Båtlämning och barlast vid Resö

Marinarkeologisk förundersökning
Lur 594 och 595
Resö 3:24, Lurs socken, Tanums kommun
Delia Ni Chiobháin Enqvist
Bohuslänsmuseum
Rapport 2013:30
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Figure 1. Section of Sverigekartan with the investigation area marked.
Svensk sammanfattning


Museet har efter avslutad förundersökning således inget att erinra mot den föreslagna detaljplanen.

Abstract

In October 2012 Bohusläns museum conducted a preliminary archaeological investigation on behalf of Tanums kommun in response to Tanum kommuns zoning plans for the harbour of Resö (figures 1–3). The investigation concerned the previously identified and surveyed wreck site of Lur 594 and the ballast site Lur 595. The various wreck elements of Lur 594 were located and raised to be recorded on land. The extent of the site was defined by a number of test trenches. Dendrochronological samples were not possible to date, but a previous analysis yielded a felling date of after 1877. Lur 595 was investigated further and the northern ballast mound, named Mores grund, was found to be comprised of two separate ballast mounds in close proximity to one another. Samples of the ballast were raised for macroscopical petrographic examination and it was found that they consisted of various rock types sourced both locally and from afar. As a result of the investigation it is the opinion of Bohusläns museum that the sites Lur 594 and 595 are to be considered fully investigated with the investigation concluded Bohusläns museum therefore have no objection to the proposed work.

Background

In October of 2012 Bohusläns museum was contracted by Tanums kommun to conduct a preliminary archaeological investigation (förundersökning) in the harbour of Resö in Lur parish, Tanums kommun (figure 3). The investigation was conducted between 1st and 5th of October with a Länsstyrelsen decision (dnr 431-24858-2012) and was in response to Tanum kommuns zoning plans for the harbour. Plans for the harbour include the construction of an entrance to Kosterhavet Marine Park (Kosterhavets nationalpark) as well as a small boat marina.

This archaeological investigation follows from an archaeological survey conducted by Bohusläns museum in October 2011 when five previously unregistered cultural monuments were discovered. These include two wreck sites (Lur 594 and Lur 596), a ballast site (Lur 595), a cultural layer (Lur 598), and a pier foundation (Lur 597). Timbers from the site of Lur 594 were dated with dendrochronological analysis and provided a date of felling of after 1877. The timber was determined to have most likely come from Jutland in Denmark (Gainsford 2012). The archaeological investigation concerned with in this report focused on the removal and analysis of the wreck site Lur 594 and investigation of the ballast site Lur 595.

Purpose

The purpose of this archaeological investigation was to assess and describe the extent and features of the ancient monument sites Lur 594 and 595 prior to the planned development. The results of the investigation will serve as a basis for Länsstyrelsen and Tanums kommuns planning of the proposed development.

Cultural environment

There are several known tomtnings sites connected to the investigation area (Lur 113:1, 114:1, 115:1, 116:1, 232:1, 256:1, 257:1, 257:2, 257:3, 612, 614, 616), as well as port facilities (Lur 256:2). Within a few kilometers radius of the investigation area there are no registered ship remains. However, there are records of founderings (53,
Figur 2. Karta över förundersökningsområdet. Skala 1:20 000.

Figure 2. Map showing the investigation area. Scale 1:20 000.
Figur 3. Karta över förundersökningsområdet. Skala 1:10 000.

Figure 3. Map showing the investigation area. Scale 1:10 000.
OKÄND: 59, Tjärnö 174, 180 and 181) and so the presence of undiscovered vessel remains in nearby waters can not be excluded.

Tomtning sites have traditionally been assumed to be remnants of seasonally used dwellings, associated mainly with fishing but also to the hunting of seals and waterfowl. It is unknown how these primitive dwellings were originally constructed but it is assumed that they would have been covered with a simple roof type for protection against the elements. On the Swedish west coast in particular there has been an effort to place these sites in the context of recorded historical herring fishing periods during the medieval period and modern times. Despite the large number of known tomtning sites relatively few have been studied and so our knowledge of these remarkable cultural monuments remains fragmented (von Arbin 2003).

