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FARMHOUSE BREWING IN ESTONIA

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Introduction

Farmhouse brewing was historically undertaken by almost every household in northern Europe outside of urban areas.[1] Farmers were generally subsistence farmers, their main source of calories being their own grain. Hops and other additions were easily available, as was yeast (see below). Consequently, all the farmer needed to be able to make beer was a surplus of grain beyond the minimum necessary to feed the household on the farm. This tradition of farmers brewing their own beer gradually declined after the industrial revolution, but in Estonia it remained strong until World War II, and on the islands in the Baltic this brewing tradition is still alive.

What is now Estonia was populated quite soon after the end of the last Ice Age, but Finno-Ugric speakers only arrived in the first millennium BCE. Since the 13th century, Estonia has been ruled by Danes, Germans, Poles, Swedes, and Russians. Germans in particular formed the landowning class from the Middle Ages onwards, and the Estonians were serfs until the beginning of the 19th century. The national awakening of Estonians began immediately after serfdom was abolished and culminated in 1918 when Estonia declared itself an independent democratic republic. Estonia lost its independence during the Second World War, but restored it along with other Baltic states in the early 1990s. Today the population of Estonia is predominantly Estonians (69%), speaking a Finno-Ugric language.

Physically, Estonia can be roughly split into two main areas, mainland Estonia and the islands, the largest of which are Saaremaa, Hiiumaa, Muhumaa, and Vormsi. The islands have been geographically and culturally separated from Estonian mainland, which has helped preserve old traditions and customs. In general, Estonians can be divided into five main ethnic groups: the north mainland Estonians, the islanders, and three minorities in southern Estonia. Võrukesed are the native inhabitants of Võrumaa in South-Eastern Estonia, whose identity is based on the *võru* language. Mulgid are the indigenous inhabitants of Mulgimaa (Viljandimaa and Valgamaa) in Southern Estonia, whose identity is based on the *mulg*i language. The best-known ethnic group is probably *setud*, in English generally referred to as the Seto, whose indigenous region is in Setomaa in South-Eastern Estonia and the neighbouring part of Russia. Setomaa is a historical meeting point of different states, cultures and religions, resulting in a unique culture that shares many features with the customs and beliefs of Estonians and Russians, while also retaining traces of ancient pagan ideas.

Related work

Although the literature on beer and brewing in general is quite extensive, the texts on farmhouse brewing is by comparison very scarce. Of the books that have been written, most focus on a single country, such as Odd Nordland on Norway,[2] Anders Salomonsson on Gotland,[3] and Matti Räsänen on Finland.[4] These early works were all written by ethnographers who had little knowledge of beer and brewing, but in recent years beer writers have started covering the tradition of farmhouse brewing as well. Mika Laitinen's *Viking age brew* is a prime example, soon to be joined by Lars Marius Garshol's *Historical Brewing Techniques: The Lost Art of Farmhouse Brewing*.[5]

Work on Estonian brewing is extremely sparse. Laitinen has three pages and Räsänen a little more. *Unustatust ja uuemast Saaremaa koduõllenduses* by Tormis Jakovlev covers only the islands in the Baltic and Aliise Moora's *Eesti talurahva vanem toit* also gives it a brief treatment.[6] The only extensive work on Estonian farmhouse ale is by Otu Ibius in *Koduõlle tegemine Eestis*, which was never published.[7]

Sources

This paper is based on a field expedition to Setomaa and the Baltic islands in the summer of 2016, as well as 1,274 pages

Figure 1. Estonia with ethnographic regions indicated. Võrolang, Wikimedia Commons, CC-BY-SA.

of ethnographic documentation from the Estonian National Museum (ERM). The documentation primarily consists of answers to questionnaire KK X on general dining customs from the period 1939-41, but also answers to questionnaire KL 184 on farmhouse brewing from 1993, as well as individual documents from the Ethnographic Archive and the Corresponent's Archive also at ERM.[8] Use has also been made of other sources, particularly Ibius and Jakovlev.

Beer in Estonian history

Cereal pollen findings in bog and lake sediments suggest that oat, barley and wheat were grown in Estonia by the Typical Comb Ceramic period (4300-3500 BC). Throughout the prehistoric period and right up to the beginning of the modern era, barley was the principal grain for making bread and most other cereal foods, mainly of the two-row and four-row varieties. Rye did not gain much prominence before the 12th century, and only after the Middle Ages did it become the main grain for bread-baking.

