

Iron industry and Banjar War on the Upper Barito Watershed, North Barito, Central Kalimantan

Industri besi dan Perang Banjar di hulu DAS Barito, Barito Utara, Kalimantan Tengah

Hartatik¹, Sunarningsih¹, Nugroho Nur Susanto¹, Gaury V. Daneswara², and Dian Triasri¹

¹Regional Agency for Archaeological Research in South Kalimantan Province

²Department of Culture and Tourism in Central Kalimantan Province

hartatik@kemdikbud.go.id

ABSTRAK

Kata Kunci:
Hulu Barito;
Perang
Banjar;
industri besi;
senjata;
buren

Penelitian arkeologi di hulu DAS Barito pada tahun 2017-2019 menghasilkan 19 situs peleburan bijih besi yang disebut *buren* dalam bahasa lokal. Berdasarkan pertanggalan radiokarbon diketahui bahwa situs *buren* digunakan dari abad ke-16 hingga abad ke-19 M. Tulisan ini bertujuan untuk mengetahui korelasi antara puncak industri besi pada abad ke-19 M dengan peristiwa Perang Banjar di hulu Sungai Barito, berdasarkan perbandingan kronologi, jenis senjata yang digunakan, dan pemilihan lokasi *buren*. Melalui pendekatan arkeologi kesejarahan, diketahui bahwa jenis senjata yang digunakan dalam Perang Banjar mempunyai kesamaan dengan senjata warisan milik penduduk hulu Barito. Diketahui pula bahwa sejumlah situs *buren* berada di lokasi yang disebutkan dalam sumber sejarah Perang Banjar. Lokasi *buren* tersebut bergeser dari tepi aliran sungai utama ke tepi aliran anak-anak sungai.

ABSTRACT

Keywords:
Upper Barito,
Banjar War;
iron industry;
weapon;
buren

Archaeological research on iron industry in the upper Barito river basin in 2017-2019, show 19 iron ore smelting sites called *buren* in the local language. Based on radiocarbon dating, the *buren* was used from 16th to 19th CE. This paper aims to explain correlation between the peak of iron industry in 19th CE and the Banjar War in the upper Barito river, based on a comparison of chronology, type of weapons, and location of *buren*. Through the historical-archeology approach, the authors suggest that the types of weapons used in the Banjar War have similarities with the inherited weapons of upper Barito people. Several known *buren* locations also recorded in historical data of the Banjar War. The location of *buren* shifted from the banks of main river to the banks of tributary river.

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INTRODUCTION

Archaeological research in 2017–2019 shows 19 location recognizes as iron ore smelting sites ([Table 1](#)). Local people address the location of iron ore smelting sites as *buren*. The *buren* located in the middle of forest, on the banks of the Montalat River and Teweh River. The two rivers are the Barito watershed in the upstream part of North Barito Regency, Central Kalimantan. The existence of *buren* is indicated by the distribution of iron slag, fragments of a clay smelting furnace, *tuyere* (air pipes made of clay), charcoal remains from firing, smelted raw iron, and iron ore fragments. Excavations at Buren Benangin, Buren Temalalu, and Buren Jaga Ramis uncovered two smelting furnaces ([Figure 1](#)). The smelting furnaces are round with a conical top and about 1 meter high. All of the furnaces found in decayed condition, the one side and the top of furnaces were collapsed ([Hartatik et al., 2020](#); [Hartatik & Sofian, 2020](#)).

Research in 2019 shows the location of iron ore sources in the Semayap River (a tributary of the Montalat River), in the Montalat River (upstream of Pelari Village), and in Riam Maninyau (Jaman Village) ([Hartatik et al., 2019](#)). Sources of laterite iron ore type are known to be in shallow soil layers and in low hilly areas close to the *buren* site ([Hartatik & Sofian, 2018](#)). The process of extracting iron ore is recounted in Schwaner's record during his expeditions down the Barito River. It was stated that the people in the upper Barito river took iron ore from the Barito river at low tide and had to dive to get iron ore when the river conditions were deep ([Schwaner, 1853](#)).



Figure 1. *Buren* Jaga Ramis with the findings of two different smelting furnaces size (red circle mark)

(Source: Regional Agency for Archaeological Research in South Kalimantan Province, 2019)

The distribution of *buren* in the upstream area of the Barito river basin ([Figure 2](#)) proofed that iron ore smelting is an important industry. The existence of industrial sites is related to many aspects, including technology, materials, product distribution, as well as social aspects such as economic and political dynamics ([Martin, 2009](#)). The existence of industrial sites can be studied and reassessed as

the basis for their development towards a more meaningful and sustainable cultural heritage (Di Ruocco, Sicignano, & Galizia, 2017). The archaeological data, in this case is a *buren* site, can provide a new perspective in the explanation of history and its use in the future (Venovcevs, 2020).

The Banjar War was an event with social and political nuances in the upper Barito watershed. The event took place in the mid-19th CE until the early 20th CE (1859–1905). The Banjar War began in the coal mining areas of Pengaron and Martapura, then expanded to the Dayak land area in the upper Barito, Central Kalimantan. It was called the Barito War or the Banjar-Barito War (Barjie, 2016). The Upper Barito watershed is known as the location of war. It also known as defense area of the warrior group led by Prince Antasari against the colonial government of Dutch East Indies. The relationship or correlation between the peak of iron industry and the events of Banjar War in Upper Barito is described in this article based on a comparison of the chronology, the types of weapons used in the Banjar-Barito War, and the selection of *buren* location related to the security conditions at that time.

