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ISLAND DWELLINGS AT 60° NORTH: NEW EVIDENCE FOR CRANNOGS IN IRON AGE SHETLAND

Summary. *Re-evaluation of recorded sites and new field survey have identified 30 island dwellings in Shetland which are argued to be part of the wider Scottish Iron Age crannog building tradition. Four were subject t`o field survey above and below water and found to be at least partly artificial. The morphology, distribution and chronology of Shetland's artificial islands are discussed and compared to the rest of Scotland emphasizing their parallels. The results support the recent move towards considering islet duns and brochs as crannogs. These newly identified sites in Shetland underline the ubiquity of the crannog building tradition in Scotland. Through discussion of the morphology, distribution and chronology of crannogs in Shetland and the rest of Scotland, it is argued that artificial island dwelling is a widely shared cultural practice and an underlying principle of Scottish Iron Age settlement.*

INTRODUCTION

Artificial island dwellings are known in many parts of northern Europe in late prehistoric and historic contexts including Scotland (Morrison 1985), Ireland (Fredengren 2002), and in the Baltic (Pranckėnaitė 2014). The reasons for building and living on these islands remain difficult to pinpoint, but interpretations range from use as defensive refuges to places of connection to watery underworlds. Compared to Alpine lake-dwellings in central Europe, artificial island dwellings, or crannogs as they are known in Scotland and Ireland, are typically located tens or even hundreds of metres from the nearest shore. They are composed of a single, or a small number, of dwelling structures, but not agglomerations of dwellings akin to a village. Their exceptional preservation conditions have attracted serious study since the middle of the nineteenth century, but in Scotland they remain difficult to incorporate into wider archaeological narratives due to their wide distribution, morphology and chronology.

This paper presents new evidence for crannogs within the sub-arctic archipelago of Shetland, mostly north of 60°. Desk-based assessment and field survey indicates that Shetland's island dwellings are substantially artificial and should therefore be considered crannogs. These artificial island dwellings represent some of the most northerly examples of lake-dwellings known in Europe and have been overlooked in discussion of crannogs in Scotland (for exception see Lenfert 2013, 127–8). This paper explores what the presence of crannogs in Shetland means for

the wider crannog phenomenon set within the context of Iron Age Scotland.[1] The greater recognition of the ubiquity of crannogs in Scotland suggests that we must revisit some of the underpinning assumptions about how crannogs fit into the frameworks of monumental domestic architectural forms of the Iron Age. It is argued here that we should view the act of building and living on a crannog as an underlying principle of Iron Age settlement more akin to the concept of enclosure or the round form of houses, rather than a specific architectural form that can be categorized by different metrics. The evidence from Shetland's artificial island dwellings is particularly clear in supporting this view, and substantially re-orientates how we should treat the presence of crannogs in contemporary landscapes across Iron Age Scotland.

CRANNOGS AND IRON AGE SCOTLAND

Artificial island dwellings are now known to have been in use in Scotland since the Neolithic in at least the Outer Hebrides (Armit 1992; Garrow and Sturt 2019). Found throughout the entire country (Fig. 1), most crannogs directly dated (which stands at more than 70 of the approximately 600 known or possible crannogs in the country) show evidence for being initially built in the first millennium BC (Henderson 2009; Crone 2012; Henderson *et al*. in press). Crannogs continue to be built, frequently re-using existing crannog mounds but not always, through the first millennium AD and into the second millennium AD (Morrison 1985; Crone 2012). Surveys consistently identify timber and stone elements of construction (McArdle *et al*. 1973; Dixon 1982; Cavers and Henderson 2005; Stratigos and Noble 2017), and entirely stone construction in western and northern regions (Dixon and Topping 1986; Holley 2000; Cavers 2010). Typically, it is impossible to assign a chronological period to crannog use without excavation and/or ^{14}C dating – the latter most commonly achieved through sampling timber structural elements preserved on the loch bed around many of these structures (see Crone 2012; Table 1 for dating systems of Iron Age). Many crannogs contain exceptional artefactual and ecofactual material (Dixon 2004; Cavers and Henderson 2005; Crone and Campbell 2005), although artefact assemblages can be smaller than expected (e.g. Cults Loch, Cavers and Crone 2018). The artificiality of the island upon which some kind of structure(s) was located has been central to the definition of 'crannogs' as a site-type and it ties together their otherwise wide ranging morphological and chronological characteristics (Morrison 1985, 17–19).

Research on crannogs has usually taken a very regional approach, mirroring the general understanding of the Scottish Iron Age (Fig. 2). However, Iron Age crannogs have been found in significant numbers in every region of Scotland where researchers have looked for them (e.g. Henderson 1998a; Holley 2000; Lenfert 2012; Stratigos 2017). Repeated efforts by researchers have sought to bring artificial island dwellings more comfortably into the normative frameworks of the Scottish Iron Age, attempting to overcome the problem of crannog diversity by adding subtlety to the portmanteau definition of 'crannog' such that the broad spectrum of artificial island dwellings in Scotland could be broken down into culturally and/or chronologically meaningful

[1] Scotland is used here to refer to the present geographical territory comprised by the modern nation of Scotland. This is the most appropriate shorthand when considering the known distribution of Iron Age crannogs largely respects the modern boundary between Scotland and England, with no known crannogs in England despite surveys that attempted to find them. This includes notable concentrations of crannogs in Dumfries and Galloway north of the Solway Firth, while Cumbria to the south has no crannogs.

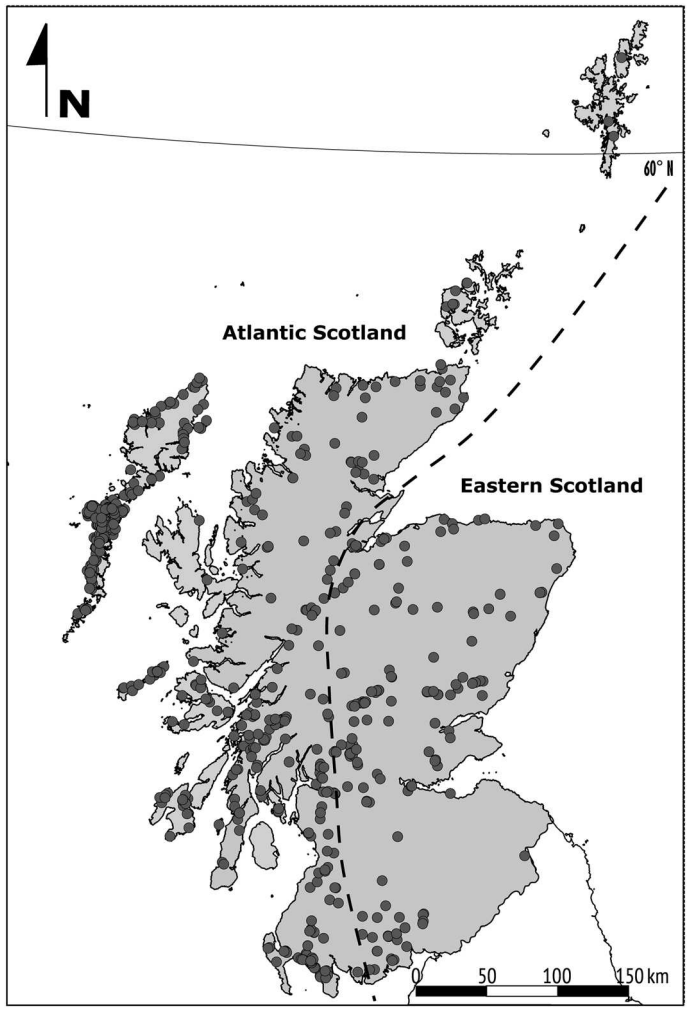

FIGURE 1
Location of Shetland and all previously recorded crannogs (data from Cavers 2010; Lenfert 2012; Stratigos 2017) with broad Atlantic/eastern regional boundary as proposed by Henderson 2007.

