

Local Ecological Knowledge and Importance of Bakeapple (*Rubus chamaemorus* L.) in a Southeast Labrador Métis Community

Amanda L. Karst¹, Nancy J. Turner²

Author Addresses: ¹245 McDermot Ave., Winnipeg, MB, R3B 0S6, ²School of Environmental Studies, University of Victoria, Victoria BC, V8W 3R4
amanda@karst.ca

Received: May 19th 2011

Published: July 15^h 2011

Volume 2:6-18

© 2011 Society of Ethnobiology

Abstract: *Bakeapple, or cloudberry (Rubus chamaemorus L.; Rosaceae) is a circumpolar perennial with orange aggregate fruits, which has been a vital food resource for many northern peoples including those of the Subarctic and Arctic areas of North America. This study documented the importance and local knowledge of bakeapple in the predominantly Métis community of Charlottetown, Labrador. The cultural importance of bakeapple is evidenced by the social customs surrounding its picking, by its prevalence in people's homes and at community events, and by its formal and informal economic exchange, within and outside the community. The local ecological knowledge of bakeapple that residents of Charlottetown possessed also illustrates its importance. Local knowledge of interviewees included different habitat types associated with various bakeapple densities and fruit sizes, bakeapple development/phenology (e.g., "turned in" stage) and variations in the berry (e.g. in color and size). Bakeapple remains a culturally important species with a high profile in Charlottetown, although lack of interest in bakeapple picking by younger people may affect future use.*

Key Words: Labrador, Métis, bakeapple, local ecological knowledge, *Rubus chamaemorus*

...That was our livelihood, that was our food, hey... those berries and fish and wild meat, that's what we lived on years ago.... (Charlottetown resident, pers. comm. to AK, 2004).

Introduction

Bakeapple (*Rubus chamaemorus* L. Rosaceae), also known as cloudberry, maltberry or "salmonberry" (a term also applied to some other *Rubus* species), has been a popular fruit for many northern peoples of Subarctic and Arctic areas of North America and Eurasia (see Table 1 for range of use and references). Many of these peoples consider bakeapple to be their most important berry (Eidlitz 1969; Griffin 2001; Jones 1983; Oswald 1957). The Vitamin C (ascorbic acid) content of bakeapples is about 130 mg per 100 g of fresh fruit, more than twice that of oranges (at 52 mg/100 g) (Arnason et al. 1981; Kuhnlein and Turner 1991). Throughout the range of this plant, bakeapples have likely provided essential amounts of this vital nutrient to people in northern communities where wild fruit sources are minimal.

Rubus chamaemorus L. is a low-growing perennial (up to 20 cm in height) distributed throughout the Arctic and Subarctic regions, from northern Russia, Finland, Sweden, and Norway, to across northern North

America, extending south to latitude 50° N in Europe and 44° N in North America. Bakeapple is typically found in acidic bog habitats and exhibits clonal growth from branching rhizomes. The upright stems bear 1-3 palmately lobed leaves and each stem produces a single white, 5-petalled flower (Taylor 1971); the flowers are dioecious and insect-pollinated. The aggregate fruits when ripe are yellowish orange to red (Taylor 1971). As the fruit matures, the broad calyx wraps around the developing fruit, pulling away when the fruit is fully ripe. Bakeapple populations show high variability in fruit production among different habitats and from year to year (Makinen and Oikarinen 1974). Flowers and developing fruits are extremely sensitive to late frosts, which are thought to be the predominant cause of fruit loss.

Traditionally, bakeapples were often gathered in birch-bark baskets and eaten fresh, mixed with animal oil and/or sugar (post-European contact) or served in "Eskimo/Indian ice cream". Large quantities of bakeapples (as much as 130 litres/30 gallons per family) were preserved in cold water or oil and stored for the winter in seal skin pokes, wooden barrels or underground caches. People often added other berries like nagoonberries (*Rubus arcticus* L.), "blackberries" or crowberries (*Empetrum nigrum* L.) or edible greens such as sourdock leaves (*Rumex arcticus* Trautv.) (cf. Andre



Figure 1. Map of Charlottetown, located in southeastern Labrador, Canada. Charlottetown is located approximately 23 km inland from the coast of Labrador.

and Fehr 2001; Eidlitz 1969; Griffin 2001; Jones 1983; Kari 1987; Kuhnlein and Turner 1991; Omohundro 1994; Russell 1991; Turner 1995).

Despite bakeapple's longstanding nutritional and cultural importance, little research has been undertaken on the details of its use in northern communities and local ecological knowledge of this species (but see Gordon, Boxall and Wein 2005; Parlee et al. 2006). In addition, there has been little ethnobotanical research carried out in Newfoundland and Labrador in general (but see Clément 1990). This paper focuses on present day use and importance as well as local ecological knowledge of bakeapple by Métis residents in Charlottetown, Labrador (Karst 2005). Our objectives for this paper were to: 1) document local ecological knowledge of bakeapple on topics such as habitat, phenology and factors critical to fruit development, 2) document a variety of components of current use of bakeapple, including picking locations, and social norms for bakeapple harvesting in the Métis

community of Charlottetown in Labrador, and 3) determine the overall contemporary importance of bakeapple in this community.

