"Oh, I've Seen One Way Bigger Than That!"

Current Research On Housepit Settlement Patterns in the Mid-Fraser Region Of B.C.

Jon Sheppard & Bob Muir

The Mid-Fraser Settlement Pattern Project

As most archaeologists will attest, it is always dangerous, and perhaps even pointless, to make absolute claims about the archaeological record. Statements such as "this is the 'largest' or 'oldest' or 'most important' site in this region," will soon be shouted down by many counter claims. Certainly those of us working in an area for any length of time have been told, by both locals and colleagues, that "you're digging in the wrong place, there's a site twice as big/old/important just over there, I'll show it to you... one day..." This, however, is often where the investigation ends, the promised field trip is never mounted and the challenge to the claim never substantiated. The section of the Fraser River between Lillooet and Big Bar has been the focus of much archaeological research for over forty years (see for example Sanger 1962, Stryd 1977, Hayden 1997, Prentiss et al., 2003, Sheppard 2006, Morin et al., 2008). Most of the attention has been given to three sites (Bell, Keatley Creek, and Bridge River), the latter two sometimes boldly touted as containing both the most and the largest housepits in the region. But due to persistent hearsay, campfire tales, and cryptic site forms from the 1970s the recognition that these are just two of several large communities that once existed in the area is ever growing (see Morin et. al, 2008). However, despite the considerable attention it has received, there are still many basic questions that have yet

Figure 1 (above): Mykol Knighton and Jon Sheppard measuring a small housepit on the western periphery of the Keatley Creek site. (Photo by Vanessa Rockel).