TABLE 1
Periodization in the Atlantic Scottish Iron Age. See SCARF 2012, 8–10 for discussion. Note that crannogs in Shetland and the rest of Scotland are built throughout this period – see Discussion – *Chronology* below in this article

Parker Pearson and Sharples 1999, 359.		Harding 2004, 3.	
Period Label	*Period Span*	*Period Label*	*Period Span*
Early Iron Age	700–100 BC	Early Iron Age	800 BC–AD 200
Middle Iron Age	200 BC–AD 400	Late Iron Age	AD 200–800
Late Iron Age	AD 400–900		

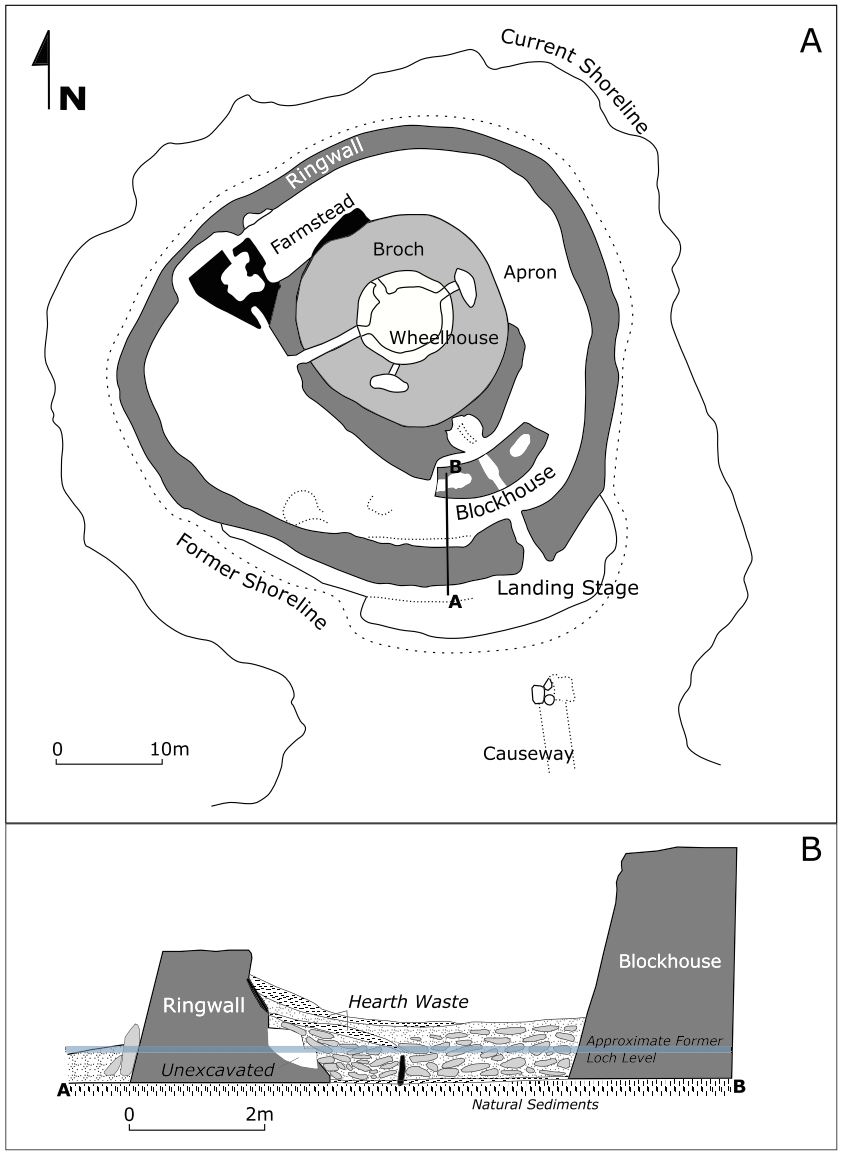

FIGURE 2
A) Plan of Clickimin Broch after Hamilton (1968, fig. 11) and Edwards *et al.* (2005). B) Section of Clickimin Broch deposits and structures after Hamilton (1968, figs. 8–11) with the likely former level of the loch prior to partial draining in the early twentieth century. [Colour figure can be viewed at wileyonlinelibrary.com]

groups (e.g. Morrison 1985; Henderson 1998b; 2009; Harding 2000; Cavers 2006a). More recent work has taken a different approach, suggesting that there has been far too much emphasis placed on material and superstructure architectural forms. Conceptually, so the argument goes, contemporary artificial islands are probably expressions of the same phenomenon (Harding 2007,

267; Rennell 2009; Cavers 2010; Lenfert 2013). This firmly ties together crannogs with islet duns and brochs, which had previously been recorded and discussed as separate settlement types, a distinction of different archaeological survey traditions between regions of Scotland rather than a real difference in the past (Lenfert 2013, 125–8).

This position, that crannogs and islet duns/brochs are all part of the same cultural tradition, is somewhat at odds with established frameworks for understanding the Iron Age in Scotland. The period has been defined by settlement types, classifying and grouping them into geographic regions suggesting cultural affinity between more closely aligned architectures (Feachem 1966; Piggott 1966; Hingley 1992; Cowley 2000, 168; Haselgrove *et al*. 2001; Pope 2003; Harding 2004; Henderson 2007). Despite long-standing calls to move away from understanding the Scottish Iron Age through settlement type distributions and wide acceptance of the shortcomings of such frameworks (Armit 1991, 204), the concept of settlement types representing cultural regionality that can be archaeologically understood persists (SCARF 2012, 16–17). The definition of roundhouse forms has drawn considerable debate in this regard, especially of the drystone brochs and duns common in Atlantic Scotland (MacKie 1965; Barrett 1981; Harding 1984; Armit 1990; Harding 2004; Henderson 2007; Romankiewicz 2011; *inter alia*). Crannogs have sat at the periphery of these debates on settlement patterns, and thus required the attempts mentioned above to bring them usefully into these discussions. More often, crannogs are pointed out as a stubborn enigma, but with potential to 'fill in' gaps in the material culture record thanks to their preservation (e.g. Pope 2003, 342).

The Outer Hebrides have seen the greatest research interest in islet duns and brochs and this includes significant excavation at An Dunan, Lewis (Church *et al*. 2013), Dun Bharabhat, Lewis (Dixon and Topping 1986; Harding *et al*. 2000; Harding 2000; 2007), Traigh na Berie, Lewis (Harding and Gilmour 2000) and Eilean Domnhuill, North Uist (Armit 1992). Landscape survey and geographic information systems analysis have also been applied to the study of island dwellings in the Outer Hebrides (Rennell 2009; 2010; 2012; 2015). There is a trend in this work where excavations at islet dwellings tend to draw parallels to other terrestrial broch and dun excavations (e.g. Church *et al*. 2013), while the landscape survey and other investigations have specifically emphasized the island setting of these sites (e.g. Rennell 2010; Lenfert 2013). Other regions in northern Scotland have seen much sparser investigation of islet dwellings with only initial surveys in Caithness on the mainland (Cavers 2006b) and Orkney (Dixon and Forbes 2004; Laureanti 2012) and to date, no specific artificial island research has been undertaken in Shetland.