Although farmhouse brewing in Estonia almost certainly began long before, the first detailed records of peasant-brewed beer can be found in the 15th-16th century lists of foods brought to the vakus-festivals. 'Vakus' designated an administrative unit and tax district; these had taken shape already in the prehistoric period and were retained by the German-Scandinavian conquerors in the 12th-13th century. Each vakus had to organise a grand yearly festival for their lord or squire. The general rule was that each vakus had to bring at least one or two barrels of beer to the festivities. In his *Chronicle of Livonia* Balthasar Russow described these celebrations:

> Then they brought out large wooden cups that were called bowls and were so huge that one could bathe children in them; from one of these bowls, two men drank to the health of two others until their sight got blurred and they could not see each other anymore; and the last man standing was honoured and praised the next day as if he was a courageous hero returning from a victorious battle.[9]

Beer at that time had a much deeper ritualistic significance, and beer drinking was probably the most important part of these festivities. Even though the tradition of vakus-festivals

had largely faded by the end of the 16th century, it continued to be observed in Saaremaa throughout the beginning of the 17th century. The custom had always been more common in Saaremaa, Northern Estonia and Western Estonia. In Eastern Estonia, the tradition either failed to develop or disappeared even earlier.

It is likely that the roots of the 18th-19th century peasant brewing customs lie in these medieval vakus-festivities and wedding celebrations. While the custom of vakus-festivals ended by the 17th century, the tradition ofbeer-making on important celebrations and holidays continued in rural communities. The brewing tradition remained strong much longer in Estonia than in just about any other country in Europe: as late as 1939 farmhouse brewing seems to have been widely practiced throughout the entire country. When Estonian independence was restored in 1991 after the Soviet period brewing appeared to have died out everywhere except on the islands and in Setomaa.

The farmhouse brewing tradition generally survived for as long as it made economic sense for the farmers to brew. That is, for as long as they could make it for free because they grew the grain themselves, and they had a need for the home-made beer, they would keep brewing. If commercial beer became available at acceptable prices farmers might have switched to that, but clearly in Estonia they did not. Very likely this reflects the relatively low level of economic development in Czarist Russia, with poor transportation infrastructure and a largely agrarian economy. Twenty years of independence was not enough to develop the country economically to the point where farmhouse brewing no longer made economic sense. The collectivization of agriculture under the Soviets disrupted traditional life in the countryside, and likely destroyed the brewing tradition on the mainland. Why brewing continued on the islands despite collectivization is not clear. Today, the common Estonian name for farmhouse ale is *koduõlu*, literally 'home beer', and it is primarily associated with the islands, where it is quite widely brewed.

Grain and malting

Historically, Estonian farmers malted their own grain for brewing — not a single historical account describes brewers buying malts. Presumably there were cases where this happened, but they seem to have been very rare.

Types of grain

65 accounts that state which types of grain were malted have been analyzed, the results being:

- barley, mentioned in 98% of the accounts,
- rye, 35%,
- wheat, 11%, and
- oats, 3%.

Barley has been the generally preferred grain for brewing in most of the world, because it gives the highest sugar yield and is also considered to give the best flavour. Furthermore, it is the most adaptable grain, meaning that it is very widely grown. The only account which says no barley was used is Fredric Joachim Ekman's *Beskrifning om Runö i Liffland*, describing the Swedes on the island of Ruhnu (Runö in Swedish), which claims only rye was used.[10]

Rye seems to have been used mostly in eastern Estonia, on the west coast, and on the island of Saaremaa.

Wheat seems to have mainly been used on Saaremaa, although there are two mentions from mainland Estonia as well. Wheat is a rather demanding grain that was difficult to grow in northern Europe, and since it was the only grain from which leavened bread could be made, the little wheat available was usually kept for bread baking.

Malting methods

Malting began by soaking the grain in water for a few days, typically in a wooden tub. Once the grain was sufficiently wet, it was taken out and spread in a layer on the floor of a suitably warm room for germination. The germination time generally depended on temperature, and the grain could sprout untouched, so that the rootlets made the grain stick together in a mass. The rootlets were removed before brewing (according to 14 out of 14 accounts).

Estonian farmers seem to have used two main kinds of malt drying methods that produced two types of malts: very pale unsmoked malts and ones similar to modern caramel malts. The very pale unsmoked malts were made on the islands and in north-western Estonia, using three different drying methods:

- Sun-drying, where the malts were spread out on cloth or wooden frames in the sun to dry. The malts did not always dry completely this way, in which case it might be dried gently in an oven afterwards.
- On the floor of a heated room. In many cases the room was heated from a fireplace on the floor below, with a channel leading the smoke and heat underneath the floor and out of a chimney. This method of malting is still in use today on the islands.
- On top of a 'reheahi' — an extremely large Russian-style oven (see Fig. 5). The top of the oven was often used as a

Figure 2. Types of grain malted in Estonia.