Tomtning sites on Resö and the surrounding islands indicate that people used the area during the fishing seasons. A Norwegian map from 1843 shows an anchorage in the so-called Hamnsundet, between the islands Resö and Bissen (figure 4). There is reason to believe that the area may have been used as a port for centuries due to the area within Hamneholmen being well protected. The numerous tomtning sites also give weight to this assessment.

**Written sources**

In the late 1300s Resö is first mentioned in written sources where it is stated that the Church and Crown were landowners of Lilla Resö.

In a tax roll (skattelängd) from 1544, there are five men listed as taxpayers on Resö, meaning there were as many families. In Bohuslänns first complete population tax register (skattemantalslängd), established in 1610, there are records of strandsittare, six of whom were on Resö. Strandsittare made a living from fishing and resided in close proximity to the water. They were not landowners but leased or squatted on land with the owners’ knowledge. In the 1666 register there is mention of five farms on Resö where fishing had also occurred before (Pettersson 1953:81,127). The population of Resö increased subsequently from 53 inhabitants in 1850 to 460 inhabitants by 1910.

During the most recent historic herring fishing period, between 1877 and 1904, there were fourteen herring salteries on Resö, with five to six at the port itself. These were called Kyrkan, Finkan, Hinkan, Minkan and Törrebo. There were two herring warehouses and salteries at Holmsbacken and Oljeskär (Gustavsson 1995). In the 1930s the last saltery was demolished (Högström 2002).

Following the end of the herring period most Resö inhabitants returned to agriculture (Högström 2002, Westerlind 1982). With new large ships, the so-called kuttrar (English smacks) that were bought from England with herring money; fishing became again a main industry. Different fishing areas began to be used, such as mackerel fishing in the North Sea and herring fishing around Iceland, and freight was shipped along the coastal Skagerrak and Kattegat (Lind 2010).

In the 1930s a new port was built on Resö. The construction resulted in parts of the shore being filled out, as well as the building of a T-pier and three stone piers. The work finished in 1935 (Anonymous 2004) and at this time there were 26 fishing boats based at Resö. In recent times the southern entrance to the harbour was developed resulting in a connection between Hamnholmen and Resö (Högström 2002, Westerlind 1982).

**Previous investigations**

In 2011 a maritime archaeological survey was conducted in the harbour of Resö and adjacent areas. Five new sites were surveyed and registered, among them the two sites, Lur 594 and 595, which later were investigated and now
are being described in this report. Lur 596 is the remains of a wreck located adjacent to and partially covered by the stone pier that forms the entrance to the harbour. Broken planking and frames were visible on the site and the wreck was estimated to have originally measured circa 20 meters long. The age of the wreck is difficult to ascertain but it may have been used as foundation material during the harbours renovations in the 1930s. Lur 598 is a cultural layer encompassing an area within the entrance to the harbour. Finds from the layer included bones, redware ceramics and a plank from a carvel-built vessel. Lur 597 is the site of a stone pier foundation which was comprised of hewn stones and may have been used during the last herring period (Gainsford 2012).

Lur 594 is the ancient monument site of a wooden clinker-built boat with treenail fastenings (figure 5). Timber samples taken from planking were dated with dendrochronological analysis and provided a date of felling of after 1877. The timber was determined to have most likely come from Jutland in Denmark. The ballast site Lur 595 consists of two ballast mounds. The northern mound, known locally as Mores grund, has an irregular shape and consists of a variety of ballast material. It is located on a slope with water depth ranging from 0.5 to 2 meters. The southern ballast mound is
located at a depth of 7–9 meters and consists of slag/ore (Gainsford 2012).

**Method**

Fieldwork for the preliminary archaeological investigation was conducted between the 1st and 5th of October 2012. All diving was carried out with tethered surface-supplied diving and diver-surface communications in accordance with the Work Environment Authority’s (Arbetsmiljöverkets) regulations of commercial diving (AFS 2010:16) and the diving standards of Bohuslän museum. Archaeological remains, trenches and sampling locations were positioned by means of DGPS.