Charlottetown, the community where this study was undertaken, is located in the southeastern region of Labrador, 23 km from the Atlantic coast (Figure 1). Charlottetown was established in 1950 with a population of approximately 360 people, many of whom are members of the Labrador Métis Nation (LMN). Members of the LMN have mixed Labrador Inuit and European ancestry. In the past, people in this community relied on fish (e.g. Atlantic salmon, Arctic char, Atlantic cod, capelin), birds (e.g. partridge and eider duck), and mammals (e.g. caribou and rabbit) for meat sources. They also harvested wild berries extensively, including: bakeapples; "blackberries" or crowberries (*Empetrum nigrum* L. Empetraceae); "redberries" or partridgeberries (*Vaccinium vitis-idaea* L. Ericaceae); blueberries (*Vaccinium* spp. Ericaceae); and squashberries (*Viburnum edule* Michx. Caprifoliaceae). A shrimp processing plant, established in 2001 and employing over 100 people, is the primary economic support in the community. Some residents harvest shrimp and also crab. Bakeapples and other wild foods have continued to form an important supplement to peoples' diets and incomes.

Methods

Two methods of data collection were used in this study: in-depth, semi-directive interviews and participant observation. The selection of a community to study bakeapple involved consulting with the office of the Labrador Métis Nation and obtaining community contacts who in turn provided us with phone numbers of experienced bakeapple pickers. Charlottetown was selected as the focus for the research because there was a high degree of bakeapple use in the community and it was home to the largest number of people who agreed to participate in the study. Community members also participated in the project in other ways: one individual was a paid research assistant and others provided transportation and accommodation.

A snowball sampling method was used to identify potential interviewees, in which initial contacts (experienced bakeapple pickers in the community in this case) suggested additional interviewees (Walker 1985). Interviews were carried out in 2004, between May and August, and were conducted in community members' homes. All community-based research and interview protocols were approved by the University of Victoria Human Research Ethics Committee (ID #

052-04). Each interviewee was first contacted by phone and then through a subsequent home visit where they were provided with a leaflet describing the project and its goals. Interviewees read or had read to them a consent form fully describing the project and their role in the research, which they signed prior to interviewing.

Each interview covered approximately 100 questions relating to bakeapple use, and lasted between 45 minutes and 2 hours. Questions covered all aspects of bakeapple harvesting, including the social groups with whom interviewees tended to pick, specific areas picked, ecological knowledge of bakeapple, types of containers used and quantities of berries picked, storage techniques, and how bakeapples were prepared and eaten. The taped interviews were transcribed and analyzed using QSR N6 © (Vol 4.0, QSR International Pty Ltd). Trends in interview statements were used to identify major topical themes in the data.

Fifteen community members in total were interviewed in this study: six women and nine men. Interviewee age ranged from 30 to 73 years, but a larger proportion of older pickers were interviewed because of their greater experience. Of the 15 interviewees, 12 had grown up in Charlottetown, or around St. Michael's Bay where Charlottetown is located, while three had moved in from Henley Harbour or Red Bay. All of the interviewees had families with over three generations of bakeapple picking experience and all had begun picking bakeapples at 5 to 7 years of age. Generally, all interviewees had picked bakeapples throughout their lives. Total bakeapple picking experience of individual interviewees ranged from 25 to 65 years.

Local Ecological Knowledge

Bakeapple habitat—Most interviewees described three main habitat types where bakeapples are found. The first and most common is a bog, or “mash” as it is locally termed. People described this habitat as a wet, flat area that is fairly open with red/brown/yellow mossy ground. The second kind of bakeapple habitat interviewees identified was an area sheltered by shrubs and trees. Most interviewees describing this habitat often were referring to shrubs and trees on the periphery of the mashes, but almost half said they found bakeapples in forested areas sheltered among trees. The third type of habitat described by several interviewees was what one interviewee referred to as “barren ground” (the other interviewees generally referred to it as a drier area). Interviewees described this type of area as open and flat, similar to a mash but drier and rockier. Interviewees said that barren ground or drier ground is characterized by more “caribou

moss” (*Cladonia* spp.) and “blackberry” or crowberry (*Empetrum nigrum*) bushes compared to the predominant cover of moss (*Sphagnum* spp.) found in a mash. One interviewee explained that the barren ground was “hard” to walk on, compared to the bog, where you are “going up and down” when you walk across it reflecting the spongy nature of the peat in the bogs. Pickers also noted that bakeapples in both sheltered and barren areas are more “scattered” (i.e., lower density) whereas bakeapples found on mashes tend to be “thick” (i.e., higher density).