ARTIFICIAL ISLAND DWELLING IN SHETLAND

In more recent collations of artificial island dwelling records in Scotland, only three crannogs have been identified in Shetland (Cavers 2010; Lenfert 2012; Table 2). However, islet brochs and duns in Shetland were recognized in antiquarian literature as 'crannogs', including Clickimin Broch which was noted as such in the nineteenth century (Stuart 1866, 176). Other artificial islands in Shetland were also discussed in the late nineteenth and early twentieth centuries (Blundell 1913, 286). Setting aside some early haphazard investigation and reconstruction of Clickimin Broch, the first recorded excavation of an island dwelling site in Shetland was carried out by Gilbert Goudie, a notable Shetland antiquary, at the Loch of Brindister Dun. His work here did not explore the potential connection between this islet dun and crannogs, rather it emphasized the similarity between the dun and better known broch towers (Goudie 1889). Goudie

TABLE 2
Sites identified as 'crannogs' in this study. Note the NRHE record number is provided; where the NRHE has not recorded the site in question, the Shetland SMR number is provided

Site Name	Fig. 3 Ref	NRHE ID#	Classification	NGR	Setting
Brindster Voe	1	HU25NE 6	Broch	HU 28470 57180	Marine
Brough Holm	2	HP50NE 3	Broch	HP 56560 05840	Marine
Brough Sound	3	HU44SE 4	Broch	HU 48860 41070	Tidal
Burga Water (West Mainland)	4	HU46SE 1	Broch	HU 48050 64100	Freshwater
Burga Water (Lunnasting)	5	HU25SW 5	Dun	HU 23410 53980	Freshwater
Burgastoo	6	HU36NW 7	Broch	HU 34520 65950	Marine
Burland	7	HU33NE 1	Broch	HU 38980 36940	Marine
Burra Holm	8	HU34NE 9	Broch	HU 38572 45821	Tidal
Castle Holm	9	HU34NE 1	Castle	HU 39530 47531	Marine
Clickimin	10	HU44SE 2	Broch	HU 46433 40815	Freshwater
East Burra Firth	11	HU35NE 2	Broch	HU 3580 5792	Marine
Gossa Waters	12	Shetland SMR (#506)	Mound	HU 25440 83820	Freshwater
Holm of Benston	13	HU45SE 18	Broch	HU 46320 53720	Freshwater
Holm of Califf	14	HU44NE 6	Broch	HU 45100 58200	Marine
Holm of Copister	15	HU47NE 1	Broch	HU 472300 77970	Marine
Mid-Holm of Hogaland	16	HU34NE 90	Broch	HU 396660 474320	Marine
Housa Water	17	HU24SE 12	Dun	HU 28840 44230	Freshwater
Law Ting Holm	18	HU44SW 11	Ting	HU 41802 43403	Freshwater
Loch of Brindister	19	HU43NE 9	Dun	HU 43260 37010	Freshwater
Loch of Brow	20	HU31NE 7	Broch	HU 38320 15610	Freshwater
Loch of Cliff	21	HP61SW 16	Crannog/Cairn	HP 60570 13460	Freshwater
Loch of Huxter	22	HU56SE 1	Fort/Blockhouse	HU 55860 62000	Freshwater
Loch of Kettlester	23	HU58SW 2	Broch	HU 51080 80550	Freshwater
Longa Skerries	24	HU45SE 15	Broch	HU 46980 51200	Marine
Mail	25	HU42NW 8	Broch	HU 43250 27790	Tidal
Ness of Burwick	26	HU34SE 4	Broch	HU 38810 40570	Tidal
Noonsbrough	27	HU25NE 5	Broch	HU 2953 5769	Marine
Orbister	28	HU37NW 1	Broch	HU 3126 7664	Tidal
Railsborough	29	HU45SE 16	Broch	HU 4555 5235	Tidal
West Burra Firth	30	HU25NE 4	Broch	HU 2562 5720	Marine

(1889, 249) admits that his excavations were cursory in nature, and that a wealth of information is preserved at the Loch of Brindister Dun waiting to be explored (see below *Loch of Brindister Dun*).

Clickimin Broch, excavated by John Hamilton in the 1950s, saw occupation spanning at least the Early Iron Age through to the later first millennium AD (Hamilton 1968, Fig. 3a). The interpreted phasing should be viewed with some scepticism as it seems as though Hamilton was unaware that the broch had been significantly rebuilt in the late nineteenth century (Smith 2015). Additionally, there is no radiocarbon chronology from the site, and artefact typologies are relatively imprecise in later prehistoric Shetland (Murray 2016). There is, however, detailed palaeoenvironmental data from a lake core taken from the Loch of Clickimin which supports some elements of Hamilton's (1968) phasing (Edwards *et al*. 2005). The excavation in the 1950s revealed that, in some areas of the islet, occupation layers sit immediately on top of natural sediment, while in other parts, occupation and structures are laid down over accumulations of anthropogenic deposits which would have brought the islet above the level of the loch (Hamilton 1968, 14–24, Fig. 3b). The material culture recovered from Clickimin Broch suggests long-distance trade networks, including several fragments of Roman glass produced in the Rhineland dating to between the first and third centuries AD (Hamilton 1968, 133).

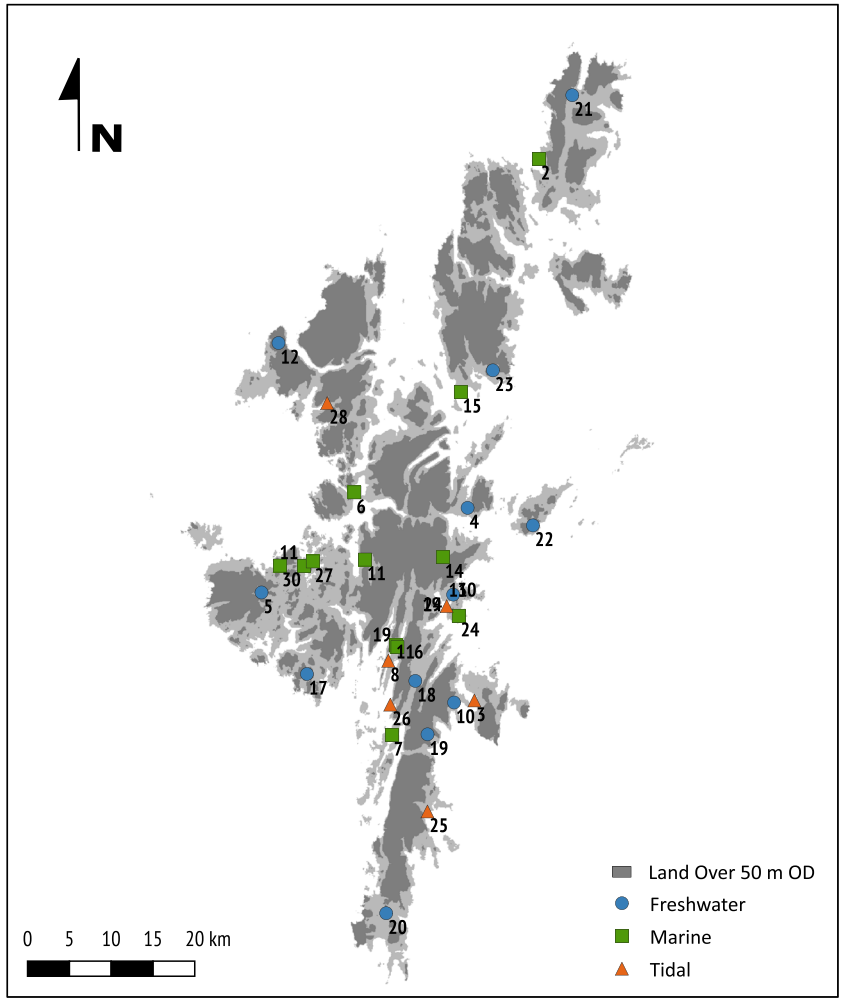

FIGURE 3
Sites identified in desk-based assessment. See Table 2 for Site ID numbers. [Colour figure can be viewed at wileyonlinelibrary.com]

The only other excavation of an islet settlement in Shetland has come recently at the Law Ting Holm, Tingwall. Excavation in 2011 demonstrated that there probably was a drystone roundhouse built on the islet prior to it being cleared in the ninth century AD to create the historically attested assembly or *ting* site (Coolen and Mehler 2014). Relatively little archaeology of any period was encountered with only a modest assemblage of Late Iron Age pottery, bone and iron slag. The excavation and former level of the loch demonstrates that the Law Ting Holm was an islet dwelling, with a natural bedrock foundation for the drystone superstructure. The degree to which the natural foundation was consolidated or altered is difficult to assess in light of the significant reworking from the ninth century AD onwards.

