

A Summary of Reproducing the 18th Century English Sea Biscuit

Research and Recipe by Jeff Pavlik

Making a reproduction sea biscuit, also called ships bread or simply biscuit during this era, would seem like a simple task if we follow basic period descriptions of “a large lump of dough, consisting merely of flower and water, is mixed up together”¹ But over the course of my research I have found many intricate details in the historical record concerning the types of flour used, the manners that various nations made their sea biscuits as well as observations on the science of baking these simple breads that all assist in better reproducing a period biscuit in modern times. This paper is a brief summary of some of the highlights of my research concerning the English sea biscuit. The French sea biscuit has some unique qualities that will not be dealt with in this paper. The full text of my research will be maintained at my website when it is completed.²

The first hurdle encountered in reproducing sea biscuits is that modern flours are in many ways different than historic flours. Modern flour is more finely milled and more carefully dried as well as it is bred to have a greater amount of gluten than the wheat of the colonial times. Biscuits made with only modern flour will differ in dough elasticity, water absorption and will feel smoother than period biscuits. The most significant problem is that millers of the period marketed a sort of ground wheat flour that is no longer produced with modern milling technology. Various names were given to this sort of roughly ground wheat: fourths, middlings, pollard and ships stuff. But a writer from the mid-18th century sums it up best, “The other sorts of flour, which biscuit and gingerbread makers use should be called coarse flour.”³

To best replicate the look of a sea biscuit a portion of the flour should be some sort of coarse flour with recognizable pieces of the wheat grain to imitate the addition of sharps or middlings. Sharps are a specific component of the unmilled flour known as middlings, “the greatest portion of the whole flour is constantly thrown into that assortment which is called Household, the rest and residue being Middlings only, such as is chiefly used for Biscuit Stuffs.”⁴ Working in collaboration with Alisa Crawford, the miller at *De Zwaan*, an 18th century windmill in Holland Michigan, I have been fortunate to utilize some of these sorts of flours in my research.⁵ Some options to make close replications of these coarse flours are given in the full text of my research.

What will be adequate for most people in replicating a more period correct biscuit is using stone ground red whole wheat flour and white whole wheat pastry flour.⁶ Another simpler option is to just use whole wheat flour and all-purpose flour. This combination has only a few of the attributes of period biscuit

¹William Falconer and William Burney, *A New Universal Dictionary of Marine*, (originally published London, 1815, reprint Naval Institute Press, 2006), 40.

² When the research is completed it will be published here: http://www.colonialbaker.net/english_sea_biscuit.html

³ Jonas Hanway, *Letters on the imporantace of the rising of the generation of the laboring part*, (London, 1766), 276.

⁴ Report from the committee appointed to consider of the methods practised in making flour from wheat, Parliament Procedures, (London, 1774), 8.

⁵ Information on this windmill can be found at: <http://www.cityofholland.com/Brix?pageID=111>

⁶ I use King Arthur flours in my baking. <http://www.kingarthurfLOUR.com/flours/>

flour, but suffices for our purposes. What is missing in this modern combination is the grittiness of sharps and the coarseness of flour stuck to bran (called pollards) so this modern dough is much more supple and smooth than that of period biscuits. The visible bran in modern whole wheat flour does give some texture to the biscuit, but it should be recognized that long pieces of bran were sifted away as much as possible during the colonial period.

Modern interpretations and recipes that describe the 18th century biscuit call for the addition of salt to the dough. In none of the primary documents found in this research is salt a named an ingredient of a biscuit. Salt is very important in the process of making risen bread as it helps bind the gluten proteins that hold the loaf's shape, helps control fermentation, gives bread a better flavor and maintains moisture in a baked loaf. But none of these virtues of salt in bread-making are required for a biscuit. Salt is such a mainstay in bread making that it has made its way into modern interpretations of a biscuit without any merits. Biscuit makers of the period were well informed on the detrimental effects of salt in a biscuit and were informed to "not use salt... salt can make it more likely to attract moisture from the air."⁷ Besides the lack of mention of salt in any documents on biscuits, we also have one poignant definition of a biscuit from 1701 that empathizes the lack of salt: "*Sea-Bisket*- of excellent use for the Sea, because baked without Salt, and well dried"⁸

When making biscuits the amount of water absorption in the flour is less important since the goal is not to make a soft loaf rather one devoid of moisture. But in following any recipe for breads, be aware that the amount of water called for might be needed to be adjusted. Biscuits, even with modern flour, begin with approximately 30% water and that is reduced by baking and drying to a mere 5% or less of its total weight. A period source confirms this ratio. "The water must be nearly a third of the mass, and is lost completely in the oven."⁹ For one pound of flour you will obtain just under a pound of biscuit. The inefficiency of biscuit's use of flour was surpassed by its effectiveness in making a necessary and durable foodstuff for trans-Atlantic voyages, continental warfare or exploration and trade into the interior of North America.

The size of 18th century biscuits varied, but in general the amount rationed was usually around one pound for the English and one and half pounds for the French during this era. Therefore in formulating this recipe I started with one pound of flour, which will yield one pound of biscuits, or what we can consider an average ration for the colonial era. Three period descriptions of the biscuit making operation confirm this flour-to-biscuit ratio. *The Seaman's Guide* from 1797 states that "it requires an hundred pounds of flour to make ninety-two pounds of biscuits."¹⁰ The 1802 *Domestic Encyclopedia* refers to a baker who takes 100 pounds of flour and when the dough is "well baked, afford 90 lb of biscuit."¹¹ Lastly *A New Universal Dictionary of Marine* from 1815 relates that flour for each batch is "112 pounds; which baked, produce 102

⁷*Encyclopédie Méthodique ou par ordre de Matières: Marine*, Volume 1. (Paris, 1783), 145.