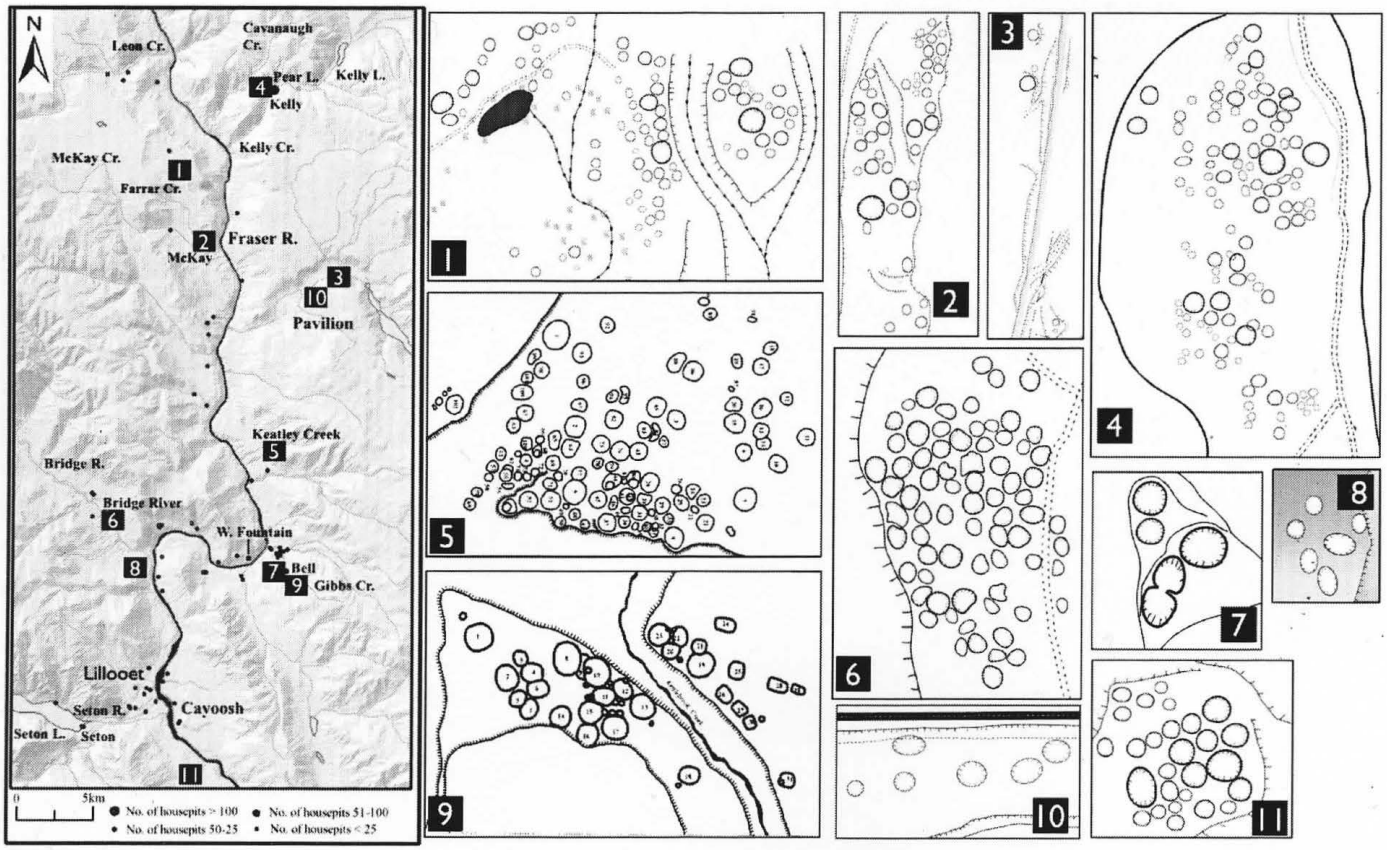

Figure 2: The Mid-Fraser Region and the location of some of the sites discussed in this article. Note the wide range of settlement sizes and number of apparently large sites in the area.

to be answered about the archaeology of the region. These include such questions as: how many village sites are in this region? How many houses do they contain? How big are the houses? Are there any other villages as large as (or even larger than) Keatley Creek or Bridge River? And where are they actually located?

Since last summer, we have been working on a settlement pattern analysis in this region, focusing on the relationship between settlement size and the distribution of natural resources. One of our main goals in this project is to expand our knowledge of housepit villages in the region as a whole, moving the focus away from just the sites of Keatley Creek, Bridge River, and Bell. As there is an abundance of virtually unstudied villages in the area, it is our hopes that our work will remove some of the mystery surrounding these sites. Moreover, once complete, it is hoped that our study will allow evaluation of whether larger pithouse settlements were in closer proximity to a greater number of valuable resources than smaller settlements. But on a more personal level it will hopefully—once and for all—settle that nagging question of whether or not there actually is a site "way bigger than that, just over there."

It may appear that the debate about which site is largest is less a scientific concern and more one of bragging rights. While there may be an element of truth to this, there are good reasons for wanting to know which site is biggest, how many big sites there are, and ,well, how big is 'big.' Theories of the evolution of complex cultures are many and varied, but one factor that is usually considered prominently is population size. The growth of human populations on all scales (household, community, and regional) are all recognized to be important aspects of the development of complex societies. Whether population growth is a cause or effect of complexity is debatable, but either way it is important to have some means of evaluating the scale of human populations. One obvious proxy for population size is settlement size. Clearly, it is a reasonable assumption that a larger house was capable of housing a larger family (or corporate group); similarly it could be argued that a larger number of houses suggests a larger community size. Of course, there is a problem with this latter argument, in that we are assuming that all of the houses were occupied simultaneously, which may not have been the case. So to be honest, it is important to note that when we refer to settlement size, we are not speaking of human populations; instead we are using site size as an index for intensity of use of a settlement location (see Lipe 1992:128). A larger sized settlement therefore refers to a more intensively used piece of land than a smaller settlement. The intensity of settlement occupation is important as archaeologists have argued that increases in sedentism and sociopolitical inequality are directly related to resource abundance in particular areas or environments, as this affects the wealth, population size, storage, trade, territoriality, and craft specialization of a community (e.g., Kelly 2007; Hayden 1995, 2000; Varien 1999). Hayden (2000:255) has used this resource abundance model when discussing the social organization of Late Period complex hunter-gatherers in the Mid-Fraser region, whom he claims were amongst the largest hunter-gatherer communities anywhere in the world. Hayden suggests that the

Figure 3: Jon Sheppard and Nova Pierson Measuring the diameter of HP1 at the Farrar Creek Site. (Photo by Bob Muir)

highly diverse socioeconomy and large sized settlements, such as Keatley Creek (the largest documented settlement in the region, at the time of Hayden's research), are a product of the abundance of, and/or controlled access and trade in, extractable resources — specifically high quality salmon (1997; 2000:255-260). Reliable access to such a valuable resource would have given certain Lillooet communities a great advantage, as groups nearby would have been forced to trade to acquire enough salmon to subsist on during the scarce winter months. Our research is intended, in part, to test Hayden's model of resource abundance, settlement hierarchies, and the complexity of the Mid-Fraser region.

