same time as Mackinlay’s (1857) discussion, suggesting its acceptance within academic circles (Illus 4). The continued usage of the term through time and its prevalence from the 1980s onwards demonstrates that it has remained the most frequently and consistently used term throughout the historiography of research – indeed now the preferred appellation for artificial islands as a whole, regardless of structural remains or period (<https://canmore.org.uk/thesaurus/1/508/CRANNOG>). However, the prevalence of other terms suggests that this adoption was not uniform.

Illus 4 here

For instance, the frequency of the term ‘lake dwelling’ until the mid-20th century indicates the resounding influence of Munro (1882: 5), who, despite Mackinlay’s (1857) insight into the etymology of the term ‘crannog’, found its origins ‘doubtful’ and preferred this term instead. However, the inherent difficulty with the term ‘lake dwelling’ is the assumption of site function, which, as we have seen of Munro’s work elsewhere (Blankshein et al 2023a), constrains site classifications to interpretations of use rather than verifiable elements.

Furthermore, a letter written by M’Callum to the Glasgow Herald in 1891 and quoted to the Society by Munro (1893: 211) himself refers to an island in Loch Askaig (Canmore ID

[39923](#)) that was ‘spoken of always by the natives by the name of Crannaig’. Indeed, Fredengren (2002: 7–9) has demonstrated the early etymology of the term ‘crannoge’ in Ireland, tracing its use back to at least *c* 1220 AD. Whatever the reasoning, by the start of the 20th century the use of the term ‘lake dwelling’ began to wane – the final spike representing Ritchie’s (1942) preference for this term as well. Although the term reappears occasionally in modern research (eg, Morrison 1985; Lenfert 2012), its overall usage remains limited, perhaps due to the limited interpretations it imposes.

Similarly, the more frequent occurrence of the architecturally indicative term ‘pile structure’ in the late 19th and early 20th centuries relates to the prevalence of work being conducted along the River Clyde (Bruce 1900, 1908; Callander 1911). The sudden absence of this term from the literature through most of the 20th century may reflect the controversy surrounding the work on these sites, during which Munro publicly accused the excavators of forgery (Hale & Sands 2005; Blankshein et al 2023a). The disagreement may have stigmatised the study of these riverine islands or the term ‘pile structure’ itself, but regardless, little further research was conducted on these sites and the term has diminished in use.

The phrase ‘pile dwelling’, although sounding effectively synonymous with the term ‘pile structure’ has its own connotations. The discovery of prehistoric pile dwellings in Switzerland in 1853–54 arguably instigated crannog mania in Scotland; however, Scottish researchers have always maintained a distinction between crannogs and their mainland counterparts. This distinction, along with assumptions regarding form and use, may explain the infrequent use of this term in reference to Scottish sites. Indeed, the omission of pile structures/dwellings, including the Clyde sites, from many researchers’ databases reflects the differences in context and construction between these riverine sites and the predominately lacustrine islands (Hale 2000, 2004). Yet, these sites once again demonstrate the great

diversity of archaeological islands in Scotland as well as the many inconsistencies in term usage – for example, the Clyde structures are classified as crannogs on Canmore.

In contrast, the increased appearance of the less denotative term ‘artificial island’ in the early-20th century reflects Blundell’s (1909, 1910, 1913) more inclusive work. Blundell often referred to the islets he investigated, or the new sites he revealed, as both crannogs and artificial islands. This may reflect his more inclusive approach to the record overall, and in modern usage the terms are broadly interchangeable. Unfortunately, Blundell’s work highlights the issues with both this term and the term ‘crannog’ as many of these sites were not proven actually to be artificial.

Additionally, there has been a long and significant debate as to the importance (or not) of artificiality in the use of loch islands (Henderson 1998a: 238; Harding 2000: 302; Cavers 2010: 2). Such discourse is important – in fact, so far two natural loch islands have produced Neolithic materials in the Outer Hebrides – but should not impact on the use of currently accepted definitions of a crannog, where modification of an islet is as much a qualifier as being entirely anthropogenic. However, it does raise interesting questions about the place of natural and unmodified islands within current typological classifications; hence, our project’s adoption of the term ‘archaeological island’ (see also Blankshein et al 2023a).