Investigations of Shetland islet dwellings have not specifically been interested in their connection to the wider artificial island dwelling phenomenon in Scotland; the totality of Shetland's islet dwellings remains largely unknown and under-reported. Wider discussion of artificial islet dwelling in Scotland has largely ignored Shetland and the islet dwelling sites it clearly contains. This oversight is likely due to competing and changing archaeological definitions through time and different survey traditions across regions in Scotland (see Henderson 1998a; Harding 2000; Lenfert 2013). However, it is clear from the above that an islet dwelling tradition existed in Shetland in the Iron Age. This realization spurred work in 2016 aimed at more robustly quantifying the number of islet dwellings and assessing how the islet dwellings of Shetland compare to those from the rest of Scotland. Specifically, how many island dwellings are extant in Shetland, and to what degree are they artificial?

New investigation: Assessing the records

An initial assessment of Shetland's Sites and Monuments Record (SMR) and the National Record of the Historic Environment (NRHE) was carried out. This identified sites consistent with expanded definitions for crannogs that includes artificial island dun and broch sites (Cavers 2010, 34; Lenfert 2013). These sites were then compared to modern satellite imagery (GetMapping Plc via Edina Digimap) to check their description and provide further confidence in their identification as an islet settlement. This desk-based assessment identified 30 sites across the SMR and NRHE plus a single site newly identified from aerial imagery analysis (Table 2; Fig. 4). Of these, 13 were located in freshwater lochs. Seventeen islets were identified in marine contexts, 11 of which are islands at all times and 6 are tidal islands. The majority of the sites identified are recorded as brochs, although some are recorded as duns and one site apiece as a mound, *ting*, crannog, castle and fort/blockhouse.

The relative proportion of marine islet sites in Shetland is somewhat unusual, but marine crannogs are not unique to Shetland. There are about 15 examples known elsewhere, especially on the Clyde and Beauly estuaries, characterized by low spreads of timbers and stone (Hale 2004). The Shetland marine islet sites are more diverse, ranging from apparently wholly artificial mounds similar to mainland crannogs (e.g. Burra Holm, see below) to slightly altered natural islets (e.g. West Burrafirth Broch). Shetland has seen a relative sea-level rise over the last 3000 years, so there is a question with some of the sites as to how much of an island they were at the time of their construction. However, despite very significant relative sea-level rise in the early and mid-Holocene, relative sea-level rise over the last 3000 years in Shetland has slowed. Precise relative sea-level curves are not available for Shetland, but regional models put total relative sea-level rise at a maximum of three metres in that time (Smith *et al.* 2019, 237–8). This means that the sites defined here as 'marine islands' have likely been at least tidal islands since their construction. It is possible that any of the six intertidal sites identified could have been connected by land to the hard shore (especially in areas of significant coastal erosion, e.g. Mail Broch, Cunningsburgh). Detailed study of the individual localities' relative sea-level, erosion rates and sediment regimes would be required for a definitive answer on whether any presently intertidal site was originally connected to the hard shore. However, Burland Broch, even in its present intertidal location, has a substantial stone causeway to the broch and that would only be necessary if it were at least tidal when built (Moore and Wilson 2014, 241).

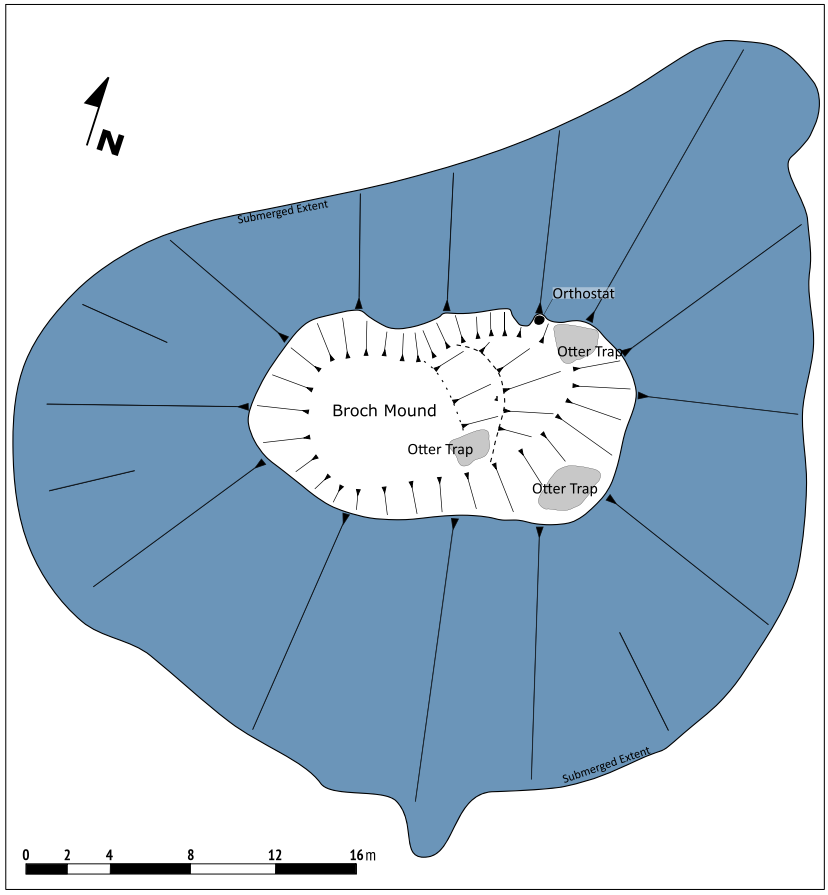

FIGURE 4
Plan of Burra Holm Broch, shaded area submerged at high tide. [Colour figure can be viewed at wileyonlinelibrary.com]

New investigation: Field Survey Approach and Results

None of the sites identified in the desk-based assessment had seen any submerged investigation, and the descriptions of the sites contained within the national and local monument records alone were not enough to determine the extent to which these islets were artificial. To test this, four sites were selected for field survey. They represent a range of different types of site identified in the desk-based assessment from a range of environmental contexts with different exposed features. Fieldwork comprised tape survey above and below water (with a snorkel) to establish the dimensions of each site and to assess their degree of artificiality. Tape survey and underwater observation has been routinely used in Scottish crannog research to establish the artificiality of island sites, and identification of accumulations of larger boulders and timbers used in the underwater construction is the best indicator for artificiality (see McArdle *et al*. 1973; Dixon 1982; Henderson *et al*. 2003; Cavers 2010).

Although the four sites surveyed as part of this investigation represented a range of different extant morphologies and environmental settings, the survey identified several key shared characteristics. First, all the sites have unequivocal evidence for substantial amounts of rock being brought to site to form the underwater foundation of the island. Second, three of the four sites surveyed had consolidated and augmented natural protrusions of bedrock, paralleling the excavated evidence from both Clickimin and the Law Ting Holm. Additionally, all four sites investigated have upstanding superstructures or surface features which would not be out of place in contemporary terrestrial contexts.

Burra Holm, Stromness Voe. Burra Holm is recorded as a broch in the Canmore database and the Shetland SMR, and no previous work had been carried out on the site. The islet is described as a broch mound with a possible causeway, separated from shore by between 20–30 m depending on the state of the tide. Above water, the broch mound is 19 x 10 m in diameter, while underwater the site is 38 x 30 m (Fig. 5). The boulders which make up the islet mound range in size from 0.2–1 m in diameter. Underwater the boulder layer slopes evenly out on all sides until meeting a silty sand marine sediment. Below high-tide, there are littoral seaweed species (wrack (*Fucus* sp.)