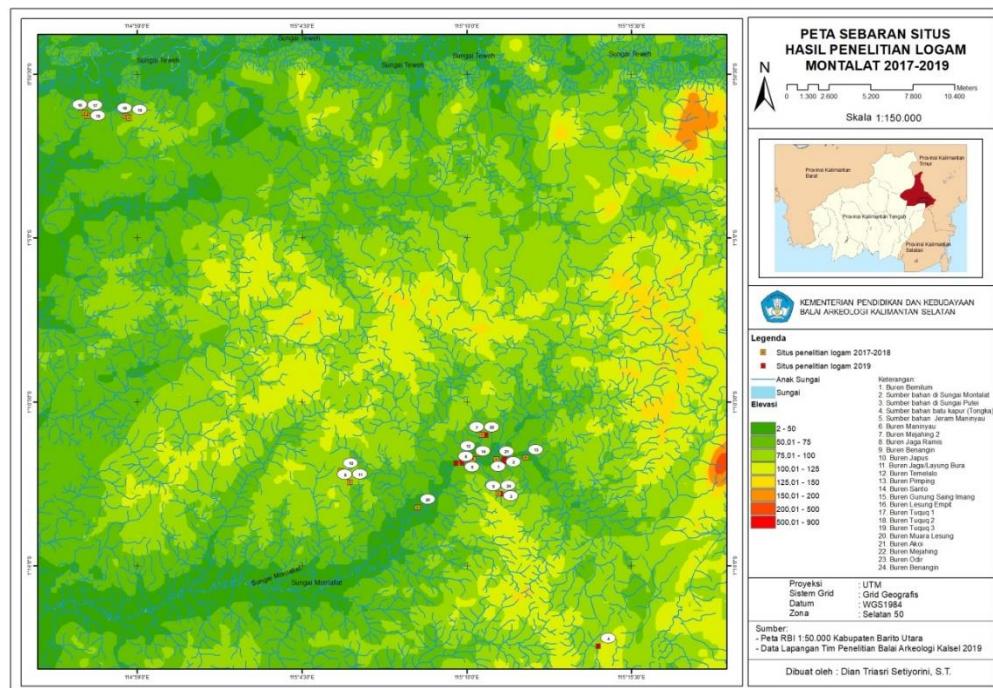


Figure 2. Map of the distribution of iron ore smelting sites in the upper Barito watershed (Source: Regional Agency for Archaeological Research in South Kalimantan Province, 2019)

METHODS

This article was written based on the results of descriptive research using inductive reasoning. Problems are answered with historical archaeology and ethnography approaches. Archaeological data in the form of iron ore smelting sites (*buren*) were obtained from archaeological research in 2017–2019 in the upstream part of the Barito watershed, North Barito Regency, Central Kalimantan. Historical data was obtained from library searches in the form of books, documents, archives,

and expedition records about the Banjar-Barito War. Ethnographic data in the form of information or testimonies from source person were cross-checked with historical data for the compatibility of analysis result and the interpretation of archaeological data ([Picha, 2009](#)). Ethnographic data were obtained from testimonies or narratives of local people based on their memories related to the Banjar-Barito War around the *buren* location.

The concept used in this research is a relationship or correlation between the existence of iron industry and the Banjar War in the upper Barito watershed. The correlation between iron ore smelting and the Banjar-Barito War is known through a comparison of the chronology, the types of weapons used in the Banjar-Barito War, the types of weapons produced by the *buren*, and the location of the *buren*.

The site chronology was obtained from radiocarbon dating analysis of excavated charcoal samples. The radiocarbon dating is then aligned with historical data during the Banjar-Barito War. The types of weapons used in the Barito War were obtained from historical data, then compared with the types of weapons produced by *buren* from ethnographic data. The locations of the Banjar-Barito War were obtained from historical data and compared with the location of *buren* in the current site distribution map. The ethno-historical data referred in this study are historical data in local communities as well as expedition records in the upstream area of Barito ([Ember & Ember, 2006](#)).

RESEARCH RESULTS

Banjar-Barito War

The upstream area of Barito from the 16th CE to the mid-19th CE was part of the Kingdom of Banjar (Sultanate of Banjar). In 1860, the territorial status of the Kingdom of Banjar was abolished. After that, the area that was formerly controlled by the Kingdom of Banjar became the territory of the Dutch Gubernurmen. The territory of the Dutch Gubernurmen is divided into *afdeling* (*Zuider en Oosterafdeling van Borneo*) led by the Gubernurmen Commissioner or Resident. The central government of Banjarmasin covers the areas of South Kalimantan, Central Kalimantan, and East Kalimantan. The Dutch East Indies government system changed frequently, until in 1898 through *Staatsblad* number 178, southern Borneo (Kalimantan) was divided into several administrative areas, namely, *Afdeling Martapura*, *Kandangan*, *Amuntai*, *Tanah Dusun*, *Tanah Dayak*, *Sampit*, *Pasir*, and *Tanah Bumbu*. *Tanah Dusun* is another name for the upstream area of Barito in Central Kalimantan. The name "Dusun" refers to the name "Dayak Dusun" who live in the upper part of the Barito watershed ([Sjarifuddin et al., 2020](#)).

The Banjar-Barito War is the longest historical battle event in Indonesia which took place in 1859–1905 ([Sjamsuddin, 2014](#)). This war was triggered by the intervention of the Dutch East Indies government against the Kingdom of Banjar and the ambition of coal exploitation in several *apanage* lands which belonged to the Sultan's family. The raid on the Dutch East Indies government's fort and coal mine in Pengaron in September 1859, was the starting point of resistance against the Dutch East Indies government. Then, the battle leaders negotiated to divide the battle territory. Tumenggung Jalil and Prince Hidayat had the battle area in Banua Lima, Demang Lehman in Martapura and its surroundings, while Prince

Antasari in Dusun Atas area (upstream Barito). Prince Antasari was accompanied by Tumenggung Surapati, the leader of Dayak Siong ([Sjarifuddin et al., 2020](#)).