Interviewees reported few plants found in areas with bakeapples but Indian tea leaves (*Rhododendron* (*Ledum*) *groenlandicum*), marshberries or bog cranberries (*Vaccinium oxycoccos*) and “blackberry” bushes were mentioned as being associated with bakeapple. Three pickers noted that bakeapples tend to grow well near ponds and along brooks. Other descriptions of bakeapple habitat provided by pickers include: in small valleys higher up on an island, in gulches, on the sides of banks, and at the foot of hills, where one interviewee said, “the water dribbles down and the ground isn't as dry.” Another interviewee stated that large and high densities of bakeapples are found in elevated areas, “like little islands” within wet bogs.

Fruit Production and Variation—All pickers identified the weather as the main factor influencing fruit production of bakeapple and most prominently at the sensitive blossom stage. Interviewees described different kinds of damaging weather, including lightning and thunder, hard rain, frost, and hard wind. These weather conditions can potentially destroy the majority of blossoms in an area and thereby prevent berries from forming. Several pickers, however, observed that if a late frost or hard rain destroyed all the developed blossoms, some bakeapples might still fruit. This is due to the variability in fruit development within an area, so blossoms that have not emerged yet may still turn to fruit.

If these kinds of damaging weather conditions have occurred, almost half the interviewees said that bakeapples will only be found in among the shrubs and trees (i.e., sheltered areas). Dry weather is also said to be detrimental for developing fruit, and can result in the bakeapples “not coming to berries”; this was described mostly for the blossom stage, but sometimes also after the plants had “turned in” (i.e., the time when the “shuck” [calyx or sepals] engulfs the developing berry). One interviewee, when describing how different kinds of weather conditions affect bakeapples, said,

The sun dries them up and the wind blows them away and the rain knocks them off too.... That sort of thing... the weather got to be sort of normal, hey, and nice normal weather, and showers of light rain and that sort of a thing, helps them to grow.... And if you don't get the rain, it dries up, burns....

A few interviewees said that once the bakeapple reached the “turned in” stage, it was unaffected by the weather, while others said it could still be affected by some adverse weather conditions, such as frost. Favorable weather conditions outlined by some pickers include an abundance of snow in the winter and a balance of rain/fog/dampness and warm weather once the bakeapple has turned in. One interviewee said the rain “brings the shucks away from the berry.”

Interviewees report that the size of bakeapple fruits can vary considerably among patches and years as well as within a patch in a given year. Both sheltered habitats and barren areas were reported by pickers to have larger berries and lower densities of bakeapple plants than bog areas. Pickers also note that larger berries may be found at the bottoms of hills and within depressions, or “valleys” in high elevation areas. Interviewees also discussed differences in the colour of the bakeapples, which can vary from pale orange to red. One interviewee observed redder berries on drier areas while another interviewee noted that the larger bakeapples tend to have a paler color.

Aspects of Bakeapple Use

The When, Who & Where of Picking—Bakeapples are the first of the wild berries to be harvested in the season. Pickers use a range of methods to determine when the bakeapples are ready for picking. Some of the older people still observe the weather to determine when to go out picking. For example, an early spring or a hot summer signals pickers to check the bakeapples for ripeness earlier than usual. Presently, the most common means of knowing when the berries are ripe is through word of mouth between friends, neighbours and family members and the arrival of the first boat returning with bakeapples.

All pickers stated that no other berries or plants were gathered during bakeapple picking, other than for very casual snacking, partly because no other berries were ripe at this time except the lesser valued “blackberries”. Some pickers also suggested that the focus on bakeapples was encouraged due to the very short interval between when the berries are too hard and when they become “faded” (overripe). If people do



Figure 2. A grandfather and his granddaughter picking bakeapples on one of many islands near Charlottetown, Labrador, August, 2004.

not concentrate on this particular species at that time, they will miss the harvest.

Typically two to five people, who are often relatives, go out bakeapple picking together (Figure 2). Some older men in the community who harvest bakeapples to sell as a means of supplementing their incomes pick bakeapples alone. All interviewees commented on the fact that currently the younger people in the community (age 20 and under) are mostly not interested in picking bakeapples. This was consistent with the first author’s experience in the community, where she observed and heard of very few young people going out bakeapple picking. The interviewees mostly pick bakeapples on the islands in St. Michael’s Bay. They often pick in harvesting areas that they frequented in their youth, shown to them by their parents, uncles and aunts. As one interviewee summarized, “We knew handy about where [to go picking]. The old people would tell us.” Those who married into the community said they were introduced to good picking places by their in-laws.

Due to the unpredictable nature and annual variability of bakeapple fruit yields from one place to the next, most pickers noted that it was important to check all bakeapple spots every year. Eight of the

interviewees recognized bakeapple-picking places that were accessed exclusively by specific individuals or families, which were generally left for them to pick. The remaining interviewees stated that there is no “ownership” or “claiming” of bakeapple areas and that the first person to go to an area in bakeapple season is considered free to harvest the berries. Those who identified exclusive bakeapple areas, explained that such spots were named after the person who was credited with discovering them, or who had picked a large quantity of bakeapples there at one time, or who was known to pick regularly at that site.