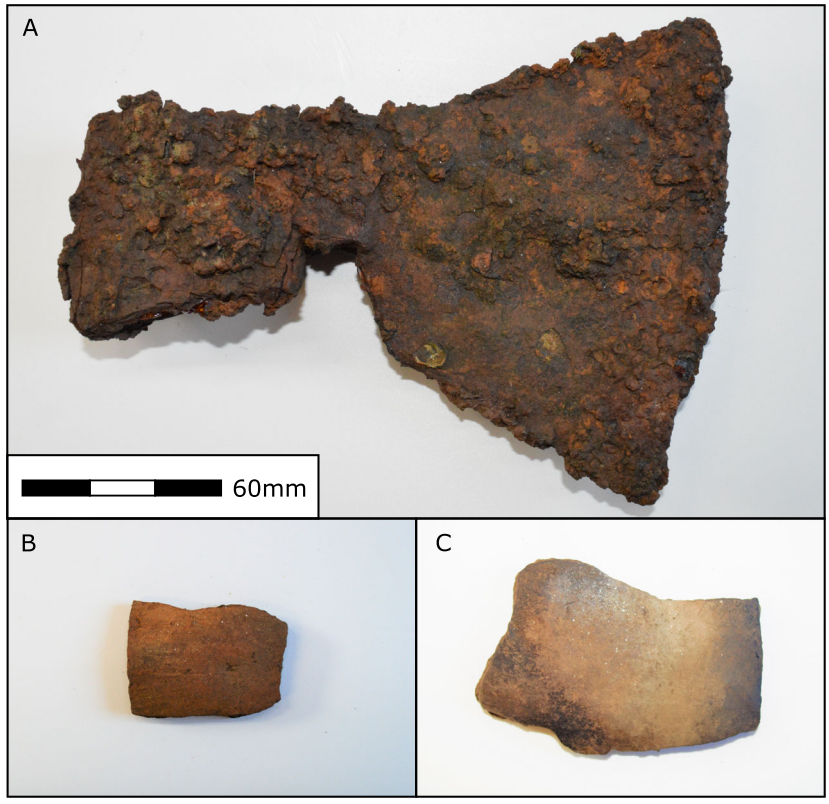

FIGURE 5
Artefacts recovered from Burra Holm Broch: A) iron axe, B/C) Late Iron Age body sherds. [Colour figure can be viewed at wileyonlinelibrary.com]

and kelp (*Laminaria* sp.)) on the boulders which make up the islet, and these trace the extent of the islet underwater. Examination between the voids of the exposed boulders at different points around the islet underwater found that the uppermost boulders on the islet sit atop further layers of boulders. Above water, there is an upright stone or orthostat exposed on the north-east side of the islet, and in other places laid courses of drystone masonry can be observed. An iron axe of unknown date was also recovered during the survey sitting on the surface of the mound. The landowner had recovered two sherds of Late Iron Age ceramic not long before the survey in 2016, possibly from an area of active erosion on the south side of the islet (Fig. 5).

Castle Holm (Black's Castle), Strom Loch. Castle Holm is located on a small ovoid islet in Strom Loch, connected to the shore by a stone causeway (Fig. 6). Strom Loch is a brackish body of water connected to the sea, via Stromness Voe, by a narrow strait *c*.20 m across. The upstanding masonry comprising the remains of a small castle might be a very early example of stone with lime mortar castle-building in Scotland, dating to the twelfth century AD (Smith 2007). The islet above high tide measures 20 x 7 m. Underwater survey and inspection (with a snorkel) revealed that the site below the surface is nearly identical to Burra Holm, medium to large boulders covered in seaweed species, extending underwater to 34 x 24 m. Again, further layers of boulders were found below the uppermost exposed layer, suggesting anthropogenic accumulation. The causeway is also composed of medium to large boulders with very large voids between the rocks. It is unclear how the causeway would have appeared when in use, as a paved surface or as uneven stepping-stones — both of which have parallels elsewhere in Shetland and the rest of Scotland. It is also unclear if Castle Holm is single-phase, built contemporary to the castle, or if earlier phases are also present — excavation would be required to answer this question.

Mid-Holm of Hogaland, Strom Loch. The Holms of Hogaland are three small islets located within Strom Loch about 200 m east of Castle Holm. The Mid-Holm was targeted for survey when a possible causeway and island dwelling, previously unrecorded, were noted in Historic Environment Scotland aerial photographs by Claire Christie in summer 2016 while undertaking the Shetland SMR Polygonisation Project with the Shetland Amenity Trust. When the site was surveyed in the field, it identified a massive-walled drystone roundhouse, probably the remains of a broch. Upon speaking to local residents, it transpired that the causeway and probable broch had been known to the landowner all her life, and was also known to others in the area. The site is nearly circular with a diameter of 15 m and an internal depression 4 m in diameter. The exterior walls of the internal depression feature are approximately 5.5 m in thickness (Fig. 7a). Exposed in eroded sections around the edge of the islet are medium to large boulders, some of which appear as *in situ* laid masonry (Fig. 7b). It would seem that much of the outer wall face has been lost to erosion or removal. Around the well-defined internal depression, there are three other depressions, possibly the remains of secondary phase roundhouses (Fig. 7). On the west side of the islet, there is a small (less than 2 m diameter) exposure of bedrock.

Underwater survey and observation of the islet again identified the surface to be made up of medium to large boulders mostly covered in wrack and kelp. There was no exposed bedrock making up the islet underwater, except for where the small section above water was found. These boulders sloped regularly down until meeting the natural sandy silt marine sediment. A similar pattern is observable on the causeway, also made up of substantially similar, medium to large boulders,

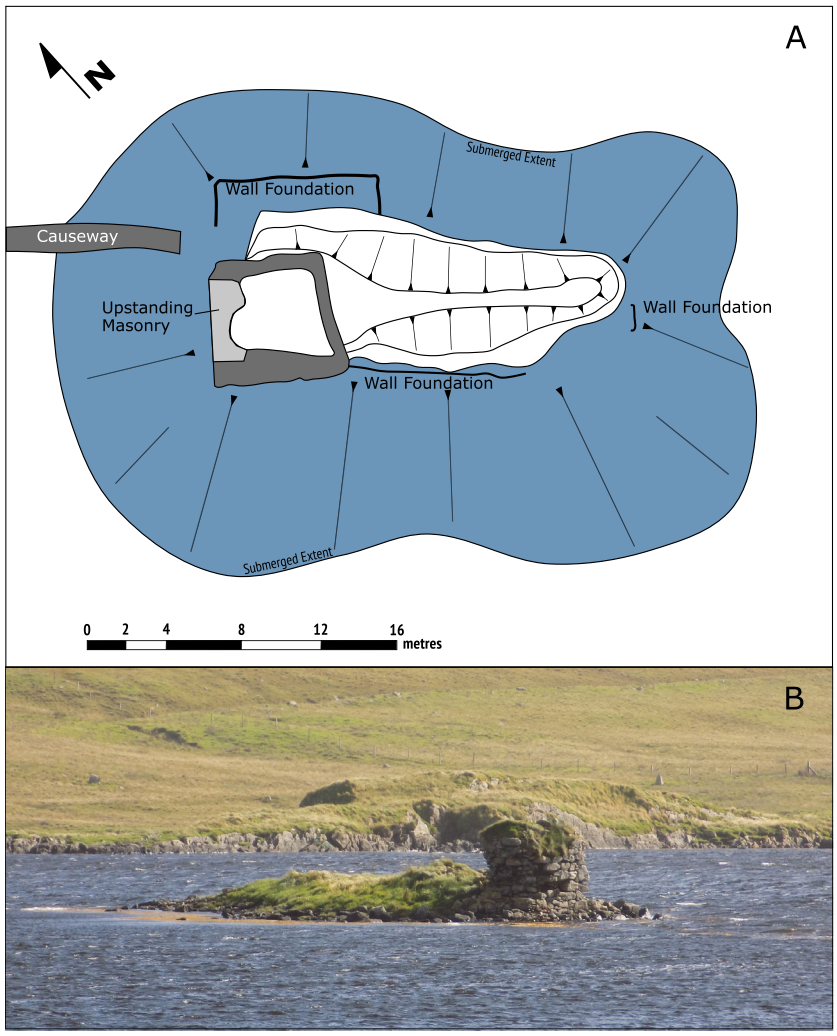

FIGURE 6
A) Plan of Castle Holm, shaded area submerged at high tide. B) Photograph of upstanding masonry on the islet. [Colour figure can be viewed at wileyonlinelibrary.com]