Research Objectives

The study area for our project consists of the Fraser River valley and its surrounding tributaries and drainages between the confluence with Texas Creek, immediately south of the Town of Lillooet, B.C., and Leon Creek, west of Clinton. This area is part of the asserted traditional territory of the Stl'átl'imx and Secwepemc First Nations. Our research consists of three goals related to determining what role the environment plays in pithouse settlement size and distribution throughout the region, specifically:

1. To characterize the size range and distribution of housepits and villages in the study area.
2. To investigate the spatial relationship between settlements and resource zones.
3. To explore possible relationships between settlement size class and resource proximity.

Our methodology to address these objectives involves measurement of the size of each settlement and each housepit; evaluation of whether or not significant size classes actually exist among housepits and settlements; documentation of the precise location of each site, the location of specific resources and/or environmental zones, and the distance from each site to each environmental zone/and or specific resource.

In order to assess the overall size of each settlement, two measurements were used: (1) we counted the number of house-sized depressions (i.e., those larger than 4 meters in diameter) that were visible on the ground surface and (2) we measured the diameter of each (rim crest to rim crests, N-S and E-W) and using these measurements calculated the total 'roof area' of each house. To evaluate differences between house and settlement sizes we calculated z-scores, and created graphical illustrations of housepit and settlement sizes. This was done to resolve whether size classes (small, medium, and large) exist amongst housepits and settlements in the region, or if they are simply normally distributed. Size classes are critical to making arguments that settlement size is related to the abundance of extractable resources. If the size of settlements and housepits simply vary 'normally' around a central value, then statistically, they are not significantly larger or smaller than one another and thus the whole notion that settlement size varies according to location would be moot.

Settlement Sizes

While our project is not yet complete, the preliminary results present a number of intriguing findings. To date, we have documented 18 sites, containing a total of 604 housepits. With respect to settlement size, some very interesting results have emerged. Figure 5 shows settlement sizes based on total roof areas, presented in rank order from largest to smallest. Note the large grouping of small settlements (0-600 m^2) and comparatively small cluster of large settlements (larger than 7600 m^2).

The average total roof area for the settlements is 2355 m^2 and 33 houses is the average number of houses. Somewhat surprisingly Keatley Creek does not appear to be the largest site in the region, based on either number of houses or total roof area. Instead it is Bridge River that is the largest based on area (10426 m^2), though it ranks 4th in terms of number of houses (n = 76). It is notable that the size difference between Bridge River and any of the other sites is substantial (and statistically significant). The second largest site is Kelly Creek, a site to the north of Keatley Creek and west of the town of Clinton. This site has 174 housepits, most of which are much smaller than Bridge River's, with a total area of