Harvesting Protocols—Most interviewees did not describe any special technique for picking bakeapples but some noted conventions to follow, such as the importance of not pulling the stalks out from the ground while picking, as this damages the bakeapple plant and could impede the next year’s growth. If bakeapples are picked before they are ripe, there are a few ways to “shuck” (remove the calyx from) the berry, which can be done either while picking or after returning home. Some pickers use their thumb to snap the berry from the shuck, and a few used their teeth for this. Two interviewees talked about not “picking through” the bakeapples, meaning not to select only the very large berries, but instead pick all those that are ripe in a given patch. One interviewee was taught by his mother or uncle to avoid certain berries:

...While you was there, picking with them and they'd talk about the berry, this one here was blighted [spoiled].... And they'd always tell us, they'd show us, the berry to pick, right? ... Don't pick 'em if ...they got old spots into them, right?.... We were always taught not to do that.

A few of the older interviewees expressed concern over berry grounds being “trampled” by other pickers, either where fruits or just the plants were damaged. One person viewed this as being very disrespectful to the bakeapples. A few interviewees also mentioned one particular area in town that used to produce bakeapples but where the potential for the area to produce fruit had been destroyed due to considerable use by ATVs (all-terrain vehicles).

The topic of picking unripe bakeapples was brought up by many interviewees. While most people expressed the importance of waiting until the berries are soft (i.e., ripe) before picking them, for a number of reasons, many people actually tend to pick from a few to many hard (i.e., unripe) berries. These reasons included: if there were not enough hard berries to warrant a later return trip to a particular patch; they are

better for jam than soft berries; pickers are unable to resist picking really large berries (despite their ripeness); hard (red) berries give the berry mix a better colour in desserts; and that a few hard berries prevent bakeapple pies from being soggy. Some factors have discouraged people from picking the harder, unripe berries, such as the extra time required for cleaning unripe berries (must remove shuck from berry) and the fact that unripe berries get “rubbery” after they are left to ripen and do not taste as good as berries harvested when ripe.

The quantities of bakeapples harvested in a household each year is affected by a number of factors: the number of individuals in the family interested in harvesting and consuming bakeapples; the productivity of the bakeapples in a given year; and the time available for picking and processing them. Individuals who sell bakeapples will pick a much larger quantity of bakeapples than those just picking for consumption. Interviewees use plastic buckets to pick bakeapples.

The “boil-up” is a social event that is often associated with berry picking (and other outdoor activities). This is “how you get your lunch,” explained one interviewee. The basic requirements for a “boil-up” are a fire and a kettle or container for boiling water to make tea. Common favourite foods at the boil up are molasses bread and mussels roasted over the fire. Boil-ups are not tied specifically to bakeapple picking, however, and are held throughout the year.

Processing, Consuming & Preserving—Interviewees generally agreed that it is the women’s – the mother of the family and sometimes the oldest daughters – job to carry out all bakeapple processing activities following the harvest. A point of pride is for some to pick the berries so “clean” that it is not necessary to go through them afterwards. Bakeapples are consumed in a variety of ways, for example with cream and sugar and in pies. Currently, cheesecake is the most popular form of dessert using bakeapples. Generally, interviewees freeze their bakeapples. Some also store bakeapples in canning jars, either as jam or simply scalded briefly. A few interviewees make bakeapple jam using “freezer jam gelling powder” so the bakeapples do not need to be heated.

Economic Aspects of Bakeapples

Selling berries is relatively new to the community of Charlottetown. Mostly retired fishermen pick large quantities of bakeapples to sell. The first author was told that bakeapples can sell for up to \$80 a gallon during years when the quantity is low. Although some

interviewees sell their bakeapples, other interviewees did not support this practise.

I never sold a bakeapple in my life... never a berry in my life... and I give away dozens and dozens of gallons...never ever bothered to charge them.... I'm no worse off for it, I'm only gonna live till I die, just like everybody does... no more than that to it.

One interviewee said he only sold enough bakeapples to pay for his gas. Some pickers said they would buy bakeapples if they were not able to pick enough while others said they would go without.

Most interviewees reported giving away their bakeapples to others. One interviewee said, "We give away a lot of berries. We give away half of what we pick." Another interviewee talked about giving bakeapples to a family in the community: "They're right delighted if they had a bag of bakeapples... 'cause where they're busy, they don't get to go out and get bakeapples." Interviewees also describe situations where bakeapples are given to others who have given something to them (e.g., raspberries or caribou) or who did something nice for them (e.g., gathered wood for their house).