The Dutch East Indies government persuaded Tumenggung Surapati to hand over Prince Antasari in exchange for 10,000 *guldens*. For that, they sailed from Banjarmasin to Muara Teweh, Central Kalimantan, on the Onrust ship and invited Tumenggung Surapati to look at the "modern" Onrust ship at that time. When Tumenggung Surapati and several of his men were looking around the ship, Tumenggung Surapati's son, Ibon, drew his *mandau* (traditional kind of machete) while shouting to give orders to attack. His call was followed by about 400 warriors who had been hiding in the bushes and approaching the Onrust by boat. They fought at close range with stabbing weapons, so the Dutch East Indies troops on board did not have time to use cannons and rifles. The ship carrying 10 officers, 40 marines, and 43 crew members finally sank after one of the warriors opened the water tap in the hold chamber. The Onrust ship sank together with its crew at the bottom of the Barito River on December 26, 1859. The sinking location of the Onrust ship was in Lontotuur, Muara Teweh, North Barito Regency. The weapons in the ship such as cannons, *lila* (small cannon), and rifles were taken by the warriors. The stolen weapons were then used against the Dutch East Indies troops, especially to fire on patrol boats in the Barito area ([Rees, 1865](#); [Sjamsuddin, 2014](#)).

Site Chronology

The absolute dating of the *buren* site was determined by radiocarbon dating (C-14) and accelerated mass spectrometry (AMS) of charcoal samples obtained from surveys and excavations. The C-14 analysis was carried out by the National Atomic Energy Agency (BATAN) Jakarta ([Table 1](#), sample numbers 1-6) in 2017 and the PINSTECH laboratory in Pakistan in 2018 (sample number 7/Buren Temelalo). The AMS analysis was carried out by the Waikato University laboratory in New Zealand ([Table 1](#), sample numbers 8-11) in 2019. The analysis yielded an average age range of the 12th CE to the early 20th CE, even though there are also dating results showing older age than Buren Mejahing TP 4, namely the 7th CE and early 10th CE ([Table 1](#), sample No. 5). The dating results from Buren Mejahing TP 4 are doubtful because they show a prominent gap age range from the results of other sites. Therefore, a re-analysis of the Buren Mejahing TP 4 charcoal sample was carried out by the Waikato University laboratory. The analysis result shows the age 1778–1789 cal AD ([Table 1](#), sample No. 10). A re-analysis was also carried out on charcoal samples from the Buren Temelalo TP 1 by PINTECH Pakistan in 2018. The results of the analysis show the age 1167–1218 cal AD ([Table 1](#), sample No. 7). The results of re-analysis by the Waikato University laboratory show the age 1528–1552 cal AD ([Table 1](#), sample No. 11) ([Hartatik et al., 2019](#)).

The re-analysis of samples from Buren Benangin TP 1 in 2018 yielded age range that did not much different from the analysis in 2017, namely in the 17–18th CE. Nine samples from five sites (Buren Benangin, Mejahing, Temalalo, Jaga, and Tukuq) show an age range from the 16th to the 19th CE. The results of dating analysis show that the smelting iron ore activity in the upstream area of Barito lasts for a quite long time, about four centuries. The peak of activity occurred from the end of the 18th CE to the 19th CE indicated by Buren Benangin, Buren Jaga, and Buren Mejahing. Those three *buren* located in the Montalat sub-watershed in Pelari

and Kandui villages, Gunung Timang sub-district ([Hartatik et al., 2019](#)).

The time span of the iron ore smelting activity coincided with the Banjar War that took place in the upstream of Barito River (1859-1905). The latest radiocarbon age obtained from Buren Tukuq in the Teweh sub-watershed shows 117 BP or 1919-1935 cal AD. The finding of iron slag in the hilly *buren* raises an indication that the *buren* is used to iron ore smelting activity persisted over a long period of time. Charcoal samples for the Buren Tukuq dating analysis were taken from iron slag mounds at a depth of about 20 cm from above the ground, so there are indications that in the lower layers older age will be obtained ([Hartatik et al., 2019](#)).

Excavations at Buren Benangin, Temalalo, and Jaga show that the iron slag mound is located about 3–5 meters from the smelting furnace. The iron slag mound is hilly with a height of about 1–1.5 meters and a width of about 3x5 meters. The soil layer around the smelting furnace at a depth of 40 cm (from the highest point) is already the original/cultural soil layer. This condition was not found at the Buren Benangin TP 2. It is located on a low slope area which has a cultural soil layer within the depth of 70 cm. Charcoal samples for absolute dating obtained from the middle layer and the lowest layer, while samples from the upper layer (possibly younger), were not analyzed because of the high possibility of contamination by recent activities ([Hartatik et al., 2019](#)).

Table 1. Results of radiocarbon dating (C-14) from research in 2017–2019

No.	Sample Name/Depth	Percent Modern Carbon (PMC)	BP Age	Calibration (cal AD Calib. Stuiver & Reimer, 1993)
1.	Buren Benangin TP1/20 cm)	97,53±0,81	207±106	1782–1797
2.	Buren Benangin TP2 /70 cm	95,55±0,85	376±20	1455–1496
3.	Buren Mejahing TP 1/20 cm	96,97±0,90	254±14	1645–1657
4.	Buren Mejahing (survey, ±20 cm)	93,31± 0,97	573±30	1327–1342
5.	Buren Mejahing TP 4 (30 cm)	86,23±0,97	1225±65	665–902
6.	Buren Tukuq 3 (survey, ±30 cm)	98,32±0,62	140± 8	1919–1935
7.	Buren Temalalo TP 1 /30 cm	90,21±6	850±100	1167–1218
8.	Buren Jaga Ramis TP 1 /40 cm	98,1±2	153±17	1850–1869
9.	Buren Benangin TP 3 /30 cm	97,2±1,8	229± 5	1653–1665
10.	Buren Mejahing TP 4 (30 cm)	97,6±1,7	198± 4	1778–1789
11.	Buren Temalalo TP 1 /20 cm	96,4±1,8	229± 5	1528–1552