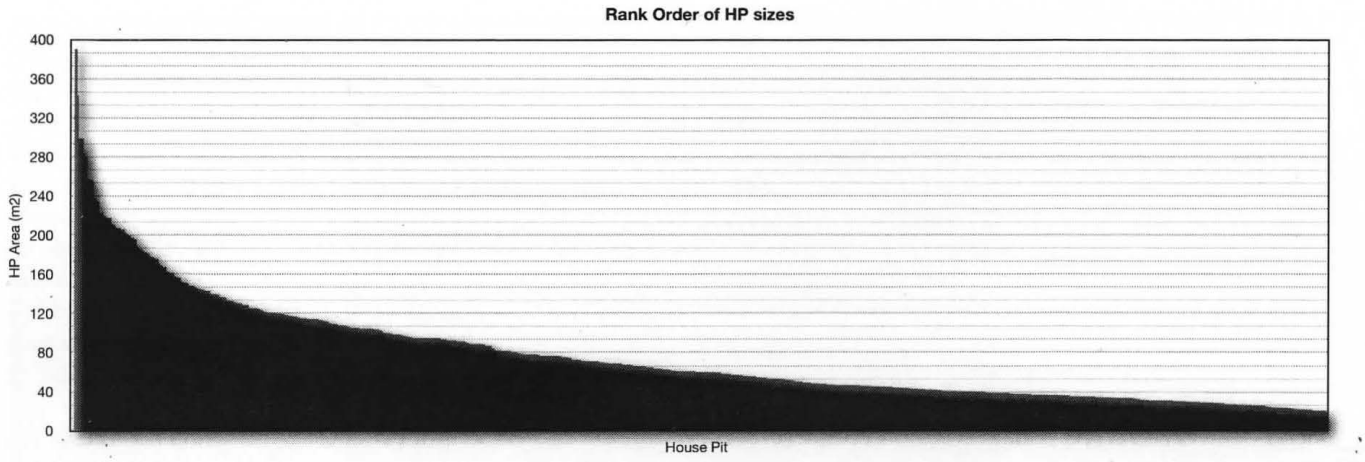

Figure 4: The relative size distribution of all housepits incorporated in this study. x axis is each individual housepit (n=604), y axis is housepit area (m^2).

8758 m^2. Keatley Creek appears to be the third largest site in the region with its 117 housepits making a total area of 8469.75 m^2. A settlement along Farrar Creek, near the community of Leon Creek, is the fourth largest in the region. Farrar Creek has 79 housepits with a total roof area of 5239.53 m^2.

Some other notable settlements so far included in our project are Bell, the fifth largest site in the region, with a total area of 3072.2 m^2; McKay Creek, just south of Farrar Creek, which is the sixth largest with a total area of 2604.52 m^2; and the seventh largest site EdRl-2, with a total area of 1199 m^2, which is located south of Lillooet near Texas Creek. Some of the smaller settlements we examined include Pine Mountain (534.57 m^2), Latimer (480 m^2), EfRk-6 (396.33 m^2), EfRk-107 (353.61 m^2), EeRl-221 (219.7 m^2), EeRl-75 (213.5 m^2), EeRl-220 (197.4 m^2), EeRl-145 (174.69 m^2), and finally EeRl-135 (114.9 m^2).

Overall the distribution of settlement sizes fall into three size classes, with the majority being small, up to 1500 m^2 or six houses in size; three medium-sized settlements (Bell, Mckay, and EdRl-2), between about 1200 and 3000 m^2 in total roof area and 27 to 48 houses, and four large settlements (Farrar, Keatley, Bridge River, and Kelly) over 5000 m^2 and more than 70 housepits.

Housepit sizes

Housepit size also ranges dramatically throughout the region, with the largest house being 22 m in diameter, while the average is a mere 9.6 m. Figure 4 illustrates the distribution of roof areas in rank order, from largest to smallest. Note the large grouping of small housepits (0-50 m^2) and comparatively small cluster of large housepits (larger than 180 m^2). This indicates that the features can be grouped into three size classes, with the medium-sized housepits ranging between 51 and 180 m^2. Results of z-score analyses support this, indicating that housepits larger than 180 m^2 yield z-scores above 1.96, making them significantly deviant from the mean size (of 72.89 m^2), with 95% confidence. Furthermore, amongst the largest housepits, two stand out as unusually large (again based on z-scores); these being House 1 at Keatley Creek (390 m^2) and House 1 at Farrar Creek (343 m^2). The next largest houses are houses 2 and 5 at Keatley Creek, each having a roof area of 289 m^2. This suggests that the two largest housepits could warrant a size-class of their own (i.e., 'very large'). It is notable that the Bridge River site has the largest number of large housepits (11), though the largest of these (House 25) has an area of only 211 m^2, ranking it 18th largest in the region. Kelly Creek has only two houses that qualify as 'large,' these ranking 16th and 22nd overall within the region. Keatley Creek has only six large housepits, however four of these are amongst the top five largest in the region.

Discussion

As our results are beginning to show, previous understanding of the region was not complete or accurate. Keatley Creek appears not to be the largest site in the region, but rather falls amongst a group of similarly large sites, including Bridge River, Kelly Creek, and perhaps Farrar Creek. Furthermore, it appears that there are two patterns emerging with respect to house sizes at large settlements. Keatley, Farrar, Bell, and Mckay all display a distinct hierarchy with respect to housepit size, each displaying one unusually large housepit, followed by a more or less normal distribution of other sizes. While other sites, particularly Bridge River show no size hierarchy, but rather a continuous normal distribution of house sizes. This may reflect differences in the nature of social or economic organization of these communities.