Importance of Bakeapple

Bakeapples and partridgeberries ["redberries"] and salmon and trout... that's pretty much the community, it's a lot of it... they're important in terms of diet in your home... all of the tradition and the stories and the things that come with it... something I did as a kid, now I pass on that to my child....

It was a thing you'd always try to get, if you could get them, hey ... redberries [partridgeberries] and bakeapples, that was the two main berries, now you picked blueberries and a few blackberries [crowberries] for buns and puddings, but bakeapples and redberries..., that was the two main ones, yeah.

Bakeapple is important to the community of Charlottetown, in terms of its relatively high profile compared to other wild berries, as a component of traditional foods of the Labrador Métis and in its role in the social and cultural fabric of the community. All interviewees identified bakeapple as one of the two "main berries" for the community (the other being redberry). Along with redberries and wild meat and fish, bakeapples formed one of the primary food staples for the community in the past and therefore played a large role in the social life of the community that still exists today.

...With every island there came a story... boat ran ashore... or where they hunted.... Maybe they came across a bear during berry picking, or something that had happened with a whale... where grandfather would set up tent... just stories, everyday stories, right?

It was often during the activity of bakeapple picking that local knowledge associated with bakeapples and living out on the land and waters was communicated from parents or older relatives to children. According to the middle aged interviewees who recalled their childhood experiences, it was at this time, for example, that children learned about the history of the islands where they were picking. This included both biological (e.g., history of fluctuations in bakeapple abundance) and social (e.g., past berry picking experiences on the islands) aspects pertaining to the land, as well as practical knowledge such as how to start a fire and where to get fuel. Children and youth would learn all facets of bakeapple harvesting, ranging from the location of picking areas and habitat characteristics of the best sites, to various influences on bakeapple abundance, and techniques used in picking.

One middle aged interviewee explained:

...[bakeapple picking is] a part of my culture and it's a part of who I am... a part of that history... passed down, so it's meaningful... The times that are important to me in my childhood and the memories that stand out are the memories of berry picking, with Dad.

Older (over 60) pickers often described the importance of bakeapple picking more simply in the terms of "your living."

Yeah, and it's something you should never give up, hey... give up picking berries, because it's a part of your living, it's something that's good to be at, it's out of doors... and it's our way of living, really, that's what we grew up doing, hey....

Bakeapples are also considered a healthful food, especially important for the residents before the clinic was introduced to the community in 1975. One interviewee, who is 74 years old, said, "One time now people used to use it, like if someone was sick, make bakeapple drink." Another interviewee noted that bakeapples are good for a bad stomach, that they won't "burn the stomach." He also recalled,

A woman said to me one time, a nurse, years ago, she said 'you're a healthy crowd.' I have seven sisters, I'm the only brother.... We grew up with bakeapple drink... partridgeberry

drink... that was our foods to eat, and we were a healthy family.

Many of the interviewees made a number of comments about bakeapple that reflected its importance to the community. One interviewee said, "Oh, we'd be lost if we never got our bakeapples! ...[I] enjoy it... as cripple[d], as bad as my legs are, but I love berry picking, out in the fresh air." Another interviewee said, "...You missed it, when there was none, when the berry was scarce." One interviewee declared, "I'd just sooner have bakeapples than I would meat; we love them." Other pickers described bakeapple as a "delicacy" and a "luxury." These sentiments as well as the specialized local terms around bakeapple ecology and its role in the informal economy, illustrate the fundamental role bakeapple plays in the social practises and culture of the community of Charlottetown.

This importance was corroborated by observations the first author made in the community. For one, she was known as the 'bakeapple lady' by community members during her stay in Charlottetown, which highlights how familiar the community members were with this berry. Community events that the first author attended, such as a baby shower and the shrimp festival, always had bakeapple products, such as bakeapple cheesecake. Leading up to and throughout the bakeapple picking season, bakeapples were frequently discussed in the community (e.g., what the bakeapples were like this year, how much people picked). Other community members, in addition to the interviewees, would use the specialized local terms for bakeapple, such as talking about the "turned in" stage.

Considerations for the Future

One consideration for future use of bakeapple is how the lack of interest in bakeapple picking by younger generations may influence the collective knowledge and social protocols associated with this berry. Since young people do not often attend family bakeapple picking events, they are no longer receiving detailed knowledge from their older relatives that is shared on these trips, such as stories tied to islands and the ecological understandings of bakeapple. Younger people may become interested in bakeapple picking later in their lives, but will the older generations be there to teach them the knowledge associated with bakeapple and its use? Even younger adults in their 30s found that they did not possess the knowledge of their parents since they have not been on the land as much as their parents were when they grew up.

Another consideration is the recent small scale commercialization of bakeapple in Charlottetown and

how this may change. The sale of bakeapples will likely remain a small component of the economy in Charlottetown, since – based on our observations and conversations with community members – bakeapples are not abundant enough to support increased commercialization. Red Bay (south of Charlottetown) and Black Tickle (north of Charlottetown) both have much higher local abundance and bakeapple plays larger roles in their local economies. It will be interesting to see if young people in addition to the older retired fishermen become interested in picking bakeapples for sale. Financial gains from bakeapple picking would have to outweigh the physical discomforts of picking them since bakeapple picking is quite challenging due to high temperatures, lots of black flies, and spongy terrain.

