

Martin Magne

How Much Archaeological Inventory in Large National Parks is Enough?

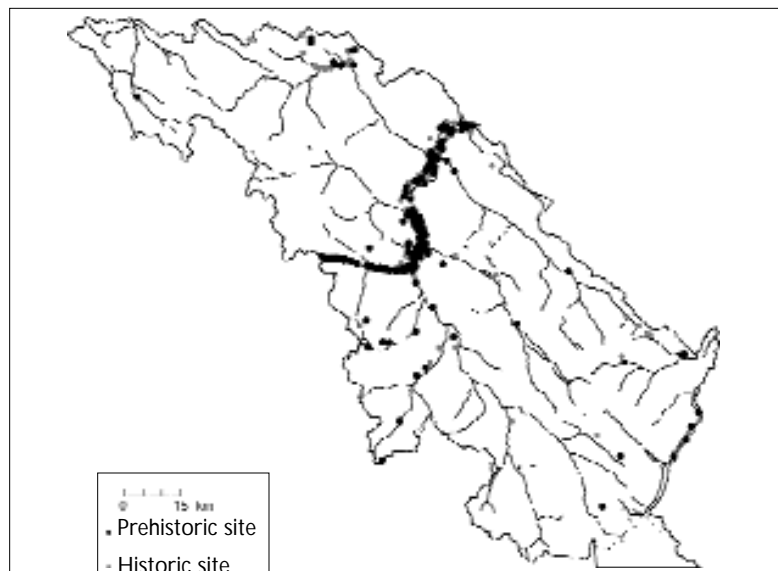


The Athabasca Valley in Jasper, looking south.

Inventory implies completeness: an inventory of a store's stock means that every item is accounted for, as is its value.

An archaeological inventory of a park implies to managers that we know all that's there, and it means that we can offer an appraisal of the worth of various resources. Archaeological inventories hardly ever approach that kind of ideal, or they do so with probabilistic models. The varying degrees of uncertainty we have about the nature of the resources very directly affect the ways we will manage them. In most North American CRM, archaeological inventory precedes or is undertaken along with, an assessment of the value (or significance) of those resources for purposes of determining their fate in the face of impending impacts. Rarely are there chances to re-examine those kinds of inventories—we have to live with the first attempts, thus in the absence of thorough archaeological investigations, very little information is available to allow long-term planning. In contrast to many development-driven management systems, in Parks Canada we are fortunate to have opportunities to manage archaeological resources' conservation far more often than their destruction. This allows for continuing checks on what "universe" the record

Distribution of archaeological sites in Jasper.



appears to reflect, leading to refinement of our estimate of that universe, without losing a significant part of the record. The nature of the inventories we maintain in National Parks, with this overriding conservation ethic, is therefore somewhat different from other more widespread archaeological resource inventories. In fact the inventories are growing, as they are on developing lands, and the in-situ resources are not depleting as rapidly. This should ultimately lead to a situation where reasonable levels of certainty may be gained concerning the types of sites present, their condition and threats, and their scientific, cultural and public values.

Other than ideal financial and human resourcing, three inherent factors largely determine the completeness of an inventory: site visibility; the size of the area of concern, and the variety of prehistoric and historic archaeological resources that are present. In places with high degrees of surface exposure and little deposition, full surficial coverage may be possible. In those instances, perhaps even fair accounts of "value" can be derived easily, but while large, stratified well-preserved sites are usually considered more important, some recognition is given to maintaining adequate representation of more ephemeral ones. Certainly exercises in value benefit greatly from having large amounts of comparative data. In very large areas, particularly those with forest cover, only intense and long-term efforts may offer more than glimpses at promising terrain. With either good or bad knowledge, we use what we know to determine the fate of archaeological sites whose demise is imminent.

In the Canadian National Parks and National Historic Sites system, the value or relevance of archaeological sites may also be in the nature of their national commemoration, if any exists, which determines the level of protection that will be considered. Sites of national significance will receive greater attention than those not



Distribution of archaeological sites in Banff.

so recognized. All in all, however, the system is quite conservative; many types of resources are preserved, and are considered of great value. For example, prehistoric Aboriginal sites contained within National Historic Sites created with recent military history themes are accorded great protection. Indeed, by and large, the various kinds of National Historic Sites we have are well inventoried for all kinds of archaeological resources, owing mainly to their relatively small size.