(Source: [Hartatik et al., 2019](#))

Furthermore, the results of absolute dating analysis compared with the relative dating obtained from the *buren* ethnographic data. Source persons in the Teweh and Montalat watersheds stated that the last time iron ore smelting activities was carried out by his great-grandfather. According to the owner of Jaga *buren*, *Bue* (a nickname for grandfather in the Dayak Taboyan language) Markus Mirun (93 years old), Jaga *buren* last used to smelt iron ore by his grandfather's parents. *Bue* Markus Mirun is the fourth descendant of the iron ore smelter. The relative dating based on the estimation of four generations. It is assumed that one

generation has life span 25 years old. One generation is multiplied by three and then added by the age of the fourth generation (*Bue Markus Mirun*, 93 years), resulted 168 years. This calculation indicates the relative age of the Buren Jaga which was last used 168 years ago or around 1851. This age is close to the results of absolute dating analysis in the Waikato University laboratory, which is 153 ± 17 BP or 1850–1869 cal AD.

Weapons of Local Production

Weapon manufactory in Kalimantan existed long before the Banjar War, namely in the Negara area located in the banks of Negara River (Barito sub-watershed). Major Hendriks, the military commander of Southern Borneo and the East Coast, investigated a weapons manufactory by orders of the Major General Cochius, Commander of the Dutch Indian Army in 1842. Hendriks recorded that weapon manufactory in Negara made various types of weapon, both European weapons (pistols and various rifles), as well as local weapons in the form of hand weapons such as machetes, *kris*, spears, and *kelewang* (a type of machete or *mandau*). They are divided into workshop groups. For example, workshops for gun barrels, preparation and assembly of spare parts, rifles finishing, bullets, pistols, gun grips, as well as particular workshops for iron, copper, and silver ([Hendriks, 1842](#)).

Hendriks' recorded the material for making weapons comes from iron stone in the land of Dusun (upper Barito) which is called Dusun iron or Montalat iron. It was named that because the iron was taken from around the Montalat River. There are two types of iron ore, namely river iron ore (river rock) and mountain iron ore (mountain iron rock). Dusun's iron ore is one cubit (*hasta*) below the ground. Residents in Dusun smelt the iron ore not using a high furnace, but a simple low furnace. They can produce number 1 quality iron referred as steel iron, and number 2 quality iron referred as black iron. The price of steel is 0.3–0.35 *guldens*, while black iron is 0.25 *guldens*. The quality of black iron is almost the same as iron from Europe, while the quality of steel is far below the iron from Europe. At the time, local people in Dusun were not yet familiar with various metal alloys in steel making ([Hendriks, 1842](#)).

Based on the list of weapon prices in [Table 2](#), the cheapest weapon prices are local weapons such as *kelewang* (a type of machete) and a curved sword (a type of *mandau*). The most expensive weapons were European types such as rifles and pistols with *pamor* (bright streaks or streaks on the blade of a metal weapon that appears by mixing two or more different metal materials). Historical data that records the types of weapons in the Banjar-Barito War in the Barito region is very limited. However, the ethnographic data in the form of iron weapons as inherited weapons owned by local people from the *datu* (the name for the grandfather's parents) illustrates the types of weapons that might be used during the Banjar-Barito War. The types of inherited weapons include *mandau*, machetes or *kelewang*, spears, blowpipes, and small knives (*jamiya*). There is a clear difference between the types of weapons used by the Dutch East Indies troops and those of the local troops. The Dutch East Indies troops used long-range weapons such as firearms and cannons, while local troops used melee stabbing weapons ([Rutte, 1863](#); [Sjamsuddin, 2014](#)).

Table 2. Types and prices of Negara-produced weapons

No.	Weapon Type	Price (f/ Gulden)
1.	Dutch infantry rifle without <i>pamor</i> circle	20 f
2.	Rifle with <i>pamor</i>	30 f
3.	Single-barreled shot gun with <i>pamor</i>	25 f
4.	Hunting rifle with <i>pamor</i>	30 – 40 f
5.	Short rifle without <i>pamor</i>	18 f
6.	A pair of guns with <i>pamor</i>	28 f
7.	A pair of guns without <i>pamor</i>	20 f
8.	A curved sword without a hilt, with <i>pamor</i>	8 f
9.	A curved sword without a hilt, without <i>pamor</i>	6 f
10.	<i>Kelewang</i> with <i>pamor</i>	8 f
11.	<i>Kelewang</i> without <i>pamor</i>	6 f
12.	Silver plated rifle with <i>pamor</i> on the bottom and and the barrel with a gold-studded keyplate	110 f
13.	Two ordinary rifles, neat	35 f
14.	Two curved sword blades	8 f

Source: (Hendriks, 1842)

The weapons used in the Banjar-Barito War are recorded in the notes by M.C.E. Le Rutte's, a medic who joined the Dutch East Indies army. Weapons in the form of a long stick (a type of spear), *sumpitan* (*blowgun*) with a spear tip, *mandau*, short dagger (*badik-jamiya*), short sword (*perladin* or *lading* machete), carried by Dayak Siong and DayakPatai who worked for the Dutch East Indies troops. Rutte also mentions a number of stabbing weapons such as *ilom*, *sakking*, *zadop*, and *bladow* (Figure 3) (Rutte, 1863). The weapon called *parang lading* (knife machete) is curved, possibly this is the weapon which Hendriks calls a curved sword for 8 *guldens*. Compared to other stabbing weapons, the *mandau* is the most widely used weapon in the Barito war. As in the incident on the Onrust Ship attack by Tumenggung Surapati's son, it was told that he was wielding a *mandau* as a signal to start the attack (Sjamsuddin, 2014). The *mandau* (Figure 4) is a type of inherited weapon owned by almost all families in the upper Barito, while the *jamiya* (Figure 5) is only owned by certain people.