covered in seaweed. The width of the causeway at its base ranges from 2–3 m, while the top of the causeway ranges in width from 0.5–0.7 m, and is permanently submerged. The causeway comes ashore at a small but prominent outcrop of bedrock, the only outcrop along this portion of the shore of Strom Loch; the nearest other outcrop of bedrock is that on the Mid-Holm itself.

Loch of Brindister Dun, Loch Brindister. Loch of Brindister Dun is located in the virtual centre of the Loch of Brindister. It has been variously described as a broch, dun and crannog (Goudie 1889;

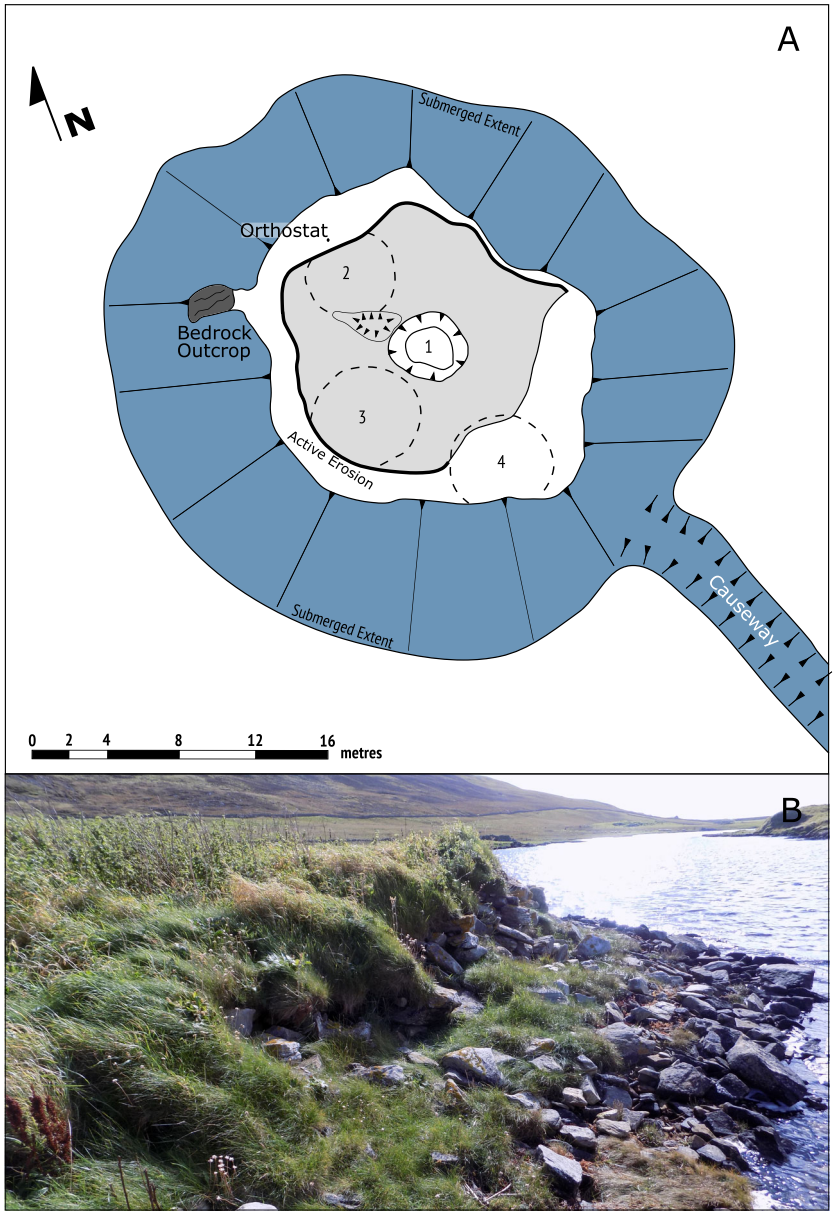

FIGURE 7
A) Plan of the Mid-Holm of Hogaland (Number 1: internal depression. Numbers 2–4 are possible secondary roundhouses), shaded area submerged at high tide. B) *in situ* masonry in an area of active erosion in the broch wall. [Colour figure can be viewed at wileyonlinelibrary.com]

RCAHMS 1946, 72; Lenfert 2013, 128). Excavation by Goudie (1889, 248–9) appears to have involved little more than exposing some occupation deposits near the entrance. The new survey confirmed the presence of a relatively thin walled drystone structure (Fig. 8). Underwater survey

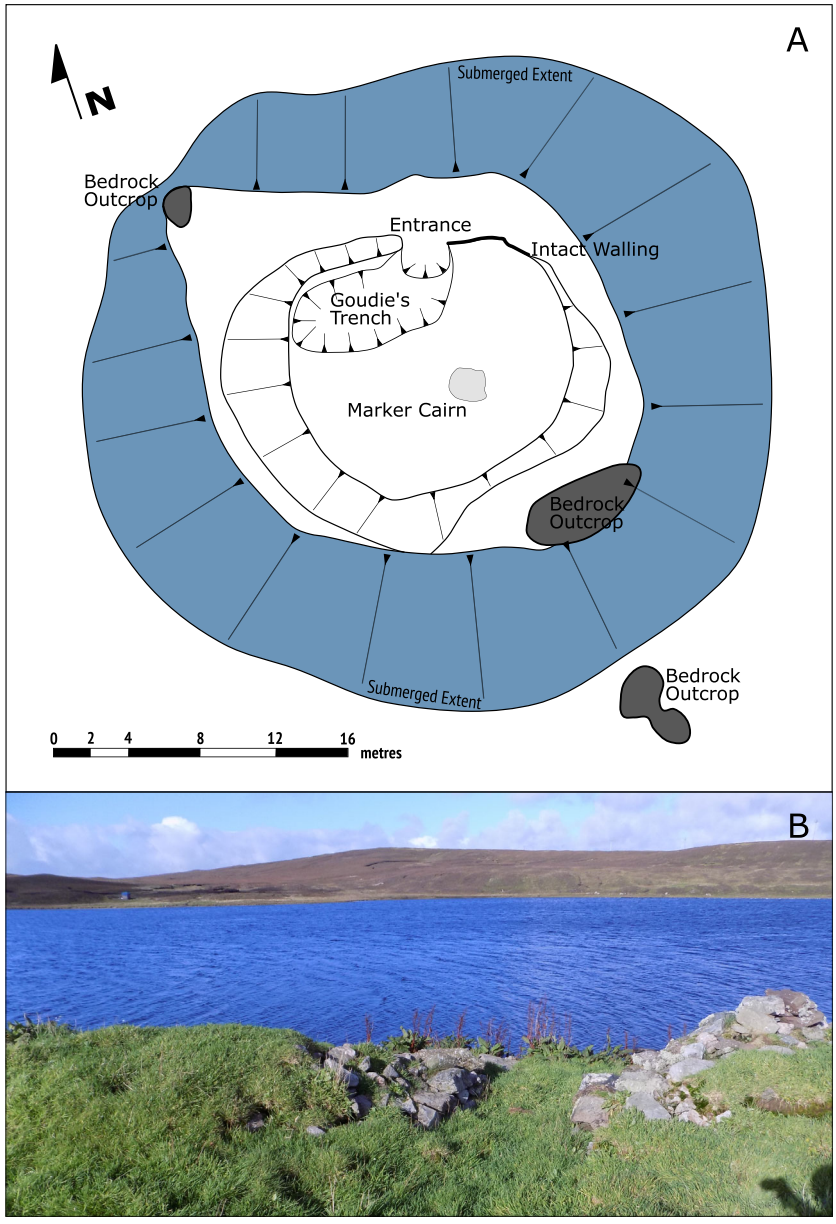

FIGURE 8
A) Plan of Loch of Brindister Dun. B) Entrance looking north. [Colour figure can be viewed at wileyonlinelibrary.com]