**Lur 594**

The site extent of Lur 594 was established by visual inspection, probing the sediment, and the excavation of four test trenches located around the wreck site with the use of a water dredge. Material was dredged into net bags and subsequently sieved for finds. The main components of the wreck that remained in situ included a part of the keel, planking, a frame, and part of a stern post. Cow tags were attached to the extents of these components and were georeferenced using DGPS. Located wreck components were removed from the site along with loose planking timbers and later recorded on land. In conjunction with the documentation further dendrochronological samples were collected.
Documentation was conducted in the form of 1:1 tracing onto transparent plastic film which was then photographed, reduced and digitized using the Inkscape vector graphics editor. Timber record sheets were created for each feature where dimensions and construction features were documented. Scaled photographs were taken with a digital camera. Following completion of documentation and dendrochronological sampling the material was discarded.

A range of ballast stones from both Lur 594 and 595 were removed for macroscopical petrographic examination, the results of which are detailed in appendix 3.

Lur 595
The sites of the two ballast mounds (figure 6) were visually inspected and the area around them probed to establish their extent. In total three test trenches were dug, two within the area of the northernmost ballast mound and one in close connection to the southernmost one. Material was dredged into net bags and subsequently sieved for finds. DGPS was used to record a detailed positioning of the two piles’ extent.

Results of the preliminary investigation
Lur 594
As mentioned above the main components of the wreck that remained in situ included parts of the keel, planking, a frame, and part of the stern post that were scattered over an area 9×5 meters. The majority of the finds from test trenches PG1-4 and loose finds from the site of Lur 594 consisted of brick fragments, wooden chips, treenails, and a collection of small stones, possibly ballast stones, which measured 7×5×3.5 centimeters up to 14×9×7 centimeters. To a lesser extent other ceramic finds (figure 7) included shards of stoneware, redware and porcelain, and three fragments of clay pipes. Two fragments of rope 4–5 millimeters in diameter were also found and two small pieces of charcoal. Finally, one animal bone fragment and one tooth from a cow were also found.

The recovered material consisted of seven boat components and three loose timbers, possibly ceiling planking (figure 9, appendix 4). These elements included a section of a stern assembly (A1), a part of the keel (A2), a section of planking with the remains of three strakes.


Figure 7. Ceramic fragments from test trenches on Lur 594. Photo Photo Delia Ni Chiobháin Enqvist, Bohuslåns museum.
and one frame (A4) (figure 8), two smaller sections of planking (A3, A7), a loose frame (A6) and a batten (laskbricka, A5). These parts were deemed to offer the most information on the ship construction process and were therefore chosen for photographing and documentation. The loose ceiling planking was badly damaged and so was not recorded in the same level of detail.

The documentation reveals that the vessel was clinker-built of both oak and pine. Oak planking was fastened together by use of treenails that were wedged from the inside of the hull. The wedges have a rectangular cross section and measure between 2 and 2,5 centimeters in width. The distance between the nails varies from 9,5 to 11,5 centimeters but is on average 10,5 centimeters. None of the planks are completely preserved, the longest measuring 3 meters long. Planking on undamaged areas measures between 20 and 27 centimeters wide and has a thickness of between 2,5 and 3 centimeters. The plank lands measure 4,5 centimeters. Planking edges are connected by means of butt joints and a batten attached to the planks with wedged treenails measuring 2 centimeters in diameter.

Treenails were used to fasten frames to planking. On section A4 one eroded frame, probably of pine, remains attached with a single treenail measuring 3 centimeters in diameter. The frame is too badly eroded to provide detailed measurements. However A6, a loose frame, has a sided dimension of 12,5 centimeters and a moulded dimension of 14 centimeters, it is also likely made of pine. Both ends are eroded and so the original length is unknown. There are chamfers on the inner sided face and two remaining treenails measuring 3 centimeters in diameter. Also, on the inner sided face are iron concretion traces from iron nails measuring 6 to 8 millimeters in size and spaced 10 centimeters apart, most likely used for fastening ceiling planks. Traces from two additional frames on A3 show that the frames were spaced on average 65 centimeters apart, measured from centre to centre.