The Next Step: Settlement Size in Relation to Resource Proximity?

Having investigated the distribution of settlement and housepit sizes in the Mid-Fraser, our next goal is to see what relationship the environment plays is these results. Specifically we are investigating whether larger sites are in closer proximity to more resources than smaller sites. In order to examine this potential relationship, we collected information on the location of all settlements using GPS. The resources we are including are lithic sources, based on previous lithic sourcing by Rousseau (2000); the Fraser River and fishing locations along it. Additionally, we will incorporate Alexander (1992), Turner (1992) and Tyhurst's (1992) research on the locations of seven environmental zones (River Valleys, River Terraces, Intermediate Lakes, Intermediate Grasslands, Montane Parkland, Montane Forests, Alpine), and the resources available in each of them. In addition, we will measure the distance between each site and the nearest tree line

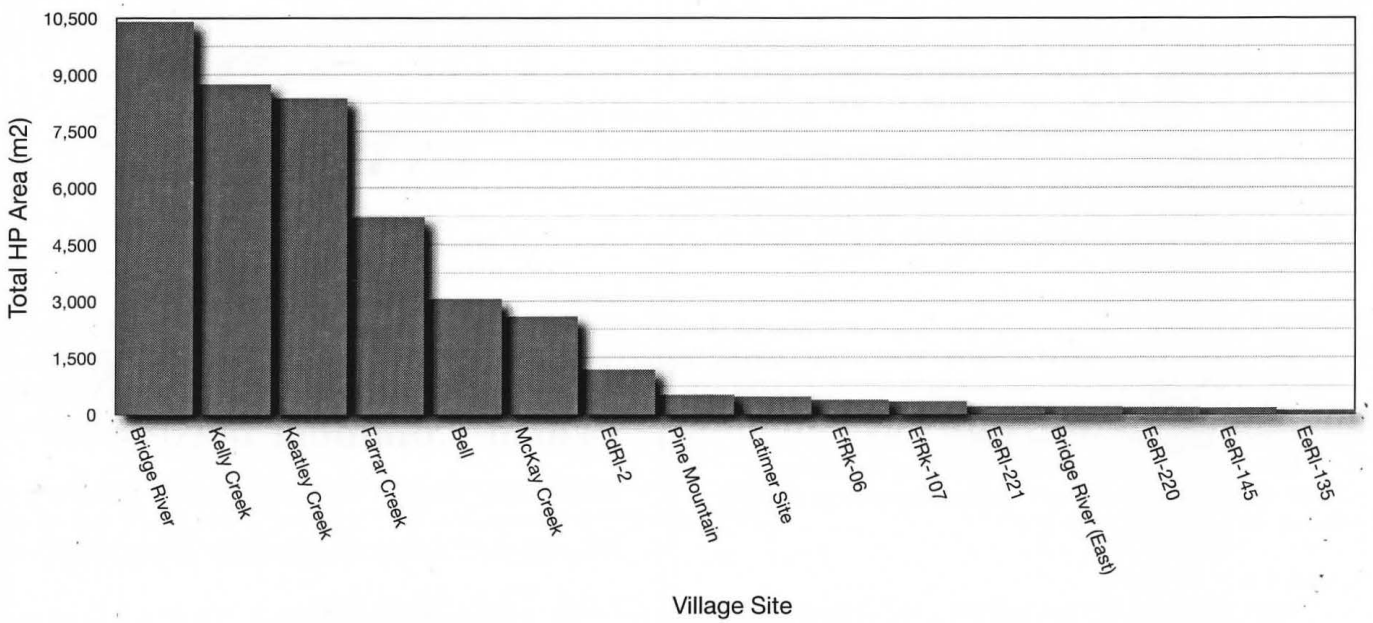

Figure 5: The relative size distribution of all settlements incorporated in this study. x axis is each individual settlement (n=18), y axis is settlement area (m^2, based on combined housepit areas).

as well as the river terrace edge to assess the nearest change in environmental zones. We will then measure the distance between resources/environmental zones and settlements by creating least-cost pathways in GIS. This will be done to assess the distance each settlement has to each of the resources and environmental zones by means of potential travel routes, as opposed to arbitrary lines, which would not be efficient pathways. Finally we will conduct a principal component analysis, to determine the nature of variability between settlements and their surrounding resources, helping to explain what common environmental characteristics are associated with each size class of settlements.