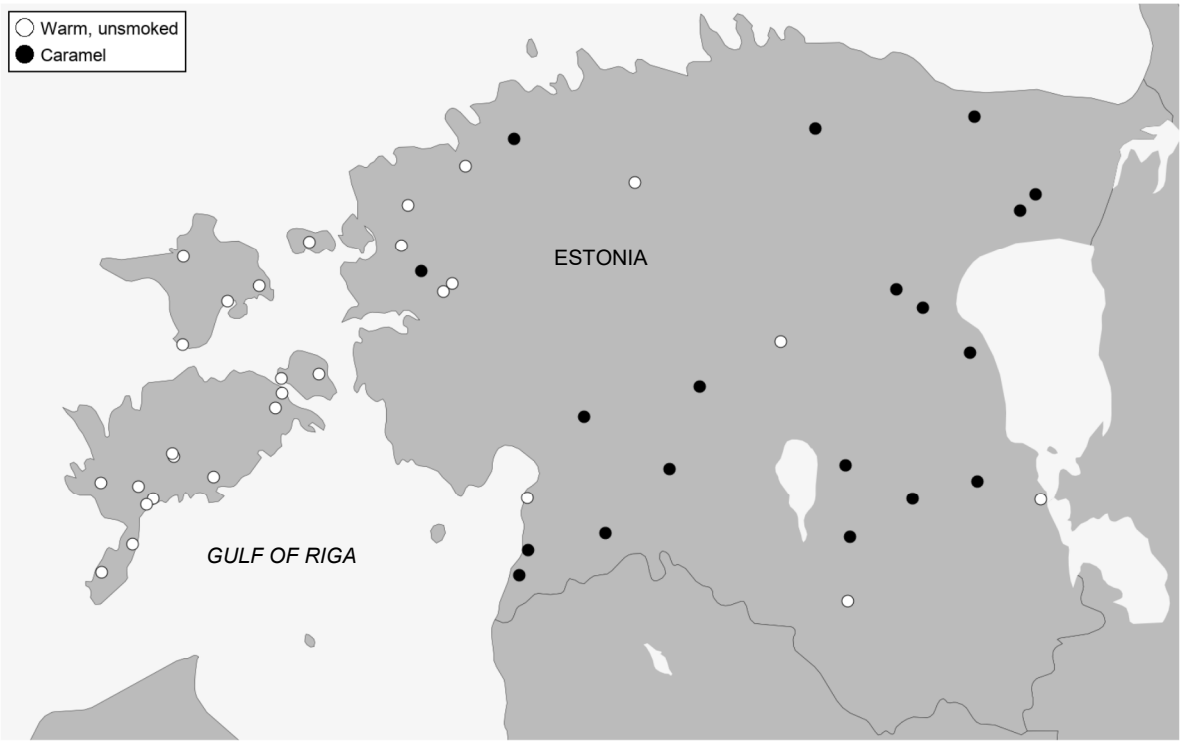

Figure 3. Types of malt produced in Estonia.

sleeping place in winter, so the heating here must have been quite gentle.

Malts dried in this way must have been smokeless, and at least as pale as modern pilsner malts.

The caramel-like malts seem not to have been made on the islands at all, and to have been dominant on the mainland outside of the north-western corner. These malts were dried by first heating the reheahi relatively gently, then removing the embers and ash before laying the malts into the oven. The oven might be re-heated a few times before the malts were completely dry.

These malts will have been quite strongly heated initially, while the green malts were still wet, and then gradually the temperature drops by itself. This is also how modern caramel malts are made, so it seems reasonable to assume these malts were similar. One author was able to taste malts dried this way, in Kshaushi in the Chuvash Republic, Russia, and the malts were very hard, and in flavour rather like caramel malts.[11]

Malting today

Today most of the farmhouse brewers buy their malts, but there are a few exceptions. Meelis Sepp in Kõrkküla on Saaremaa still makes his own malts, and there are a few other maltsters on the islands as well. Some of them sell malts to other brewers. The malts are still made in the traditional way, generally in a heated room. Those brewers who buy malts usually purchase pilsner malts, although some also mix in Vienna malts.

Brewing processes

The brewing processes used in Estonia fall into three main groups: classic raw ale, oven-based, and stone-based. None of the well-known brewing methods seen in modern commercial beer production are evident in the records, the reason being that farmhouse brewing is an ancient tradition that has developed on its own in the European countryside over many, many centuries. Commercial brewing has had very little influence on the traditional brewing, if any at all.

Until the last few centuries a key driver in the development of farmhouse brewing was the very high cost of large metal kettles. This meant that boiling the wort was very difficult for farmhouse brewers as was heating the mash. Several unusual brewing methods evolved as solutions to these challenges.[12]

Raw ale

This brewing process was and still is almost completely dominant on the islands, but also occurs on the mainland, particularly in the north-west. It is very similar to that used in Norwegian *kornøl*, and also in Lithuanian *kaimiškas*. Historically, much of the Danish *landøl* was also brewed in a similar way.

The brewing liquor is heated in a kettle, then poured onto the malt, which are stirred by hand to mix well. The mash is left alone for 1-3 hours, although many brewers add hot water again after about an hour. Once the mashing is done, the mash is transferred to the lauter tun. In Estonia this is generally a coopered vessel with a hole in the bottom, which could be opened and closed with a long, tapered rod rising out of the vessel. The bottom of the lauter tun is covered in either straw, juniper or a combination of the two and this acts as a filter to let the wort run out of the mash. The wort is then cooled, added to the fermentor, and finally yeast is pitched.