The existence of the iron industry in the upstream Barito was recorded in the Schwaner expedition while navigating the Barito River in 1847. It is stated that iron blades are one of the main commodities from the upstream Barito region which are traded to southeastern Kalimantan, in addition to rattan, agarwood, beeswax, and honey. Iron blades were traded from villages along the Barito River to be exchanged for daily necessities, such as salt, cloth, *kebaya*, *sarongs*, tobacco, and cotton. Schwaner recorded that the exchange rate of 1 *gantang* (bushel) of salt was equal to 4 iron blades or f 1.60 (1.60 *guldens*), so 1 iron bar was valued at f 0.4 (0.4 *guldens*) (Schwaner, 1853). Schwaner passes through the Montalat River, a tributary of the upper Barito River. However, Schwaner does not appear to have entered the Negara River, so he does not record the existence of an iron industry on the banks of the Negara River. Reports related to the iron weapons industry on the banks of the Negara River are recorded in Carl Bock expedition in 1879. It is stated that the residents of Negara worked as pottery makers, boats, and weapons in the form of rifles and *kelewang* (a type of machete). Bock stated that iron ore for weapons was imported from the Dusun district or the upper Barito (Bock, 1988).

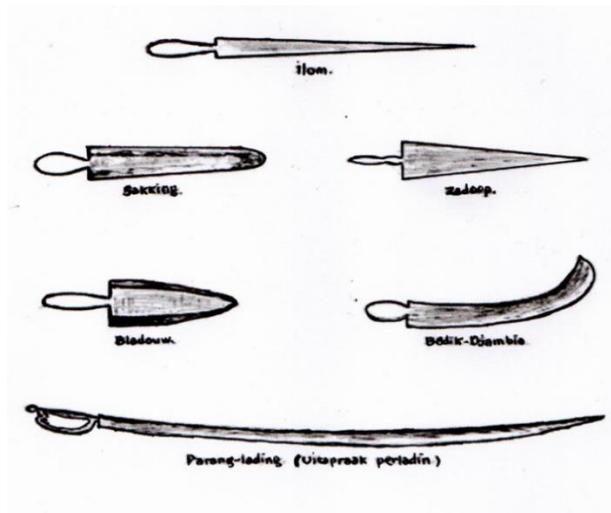


Figure 3. Sketch of Dayak weapons during the Banjar-Barito War
(Source: [Rutte, 1863](#))



Figure 4. The *mandau* and its case belonging to Mr. Armani Koi, Pelari Village, Gunung Timang
(Source: Doc. Regional Agency for Archaeological Research in South Kalimantan Province)



Figure 5. Jamiya belonging to Mr. Salapan, Sikui Village, Teweh Tengah District
(Source: Doc. Regional Agency for Archaeological Research in South Kalimantan Province)

DISCUSSION

Buren and the Traces of the Banjar War in Upper Barito

The upper Barito watershed became the arena of Banjar warriors against the Dutch East Indies from the mid-19th CE to the early 20th CE ([Saleh & Sutjjaningsih, 1993](#); [Sjarifuddin et al., 2020](#)). The Onrust shipwreck at the bottom of upper Barito River is one of the Banjar War evidences. The existence of Prince Antasari's fortress in Gunung Tongka in the upper Montalat River, and several other villages, is evidence that the Banjar-Barito War also took place on the Montalat River (a tributary of the Barito River). Several village names are mentioned in the historical data of the Banjar-Barito War. Oral traditions that are still remembered by the local people mentioned Malungai Village, Rerawa Village, Pelari Village, and Tongka Village. Malungai and Rerawa villages located in the lower Montalat River, while Pelari and Tongka villages are in the upper Montalat River (administratively part of the Gunung Timang District, North Barito Regency). There are at least six *buren* sites in Pelari Village and one in Tongka Village of the upper Kelaat River (a

tributary of the upper Montalat River). In addition, according to information from Polonius, the head of the Dayak tribe of Gunung Timang sub-district, there are also many *buren* in the villages of Malungai and Rerawa. However, the *buren* in this location has never been studied ([Hartatik & Sofian, 2018](#)).

The Prince Antasari guerrilla war that took place in the upper Barito watershed was based on the consideration of natural conditions in the form of mountains with hundreds of rivers and dense forests. This considers as an advantage since it cause difficulties for the outsiders who are not familiar with natural conditions to enter and find the location. The upper Barito watershed on the border of Central Kalimantan and East Kalimantan is also considered strategic because it makes the Paser and Kutai Sultanates relationship easier, they are the relatives and alliances of Prince Antasari. The two sultanates were willing to help Prince Antasari's struggle by sending aid in the form of weapons and gunpowder ([Sjamsuddin, 2014](#)).

Several places mentioned in the historical data of the Banjar War, such as Malungai, Rarawa, Pelari, Sengkorang, Tongka or Ingai, as well as villages along the Montalat River and Teweh River, have a *buren* site for smelting iron ore. Meanwhile, Sampirang Village in the upper Teweh River, East Teweh District, is also accessible from Hajak which has a *buren* site ([Table 3](#)). Absolute dating shows that the *buren* in the Montalat and Teweh watersheds date back to the 1800s or early 19th CE. The *buren* in the Montalat watershed at that time were Buren Jaga (in Kandui Village), Buren Benangin and Mejahing (Pelari Village), and Buren Tukuq in Hajak Village (Teweh watershed) ([Table 3](#)). The Banjar War in the upper Barito happened in the mid-19th CE to the early 20th CE, apparently has the same age with several *buren* in the area.