It is our goal that once our project is completed our research will increase our understanding of potential social hierarchies between settlements in the region by examining inter and intra-settlement class differences. In addition, our research will further our understanding of how the environment relates to the expansion of social complexity among hunter-gatherer societies. On a regional level, our research is a great contribution, expanding our knowledge of numerous large settlements in the area. This research builds on previous ecological theories of complexity, testing existing models of resource abundance, settlement hierarchies, and complexity in the Mid-Fraser region.

Jonathan Sheppard is a current graduate student at Simon Fraser University, where he also completed his B.A. He has been working on B.C. archaeology since 2003, and has excavated at sites in the B.C. Interior such as Keatley Creek, Katz, and Greenwood Island, along with a number of consulting related projects in Southwestern B.C.

Robert Muir is a senior lecturer at Simon Fraser University who has been pondering the many archaeological mysteries of the Lillooet Region since 1987.

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References

Alexander, Diana
1992 Environmental Units. In *A Complex Culture of the British Columbia Plateau*, edited by Brian Hayden, UBC Press, Vancouver.

Hayden, Brian
1993 *The Collapse of the Classic Lillooet Culture*. Documentary Film directed by John Thompson. Knowledge Network. Distributed by SFU Archaeology Press, Burnaby.

1995 Pathways to Power: Principles for Creating Socioeconomic Inequalities. In *Foundations of Social Inequality*. Pp.15-86. Edited by Theron Douglas Price and Gary M. Feinman. Plenum Press, New York.

1997 *The Pithouses of Keatley Creek: Complex Hunter-Gatherers of the Northwest Plateau*. Archaeology Press, Simon Fraser University, Burnaby.

2000 "An Overview of the Classic Lillooet Occupation at Keatley Creek." *The Ancient Past of Keatley Creek*, Vol. II: *Socioeconomy*, edited by Brian Hayden. Archaeology Press, Simon Fraser University. Pp. 255 – 286.

Johnson, G.A.
1989 Dynamics of Southwestern Prehistory: Far outside – Looking In. In *Dynamics of Southwestern Prehistory*, edited by L.S. Cordell and G.J Gumerman, pp. 371-389. School of American Research Advanced Seminar Series. Smithsonian Institution Press, Washington, D.C.

Kelly, Robert L.
2007 *The Foraging Spectrum: Diversity in Hunter-Gatherer Lifeways*. New York: Percheron Press.

Kennedy, Dorothy I.D. and Randy Bouchard
1992 Stl'atl'imx (Fraser River Lillooet) Fishing. In *A Complex Culture of the British Columbia Plateau*, edited by Brian Hayden, UBC Press, Vancouver, pp.266-354.

Lipe, William D.
1992 Summary and Concluding Comments. In *The Sand Canyon Archaeological Project: A Progress Report*. Occasional Paper 2, edited by W. Lipe. Crow Canyon Archaeological Center, Cortez, Colorado.

Morin, Jesse, Ryan Dickie, Takashi Sakaguchi, and Jamie Hoskins
2008 Late Prehistoric Settlement Patterns and Population Dynamics Along the Mid-Fraser. *BC Studies* 160: 9-34.

Rousseau, Michael K.
2000 Results of the Keatley Creek archaeological project lithic resource study. In *The Ancient Past of Keatley Creek*, Volume 1, *Taphonomy*, edited by B. Hayden. Archaeology Press, Burnaby, pp. 165–184.

Turner, Nancy
1992 Plant Resources of the Stl'atl'imx (Fraser River Lillooet) People: A Window into the Past. In *A Complex Culture of the British Columbia Plateau*, edited by B. Hayden, UBC Press, Vancouver, pp.405-469.

Tyhurst, Robert
1992 Traditional and Contemporary Land and Resource Use by Ts'kw'aylaxw and Xaxli'p Bands. In *A Complex Culture of the British Columbia Plateau*, edited by B. Hayden, UBC Press, Vancouver, pp.355-404.

Varien, Mark
1999 *Sedentism and Mobility in a Social Landscape: Mesa Verde and Beyond*. University of Arizona Press, Tucson.

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