The wort is not boiled, which is and has been very common in farmhouse brewing. This leads to unusual flavours and a fuller mouthfeel due to the retention of proteins. This method also results in a gently abrasive mouthfeel, which helps balance the sweetness in the beer. Surprisingly, it is very rarely sour, because the heat during mashing pasteurizes the wort sufficiently to avoid infections.[13]

Raw ale brewers utilised many different means for adding hops to their beer, the foremost method in Estonia was to produce a hop tea (in Estonian *humalavesi*, literally ‘hop water’). The hops are simply boiled in 2-3 litres of water and added to the beer. The hop tea can be added to the brewing liquor, to the mash, in the fermenter, or even to taste after fermentation is complete.

Oven-based

By far the most popular brewing process on the mainland, outside of the north-western region, was based on using the reheahi.

There were two main ways of using the oven:

- The malts could be infusion mashed first, as in a normal raw ale, and the mash then baked in the oven after saccharification was complete.
- The malts could be mixed with cold water into ‘loaves’ and then baked in the oven.

In both cases the wort would be lautered after the baking in the oven. In the first method the oven’s heat would cause the

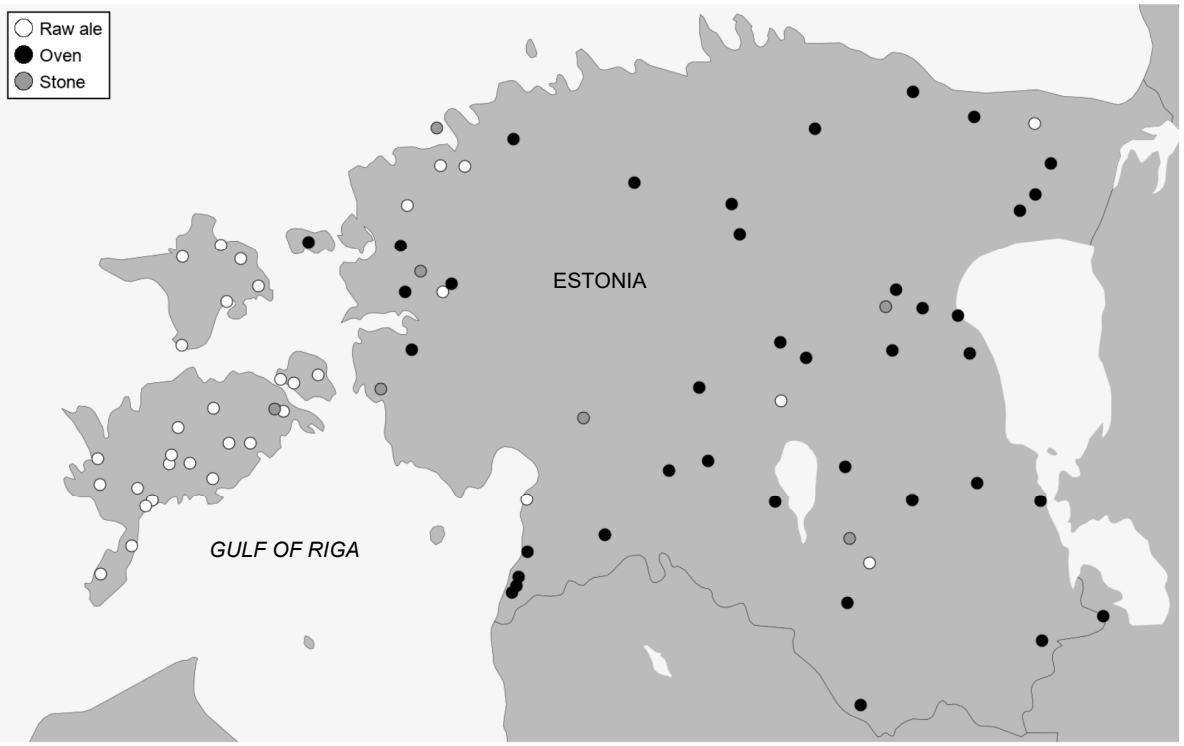

Figure 4. Brewing processes.

sugars in the mash to go through maillard reactions and even some degree of caramelization. In Lithuania this way of brewing is called 'keptinis', and is known to give dark caramel-tasting beers.[14] Four Estonian accounts clearly describe this method. In the second method it is likely that some degree of saccharification takes place in the oven itself, with maillard reactions and caramelization occurring more or less in parallel. Exactly how this would work in practice is difficult to judge without experiments. Hot water is added to lauter the beer. One account definitely describes this method.