revealed that the islet sits on a partially artificial platform that links together outcrops of bedrock. Unlike the marine and brackish contexts of the other islets investigated, in this freshwater loch no seaweed species obscured observation of the underwater portions of the islet. The stones making up the artificial island are somewhat smaller on average than those in marine contexts (0.1–0.5 m), with a sharp edge between the islet mound and finer natural loch sediment.

DISCUSSION

Morphology

The main results of the field survey presented here show similar overall size and islet composition to other crannogs. In other words, there are no morphological grounds on which to exclude the 30 islet sites identified here from consideration as crannogs (*as per* Harding 2007, 267; Cavers 2010, 34; Lenfert 2013). The field surveys also threw up a number of key morphological commonalities between the artificial islands of Shetland, the Western Isles and other parts of northern and western Scotland. The most apparent commonality is the lack of timber used in their construction, reflecting availability in these mostly treeless islands. This stands in contrast to much of what has dominated attention during the survey and excavation of crannogs in mainland Scotland (Dixon and Topping 1986; Holley 2000; Dixon 2004; Crone and Campbell 2005; Cavers 2010; Cavers and Crone 2018). Artificial island dwellings identified in Shetland also share their range of drystone superstructures with examples from elsewhere in northern and western Scotland. As in the Outer Hebrides, the full range of Shetland's Iron Age terrestrial archaeological record is reflected on these artificial islands. This includes brochs, but also two of the four securely identified 'block houses' in Shetland (Carter *et al*. 1995).

A possible point of distinction between Shetland's artificial island dwellings and the rest of Scotland is the frequent use of natural bedrock outcrops as a foundation compared to mainland sites. However, this is perhaps less of a distinction than appears at first glance, since examples of more typical crannogs at Ederline, Loch Awe (Cavers and Henderson 2005) and Eilean Breaban, Loch Tay (Dixon 1982) also consolidate bedrock prominences. The reasons for using bedrock outcrops may lie simply in the reduction of material required to build the island, or that they provide a sturdier foundation for a heavy stone superstructure. However, the spectrum of natural rock outcrops used in Shetland ranges from near completely artificial construction (e.g. Burra Holm) to only minor augmentation of mostly natural islets (e.g. Law Ting Holm). Marine sites like Mail, West Burrafirth and the Holm of Copister are ostensibly natural islets, but their construction consolidates virtually the entirety of each islet into the broch structure. However, there is a point at which preference is given to augmenting or consolidating small islets over simply building on a more substantial natural island. This is clearly seen at the Holms of Hogaland where two natural islets are located immediately adjacent to the Mid-Holm Broch (Fig. 9). Again, this parallels sites across mainland Scotland where artificial islands are built in lochs that possess natural islands (e.g. Loch Awe, McArdle *et al*. 1973; Loch Lomond, Baker and Dixon 1998). To exclude Shetland's artificial island settlements from consideration as crannogs on the basis that they use natural bedrock outcrops means also excluding these crannog sites otherwise thought typical. With natural islets available offering all the same functional benefits of island dwellings, the choice to expend significant further effort to substantially build the island itself requires explanation.

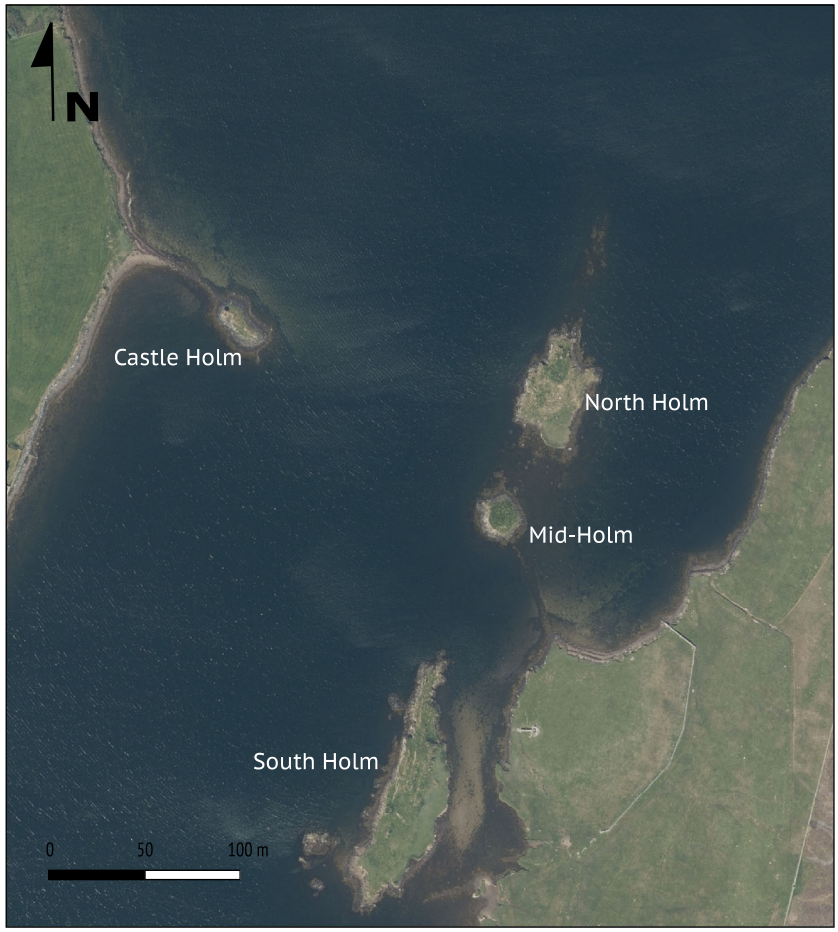

FIGURE 9
Satellite of the Holms of Hogaland. The North and South Holm islets provide the same functional aspects to island dwellings, but the choice was made to substantially construct an artificial island – the Mid Holm of Hogaland. Satellite Imagery: © GetMapping Plc. [Colour figure can be viewed at wileyonlinelibrary.com]

Distribution

The addition of the 30 sites identified in Shetland adds a substantial number of previously unrecognized artificial island dwellings and takes the total number of crannogs in Scotland to over 600 (Lenfert 2012; Stratigos 2017). This is a density of one crannog per 40 km^2 across the archipelago. This calculation for the prevalence of crannogs was used by Robert Lenfert (2013, 135) to highlight the Western Isles as having the greatest density of artificial island dwellings in Scotland with one site in every *c*.20 km^2. The next densest region of islet dwelling, Argyll, has one artificial island dwelling for every *c*.80 km^2. It is worth noting that there are probably further artificial island dwellings in Shetland that were not identified in this desk-based assessment and

survey, as they are fully submerged and thus unrecorded. The discovery of the Mid-Holm of Hogaland during this study supports this possibility. Although recent work has suggested that the distribution of crannogs is less weighted to western or Atlantic Scotland than previously thought (Stratigos 2016; Stratigos and Noble 2017), the results support the idea that artificial island dwellings have their greatest concentrations there (Henderson 1998a; 2009; Cavers 2010, 29–32). This could be argued to indicate that, whatever the drivers for building artificial island dwellings, they were most relevant to Atlantic regions of Scotland. However, it may simply reflect the fact that there are a greater number of suitable locations to build crannogs (i.e. lochs within areas reasonably well populated) compared to eastern Scotland.