In National Parks, a principal value of prehistoric archaeological resources lies in their place within the Parks' ecosystems. Another key value is their importance to First Nations peoples. Understanding the full the range of human activity to be found, past and present, is critical to proper ecosystem management. Much of what archaeologists do can be tied in direct parallel to natural resource preservation ideals: maintenance of diversity, preservation of endangered resources, influences on and from neighbouring areas, and public appreciation of these. Like natural resource managers we need to have predictable data, sound ways of monitoring the status of our resources, adequate means of assessing their value in relation to a larger picture, and the ability to interest people in what we do.

Why Inventory? How Extensive and Intensive?

We inventory for many reasons: to gather baseline data; to allow proper management by having readily available broad and detailed knowledge of our "universe"; to anticipate future impacts by human and natural agencies; to add to our knowledge of local to continental patterns; to allow integration of archaeological resource management programs with natural resource management, visitor services programming and other Parks/NHS needs. In new Parks or Historic Sites, inventory facilitates preparation of long-term management

plans. I am interested in examining the levels of inventory work existing in two existing large parks. Can our experiences with Banff and Jasper help us design what we do with new challenges? Do we have sufficient knowledge?

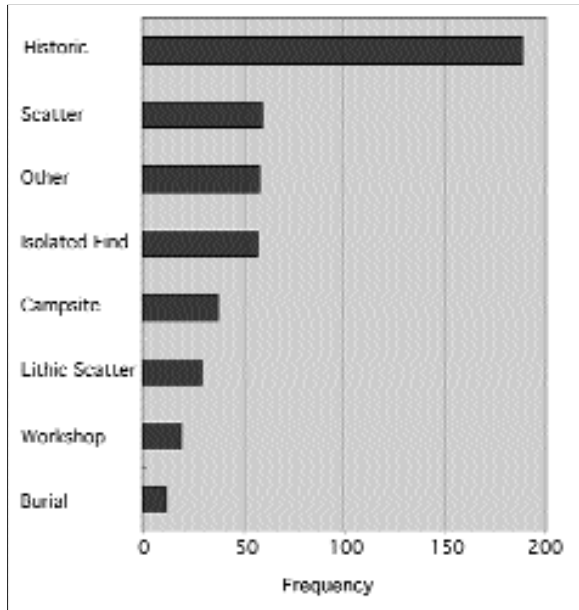
Banff and Jasper were never inventoried archaeologically at the time the parks were created, but that is now expected almost as matter of course in new park developments. Those two Parks have been investigated by means of sub-regional surveys to some extent, and a great many sites have been found in impact assessment studies. In both parks, early non-intensive surveys in the 1970s have been replaced largely by impact assessments, including some fairly large-scale ones, and some directed surveys. Early surveys were scattered and did not contribute a great deal to in-depth understanding of human occupation of the parks, however we should recognize that western Alberta and eastern British Columbia did not have very well-developed culture histories or settlement pattern schemes at the time. Even now we have only a sketchy understanding of the role of the Parks' prehistoric sites within the frameworks that exist for these larger areas.

Inventory should cover the full extent of the area of concern, depending on the nature of previous work. The actual intensity of any particular inventory project has many dimensions: whether to undertake surface survey only, whether or not to shovel test, whether or not to test once sites are found, whether or not to undertake marine surveys, whether to examine high altitudes, how to reach remote areas, how large crews should be, whether or not to undertake probabilistic or judgmental survey, how to incorporate traditional Aboriginal or ethnographic knowledge into the studies. All of these factors can be equated with cost, a limiting criterion in how much we do. The efficiency of undertaking intensive inventories appears to be related to a Park's history, with greatest efficiency over the long term being reached by surveying as completely as possible at the outset of Park establishment, while in older Parks, the focus is where management needs are immediate.