⁸ Samuel Jeake, *A compleat body of arithmetic*, (London, 1701), 74.

⁹ *Encyclopédie Méthodique ou par ordre de Matières: Marine*, Volume 1. (Paris,1783), 154.

¹⁰ John Cochrane, *The Seaman's Guide*, (London, 1797), 26.

¹¹ Anthony F.M. Willich and James Mease, *The Domestic Encyclopaedia*, vol. 1, (London, 1802), 267.

pounds of biscuits.”¹² Dividing the pounds of flour used to make each pound of biscuit we can arrive at a common ratio that confirms that for every 1 pound of biscuit produced it takes on average 1.1 pounds of flour.

The recipe given will make 1 ½ pounds of dough. This amount can be divided into three to five pieces to make one ration of biscuit. The water lost by baking and drying the biscuits will reduce the bread’s weight by 1/3 and give you the proper weight for each biscuit of the given size. Oven temperatures and baking times are inconsistent in period documents. While the root of the word biscuit means “twice cooked”, there are only a few references to these breads being baked multiple times. Baking them once for an hour at 375 degrees and then air drying them for a few days is sufficient. There are an array of methods and devices that the biscuit bakers used to facilitate the further drying of these breads that I elaborate in my research paper. I suggest that the easiest manner to dry them at home is to place them on a cookie rack to that they get can dehydrate on top and bottom, or store them in the oven with the door slightly ajar so that the residual moisture can evaporate.

One English biscuit from 1784 is in the collections of the National Maritime Museum, Greenwich, London and can be seen on their website.¹³ The dimensions of this biscuit are 95mm (3¾ inches) diameter by 10mm (9/16") thick, to replicate this size I recommend dividing the dough in my recipe into five pieces. A piece of dough that fills a ½ cup measuring cup will make a biscuit about this size. Whatever the size biscuit you choose to make, it is best to press them down so that they are about ½ inch thick. Biscuit presses of the period were hefty pieces of metal imbedded with spikes that would puncture the bread to assist in evaporation. A modern pizza docker works very well for this task, or an ice pick can be used to put multiple holes in the biscuit.

After baking and thoroughly drying the biscuit, it should be very dense and not prone to breaking easily. Cracks in the dough come from insufficient kneading and if the biscuit is not thick enough they can break in storage or transport. When finished making biscuits you can compare them to a period test of a properly made sea biscuit. “A good biscuit breaks clean and crisp, has a shining appearance within, and the outside is glossy. When soaked, it swells considerably in the water, without crumbling, or sinking to the bottom of the vessel.”¹⁴

¹² William Falconer and William Burney, *A New Universal Dictionary of Marine*, (originally published London, 1815, reprint Naval Institute Press, 2006), 40.

¹³ <http://www.nmm.ac.uk/collections/nelson/viewRepro.cfm?reproID=D4001%5F1&picture=1#content>

This link will take you to the National Maritime Museum where you can observe the biscuit in detail. I am not in full agreement with the text given along with this biscuit. Hard tack is not a word used during this period, nor were weevils a significant problem with the provisions. To see an excellent debunking of the weevil myth see this article:

<http://www.hms.org.uk/nelsonsnavymaggot.htm>

¹⁴ Anthony F.M. Willich and James Mease, *The Domestic Encyclopaedia*, vol. 1, (London, 1802), 267.

Sea Biscuit Recipe

This recipe is the most basic manner to replicate the English sea biscuit of the 18th century using readily available ingredients. The amount of dough made using this recipe will equal a ration of one pound of biscuits after they are baked and dried.

2 cups whole wheat flour

1 cup white whole wheat pastry flour (or pastry flour or all-purpose flour)

1 cup plus 2 tablespoons of water

Preheat oven to 375 degrees.

Combine flour and water; add an additional tablespoon of water if the dough is too stiff for you to mix it by hand. The dough will be denser than bread dough and you should be cautious using modern mixers as they might not do well under the stress of this stiff dough. The initial water added to the flour will seem insufficient to experienced bread makers, but give it time to incorporate and dough will form.

Knead dough until it is smooth. This will take a few minutes. The amount of kneading necessary is less than when you are developing the gluten in yeasted dough, but the time and effort in this stiff dough is often the same. The dough will become easier to knead after a short while once the water has had time to soak into the flour.

Divide dough into three to five pieces. Hand roll each piece round like a dinner roll until it is a smooth mass. Press the dough down with the palm of your hand until it is about ½ inch thick. If the dough cracks on the edges or splits then more kneading is required.

Make evaporation holes using a pizza docker or an ice pick. The holes do not have to go all the way through the biscuit dough. The holes should be about ¾ inch apart from each other and cover the entire surface of the biscuit.

Place biscuits on a cookie tray and bake for one hour. During the baking you can open the door of the oven once or twice to let the evaporating water escape the baking chamber. After an hour remove the biscuits and place them on a cookie rack to cool and to continue to dehydrate them by leaving them exposed. You can also store them in the oven to dry once it is cooled. The biscuits will be ready for use as a provision after they have dried for several days. They will keep indefinitely if maintained in a dry, cool place and stored so that insects cannot access them.