Trying to explain the wide occurrence of artificial island-dwelling geographically and chronologically is very difficult when viewed within the existing frameworks for understanding Iron Age settlement architecture. They cross virtually every boundary proposed for recognisable groups of Iron Age settlement types. It is also very difficult to sustain interpretations that see crannogs as a response to specific stimuli that apply locally or regionally, such as increased levels of conflict or economic instability (cf. Cavers and Crone 2018, 240–2). The alternative is to view crannogs as a response to external stimuli which apply very widely, for example climate change. However, even with a widely applicable postulated stimulus and limiting discussion only to the Iron Age, that all regions in Scotland respond by building crannogs still presupposes a very widely shared cultural understanding that small artificial islands were essential places to build domestic structures. This understanding of watery locales in Iron Age Scotland cuts across the notional regional boundaries in Scotland, including the broadest such definition between Atlantic Scotland and eastern/lowland Scotland. This circumstance blurs further some of the key underpinning framework for how we conceive of Iron Age Scotland.

Alternatively, the broad adoption of crannogs might suggest that the practice of building and living on islands is fundamental to Iron Age settlement practices in Scotland, akin to enclosure or building round houses. This may be a more useful way to view crannogs; not as a settlement or architectural type defined by material, construction technique or presence/absence of architectural features, but rather as an underlying principle of the house-centric societies of the Scottish Iron Age. Such a view might support Tanja Romankiewicz's recent reappraisal of the broch/dun building tradition in Scotland (2016) linking the more granular architectural choices (with material choices mostly reflecting environmental factors) to the expression of different identities, ambitions and the success of the households responsible for their construction, rather than the classification of the site based on archaeological definitions of these 'site types'. She highlights in her (2016) study an islet dun, Dun Bharabhat, Lewis, and specifically sets out how its islet setting helped emphasize its outwardly impressive façade. In the same way that other geographic locations (e.g. hill tops and promontories) were places to be enclosed with earthworks and timber palisades, so too islets were places to be erected and dwelt upon whether with timber pile dwellings, stone mounds or some combination thereof. This may also explain why the full range of superstructure architectures are found on artificial islands in Shetland, the Western Isles and mainland Scotland, as has been recently argued (Cavers and Crone 2019, 122–3). The superstructure architecture did not *a priori* require an artificial island foundation; rather, artificial island settlements were selected (needed?) and adorned with existing or emergent domestic architectural traditions (but see Romankiewicz 2018 for discussion of the primacy of 'domestic' roundhouses in Iron Age Scotland). That the initial move to building and living on islands in water is increasingly being pinned (through dendrochronology and radiocarbon wiggle-match dating) to a few centuries in the mid-first

millennium BC across all of Scotland points to strong networks of communities with deeply shared understanding of what bodies of water meant and how that related to domestic architecture.

Chronology

The chronology of Shetland's artificial island dwellings remains mostly unknown, and the desk-based identification of new sites and field survey have not substantially moved this forward. Further work establishing chronologies for these newly identified crannogs is now needed. The only island dwelling in Shetland with sufficient chronological evidence in the Iron Age to compare to mainland Scotland crannog building is Clickimin Broch. Although the chronology of Clickimin is poorly constrained, re-evaluation of the site and assemblage shows it aligns broadly with many crannog site chronologies. Hamilton's (1968) original phasing sees a Late Bronze Age origin, however, more recent re-examination has thoroughly rejected a Late Bronze Age at the site (Fojut 1998; Smith 2015) and proposed a mid-first millennium BC origin, based on a ceramic evidence (Murray 2016, 152). Additionally, a pollen core from Clickimin Loch suggests increased activity in the mid-first millennium BC which might be coincident with the initial major phases of construction of the Clickimin broch as an occupied islet (Edwards *et al*. 2005). This would align with the mainland crannog tradition which has refined dating of crannogs on the Hallstatt Plateau of the radiocarbon calibration curve to the sixth century cal BC at the earliest, so far (Cook *et al*. 2010; Cavers and Crone 2018). Construction and occupation at Clickimin continued throughout the Iron Age into the middle of the first millennium AD with later phases of broch construction and a post-broch wheelhouse (Hamilton 1968, 125–60). Major occupation of the site probably ends in the first millennium AD. This mid-first millennium BC to mid-first millennium AD chronology is closely paralleled by a number of crannog sites around Scotland (Cavers and Henderson 2005; Dixon *et al*. 2007).

Outside of Clickimin Broch, there is further evidence from other artificial islands in Shetland such as the Law Ting Holm for construction or occupation in the first millennium AD. The two sherds recovered from Burra Holm likely date to the first millennium AD, and the probable later phase roundhouses at the Mid-Holm of Hogaland also seem to be likely candidates for further mid-first millennium AD activity. Castle Holm is the only artificial island in Shetland which has unequivocal settlement evidence extending into the second millennium AD. Second millennium AD phases of crannog use are common across most of mainland Scotland, as is even more recent opportunistic re-use of crannogs evidenced in Shetland by the historic otter traps at Burra Holm (Shelley 2009; Stratigos 2017). Although we await further programmes of dating on the Shetland artificial island dwellings, it appears on balance that their chronologies parallel wider patterns. Just how closely Shetland's crannogs mirror the chronologies of crannogs in the rest of Scotland is now a matter of priority: to understand when, and perhaps why, the tradition of building and living on islands emerged in the mid-first millennium BC.

Although this paper has dealt exclusively with the Iron Age phenomenon of crannog building, it is worth highlighting that Shetland may be among the more promising regions to search for further Neolithic crannogs (see Garrow and Sturt 2019 for discussion of Western Isles). Neolithic phases of crannogs remain to be found outside of the Outer Hebrides, but there are close

geographical and preservation parallels there to the freshwater islets identified here in Shetland. How Neolithic artificial islands are related to the Iron Age and later crannog tradition remains to be understood, especially in light of the Bronze Age hiatus in crannog building separating the two by at least 1500 years and probably more. In this author's view, they need not necessarily be connected at all, beyond the use of the archaeological term 'crannog' to describe them.

CONCLUSION

The 30 sites identified in this study should be considered as part of the wider crannog building tradition in Scotland. Their morphological characteristics, wide distribution and chronology all mirror broader trends in crannogs across Scotland. These newly identified sites take the total number of recorded crannogs throughout Scotland to over 600 and populate one of the final regions of the country where few crannogs had previously been widely recognized. The addition of further crannogs in Shetland serves to underline the ubiquity of the artificial island-building phenomenon across Scotland, cutting across the nominal boundaries of settlement and architectural type frameworks in Iron Age Scotland. For the wider discussion of Scottish crannogs, this represents a further, or indeed final, step to considering islet duns and brochs as a full part of the crannog phenomenon. The significance of this ubiquity lies in the suggestion of a very widespread adoption of a new idea, building and living on an island, that increasingly appears to be co-incident very widely across Scotland in the middle of the first millennium BC. It is a matter of urgency to obtain better temporal resolution for crannogs in Shetland to examine just how chronologically tight the adoption of artificial island building was, across such disparate locations and geographies. Although the Scottish Iron Age is generally viewed as intensely regional, crannog building and dwelling is a widely shared cultural practice fundamental to settlement patterns in Iron Age Scotland, stretching from Shetland at 60° north to Dumfries and Galloway and everywhere in Scotland between.

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