Jasper and Banff: What We Know

Jasper is over 10,000 km² in size, Banff is over 6600 km² in area. Both have extensive mountain ranges approaching and over 3,000 m in elevation, and large river drainages. Banff overall is probably more favourable for human occupation and the archaeological record may reflect that rather well. Jasper was first surveyed archaeologically in 1970 and 1971, Banff in 1969. Jasper has on record 423 archaeological sites of various types, for a known site density of 0.04 sites/km². Banff has 625 sites on record for a density of 0.1

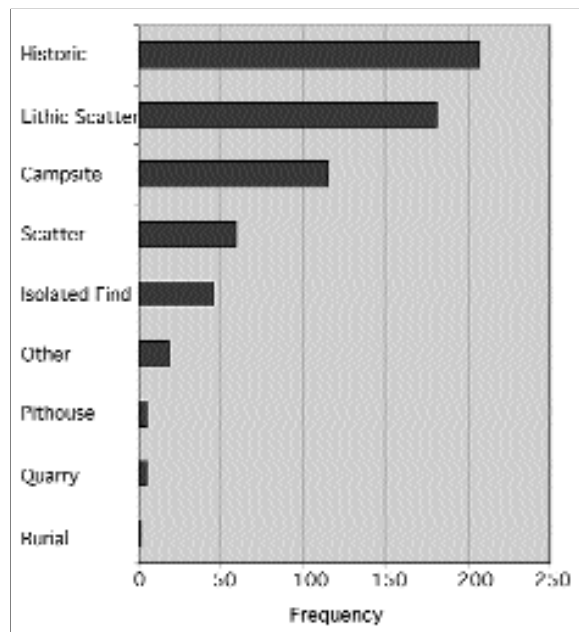
Chart of condensed site type frequencies for Jasper.



sites/km². Many different kinds of sites are known in each (see graphs): prehistoric lithic scatters dominate the database, but many historic period sites are known as well. There is no obvious bias in terms of overall representation—each park appears to have about equal relative representation of site types.

Interestingly enough, a very liberal calculation indicates that about 10% of the area of each of the two parks has been surveyed at least in a cursory fashion. (calculated by estimating the linear distance of covered areas with a 1 km buffer). It would be far too simplistic to simply multiply the known frequencies by 10 to yield a predicted “universe,” particularly since only some of the attractive, “high potential” areas have been covered by intensive surveys. But the pattern of site occurrence within each is a bit different: if we con-

Chart of condensed site type frequencies for Banff.



sider the density of sites in relation to area actually examined, Banff shows an apparent density of 1 site/km², while Jasper’s apparent site density is 0.3 sites/km². Banff would appear to have three times the site density that Jasper has.

Up to 1988, Banff had seen about twice as many archaeological projects as Jasper: about 35 to 16. It is slightly misleading to compare these figures, since some projects were extensive surveys, others were single-locus impact assessments, others were assessments of 20 or more development projects. Apart from this, though, the historical pattern of investigation within each park is much the same: in Banff, 116 sites were recorded in 1969; 41 were recorded in Jasper in 1971. In 1981 and 1982, 112 sites were recorded in Banff, while 140 recorded in Jasper in 1983. Another 127 in Banff in 1987, 208 in Jasper between 1985 and 1987. However in the two recent years, 1992 and 1993, 78 new sites have been recorded in Banff, only 2 in Jasper. What these patterns demonstrate is that intensive survey work can yet reveal substantial new data, but also that we may be approaching a fall-off point, where considerable numbers of new sites may not be always forthcoming with new surveys.

What the numbers do not demonstrate is that, particularly in Banff, re-investigation of certain areas can produce highly significant new information. The older (ca. 10,500 BP) Vermilion Lakes sites were found, for example, during the Trans-Canada Highway assessment and mitigation studies in a valley where many sites had been known. In addition, it is interesting to note that often, very significant resources are recorded only uniquely or recently: For example, in Jasper, a First World War internment camp was recorded in Jasper in 1986; several Aboriginal burials were recorded only over six years since 1971 and most recently in 1991, two habitation caves were noted, one in 1991, a fur trade post in 1985, and only one split-log tipi has been recorded, that being in 1971.

How intensively have the sites themselves been investigated? Not surprisingly, most sites are simply recorded upon their initial discovery. About half have been tested with only 1 m² or smaller, single shovel test units. Excavation of sites is not a significant activity until the second or third visits. In Jasper 87 sites have seen second visits, 199 in Banff. Sixty-one sites in Banff have seen three visits, 23—four visits, and 8, five or more. One site has been revisited, recorded, tested, and excavated, on eight separate occasions. In Jasper, only three sites have been visited three times. Overall then, many sites are recorded, but their surfaces have barely been scratched.