 Hebrides and beyond

What is most evident from Mackinlay’s discussion is the adoption of the term ‘crannog’ beyond its strict etymology due to the need to encompass a burgeoning type of site, characterised broadly as insular structures in lakes made of a variety of materials. But as previously discussed, its use appears to have come with some controversy. While Mackinlay may have been trying to establish the legitimacy of the expanding ‘crannog’ definition, he also implies some debate as to the applicability of the term to insular ‘forts’ made of

materials other than wood – of which, stone structures on islands, a type prevalent in the Outer Hebrides, can be inferred. Although Illustration 4 shows the apparent established use of the term ‘crannog’ throughout the historiography of research, it also shows that terms were neither consistently used nor uniformly applied.

Since the terms ‘dun’ and ‘broch’ were not searched through the data mining process (or else they would have produced too many irrelevant results), Outer Hebridean sites were relatively absent from the data mining results. It appears that the Outer Hebrides has its own legacy of terminology influenced through early antiquarian research. Whilst Munro was investigating ‘lake dwellings’ on the mainland, Captain F W L Thomas (1890) was exploring ‘duns’ in the Outer Hebrides, many of which resided on islands. Two decades later, whilst Blundell was diving on ‘artificial islands’ in the highlands, Dr Erskine Beveridge was investigating ‘island duns’ in North Uist. In his compilation *North Uist: Its Archaeology and Topography* (1911), still today a key resource for archaeologists working in the Outer Hebrides, Beveridge referred to anthropogenic islands as duns even when a lack of evidence for stone superstructures existed. Indeed, Eilean Domhnuill was once investigated by Beveridge (1911: 197–98) and included in his list of ‘Duns, or Prehistoric Forts’. Another site, Loch nan Clachan (Canmore ID [10094](#)), was described by Beveridge (1911: 199) as an island-fort enclosed by a thick stone wall but instead was demonstrated to be a stone and timber Neolithic crannog with no trace of any stone superstructure (Blankshein et al 2023c).

Irrespective of the reasons for it, linguistic divergences have had a profound impact on the record of archaeological islands as a whole as well as interpretations of them (Harding 2000). In this instance, geographic influences have split research and interpretations of archaeological islands into two different trajectories; the heavily studied artificial islands on mainland Scotland have come to typify the crannog classification, whilst the artificial islands in the Outer Hebrides (some of which contain dun or broch superstructures) are typically

viewed as a separate or typologically distinct class of Iron Age site (see also Stratigos & Noble 2018: 148).

Dividing the record into the Outer Hebrides and the rest of Scotland reveals this division even further. Firstly, the large quantity of archaeological islands in the Outer Hebrides compared to the rest of Scotland is clear, with the Outer Hebrides containing 197 sites (around one-third of the total record). However, few of these sites are recorded as crannogs on Canmore, with over 80% being classified as duns (Illus 5). Duns, and their more elaborate counterpart brochs, are Iron Age drystone towers unique to the Atlantic façade of Scotland, especially the Outer Hebrides where they were often built on islands. Currently there are over 300 duns and brochs recorded on Canmore in the Outer Hebrides, and according to Armit (1992) over half of these are located on islands.

Illus 5 here

Morrison (1985: 37) suggested the distinction between the two is that ‘dun sites are those with a notably heavy stone superstructure walling them around. Its weight usually requires a bedrock foundation...’, meaning they are not artificial. However, it has been demonstrated that some duns and later structures reside on artificial or enhanced islands, such as Dun Bharabhat and Loch Arnish (Canmore ID [4316](#)). As our recent work has shown, often the only way to make a distinction between an artificial island capped with stone and a crumbled stone structure built on a natural island is through underwater inspection – and even in the water there are many hinderances to underwater inspection (Blankshein 2023a, c). This obviously presents a challenge to any finer-grained classifications of individual sites, but equally, with reference to our broader understanding of practices in the Northern and Western Isles, it also highlights the persistent preconception that stone islands in these regions are stone structures built on natural or fortified islands, not artificial islands with a stone capping. The restrictive connotations of various terminologies have likewise had an influence on the interpretations of other related sites in the Outer Hebrides. For instance, Eileann An Tighe