17 of the accounts are very brief and just say that the loaf-like shapes are formed, baked, and lautered, without making it clear whether the water used is cold or hot. They do not say anything about waiting for saccharification before forming the loaves or before putting them in the oven. Since the 'loaves' are formed by hand it seems improbable that hot water is being used, and most likely all, or nearly all of these, actually describe the second method, where cold mash 'loaves' go in the oven.

It seems very likely that this method of brewing originated as a way of mashing without using metal vessels, since the 'loaves' can be mashed in the oven without any container. The post-mash baking most likely arose as a later development where the purpose of the baking step is to get the dark colour and caramel flavour.

The accounts describe many ways of using hops together with this brewing process. Dry hopping is common, as is mixing in hop tea during sparging. In some cases the hops are added during lautering, and sometimes the hops go into the malt 'loaf' itself.

Stone-based

Six accounts include hot stones in the main brewing process described. Five of these come from the ERM material, and one is from Reinerus Broocman's *En fullständig swensk hushållsbok* published in 1736.[15] The five from the ERM material are all quite similar, and describe a brewing process almost identical to that for the raw ale above, with the difference that after mashing the hot stones are added to the mash.

Question 74 in the KK X questionnaire is about stones in brewing: 'Are heated stones used in beer making? For what reason?' Because of this question, many accounts provide

Figure 5. Estonian ‘reheahi’ oven in Obinitsa, Setomaa. July 2016.

more information about stone brewing, even when they do not mention hot stones in the normal brewing process.

All told, a further 20 accounts mention the use of hot stones. Most say the stones were used to give the beer colour, and some say they were used for flavour. The accounts all say the stones were used in the mash, although the stones could also be used to heat the wort for pitching the yeast if it had accidentally cooled too much. One account says the stones could also be used to boil the wort (which is somewhat odd, since not a single account describes a brewing process where the wort is boiled).[16] It seems hot water or juniper infusion was usually poured on the mash first, but some accounts say the mash was heated with the stones. A typical description of the use of hot stones states: ‘In the old times, brewers used to throw red (heated) stones into the mash - it is said to give the beer a better taste. Some people still use this method. This method is probably from another time when water was not boiled in big kettles. This method has survived as a tradition to this day’.[17] (Note that this was written by a local farmer on Saaremaa, documenting the customs of the parish he lived in for the National Museum.)

Adding hot stones to the mash will, of course, have darkened the beer by burning and caramelizing the sugars in the mash and have given some degree of caramel flavour. In this sense stone beers are like oven beers, and a few accounts say explicitly that brewing with stones could be an alternative to using the oven. One even says the stones were used when the mash ‘was not baked enough in the oven’.[18]

Although it may seem surprising that the stones were nearly exclusively used in the mash, the pattern is the same in other places in Europe.[19] Hot stones were originally used to overcome the difficulty of brewing without a kettle, and for a brewer who has no kettle, the key problem is how to heat the mash. Dropping hot stones in a mix of cold water and malts neatly solves the issue.

The brewers described in all these Estonian accounts do have kettles, so the stones were not a practical necessity anymore. The reason they were still used is very likely a mix of conservatism and a liking for the caramel flavour (and colour) the stones imparted to the beer.

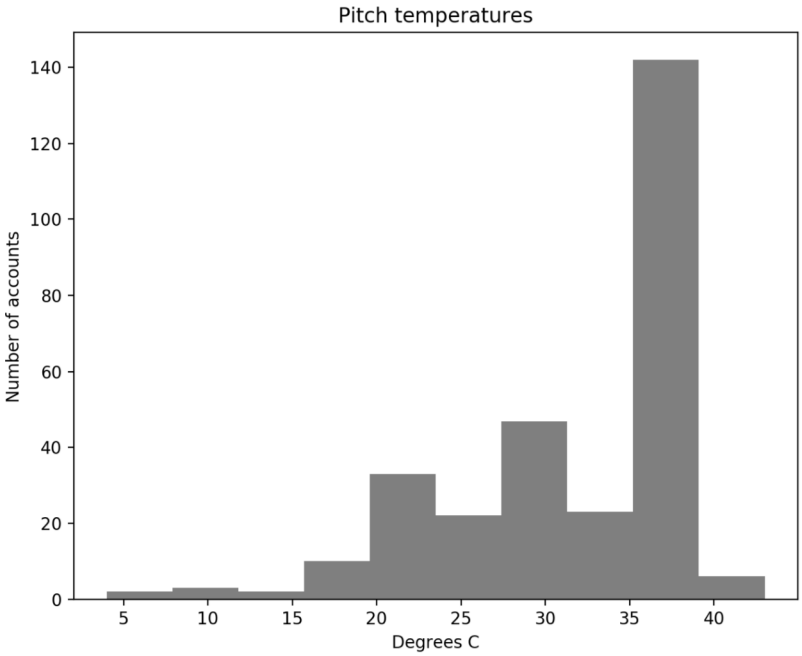

Figure 6. Yeast pitch temperatures, both today with commercial yeast and historically.