In terms of cultural themes, we know that the Parks were occupied for at least the last 11,000 years and that there was widespread use of nearly all environments by Aboriginal peoples, (although ironically we have difficulty documenting recent band-level occupations by archaeological and ethnohistoric means). We have excellent records and archaeological signs of early exploitation of the parks by fur-trade interests, mining and logging, railroad companies, and other commercial activities of many kinds.

The pattern seems to be that new kinds of important resources continue to be found in Banff and Jasper, yet relatively large areas of each have been looked at. In terms of total area, about 90% of each is in need of survey. Much effort would be required to reach reasonably complete coverage. Even if only one-quarter of the unsurveyed areas has any "potential", about 20% of this kind of area of each Park has not been examined, or 1328 km² in Banff and 2175 km² in Jasper. While it may appear that 80% coverage is plenty, even a 10% sample of those remaining areas would require large-scale projects. Yet we continue to focus almost entirely on mitigating development impacts in areas we already know much about and ignoring the rest. What about natural impacts? In many areas we are forced to neglect natural impacts of moderate scales, although the National Threatened Sites Program (some examples of which are discussed elsewhere in this issue) has addressed many instances of severe natural damages.

There are two obvious biases in our resource data: severely clustered survey areas and site distributions, and diversity of site types. The distribution maps show clear concentrations in the large river systems such as the Bow Valley in Banff and the Athabasca Valley in Jasper. However, in two seasons of high-altitude survey in Banff recently, in areas well away from development threats, over 80 new sites were discovered, one a Clovis surface find. We have surprisingly few rock art sites in Banff, despite many located on each side of the Park, few kill sites, and few recent or proto-historic Aboriginal sites despite known frequent use. Banff has recently yielded a series of housepit sites, a common characteristic of Plateau settlement, that raise intriguing questions about the extent of Plateau peoples' movements across the Rockies. A series of interesting historic Aboriginal sites in Jasper have not been re-examined that have potential to yield information regarding a completely unknown but critical geographic area of occupation by Athapaskan peoples. This part of western Canada is not very well known in the ethnohistoric literature, however, this is the probable homeland of Beaver and Sarsi peoples, close rela-

tives of the Apache and Navajo, whose history is also of great interest to many. These historic sites have potential threats from controlled forest burnings and natural deterioration; we have no idea whether there are more than those recorded, or what potential information the sites contain, or what other kinds of related resources might reside nearby. In general, prehistoric settlement patterns do not appear to have well-balanced representation even though substantial ground areas have been examined. We do need to relate more directly to the archaeological record of neighbouring areas, though, to determine if that under-representation is an artifact of park boundaries.

Where Does it End?

Formally, an inventory ends when its terms of reference have been fulfilled: whether within a certain timeframe an entire park area has been examined; whether an entire park area has been sampled systematically or randomly, whether the existing data are sufficient to allow management planning, or when the project runs out of money. Realistically, our inventories of these large Parks will never end. Currently we operate under an ecosystem paradigm that requires us to know a lot more about human-environment interactions than we do now. Future research and management paradigms should be more encompassing than the sub-regional studies we do now. We hope that GIS capabilities will lead to linked databases that can examine very broad patterning. Frankly I do not believe that 100% inventory can ever be reached with archaeological resources, without, paradoxically, eliminating the resource itself. The question is that of how intensively each site should be examined.

In sum, it is my view that large-scale inventories should continue but that we need a thorough assessment of what we have, some kind of middle-ground standard that would see more research with known sites. We should use the high-tech resources at our disposal to make the best use of our time and money, and to efficiently model our management methods and we need to consider areas around our National Parks more carefully in framing our models. It would be interesting, for instance, to compare archaeological site discovery and loss records for particular site types across park, private, and provincial lands. We need more co-operative endeavours with our provincial neighbours and private industry to merge our knowledge, to more fully come to grips with what do and do not know.

Martin Magne is Senior Archaeologist for Alberta and British Columbia, Professional and Technical Services, Parks Canada, Calgary.