(Canmore ID [10372](#)), a natural island in the Outer Hebrides, produced large quantities of Neolithic pottery during excavations (Beveridge 1911: 222; Scott 1951). As the island is not artificial, it does not fit the crannog typology, which may have influenced Scott's (ibid) alternative interpretation of the site as a pottery workshop, an interpretation that has now been dismissed. This unique site has not been investigated since, relegated to the annals of history's misinterpreted sites. Instead, it would be another 30 years before Neolithic 'archaeological islands' were properly recognised with the discovery of Eilean Domhnuill. When confronted with the comparatively limited amount of modern excavations that have been conducted, and the strong influence of antiquarian research on existing knowledge, a reliance on interpretations (about period, architecture or use) within site classifications appears as imprudent today as it did in the past. The issues with selective classifications have been discussed by numerous researchers (Henderson 1998a; Cavers 2010; Lenfert 2019); variations in structural form and setting having led to the categorisation of sites in diverse ways – for instance, by material (stone/timber, packwerk, peat/brushwood), by region (Highlands, Lowlands, Northern and Western Isles) or by waterbody type (freshwater, marine, riverine). These are important sub-classifications to consider but as stated by Cavers (2010: 2), 'given the embryonic state of our knowledge of crannog taphonomy, even simplistic classificatory terminology... is likely to be misleading...'

With the realisation of an additional 3000 years of time depth to these sites, these many challenges have been furthered. As highlighted by Morrison (1985: 12), the multi-phase and often multi-period reuse of many of these sites makes them difficult to investigate and categorise:

Typological dating by simple inspection is not reliable. The exterior forms of crannog mounds generally reflect the exigencies of building at the desired locations, rather than their date. Even neighboring sites that can be shown to be contemporary can be

quite different in aspect, while others of widely differing date may look alike
(Morrison 1985: 120).

Whilst a reliance on form or materials appears to have been disregarded in site classifications, a comparison of antiquarian linguistics to modern databases demonstrates the perpetuation of some inconsistencies through time, especially the distinction regarding crannogs on the mainland and the Outer Hebrides (Illus 6). Such divisions have been challenged as researchers suggest that these sites should not be seen as distinctive but rather as part of an ideological phenomenon that entails being on an island (Fredengren 2002; Cavers 2010: 34; Lenfert 2013: 125).

Illus 6 here

If the ideologies and cultural significances underpinning the practice of constructing and using islands are to be understood, a more holistic and less restrictive perspective is required (Lenfert 2013). The only way to approach this cohesive perspective is through inclusivity, overcoming the terminological inconsistencies and geographic, visual and ideological biases inherited from antiquarian research, at least until more fieldwork allows for more resolute classifications.

 Veracity of source information

If classificatory terminology is to be avoided until more fieldwork is conducted, there is likewise a danger in ascribing too much certainty to existing records. Through the data mining and qualitative information extraction outlined here the source of information for the generation of each record was quickly and thoroughly assessed, revealing great variability in the veracity of source information for each site record. A few eccentricities encountered on Canmore are outlined here.

The entire Canmore record for one crannog (Canmore ID [4897](#)) states simply that ‘according to Mr Mayer, there is a tradition of two crannogs in Loch Hope’ but ‘Mr Mayer has never

seen the structure’. In another instance, local knowledge led to the generation of a site record – an island in Loch Aslaich (Canmore ID [12324](#)) was suggested to Blundell (1913: 272) to be artificial – but also led to its dismissal when the Ordnance Survey noted in 1975 that the island is ‘believed locally to be entirely natural’. These examples highlight the insecure information that underpins some early records. In contrast, Lochindorb Castle (Canmore ID [15463](#)) has a clear and well-recorded history of use as a medieval island fortification, which is accurately reflected by the site’s classification. The record also notes that local knowledge suggested the castle is built on an artificial island, but in this instance the site is not classified as a crannog. Thus, in addition to uncertain information, there is also the inconsistent treatment of that information.