The sternpost assembly section, A1, measures 39,5×86 centimeters and consists of two oak timbers and two planks, possibly of pine. The planking is heavily eroded and the sternpost has a number of large concretions. The stern post has an overall remaining height of 63 centimeters, a sided dimension of 7 centimeters, a moulded dimension of 26 centimeters and a rake angle of 130°. Concretions on the aft face are from an iron rudder gudgeon strap and visible impressions measure approximately 16,5×5,5 centimeters. The impressions of an eroded rectangular iron strap on the lower ends of the stern post measure 19×4,5 centimeters and likely served to fasten the sternpost to the keel, in addition to two nails on the underside measuring 10 millimeters.

The stern knee has some erosion on the inner sided face, it measures 74 centimeters long with a sided dimension of 10 centimeters and a maximum moulded dimension of 21 centimeters. The impressions of four iron nails measuring 8 millimeters are visible on the inner face but there may have been more where the knee is eroded. When disassembled (figure 11) the outer face revealed three bolt holes, one for fastening the knee to the sternpost and two for fastening the post to the keel, measuring between 2,5 to 3 centimeters. The remains of two planks are on each side of the assembly but are both heavily eroded from Teredo damage. They were fastened to the inner sternpost and stern knee by means of treenails measuring 2,5 centimeters in diameter that have an approximate length of 15 centimeters.
The remains of the keel A2, consist of a single oak element damaged at both ends and measuring 1.75 meters in length. The upper face measures between 10 to 13 centimeters wide and is damaged slightly by erosion, while the moulded dimension measures 22 centimeters. The keel is equipped with a 5 centimeter high and 2.5 centimeter deep rabbet to receive the garboard strakes. The remaining elements of the garboard strakes have a thickness of 3 centimeters and remain fastened with wedged treenails, measuring 12 to 2.5 millimeters in diameter. The treenails are spaced regularly 12 centimeters apart. Remnants of luting/caulking material remained between the garboard strakes and the keel but was not analysed. Six iron nails holes remain on the underside of the keel, measuring on average 10 × 10 millimeters. The overall cross section of the keel shows a sharp curvature between the sides and underside.

The ceiling timbers were most likely of pine and none were complete. In undamaged areas they measured between 18 and 20.5 centimeters wide, the longest measured 75 centimeters long and had an average width of 27 centimeters. All three had traces of iron nail concretions and nail holes, with nail heads measuring approximately 5 millimeters in diameter. The planking assembly recovered from the previous archaeological
survey (figure 12) was discarded following dendrochronological sampling. The section included planking with the remains of two strakes comprised from four planks. Similar to A4, the planking edges are also connected by means of butt joints and a batten attached to the planks with wedged treenails.

Dendrochronological analysis was carried out on three samples taken during the 2011 archaeological survey. Two samples were taken from planking and one from a batten. None of the samples contained any sapwood and one could not be dated. The analysis resulted in a likely felling date of after 1877 and yielded a provenance of Jutland in Denmark (Gainsford 2012). Dendrochronological analysis conducted on four timber samples from this investigation yielded no new results (appendix 2).

Ballast stones that were analysed from Lur 594 (figure 13) and the test pit (PG 7) by the site revealed that they consisted of various rock types which probably were sourced both locally and from afar. The results of the analysis is presented in greater detail in appendix 3.
The northern ballast mound, *Mores grund*, was found to comprise of two adjacent mounds with distinct stones. The northernmost ballast mound, A, covered an area measuring 7×12 meters and contained stones ranging from 60×40×30 centimeters to 15×10×10 centimeters in size. It lies on a slope with a water depth ranging from 0,5 to 1,3 meters. Ballast mound B contained even larger stones and lies in water ranging in depth from 0,8 to 1,8 meters. Both mounds are raised above the seabed 0,5 meters. Test trenches PG5 and 6 were excavated in between the two piles and contained brick.
and coal fragments (figure 14). Loose finds from the site consisted of flint pebbles, slate and assorted stones.