Two accounts describe a method for getting even more flavour and colour from the stones: sprinkle flour or milled malt onto the red-hot stones before dropping them in the mash.

Yeast

Historically, farmhouse brewers maintained their own yeast cultures, and Estonia is no exception. Unfortunately, the available documentation has little detail on the use of yeast, but there is some information, mainly from the islands. As in other European countries, the most common pitch temperature in Estonia was roughly body temperature. Many of the older accounts do not give the temperature in degrees, because the brewers did not use thermometers, but rough temperatures can be deduced from the descriptions. Some historical accounts give temperatures like ‘summer water’ or ‘room temperature’, which is probably around 20 degrees. The high temperatures are often specified as ‘body temperature’, ‘milkwarm’, ‘blood temperature’, or ‘the temperature of human skin.’ Some simply say ‘lukewarm’, which is too ambiguous to be useful.

Fermentation times in Estonia, just as in other countries, were very short. Most fermented 24 hours or less before harvesting the yeast, and nearly all 48 hours or less. Although the farmhouse yeasts that have survived are very fast fermenters, the beer probably had not finished fermenting after 24 hours. Instead, the beer mostly likely continued to ferment in the beer barrel in the cellar.

Regarding the harvesting of the yeast there is very little documentation. Aarne Trei on Saaremaa reported harvesting the yeast from the bottom of the fermentor after the beer had finished fermenting. Algis Viilukas, also on Saaremaa, reported that the yeast was harvested from the bottom of the empty beer barrel when the new beer was brewed.

On the islands eight accounts say the yeast was stored wet between brews, and all say it was preserved in a sealed jar that was hung in the well to stay cool. Two accounts, one from Muhu and one from the east end of Saaremaa, say the yeast was dried. Both agree the yeast was preserved by being dried on branches. The use of yeast logs and yeast rings is not reported in Estonia, but the material is not substantial enough to rule it out.

In the summer of 2016 two brewers on Saaremaa claimed to have recently used their own yeast, but that they switched to buying bread yeast in the 1990s, because at that point bread

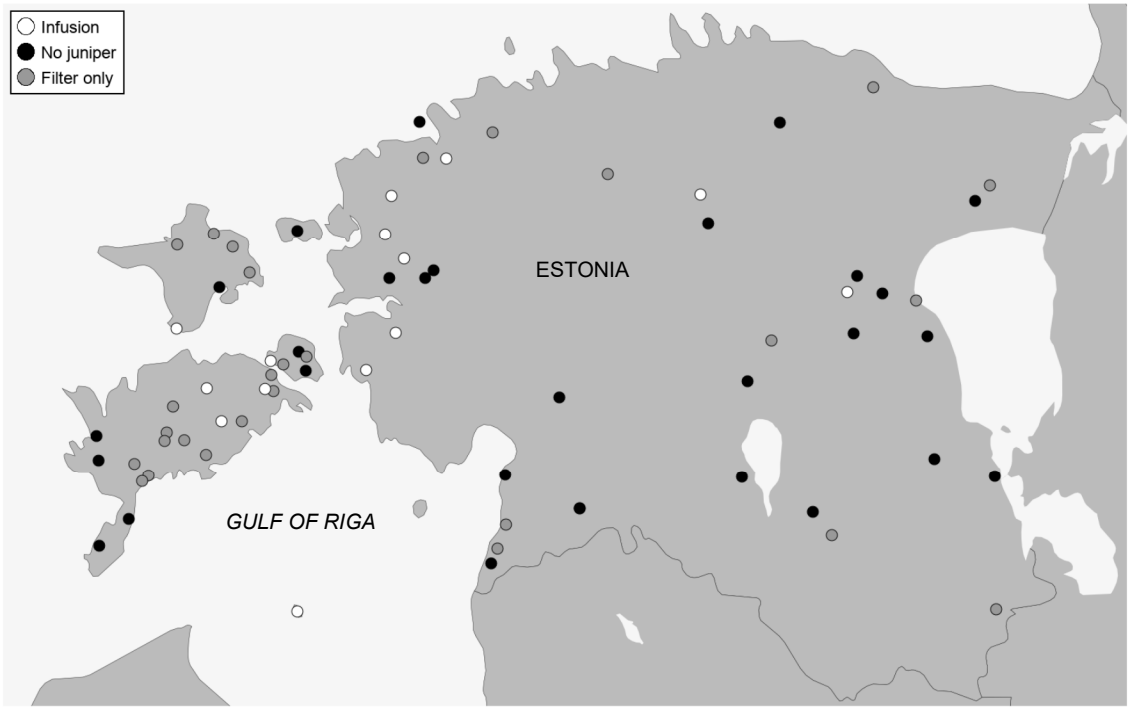

Figure 7. Utilization of juniper.

yeast became easily available. Today, the *koduõlu* brewers on the islands mostly use one of two brands of bread yeast - Nordic Pärm Vilmix or Pärm Euroferm Salutaguse - although quite a few buy dried brewer's yeast. The most common brand of bread yeast, Pärm Euroferm Salutaguse, is the same yeast as the Finnish Suomen Hiiva used in sahti.