There are many examples of sites being recorded through local knowledge, but clearly not all knowledge was of equal reliability. Regardless, it appears that many sites of great uncertainty (even those whose location is unknown) are classified as crannogs, whilst others are not included despite having the same or even greater evidence for artificiality. In the case of Lochindorb, and many similar sites with multiple phases of use, the visibly and historically dominating superstructure has obscured the potential earlier origins of this site, not only physically but also terminologically.

Blundell’s legacy of relying on public knowledge also persists; his appeal to the public generated a number of inaccurate records. As he did not visit many of the sites himself, particularly in the Outer Hebrides, the record has been skewed by uncertain local knowledge since at least the early-20th century. In fact, our own field visits in 2022 included one of the islands relayed to Blundell (1913) (Canmore ID [9894](#)). We were unable to identify any sort of archaeological, much less artificial, island in the loch (Blankshein 2023c). As its recorded location is on dry land, the real location of the island, if it exists at all, remains unknown.

This returns to the issue of classifying a site without visual inspection, particularly if that classification is predicated upon some form of artificiality. As already discussed, identifying artificial features can be challenging, even in the water, and caution should be ascribed to records and classifications that have limited investigations to even support their existence, much less categorise them. Imprudent and inconsistent record generation has led to the perpetuation of uncertain site records in modern databases, and this imprudence is reflected in modern research as well. For instance, several sites have been recorded as crannogs through satellite imagery alone, leaving much speculation as to their artificiality, and even anthropogenic use. Despite advances in technology and the ability for digital databases to house ever increasing stores of information, one lesson to be learned from antiquarian research is circumspection when recording or classifying sites, relying foremost upon thorough field inspection.

The questionable veracity of site information led us to incorporate a certainty ranking into our database, indicating whether a site has been verified through visual inspection, remains uncertain or is likely an error. The latter was removed from our totals for the Outer Hebrides, primarily due to the reliable information generated through collaborative fieldwork with local archaeology groups (Blankshein et al 2023b), which showed that many of these uncertain sites were either not located on islands ever or not located on islands fitting our criteria (for example, large bedrock islands or sea skerries). Knowing this information provides a truer picture of the record of crannogs and offers a glimpse into the broader fascination with islands through time (Illus 7).

<A> Conclusion

Illus 7 here

Whilst the process outlined in this paper enabled the collation of a thorough database of archaeological islands and its enhancement through data mining and information extraction techniques, in many ways it was simply repeating a cycle of knowledge generation that has

already been conducted many times. We are not the first to generate a database of crannogs; however, in taking this approach we developed a method through which a variety of different topics could be explored and the now open and accessible archives of major sources of information re-valued and leveraged to further our understanding of the past. Critically, by re-engaging with the time-depth of these sites we were able to highlight previously overlooked aspects of the record, identifying the presence of Neolithic materials that could indicate earlier origins for more sites (Blankshein et al 2023a).

Beyond our more specific aims, the approach outlined within this paper has allowed us to understand the historiography of Scottish crannogs in new and important ways, providing insights into several key areas. Exploring terminologies used through time in both a quantitative and qualitative way shed light on current classificatory systems, predominately the lack of consistency and number of overlapping and incongruous terms. When dividing the record into the Outer Hebrides and the mainland, further geographic discrepancies were revealed. Although no sites were found through the data mining and subsequent qualitative information extraction that did not already exist in the record in some form, numerous sites were revealed with miscellaneous classifications that would not have been revealed otherwise. Through additional refinement of this database and subsequent fieldwork, we were able to identify new sites that were not in the established record and to question ‘known’ sites that perhaps should not be. As a result of our work, we have gained a better understanding of particular site types – and the differential visibility of these – in the national-level heritage record (which is, after all, a historically constituted document in itself).