The southern ballast mound of slag/ore is located on a slope ranging in depth between 7 and 9.5 meters and covers an area 3 × 4.5 meters. It is raised above the seabed 0.2 meters and contains fragments ranging in size from 8 × 5 × 4 centimeters to 30 × 16 × 10 centimeters. Test trench PG7 was excavated to the west of the pile and contained brick fragments and one piece each of flint and porcelain. It was noted in the previous archaeological survey that eroded timber fragments protruded the pile but they were not located on this investigation (Gainsford 2012). A central position was taken with DGPS to record the location of the pile (figure 5).

The artefacts recovered during investigation, particularly the bricks and porcelain, suggest a likely dating of the site to the second half of the 19th century. The macroscopical petrographic examination of samples from all three separate ballast mounds (figures 13, 14) revealed that the stones are of various rock types sourced both locally and from afar. The results of the examination are further presented in appendix 3.

Discussion

Upon completion of recording and analysis Lur 594 was found to have been a clinker-built boat of oak and possibly pine, with an estimated length of circa 10 meters. Previous dendrochronological analysis resulted in a likely felling date of after 1877 and the wood yielded a provenance of Jutland in Denmark. Dendrochronological samples from this project were inconclusive. Comparative analysis with Morlanda 533, a wreck found in Ellös a couple of years ago (table 1), shows close similarity in component size and construction technique between the two vessels. On the basis of the available dimensions the estimated length of the vessel would have been circa 8.5–10 meters. This size would indicate that it was a type of jakt, däcksbåt, makrillgarnbåt or similar (von Arbin 2008:12). The dimensions of Lur 594 suggests that it has been of roughly the similar size or perhaps even somewhat larger.

The ship remains are dated to the latter half of the 1800s. It is likely connected with fishing activities, mainly the salting of herring which was conducted in the area during the herring fishing period 1877–1894. It is also an example of the widespread cultural contacts across the Kattegat and Skagerrak during historical times. The boat remains shows that these contacts were also maintained with relatively small vessels. The date of the ballast sites are difficult to determine, although the limited artefacts suggest a dating towards the latter part of the 1800s. As with Lur 594, they may possibly be associated with salting operations in the area. Another possibility is that it has associated with the kutter era on Resö in the early 1900s. Similarly, the ballast material represents both regional and interregional connections. Both Lur 594 and 594 are thus important finds, in placing Resö within its cultural context and in tracing its cultural and historical links with its surrounding coastal areas.

Conclusion and recommendations

As a result of the investigation it is the opinion of Bohuslän museum that the sites Lur 594 and 594 can be considered fully investigated. While it is likely that additional shipwreck remains may be found in the area of Lur 594, it is the museum’s view that a full excavation would not provide significant additional knowledge. Bohuslän museum, the preliminary investigation being concluded, therefore have no objection to the proposed work.
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<th>Vessels</th>
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<th>Morlanda 533</th>
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<tr>
<td>Estimated length</td>
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<td>8.5 - 10 m</td>
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<tr>
<td>Frame dimensions</td>
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<td></td>
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<tr>
<td>Plank dimensions</td>
<td>Wide 27 cm</td>
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<tr>
<td></td>
<td>Thick 3 cm</td>
<td>Thick 2.5 cm</td>
</tr>
<tr>
<td>Land</td>
<td>4.5 cm</td>
<td>4.5 cm</td>
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<tr>
<td>Treenail head</td>
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Table 1. Comparative analysis between Lur 594 and Morlanda 533 wrecks.
References

Literature


Electronic sources


Tekniska och administrativa uppgifter

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<td>Fältpersonal:</td>
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Appendices

Bilaga 1. Provgruppar grävda under förundersökningen
Appendix 1. Test trenches excavated during the preliminary investigation

Bilaga 2. Rapport över utförda dendrokronologisk analys
Appendix 2. Report on dendrochronological analysis