Herbs and adjuncts

The use of herbs has been analysed in 71 Estonian accounts, with the following results:

- 94% say they used hops,
- 59% juniper,
- 27% sweet gale (*Myrica gale*),
- 18% wild rosemary (*Rhododendron tomentosum*),
- 6% tobacco,
- 4% wormwood,
- 3% salt,
- 1% caraway,
- 1% tansy, and
- 1% yarrow.

Compared to other countries, Estonia stands out for the high proportion of sweet gale and wild rosemary usage, but why this is the case is unclear.[20] Some accounts say sweet gale was used as a substitute if hops were unavailable.[21] Another adds that gale might be necessary if the hop harvest was poor.[22] There is, however, no reason why the hop harvest in Estonia should be any worse than in the other countries we have data from. It's possible that peasants were required to give most of their hop harvest to the manor lord as a kind of tax and that in bad years this left them with none of their own. Or it may simply have been a taste preference.

Use of juniper in Estonia is on roughly the same level as for Sweden and Finland, much higher than Denmark, and much lower than Norway.

Juniper was generally used in two ways, sometimes for the same beer:

1. The branches were steeped or boiled in hot water to create an infusion of juniper, which was then used as the mash liquor. This gave the beer a clear flavour of juniper. In Estonian the infusion was called *kadakavesi*, literally 'juniper water'.[23]
2. The branches were used as part of the filter in the lauter tun, often with wooden sticks underneath or straw on top. This use of juniper also gives the beer a juniper flavour, but not as strong as by using a juniper infusion.

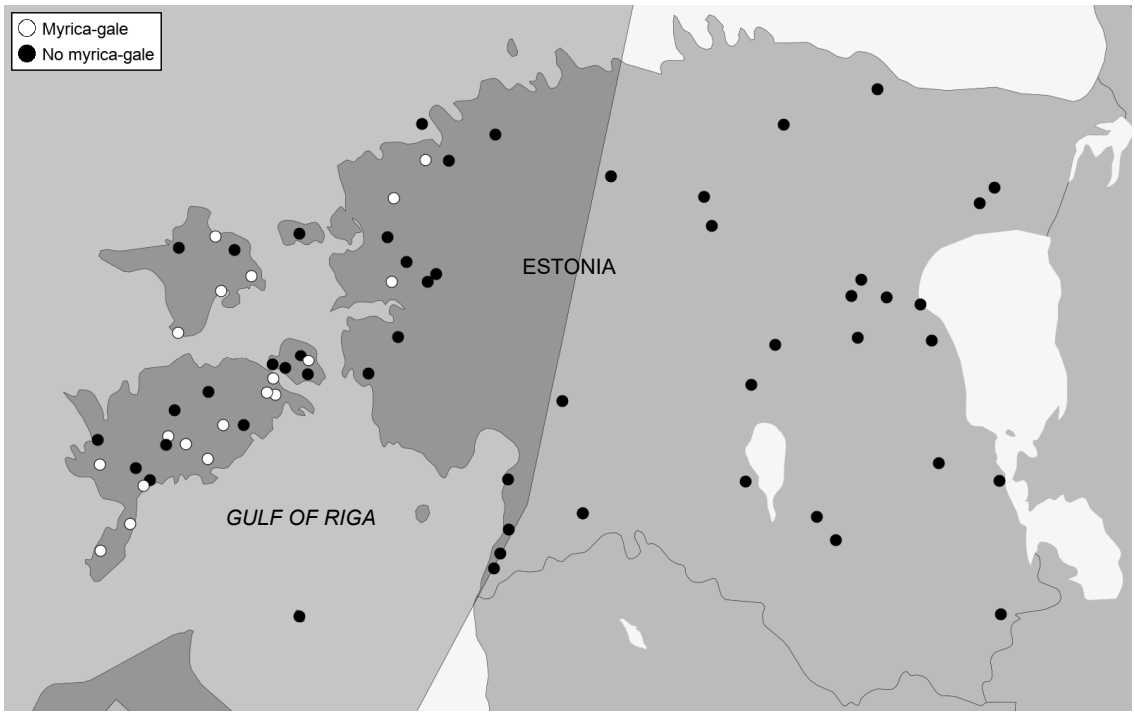

Figure 8. Utilization of gale. Myrica gale is found within the darkened area. .

As can be seen in the map, juniper was very widely used on the islands, but rarely in the southern part of the mainland. The use of juniper infusion seems to be mostly limited to the northwestern part of the mainland and the eastern part of Saaremaa. These are the parts of Estonia where juniper is the most abundant, which may well be the reason.

Juniper infusion was also widely used as an agent to clean the wooden vessels before brewing. This was common in most of northern Europe where juniper was available.