Critically, we have demonstrated that while generation of descriptive statistics is straightforward and useful, proper advancement of knowledge is only really possible when this knowledge, and the activities and ideologies that led to its generation, is contextualised. Not all information relating to the archaeological record is equal. Some is based on detailed

survey and excavation, some on anecdotal sightings – these differences matter. As we move forward, it is important that we do not generate new errors ourselves and strive to work more closely with regional and national HERs towards the betterment of the record. Canmore provides the ability to name and label sites with a degree of consistency but only if researchers choose to work within these constraints or towards their improvement.

With any complex and geographically widespread site type, errors within the dataset are inevitable. However, it is vital that we take the time to highlight these discrepancies, reconsider our categorization systems, and rethink the record as a result. Whilst we acknowledge the many benefits of more specialised crannog research, we also recognise that this research cannot be conducted in a silo. The record of known crannogs in Scotland is expanding. Invariably new sites introduce new complexities, but they also provide more information. This evolving narrative inevitably means that interpretations will need to shift and classifications will need to remain flexible. For this reason, we expanded our focus well beyond our initial scope, with our database including all inland islands that contain archaeology regardless of artificiality or period. This allowed us to include sites whose nature could not or has not been determined but also sites that currently cannot be encapsulated under a single category or meaningful term. This more inclusive starting point then allowed the level of artificiality (or indeed many other factors and biases) to be considered. Only through more comprehensive classifications and standardised approaches can more nuanced and specialised components of that broader narrative be constructed.

Archaeology is a living discourse that must be treated as such: "The archaeological record tells a story; it is interpretative and dynamic, with later excavations adding new knowledge and narratives" (Henniger 2018: 1). New evidence will inevitably challenge previous interpretations, but unlike in the antiquarian period, when such evidence was often dismissed, it should now be embraced as part of this ongoing dialogue. Just as knowledge accrued over

time has historically shaped our understanding of sites and artifacts, so too must innovative insights be generated from national datasets to prevent the interpretative dissonance that arises from the coexistence of early and modern records. The archaeological record is a living dataset, evolving over time and fostering innovation in knowledge generation to manage and interpret the expanding body of information. In this, archaeology is far from unique, but its broad scope and depth make it uniquely challenging.

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<A> References

Armit, I 1996 *The Archaeology of Skye and the Western Isles*. Edinburgh: Edinburgh University Press.

Bartschat, A, Reischl, M & Mikut, R 2019 ‘Data mining tools’, *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery* 9(4), 1–14.

<https://doi.org/10.1002/widm.1309>

Beveridge, E 1911 *North Uist: Its Archaeology and Topography, with Notes Upon the Early History of the Outer Hebrides*. Edinburgh: Brown.

Blankshein, S, Garrow, D & Sturt, F 2021 ‘Exavation and survey at Loch Bhorgastail, Isle of Lewis, Outer Hebrides (July 2021): interim report’, unpublished report.

<https://doi.org/10.5284/1100101>

Blankshein, S, Gannon, A, Garrow, D & Sturt, F. 2023a ‘Neolithic Crannogs in the Outer Hebrides (and Beyond?): Synthesis, Survey, and Dating’, *Proceedings of the Prehistoric Society*, 1–23. <https://doi.org/10.1017/ppr.2023.10>

Blankshein, S, Auger, R, Davies, S, Dix, J, Garrow, D, Karamitrou, A, Macleod, C, Monk, A, Newman, D, Rafferty, D, Stewart, M, Sturt, F & Wilson, A 2023b ‘Uist Crannog Survey Part 1: Desk-based assessment and preliminary site visits, 2020–22 (July 2022)’, unpublished report. <https://doi.org/10.5284/1100101>

Blankshein, S, Gannon, A, Garrow, D & Sturt, F 2023c ‘Uist Crannog Survey Part 2: Underwater and detailed landscape survey (July 2022)’, unpublished report. <https://doi.org/10.5284/1100101>

Blundell, F O 1909 'Notice of the examination, by means of a diving-dress, of the artificial island, or crannog, of Eilean Muireach, in the south end of Loch Ness', *Proc Soc Antiq Scot* 43: 159–164.