Historical data from Schwaner, Carl Bock, and Rutte stated that the upper Barito is a source of raw iron. Most of the raw iron smelted from the *buren* is sold, while a small portion is manufactured into personal weapons. Ethnographic data show that iron weapons in the form of *mandau*, machetes, spears, blowgun, short swords (a type of machete), and daggers/*jamiya* which are kept by the local people are inherited from the *datu*. The types and shapes of these weapons are similar to those described by Rutte (1863) as the weapons of the Dayaks who were the auxiliary troops of the Dutch East Indies and the troops of Prince Antasari ([Rutte, 1863](#)). This type of weapon was also found in the Gunung Tongka Fort which was left in a hurry by Prince Antasari and his troops. The *mandau* was the most dominant weapon in the Banjar-Barito War. At present, the *mandau* is a type of inherited weapon that is owned by almost all families in the upper Barito.

Table 3. *Buren* sites in the Barito watershed and the distance to iron ore sources

No	Buren Name	Location		Distance to River/Iron Ore Source
		District/Village	subWatershed/River	
1	Gunung Saing Imang	Teweh Baru/Hajak	Teweh/Jungan	0 meters (iron ore source location)
2	Lesung Empit	Teweh Baru /Hajak	Teweh/Jungan	300–500 meters
3	Buren Tukuq 1	Teweh Baru/Hajak	Teweh/Tukuq	iron ore source
4	Buren Tukuq 2	Teweh Baru/Hajak	Teweh/Tukuq	iron ore source
5	Buren Tukuq 3	Teweh Baru/Hajak	Teweh/Tukuq	± 50–100 meters
6	Japus	Gunung Timang/Kandui	Montalat/Japus	± 100 meters
7	Jaga Ramis/Layung Bura	Gunung Timang /Kandui	Montalat/Layung Bura	± 100 meters
8	Buren Muara Lesung	Gunung Timang/Payang Ara	Montalat/Montalat	± 200 meters
9	Buren Maninyau	Gunung Timang/Jaman	Montalat/Montalat	± 500 meters
10	Buren Temelalo	Gunung Timang/Pelari	Montalat/Temelalo	± 200–300 meters
11	Buren Akoi	Gunung Timang/Pelari	Montalat/Montalat	± 50 meters
12	Buren Mejahing	Gunung Timang/Pelari	Montalat/Jaman Kecil	± 100–200 meters
13	Buren Benangin	Gunung Timang/Pelari	Montalat/Benangin	± 50–100 meters
14	Buren Santo	Gunung Timang/Pelari	Montalat/Montalat	± 30–50 meters
15	Buren Mejahing 2	Gunung Timang/Pelari	Montalat/Jaman Kecil	± 100 – 200 meters
16	Buren Bemilum	Gunung Timang/Pelari	Montalat/Montalat	± 200–300 meters
17	Buren Odir	Gunung Timang/Sengkorang	Montalat/Tiontang	± 100 – 200 meters
18	Buren Pimping	Gunung Timang/Sengkorang	Montalat/Montalat	± 30–50 meters
19	Buren Kelaat	Gunung Timang/Tongka	Montalat/Kelaat	± 30–50 meters

Source: (Hartatik & Sofian, 2020)

The Rationale of the *Buren* Location

The socio-economic development of a community cannot be separated from the political conditions of the government and the policies of the authorities at that time. Various historical sources state that raw iron from smelting activities in the upper Barito is traded in southeastern Kalimantan (Schwaner, 1853) and is the raw material for the iron industry in Negara (Bock, 1988; Hendriks, 1842). The fourth generation of iron ore smelters in the Upper Barito said that the iron weapons produced by *buren* at that time in the form of *mandau*, machetes, spears, and *jamiyas*, were not traded, but to supply personal necessities.

The distance from the material sources

Rivers have a very important role for iron ore smelting activities, both to fulfill daily necessities and to smelt the iron. For example, the process of extinguishing the fire and dipping the iron coal that requires water. Rivers also provide a source of iron ore, such as the Semayap River and Riam Maninyau in the sediments of Montalat River. Thus, the *buren* located in a place not far from the material source or in a location close to the access of material source. Such locations are found in Buren Akoi, Buren Maninyau, Buren Santo, Buren Pimping, Buren Muara Lasung, and Buren Bemilum which are located on the banks of Montalat River.

Iron ore material is also available in the Montalat River tributaries, namely the Semayap River, Putei River, Benangin River, and Layung Bura River. Iron ore material is not all taken from the nearest river. For example, as in Buren Lesung Empit. The *buren* is closer to the Jungang River (about 50 meters), but the iron ore material is actually imported from Mount Saing Imang, about 300 meters away (Table 3) (Hartatik & Sofian, 2018).

The availability of iron ore material in the Montalat River was mentioned by Schwaner in his expedition record to the Barito River in 1847. Schwaner recorded the iron ore used in the iron ore smelting activities in the upper Barito was laterite type. Iron ore is extracted from riverbanks, mainly from lignite formations cut through by the Barito River. The iron stone can be seen when the water of the Barito River recedes, people take more iron in the dry season rather than in the rainy season when the river water is high (Schwaner, 1853). Laterite iron ore reserves in the southeastern part of Kalimantan (South Kalimantan and parts of Central Kalimantan) are the highest compared to other places in Indonesia (Ishlah, 2009). Laterite rock types are very common in tropical areas such as Africa and Southeast Asia in the form of eluvial and alluvial deposits. Laterite iron ore is blackish red because it has *hematite* and *siderite* (clay iron stone) elements (Do, 2013; Santoso & Subagio, 2018).