Social protocols around bakeapple picking may also be influenced by changing frequency in the sale of bakeapples. The sharing of bakeapples appeared to be part of the informal economy, as a way to give something to someone who has given something to you or given you assistance or to help out people who are not able to get berries themselves. Some interviewees seemed quite resistant to the idea of selling berries, perhaps because of the importance of bakeapples in the informal economy. There could be shifts in the role of bakeapple in sharing networks in the community if it becomes better known as a commodity by community members.

Conclusion

This study has documented local ecological knowledge, social aspects of use and importance of bakeapple in a small coastal Métis community in eastern Canada. The interviewees provided a number of unique observations and understandings of bakeapple ecology, in areas such as habitat and phenology. They also had a number of social conventions and rules that dictated the ways in which bakeapple is harvested and used.

A few areas could be explored for future study. For one, an experimental study could be designed building on the interviewees' ecological observations of bakeapple habitat and corresponding fruit characteristics. Bakeapple fruit size, quality and abundance could be systematically compared between mashes and the barren areas. Another avenue for future research would be to undertake participatory work in the community to identify people's thoughts on bakeapple use in the context of maintaining and renewing traditional foods in view of their importance to health and cultural heritage.

Bakeapple has been, and remains, an important plant food for the people of Charlottetown, an integral part of the culture and lifestyle. Although bakeapples are no longer essential nutritionally as one of the sole sources of fruit for the winter, they still hold high importance to the community. Local people's ecological understandings of bakeapple illustrate their close observation of and connection to this species. It remains to be seen in what ways the changes in social practices – especially fewer young people picking bakeapples– will affect the role this berry will play within the social fabric of the people of Charlottetown in the future. Today, bakeapples can be assessed as a food “at risk” and, given its important social and nutritional contributions, it is one definitely worthy of increased attention and interest.

Acknowledgements

We are very grateful to the Labrador Métis Nation, and especially to the people of Charlottetown for their warm hospitality, and for sharing their knowledge and insights on bakeapple and community life, and for their overall support of this project. We would also like to acknowledge Coasts Under Stress Major Collaborative Research Project (Dr. Rosemary Ommer, project director), funding through the Social Sciences and Humanities Research Council of Canada, National Sciences and Engineering Research Council of Canada, and the Northern Scientific Training Program. Our deep thanks also go to: Dr. Barbara Neis and Dr. Luise Hermanutz, Memorial University of Newfoundland; Dr. Geraldine Allen and Dr. Joe Antos, University of Victoria; and Dr. Ken Marr of the Royal British Columbia Museum, Victoria. Many thanks also to Carla Mellott, Stu Crawford, and three anonymous reviewers for providing comments on a previous draft of the manuscript.

References Cited

- Anderson, J. P. 1939. Plants Used by the Eskimo of the Northern Bering Sea and Arctic regions of Alaska. *American Journal of Botany* 26:714-716.
- Andre, A. and A. Fehr. 2001. *Gwich'in Ethnobotany: Plants Used by the Gwich'in for Food, Medicine, Shelter and Tools*. Gwich'in Social and Cultural Institute, Aurora Research Institute, Northwest Territories.
- Arnason, T., R. J. Hebda, and T. Johns. 1981. Use of Plants for Food and Medicine by Native Peoples of Eastern Canada. *Canadian Journal of Botany* 59:2189-2325.
- Berkes, F. 1999. *Sacred Ecology*. Taylor and Francis, Philadelphia, PA.
- Clement, D. 1990. L'ethnobotanique Montagnaise de Mingan. Centre d'études nordiques, Université Laval, Quebec.
- Eidlitz, K. 1969. *Food and Emergency Food in the Circumpolar Area*. Studia Ethnographica Upsaliensia XXXII. Almqvist and Wiksells Boktryckert AB, Uppsala, Sweden.
- Griffin, D. 2001. Contributions to the Ethnobotany of the Cup'it Eskimo, Nunivak Island, Alaska. *Journal of Ethnobiology* 21:91-127.
- Hawkes, E. W. 1916. *The Labrador Eskimo*. Government Printing Bureau, No. 1637. Johnson Reprint Corporation, New York.
- Heller, C. 1976. *Wild Edible and Poisonous Plants of Alaska*. Cooperative Extension Service Bulletin F-40, University of Alaska, College.
- Holloway, P. S. and G. Alexander. 1990. Ethnobotany of the Fort Yukon Region, Alaska. *Economic Botany* 44:214-225.
- Jones, A. 1983. *Nauriat Niginaqtuat: Plants That We Eat*. Maniilaq Association, Kotzebue, Alaska.
- Kari, P. R. 1987. *Tanaina Plantlore. Dena'ina K'et'una: An Ethnobotany of the Dena'ina Indians of Southcentral Alaska*, 2nd ed. US National Park Service, Alaska Region.
- Karst, A. 2005. The Ethnoecology and Reproductive Ecology of Bakeapple (*Rubus chamaemorus* L. Rosaceae) in Southern Labrador. Unpublished Master's Thesis, Department of Biology, University of Victoria, Victoria, BC, Canada.
- Kuhnlein, H. V. and N. J. Turner. 1991. *Traditional Plant Foods of Canadian Indigenous Peoples: Nutrition, Botany and Use*. Gordon & Breach Science Publishers, Philadelphia, Pennsylvania.
- Makinen, Y. and H. Oikarinen. 1974. Cultivation of Cloudberry in Fennoscandia. *Report from the Kevo Subarctic Research Station* 11:90-102.
- Murray, G., P. Boxall, and R. W. Wein. 2005. Distribution, Abundance and Utilization of Wild Berries by the Gwich'in People in the Mackenzie River Delta Region. *Economic Botany* 59:174-184.
- Omohundro, J. T. 1994. *Rough Food: The Seasons of Subsistence in Northern Newfoundland*. Institute of Social and Economic Research, Memorial University of Newfoundland, St. Johns.