Blundell, F O 1910 'On further examination of artificial islands in the Beaully Firth, Loch Moy, Loch Garry, Loch Lundy, Loch Oich, Loch Lochy, and Loch Treig', *Proc Soc Antiq Scot* 44: 16–17.

Blundell, F O 1913 'Further Notes on the Artificial Islands in the Highland Area', *Proc Soc Antiq Scot* 47: 257–302.

Bruce, J 1900 'Notes of the Discovery and Exploration of a Pile Structure on the North Bank of the River Clyde, east from Dumbarton Rock', *Proc Soc Antiq Scot* 34: 437–62.

Bruce, J 1908 'Report and investigations upon the Langbank pile dwelling', *Transactions of the Glasgow Archaeological Society* 5: 43–53.

Callander, J G 1911 'Notice of the discovery of two vessels of clay on the Culbin Sands, the first containing wheat and the second from a kitchen-midden, with a comparison of the Culbin Sands and the Glenluce Sands and of the relics found on them', *Proc Soc Antiq Scot* 45: 158–81.

Cavers, G 2010 *Crannogs and Later Prehistoric Settlement in Western Scotland*, BAR British Series 510. Oxford: Archaeopress. <https://doi.org/10.30861/9781407306407>

Cavers, M G & Henderson, J C 2002 'South West Crannog Survey, Dumfries and Galloway (Colvend and Southwick; Dunscore; Inch; Lochrutton; Mochrum, New Abbey; Old Luce; Sanquhar; Urr parishes), survey', *Discovery and Excavation in Scotland* 3: 26.

- Cavers, G, Crone, A, Engl, R, Fouracre, L, Hunter, F, Robertson, J & Thoms, J 2011 'Refining Chronological Resolution in Iron Age Scotland: Excavations at Dorman's Island Crannog, Dumfries and Galloway', *Journal of Wetland Archaeology* 10(1): 71–108.
<https://doi.org/10.1179/jwa.2011.10.1.71>
- Cooper, A & Green, C 2016 'Embracing the Complexities of "Big Data" in Archaeology: the Case of the English Landscape and Identities Project', *Journal of Archaeological Method and Theory* 23(1): 271–304. <https://doi.org/10.1007/s10816-015-9240-4>
- Copper, M & Armit, I 2018 'A conservative party? Pots and people in the Hebridean Neolithic', *Proceedings of the Prehistoric Society* 84: 257–75.
<https://doi.org/10.1017/ppr.2018.12>
- Crone, A 1993 'Crannogs and chronologies', *Proc Soc Antiq Scot* 123: 245–54.
- Crone, A 2010 'Forging a chronological framework for Scottish crannogs; the radiocarbon and dendrochronological evidence', in Midgley, M. S. and Sanders, J. (eds) *Lake Dwellings after Robert Munro: Proceedings from the International Seminar: The Lake Dwellings of Europe 22nd and 23rd October 2010, University of Edinburgh*, 139–68. Leiden: Sidestone Press.
- Dixon, N 1983 'A Survey of Crannogs in Loch Tay', *Proc Soc Antiq Scot* 112: 17–38.
- Dixon, N 1991 'The history of crannog survey and excavation in Scotland', *International Journal of Nautical Archaeology* 20(1): 1–8. <https://doi.org/10.1111/j.1095-9270.1991.tb00289.x>
- Dixon, N 2004 *The Crannogs of Scotland: An Underwater Archaeology*. Stroud: Tempus Publishing Ltd.

Fraser, H A 1917 'Investigation of the Artificial Island in Loch Kinellan, Strathpeffer. With a Report on the Bones and the Pottery', *Proc Soc Antiq Scot* 51: 48–98.

Fredengren, C 2002 *Crannogs: A Study of People's Interaction with Lakes, with Particular Reference to Lough Gara in the North-west of Ireland, Crannogs*. Bray: Wordwell.

Garrow, D & Sturt, F 2019 'Neolithic crannogs: rethinking settlement, monumentality and deposition in the Outer Hebrides and beyond', *Antiquity* 369: 664–84.