The existence of material source in the river was also revealed by local people living on the banks of the Montalat River. One of the iron ore sources is Riam Maninyau, located in Jaman Village in the middle of Montalat River. The research in 2019 was carried out when the Montalat River water was receding in June, so Riam Maninyau looked like a meander with laterite and hematite rock contain a lot of iron elements (Hartatik et al., 2019).

Then, based on the furnace and air pipes (*tuyere*) found at the *buren* site, it is known that the material for making the furnace and air pipe is clay. Yellow or yellowish-brown clay is found on riverbanks and near the *buren* in the form of layers and insertions (Hartatik et al., 2019). The clay is brownish-grey, yellowish-brown, and reddish-brown, thin interspersed with loam and fine sand. This layer in geological terms is called silt (Moechtar et al., 2016). Yellow clay type silt has a moderate water content with a slightly coarse texture because it contains sand. This type of soil is found in several places on the cliffs of Montalat River and the ridges around the *buren*, such as in Buren Jaga and Buren Benangin (Hartatik et al., 2019). In addition, the iron ore smelting process requires fuel which is generally obtained from wood charcoal. The types of wood used to make charcoal are hardwoods, especially ironwood, *halaban* wood, and *cangal* wood. The *buren* located in the forest close to the fuel source is in the form of wood as charcoal.

The land ownership

A number of *buren* renamed according to the name of river, for example Buren Benangin, Buren Tukuq, Buren Muara Lesung, and Buren Kelaat. In addition, a number of *buren* have been named after the land owner or the farmer, for example Buren Jaga Ramis and Buren Turing. There are also a number of *buren* which get their name after the dominant plant, for example Buren Layung Bura (*layung bura* means *white durian*). Tracing of the land ownership shows that most of the *buren* is still owned by the smelters decendants (fourth descendants).

However, there are also ownership shiftment of *buren* through land trading.

The location of *buren* is generally not far from the material source. However, there are also *buren* that are far from the material source location. For example, Buren Maninyau which is 500 meters from the material source located in Riam Maninyau. Another example is Buren Lesung Empit located 300 meters from the material source, namely Saing Imang. Customary leaders and local elders stated that the location of *ladang* (cultivation field) is also the location of *buren*. This was said by Deransyah, local people of Pelari Village who still has an inherited spear made of *buren* iron, and Edi Rasisi, local people of Pelari Village. He stated that the raw iron inherited by the *datu* was made in the *buren* along the Jaman River. This is because his ancestors owned cultivation fields around the Jaman River. Local people smelt iron ore on their cultivation land, although it is possible that the iron ore material was taken from a location far from the *buren*. The average distance between the *buren* and the material sources is around 30-300 meters, while the furthest distance between the *buren* and the material source is about 500 meters (Buren Maninyau) (Table 3).

The socio-political and security conditions

The environment as well as natural resources are known to affect the site distribution. However, just as the phenomenon of forced mass migration has influenced the distribution of archaeological sites in the Heihe River basin in northwestern China over the last 2000 years (Shi et al., 2019), socio-political events also have an influence that cannot be ignored. The iron industry site in the upper Barito watershed thrived during Colonial period was probably also influenced by the policies of Dutch East Indies government at that time.

Reports of military investigations by Hendriks (1842) and explorer Carl Bock (1879) stated that the arms industry existed in Negara before the outbreak of Banjar War. Both reports state that the iron industry in Negara obtains raw materials from upper Barito (Dusun District). Hendriks reported that craftsmen in the upper Barito smelted iron ore using a simple smelting furnace. Even though, they produced raw iron of fairly good quality (Hendriks, 1842). The simple smelting furnace mentioned in Hendriks' report corresponds to the smelting furnace at the *buren* site, which is a round clay kiln with a height of about one (1) meter.

The *buren* distribution map shows almost all *buren* are in the primary forests and close to the rivers (Figure 6). According to information from the local people of Pelari Village, initially the *buren* was located on the bank of a large river (Montalat and Barito Rivers) because it was close to the material source in the river. Local people stated that the shiftment of location occurred during Colonial period because the Dutch East Indies government forbade the existence of *buren*, so the local people smelted iron ore secretly in the forest. This location is far from the big river where the Dutch East Indies troops passed by regularly. They believe that the *buren* on the banks of large rivers are older (possibly before Colonial period) than those on the banks of small rivers. This information was obtained from the author's interview with Lukisan (50 years old), a local people of Pelari Village who heard the story from his grandfather (*pers.com* on May 5, 2018).

W.A. van Rees (1865) and M.C.E. Le Rutte (1863) mentions that the Barito River and the Montalat River were the main routes of the Banjar-Barito War. The

warriors led by Prince Antasari used river routes, dense forests, and mountains that were difficult to reach by the Dutch East Indies troops. The defense center of the warriors is the Gunung Tongka Fort located in the upper Montalat River. Tongka Fort can be reached from Banjarmasin through the lower Barito River, Ayuh River, the rivermouth of Montalat River, to the upper river in Mount Tongka. The journey from the Ayuh River to the upper Montalat River was very difficult for the Dutch East Indies troops. Prince Antasari's warriors deliberately put obstacles in the river's path in the form of large transverse trees, so that many Dutch East Indies ships were damaged. This caused the Dutch East Indies troops to plunder whatever was around the river. The wood in the fields and in the local houses was looted for ships or boats. Looting was permitted by the troop leader of the Dutch East Indies as a form of self-defense against the warriors. The Dutch East Indies troops regarded the warriors as rebels (Rees, 1865; Rutte, 1863). The looting by the Dutch East Indies troops made the population worried. This is what drives the displacement of *buren* from the banks of main river (Montalat) to the smaller river (tributary of Montalat). At that time, the Dutch East Indies troops patrolled the upper Barito watershed, either by river or by land. They also built military barracks (forts) at each river mouth to monitor the local people activities.