The use of sweet gale shows a very clear geographic distribution: it was confined to the islands and the northwestern part of the mainland. This is quite surprising, as these very clear demarcations are unusual in beer ethnography, and typically point to some specific underlying cause. Sweet gale has a rather limited distribution in Estonia, matching the areas of use quite well, so it is very likely that it was only used in areas where it is easy to find. Today, sweet gale has protected species status in Estonia.

Beer types

Farmhouse brewing never had named styles in the way that commercial brewing did, but we can still make out some types of farmhouse ale in the material. The oven-based farmhouse ale was mostly made with caramel malts (68%). Juniper and herbs were less used in this beer. There is less data concerning its strength, but it appears to have mostly been in the range 150-200 grams of malt per litre of beer. If these figures are representative it must have been a relatively weak beer, dark, mainly tasting of caramel.

The raw ale was almost exclusively made with pale, unsmoked malts (95%) and usually used juniper, and sometimes also herbs. The amount of malts varied from 200 to 500g for one litre of beer, so the strength would have likely been 4-7% alcohol. The hopping rates have varied dramatically, from 0.5 to 8 grams per litre. This type of beer must have been very similar to the *koduõlu* brewed on the islands today, although somewhat weaker.

The brewers themselves generally distinguished two types of beer: the main beer from the first wort, and the weaker small beer from wort taken off after the main beer. The small beer was generally known as ‘taherberi’. Many also made a third-grade drink, known as ‘taar’, where the spent mash was left to sour, and the resulting sour and almost non-alcoholic liquid taken off as an everyday drink against thirst. *Taherberi* and *taar* are very rarely produced today, but were made up until the last few decades.

Conclusion

The Estonian farmhouse ale tradition is interesting both for being alive today, and for historically showing many traits of very archaic brewing methods. Together with Finland, Estonia shows a much higher incidence of stone brewing than the Scandinavian countries proper, and the use of the oven and hot stones for mashing are also clearly remnants of very old brewing methods. There are strong indications that sweet gale and wild rosemary were more common in Nordic farmhouse brewing in the Middle Ages, and so the widespread usage of these in Estonia may be further indication that Estonia has retained more archaic brewing traditions than most other countries.

Today, the brewing tradition in Estonia is much reduced compared to its pre-Soviet state. Full farmhouse brewing is today only alive on the islands, and even there the local farmhouse yeast appears to be dead, and stone brewing also seems to have died out. Only a handful of farmers today make their own malts, and most of today's brewers buy modern commercial malts. The use of sweet gale and wild rosemary also seems to be just about extinct, although Paavo Pruul on Hiiumaa still uses sweet gale.[24] The beer produced on the islands today is generally known as 'koduõlu' (or island koduõlu), and today there are only two commercial producers, both using the brand name Pihtla.

On the mainland only Setomaa appears to still preserve some form of farmhouse brewing, and there the brewers buy commercially made 'malt loaves' from the shops. These 'loaves' produce very little sugar during mashing, so that the main sugar source is ordinary white cane sugar.[25] This style of beer is sometimes known as 'Seto koduõlu', to distinguish it from the island *koduõlu*, which is completely different in both taste and visual appearance.

Acknowledgements

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12. See Garshol, L.M. (2020) op. cit.
For more information on raw ale, see Garshol, L.M. (2015) 'Raw ale'. Blog post, 5 June, http://www.garshol.priv.no/blog/331.html ; Laitinen, M. (2019) op.cit.; and Garshol, L.M. (2020) op. cit.

13. Garshol, L.M. (2020) op. cit. and Garshol, L.M (2018a) 'How to brew keptinis'. Blog post 11 July,

14. http://www.garshol.priv.no/blog/394.html.

15. Broocman, R. (1736) *En fullständig swensk hushållsbok.* Norrköping.

16. ERM KK-X, KV 52, 241.

17. ERM EA-12 Gustav Ränk, 1926.

18. ERM KK-X, KV 51, 135.

19. Garshol, L.M. (2020) op. cit.

20. The highest usage of sweet gale outside of Estonia is in Sweden (7%), and of wild rosemary also in Sweden (2%).

21. ERM KK-X, KV 55, 325. ERM correspondent's archive, KV 104, A. Toomessalu. ERM KL-184 1.

22. ERM KK-X, KV 51, 145.

23. Moora, A. (2007) op. cit. refers to a source from Märjamaa saying the hop tea there was called 'kusikange' – kusi (urine), kange (strong).

24. Garshol, L.M. (2018b) 'Brewing koduõlu on Hiiumaa'. Blog post 11 March, http://www.garshol.priv.no/blog/386.html.

25. Garshol, L. M. (2017a) 'Seto kingdom day', Blog post 5 November, http://www.garshol.priv.no/blog/381.html and Garshol, L.M. (2017b) 'Taarka Tarõ: A Seto restaurant', Blog post 12 November, http://www.garshol.priv.no/blog/382.html.