<https://doi.org/10.15184/aqy.2019.41>

Garrow, D, Sturt, F & Copper, M 2017 'Submerged Neolithic of the Western Isles. Interim Report (March 2017)', unpublished report. <https://doi.org/10.5284/1100101>

Grigor, J 1864 'Further Explorations of the Ancient Lake Dwellings in the Loch of the Clans, on the Estate of Kilravock, Nairnshire', *Proc Soc Antiq Scot* 5: 332–36.

Hale, A 2000 Marine crannogs: previous work and recent surveys, *Proc Soc Antiq Scot* 130: 537–58.

Hale, A 2004 *Scottish Marine Crannogs*, BAR British Series 369. Oxford: Archaeopress.

Harding, D W 2000 'Crannogs and Island Duns: Classification, Dating and Function', *Oxford Journal of Archaeology* 19: 301–317. <https://doi.org/10.1111/1468-0092.00111>

Henderson, J C 1998a 'Islets through time: the definition, dating and distribution of Scottish crannogs', *Oxford Journal of Archaeology* 17(2): 227–44. <https://doi.org/10.1111/1468-0092.00060>

Henderson, J C 1998b 'A survey of crannogs in the Lake of Menteith, Stirlingshire', *Proc Soc Antiq Scot* 128: 273–92.

- Henderson, J C, Holley, M W & Stratigos, M J 2021 ‘Iron Age construction and Early Medieval reuse of crannogs in Loch Awe, Argyll: new radiocarbon dates and analysis’, *Proc Soc Antiq Scot* 150: 435–49. <https://doi.org/10.9750/PSAS.150.1323>
- Henninger, M 2018 ‘From mud to the museum: Metadata challenges in archaeology’, *Journal of Information Science* 44(5): 658–70. <https://doi.org/10.1177/0165551517741790>
- Holley, M W 2000 *The Artificial Islets/Crannogs of the Central Inner Hebrides*, BAR British Series 303. Oxford: Archaeopress.
- Jamieson, R D 1822 ‘An Account of some Remains of Antiquity in Forfarshire’, *Archaeologia Scotica* 2: 14–30. <https://doi.org/10.1353/tyr.2020.0096>
- Jeffrey, S, Richards, J, Ciravegna, F, Waller, S, Chapman, S & Zhang, Z 2009 ‘The Archaeotools project: faceted classification and natural language processing in an archaeological context’, *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 367(1897): 2507–19. <https://doi.org/10.1098/rsta.2009.0038>
- Jones, S E, López-Costas, O, Cortizas, A M, Mighall, T M, Stratigos, M J & Noble, G 2022 ‘Lake and crannog: A 2500-year palaeoenvironmental record of continuity and change in NE Scotland’, *Quaternary Science Reviews* 285. <https://doi.org/10.1016/j.quascirev.2022.107532>
- Kintigh, K W 2015 ‘Extracting information from archaeological texts’, *Open Archaeology* 1(1): 96–101. <https://doi.org/10.1515/opar-2015-0004>
- Kitchin, R 2013 ‘Big data and human geography: Opportunities, challenges and risks’, *Dialogues in Human Geography* 3(3): 262–67. <https://doi.org/10.1177/2043820613513388>

Kitchin, R 2014 'Big Data, new epistemologies and paradigm shifts', *Big Data and Society* 1(1): 1–12. <https://doi.org/10.1177/2053951714528481>

Lenfert, R 2012 *Long-Term Continuity and Change within Hebridean and Mainland Scottish Island Dwellings*, unpublished PhD thesis, University of Nottingham.

Lenfert, R 2013 'Integrating Crannogs and Hebridean Island Duns: Placing Scottish Island Dwellings Into Context', *Journal of Island and Coastal Archaeology* 8(1): 122–43. <https://doi.org/10.1080/15564894.2013.766912>

Mackinlay, J 1857 'Notice of Two "Crannoges," or Pallisaded Islands, in Bute, with Plans', *Proc Soc Antiq Scot* 3: 43–6.