- Oswalt, W. 1957. A Western Eskimo Ethnobotany. *Anthropological Papers of the University of Alaska* 6:16-36.
- Parlee, B., F. Berkes, and Teet'it Gwich'in Renewable Resources Council. 2006. Indigenous Knowledge of Ecological Variability and Commons Management: A Case Study on Berry Harvesting from Northern Canada. *Human Ecology* 34:15-528.
- Russell, P. N. 1991. *English Bay and Port Graham Alutiig plant lore*. Pratt Museum. Homer, Alaska.
- Shishmaref Day School. 1952. Eskimo Cook Book. Shishmaref, Alaska.
- Taylor, K. 1971. Biological Flora of the British Isles. *Rubus chamaemorus* L. *Journal of Ecology* 59:293-306.
- Thornton, T. F. 1999. *Tleikw aani*, the "Berried" Landscape: The Structure of Tlingit Edible Fruit Resources at Glacier Bay, Alaska. *Journal of Ethnobiology* 19:27-48.
- Turner, N. J. 1995. *Food Plants of Coastal First Peoples*. UBC Press, Vancouver.
- Turner, N. J. 2004. *Plants of Haida Gwaii. Xaadaa Gwaay guud gina k'aws (Skidegate), Xaadaa Gwaayee guu giin k'aws (Massett)*. Sono Nis Press, Winlaw, B.C.
- Turner, N. J. and J. C. Thompson, eds. 2006. *Plants of the Gitga'at People. Nwana'a lax Yunp*. Hartley Bay, BC: Gitga'at Nation and Coasts Under Stress Research Project, Cortex Consulting, Victoria, B.C.
- Walker, R. 1985. *Applied Qualitative Research*. Gower Publishing Company, UK.
- Young, S. B. and E. S. Hall. 1969. Contributions to the Ethnobotany of the St. Lawrence Island Eskimo. *Anthropological Papers of the University of Alaska* 14:43-53.

Biosketch

Amanda Karst has a Master of Science degree in Biology, with a focus on ethnobotany and plant ecology. She is currently a Research Associate at the Centre for Indigenous Environmental Resources where she has worked on projects on climate change, watershed planning and traditional foods.

Nancy Turner is Distinguished Professor and holds the Hakai Chair in Ethnoecology at the University of Victoria. She has published widely in the areas of ethnobotany and ethnoecology over the past 40 years, and was proud to serve as graduate advisor for Amanda Karst's MSc degree at UVic. She has a special love of edible berries.

Table 1. List of names, uses and importance of *Rubus chamaemorus* among Indigenous peoples of North America.

Group	Location	Bakeapple Name	Bakeapple importance	How used	Gathering	Processing
Cup'it (Inuit) (Griffin 2001)	Nunivak Island, Alaska	<i>atsar atsakutag</i>	Most sought after berry on island	Eaten raw, frozen for winter use, or mixed with other berries into <i>akutar</i>	By women/children in late summer/early fall	Stored in seal-pokes w/o being cooked; or stored in rock-lined underground pits, lined with <i>Rumex arcticus</i> leaves, berries packed in, covered with more leaves, sod, then rocks
Huna Tlingit (Thornton 1999)	Glacier Bay, Alaska	<i>néx'w</i>	Minor in relation to rest of berries	-----	Available in spring, men/women/children all gathered	-----
Inupiat (Jones 1983)	Alaska	<i>Aqpik, -piik, -piich</i>	Of all berries, most prized for being 1 st to ripen, large, sweet, easy to pick and keep well; most significant source of Vit. C, and good source of roughage	Eaten fresh, with seal oil and sweetener after meal, as Eskimo ice cream, preserved with blackberries	Groups of women or whole families, berries picked individually by hand, gathered (and stored) in birch baskets, pokes (sacks made from animal (includes birds and fish) skin) or wooden containers (now replaced by plastic and glass).	Folded into "fluffy" fat to make Eskimo ice cream; preserved in a seal poke or barrel, (keep best if mixed with something else) or mixed with blackberries/ raw whole sourdock leaves/ nagoonberries/ firm cloudberries/ seal oil/blueberries and stored in pits (lined with grass then coltsfoot, sourdock or rhubarb and covered with leaves, grass, and birch bark or sigluaq (small house dug part or all into the ground, covered with sod) for winter