The smelting of iron ore in the upper Barito watershed had been survived for hundreds of years until it reached its peak in the mid-19th CE. However, iron ore smelting stopped not long after. The peak of iron ore smelting industry in *buren* was during the Banjar Barito War (around the mid-19th CE to the early 20th CE) as happened in Buren Tukuq, Buren Mejahing, Benangin, and Jaga Ramis. The *buren* located on the bank of a small river, still has evidence of smelting in the form of a furnace and air pipe (*tuyere*) of clay in a relatively intact condition. The older *buren* are located right on the banks of a large river (Montalat River), such as Buren Muara Lasung, Buren Akoi, Buren Santo, and Buren Bemilum. There were no smelting furnaces and *tuyere* found. The *buren's* location shift based on archaeological data, historical data, and oral history from local people is related. Prior to the Colonial period, the location of *buren* was selected on considerations of proximity to material sources and land ownership, while in the Colonial period the consideration of security factors was more important than the location of the materials source and land ownership.

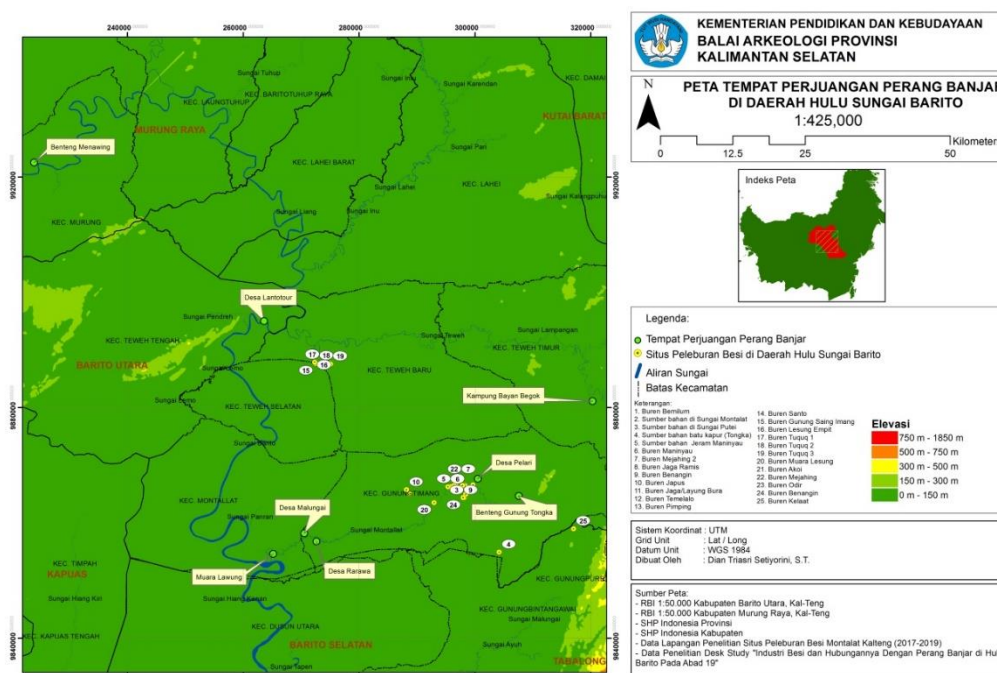


Figure 6. Map of the Banjar Barito war site and the *buren* sites in the upper Barito watershed
(Source: [Hartatik & Sofian, 2020](#))

CONCLUSION

Ethnographic data show that apart from being traded, iron craftsmen in the upper Barito also manufacture personal weapons such as machetes, *mandau*, spearheads, knives, and *jamiyas*. Most of the population still owned these weapons as ancestral heirlooms or inheritance made of *buren* iron. These types of weapons are similar with the weapons used during the Banjar-Barito War as written in historical data.

There are several villages mentioned in the history of the Banjar War (Banjar-Barito War) and the oral history that people still remember, namely Malungai Village, Rerawa Village, Pelari Village, and Tongka Village. These villages have *burens* dating back to the war, including Buren Benangin and Mejahing in Pelari Village; Buren Kelaat in Tongka; Buren Jaga in the upper of Rerawa Village, and Buren Tukuq in the Hajak Village (this location can be reached from Sampirang in the upper Teweh River). Sampirang is Prince Antasari's last defense village after Tongka Fort in the upper Montalat River.

During the Banjar-Barito War, iron ore smelting was still carried out clandestinely on the banks of tributaries, far from the Montalat and Teweh rivers. The safety factor is taken into consideration in the selection of *buren* locaton, in addition to the proximity of material source and land ownership. Absolute dating and ethnographic data show that the *buren* during the Banjar-Barito War were Buren Jaga, Benangin, Mejahing, and Tukuq. Archaeological data at the *buren* site can still be observed, among others in the form iron slag mounds, smelting furnaces, and air pipes made of clay (*tuyere*), both in half intact and fragmentary state. The old *buren* (referring to the period before the Banjar-Barito War) located

on the banks of major rivers (Montalat River) such as Akoi and Bemilum, were abandoned before or during the Banjar-Barito War. The older *buren* is now sacred by the locals. Almost no trace of *buren* material is visible on the ground because it is covered with dry leaves and thick weeds.

AUTHOR DECLARATION

All authors contributed to the creation of this article. The manuscript has been read and approved by all authors. Hartatik as the primary contributor, while Sunarningsih, Nugroho Nur Susanto, Gaury Vidya Daneswara, and Dian Triasri as secondary contributors. The order of authors listed in the manuscript has been approved by all authors. All authors confirm that there is no known conflict of interest associated with this publication and no significant financial support for this work that could have influenced its outcome. All authors adhered to the Copyright Notice owned by Berkala Arkeologi.

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