McArdle, C M & McArdle T D 1973 'Loch Awe Crannog Survey', *The Kist* 5: 2–12.

Midgley, M S & Sanders, J 2012 *Lake Dwellings after Robert Munro: Proceedings from the International Seminar: The Lake Dwellings of Europe 22nd and 23rd October 2010, University of Edinburgh*. Leiden: Sidestone Press.

Morrison, I 1985 *Landscape with Lake Dwellings: The Crannogs of Scotland*. Edinburgh: Edinburgh University Press.

Munro, R 1882 *Ancient Scottish Lake-Dwellings or Crannogs*. Edinburgh: David Douglas.

Munro, R 1885 'The lake-dwellings of Wigtonshire', *Archaeological and Historical Collections relating to Ayrshire and Galloway* 5: 74–124.

Munro, R 1893 'Notes of crannogs or lake-dwellings recently discovered in Argyllshire', *Proc Soc Antiq Scot* 27: 211–22.

- Piggot, C M 1953 'Milton Loch crannog I. A native house of the 2nd century A.D. in Kirkcudbrightshire', *Proc Soc Antiq Scot* 87: 134–52.
- Scott, W L 1951 'Eilean an Tighe: A Pottery Workshop of the Second Millennium B.C.', *Proc Soc Antiq Scot* 85: 1–37.
- Stratigos, M J 2018 'Loch drainage and improvement in Scotland', *Landscape History* 39(2): 71–89. <https://doi.org/10.1080/01433768.2018.1534459>
- Stratigos, M J 2021 'Island Dwellings at 60° North: New evidence for crannogs in Iron Age Shetland', *Oxford Journal of Archaeology* 40: 286–308. <https://doi.org/10.1111/ojoa.12225>
- Stratigos, M J & Noble, G 2018 'A new chronology for crannogs in north-east Scotland', *Proc Soc Antiq Scot* 147: 147–73. <https://doi.org/10.9750/psas.147.1254>
- Stuart, J 1866 'Notices of a Group of Artificial Islands in the Loch of Dowalton, Wigtonshire, and of other Artificial Islands or "Crannogs" throughout Scotland.' *Proc Soc Antiq Scot* 6: 114–78.
- Thomas, F W 1890 'On the duns of the Outer Hebrides', *Archaeologia Scotica* 5: 365–415.
- VanValkenburgh, P & Dufton, J A 2020 'Big Archaeology: Horizons and Blindspots', *Journal of Field Archaeology*. Taylor & Francis, 45(sup1), S1–S7. <https://doi.org/10.1080/00934690.2020.1714307>
- Wilson, D 1865 'Notice of a Collection of Primitive Implements of the Ancient Swiss Lake-dwellers, from Concise, on Lake Neufchatel', *Proc Soc Antiq Scot* 6: 376–86.

Table and Illustrations Captions

Table 1 Various crannog databases showing differences in terminology/classifications and geographic focus

Illus 1 Schematic representation of the relationship between crannogs, archaeological islands and natural islands as defined within this paper. Crannogs are contained within the black circle, archaeological islands by the grey dashed line

Illus 2 Number of times crannogs or related site types are mentioned in PSAS papers by publication date

Illus 3 Number of crannogs excavated by decade, demonstrating the strong foundations of antiquarian research. For sites that have been excavated in more than one decade, only the earliest date of excavation is shown

Illus 4 References to archaeological islands in PSAS literature broken down into predominate terms used by decade

Illus 5 Tree-map of all archaeological islands in the Outer Hebrides divided into Canmore classifications (in 2020), with the size of each box representing the proportion of that classification to the whole. Each image depicts a site that typifies the classification – note the strong visual similarities between an Iron Age/medieval dun (Canmore ID 9794) and a Neolithic crannog (Images by Stephanie Blankshein)

Illus 6 Geographic map of sites by classification, demonstrating the clear distinction in traditional terminology between the Northern and Western Isles and the rest of Scotland

Illus 7 Archaeological islands divided into nature of island (top) and certainty of existence (bottom)