Inuit (Anderson 1939)	Northern Bering Sea and Arctic Regions of Alaska	Akpik, epik	“most widely distributed of Rosaceae berries”	Eaten fresh or preserved		Preserved in oil
Inuit (Shishmaref School 1957)	Shishmaref, Alaska	<i>Ah-pick</i>	----	----	Gathered in dippers or pots, put into amouk (bag made of seal skin), tie with string	Stored in a pit, 18 inches deep, with a little willow in it, “put in as many pokes as it will hold”
Inuit, general (Heller 1976)	Barter Island, Shishmaref, Kotzebue, Noorvik, Nome, Lower Kuskokwim	<i>Akpik, Ahtchaigpiat</i>	“highly prized”	Eaten raw, with seal oil and sugar and preserved	Gathered in late August, early September, in seal poke, keg or barrel.	Large quantities stored by burying seal poke, keg or barrel in frozen tundra or in ice cellars – kept frozen until ready to use
Gwich’in (Andre and Fehr 2001)	Inuvik, NWT	<i>naskal</i> Yellowberry	A favourite in the area	Eaten fresh, saved for special occasion or given as gift	---	Stored in birch bark baskets under the moss, where permafrost kept them from spoiling and in winter, from freezing too hard
Gwich’in (Holloway and Alexander 1990)	Fort Yukon, Alaska		Limited use		Infrequently harvested	Processed into jam and jelly
Napaskiak Inuit (Oswalt 1957)	Napaskiak, Alaska SW Alaska	at’sut	The berry most important to this group		Gathered by families, go by boat to open tundra country behind village, for 3 days	Stored in wooden barrels over winter (in ice cellar)
Dena’ina (Tanaina)	South-central Alaska	<i>nqutl’</i>	Highly favoured for its juicy fruit and gathered in	Eaten fresh or preserved	Women in charge of gathering and processing all plant	Traditionally preserved in oil or lard (or will spoil). Presently commonly eaten raw or made into jam or “Indian ice cream”.

(Kari 1987)			quantity when available		materials, in birch bark or wooden containers	Traditionally stored in caches: platform cache, underground frame cache and pit cache
Alutiiq (Russell 1991)	English Bay- Port Graham Alaska		Not plentiful but "relished"	Eaten raw, in Alutiiq ice cream, with seal oil, and preserved; shared, given as gifts, occasionally traded	Women and children main gatherers (but sometimes berry gathering a family event), cleaned by hand, gathered in spruce bark containers, now in plastic containers, mid-July to mid-August	Traditionally eaten with seal oil and sugar or mixed with Alutiiq ice cream. Preserved in seal oil, dried, or preserved in water. Stored in pit cache (in wooden kegs and seal stomachs, pit lined with spruce bark and grass) or platform cache (contained dried berries held in round spruce bark containers). Recently, preserved by freezing, making into jams and jellies
Labrador Inuit (Hawkes 1916)	Labrador		"chief" among the berries			
Montagnais (Clément 1990)	Labrador	<i>Shakuteumin-ânakashî</i>	Gathered in great quantities			
Inuit (Young and Hall 1969)	St. Lawrence Island	Ahkahavazik	Not available in large quantities, but relished when found	"some older Inuit claim that there is a good crop only once every 4 yrs"	Gathered by women and young girls	"say when the berries are exceptionally abundant, called yewewmattomililinggook, meaning "man with no clothes on"; b/c the berries colour the tundra flesh coloured"

Haida (Turner 2004)	Bakeapple Name: <i>k'aaxu ts'alaangga</i> , (Skidegate dialect); <i>k'a.àw ts'alaangaa</i> (Masset dialect); <i>k'aawts'aláangaa</i> (Alaska dialect); cloudberry, mars apples, maltberry		Eaten in large quantities, extremely popular			Stored in water or grease in tall boxes, barrels; now become rare since deer and cattle introduced on Haida Gwaii
Tsimshian (Gitga'at) (Turner and Thompson 2006)	Hartley Bay	<i>golk'</i>	It is good luck to see them at Hartley Bay, up in the back where the lake is	ate them fresh, or made into jam called 'jam kolk'		