Bilaga 3. Resultat av makroskopisk petrografisk undersökning av barlastmaterial från Resö (Thomas Eliasson, SGU)
Appendix 3. Results from macroscopical petrographic examination of ballast material from Resö (Thomas Eliasson, SGU)

Bilaga 4. Dokumenterade båtdelar. Skala 1:10, 1:20
Appendix 4. Documented boat remains. Scale 1:10, 1:20
## Bilaga 1. Provgröpar grävda under förundersökningen

### Appendix 1. Test trenches excavated during the preliminary investigation

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Bilaga 2. Rapport över utförd dendrokronologisk analys
Appendix 2. Report on dendrochronological analysis

Staffan von Arbin
Bohuslåns museum/Västarvet
Museigatan 1
P.O. Box 403
S-451 19 Uddevalla.

Dendrokronologisk analyse af pröver fra klinkbygget båd ved Resö i Tanum kommun,

Tre pröver, 0115029-0115031, indsendt af Matthew Gainsford i februar 2012 og tre af fire pröver,
0115050-0115053, indsendt af Staffan von Arbin i februvar 2013, er analyseret med följande resultat:

Prov 0115029/1, ek, radial bordplanke, 95 årringe, ingen splint. Yderste årring er fra 1843.

Prov 0115030/2, ek, tangential bordplanke, 57 årringe, ingen splint. Yderste årring er fra 1857. Med
tillæg for manglende splint, i gennemsnit ca. 20 år, bliver fälldningstidspunktet tidligst 1877.


Prov 0115050/1, ek, planke, 59 årringe, ingen splint. Kan ikke dateres.

Prov 0115051/2, ek, planke, 88 årringe, ingen splint. Kan ikke dateres.


Prov 0115053/4, furu, meget få årringe. Ikke målt.

Båden er antagelig bygget på Jylland. En ny grundkurve for Jylland synes at bekræfte dette.

Et större antal pröver ville kunne bidrage till en sikrere datering på båden.

Pröverna opbevares på Nationalmuseet i Köbenhavn.

Faktura bifogas. Den bedes attesterat och videregivet.


Med venlig hilsen.
Thomas Bartholin,
Am Haidberg 18
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0049 40 720 1821
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(115029.31.Resö.Tanum.vrag)
### Bilaga 3. Resultat av makroskopisk petrografisk undersökning av barlastmaterial från Resö (Thomas Eliasson, SGU)

#### Appendix 3. Results from macroscopical petrographic examination of ballast material from Resö (Thomas Eliasson, SGU)

<table>
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<td><strong>Lösfynd vid friläggning</strong></td>
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<td>1) Grå till mörkt grå fmk, grå fmk skifer</td>
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</table>
A1. Akterstäv
A2. Köl

- Spikhål
- Tränagel
- Tränagelhål
- Tränagel med kil

Datum: 2013-11-21
Skala: 1:10

Pnr: 11046
Ritat av: DNCE
Digitaliserat av: DNCE
Fornl. nr: Lur 594
A3. Bordläggning

 FNH
 Utsida

 FNH
 Insida

 Spikhål
 Tränagel
 Tränagelhål
 Tränagel med kil

 Pnr 11046
 Ritat av DNCE
 Fornl. nr Lur 594
 Digitaliserat av DNCE
 Datum 2013-01-21
 Skala 1:10
A4. Bordläggning

![Diagram of a board with markings and symbols for different holes and notches.]

- Spikhål
- Tränagel
- Tränagelhål
- Tränagel med kil

Legend:
- Spikhål
- Tränagel

0 0,5 m

Digitaliserat av DNCE
Datum 2013-01-21 Skala 1:20

Pnr 11046 Ritat av DNCE
Fornl. nr Lur 594
Båtlämnings och barlast vid Resö

Marinarkeologisk förundersökning
Lur 594 och 595
Resö 3:24, Lurs socken, Tanums kommun
Delia Ni Chiobháin Enqvist
Bohuslänsmuseum
Rapport 2013:30