Long-Term Human and Ecological Interaction at Skútustaðir, Mývatn N. Iceland

Megan Hicks (1), Árni Einarsson (2,3), Kesara Anamthawat-Jónsson (2), and Ægir Þór Þórsson (2)

CUNY 2. University of Iceland 3. Mývatn Research Center

NABO 2013
Skútustaðir – Investigations of a Long Term Farm 2008 to 2013

Mývatn’s major southern route

Arctic Char Fishing grounds

Hay infields

Historic Farm Mound

Hay infields

Hay infields

Framengjar (outer hayfields)
Skútustaðir – Recent Excavations of a Long Term Farm

Area E1
East facing profile 1

V 1717
(007) Topsoil
(008)

V 1477
(010) (028)
(009)

H 1300
(012) (013)
(011)

K 1262
(014) (015)
(016)

SUERC 20219 AD 980-1040
(017) (019) (021)
(018) (022)

V 940
(023)
(024)
(025)
(026) Landnám tephra

V 871
(027) Natural bedrock
(079)

(078) V-

0 0.5 1 metrar

Abundant egg shell in well-dated midden strata
Mývatn Area Archaeology: prior results

Many sites investigated as part of NABO Landscapes of settlement initiative 1990’s-2000’s. www.nabohone.org

% Hunted Birds and NISP

<table>
<thead>
<tr>
<th>Site</th>
<th>% Waterfowl</th>
<th>% Ptarmigan</th>
<th>% Coastal Birds</th>
<th>NISP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hofstadir</td>
<td>12</td>
<td>101</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Skútustaðir</td>
<td>23</td>
<td>9</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Steinbogi</td>
<td>17</td>
<td>9</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Sveigakot</td>
<td>3</td>
<td>697</td>
<td>6</td>
<td>6</td>
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<tr>
<td>Hrisheimar</td>
<td>7</td>
<td>230</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data McGovern et al 2006 and Hicks 2010
Objectives

To build upon current understandings of past human/bird interactions and hunting versus collecting strategies through ongoing:

1. Excavation of long-term middens
2. Historical research
3. Interviews with current Mývatn community (Ágústa Edwald)
4. Macro analysis of archaeological bird bone
5. Stereoscopic and SEM analysis of eggshell to species level

Key progress is in long-term approach and identification to the species level.
Waterfowl guilds

- Geese and swans
- Dabbling ducks
- Fish-eating diving ducks
- Filter-feeding diving ducks

Árni Einarsson
Duck nesting habitats

M = Merganser
B = Barrow's Goldeneye
D = Dabbling duck
S = Scaup
C = Common Scoter
L = Long-tailed Duck

200 m
Abbreviated History of Wildfowl Interaction

- Today adult waterfowl are still not hunted, but the lakeside farmers collect an average of 10,000 eggs each spring.

- Tradition dictates egg collectors should leave a certain number of eggs in the nest (>1/2). Variation in collection strategy per species

- Adult waterfowl are mostly not killed for food (Ptarmigans are) (McGovern et al 2006 Edwald 2012)

Mývatn residents practice predator control killing minks and foxes.

See discussion in McGovern et al 2006 & Edwald 2012
Archaeological Eggshell Fragment Identification

- 161 – 10th c. CE
- 317 – 10th c - 13th c CE
- 167 – 1610-1717 CE

- Preparation of comparative specimens

- Stereoscopic analysis
  - Exterior Features, qualitative
  - Edge morphology and measurements
  - Interior Features, qualitative

- SEM photography and analysis
Eggshell Features
Under Stereoscope

**Exterior Features:**
- Color and Texture
- **Pore shape** slit, pinhole, lunate, square, subrectangular, triangular and
- **Density of distribution**

**Cross Section and Interior Features:**
- Overall thickness measurements
- Thickness measurements of distinct layers
- Qualitative aspects of mammillae

Sidell 1993

Rahn *et al* 1979
Preliminary Results: stereomicroscopic studies for thickness and morphology

[Graph showing data points for mammillae and shell thickness, with categories for probable goose, swan, and Barrow's Goldeneye, Húsönd.]
Scanning Electron Microscope – JEOL JSM-6610LA

Electron optical system (EOS)

Built in Japan 2009, installed at UoI 2010
Scanning Electron Microscope – JEOL JSM-6610LA

- **High topographical resolution:**
  - Due to the famous BSE backscatter electron imaging mode (backscatterred electrons have more energy than secondary electrons in standard SEM)

- **High specificity, more details:**
  - Due to the newly developed low-vacuum/high-voltage mode (20pa/10 kv), **which allows observation of uncoated and non-conductive specimen.** These new features are very useful with archeological samples, even with damaged ones.

- **The stage navigation system:**
  - Computerized controlled by the 5-axis Eucentric goniometer: X= 125 mm; Y= 100 mm; Z= 5-80 mm; T= -10 to 90° ; R= 360°

- **Magnification and image resolution**
  - x5 to x300,000. For our archeological samples we use x50 (500µm) and x300 (50µm), but higher for reference samples.
  - Images: up to 5 mpixels (we use 1,2)
SEM for eggshell identification:
number of mammilae per mm²

Images generated by K. Anamthawat-Jónsson and Æ. Þórsson
SEM for eggshell identification: species-specific internal surface description

Images generated by K. Anamthawat-Jónsson, Æ. Þórsson, ducks by Á. Einarsson
Immediate Goals

- To continue species-level identification of collected eggs and hunted birds through faunal analysis and microcopy.
- To make use of the unique long term record at Skútustaðir

Ongoing Questions

- How have residents’ collecting/hunting strategies and activities changed over 1100 years?
- Has hunting and collecting impacted bird populations?
- What long term social and economic importance do wild bird resources have to local the Mývatn population?
- What relevance does this have to communal resource studies, resilience & broader economic context.
Thank you

Funding

Contact us

• Mývatn Ecology – Arni Einarsson arnie@hi.is

• Archaeological Excavation and Results – Megan Hicks meganthicks@gmail.com

• Scanning Electron Microscopy- Kesara Anamthatwat-Jónsson kesara@hi.is

• Ethnographic Studies- Águsta Edwald a.edwald@abdn.ac.uk