

Nanaimo Trails Survey 2021:
Economic Impact of Mountain Biking, Management Considerations,
and User Characteristics



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Nanaimo Trails Survey 2021: Economic Impact of Mountain Bike Tourism, Management Considerations, and User Characteristics

The growth in the sport of mountain biking is evident in Canada. Subsequently, mountain bike tourism has demonstrated the economic importance of mountain biking providing opportunity for economic development in local communities. In BC, mountain bike destinations such as Whistler and Squamish have been well researched. However, mountain biking and mountain bike tourism on Vancouver Island have only recently gained attention in Cumberland and Nanaimo (i.e., Parker, 2016; 2018).

Like many other communities on the east coast of Vancouver Island, mountain biking in the Nanaimo and Cumberland regions takes place where trails are within easy access of urban populations. However, one of the major challenges is that much of this land is owned by forestry companies, requiring land use agreements and good relationships with the landowners. This study area consists of 850,000 hectares of privately-owned forest land. Originally established by the E&N Land Grants in the late 1800s, this area is part of the 6% (including the Kootenay's) of land owned by forestry companies in BC; the majority of British Columbia's working forestry lands (94%) are publicly owned (Government of British Columbia, n.d.).

In Nanaimo, a prime recreational area owned by the city, Westwood Lake, is also adjacent to a Department of National Defense (DND) property. Mountain biking in the region also takes place on the traditional territories of the Snuneymuxw, Snaw Naw As land and Qualicum First Nations territories. Consultation and engagement with local First Nations are a key priority for all trail user groups. Effective management has the potential to address some of these challenges, but effective decisions require a good understanding of mountain biker needs and preferences.

The Nanaimo Mountain Bike Club (NMBC) currently works with landowners Mosaic Forest Management, managing the Dumont trails, and the City of Nanaimo, with the popular Westwood Lake trail system. Relationships are being built with First Nations and the Regional District of Nanaimo (RDN). The RDN has begun work on a Regional Trail Strategy (RDN, 2022) with the intent of increasing mountain bike tourism across the region. This will tie in with the work of Toa Consulting and Kootenay Adaptive Sport Association (KASA) assessment of trails using adaptive mountain bike (aMTB) standards to increase accessibility and inclusion for all trail users, as well as Toa Consulting's (2022) work on the Nanaimo Sport Tourism Strategy in partnership with the City of Nanaimo, Tourism Nanaimo and the NHA as the primary funding partner ("All Things Cycling" being one of the six pillars of the strategy).

For Nanaimo to gain legitimacy as a mountain biking destination, and diversify and grow mountain bike tourism, a strong relationship between Mosaic, the City of Nanaimo, local First Nations, the RDN, Tourism Nanaimo, the NHA, Toa Consulting and the NMBC needs to be fostered to establish more managed 'legal' and insured trails to promote to a wider cycling audience and 'put Nanaimo on the map.'

The goal of this project was to identify the economic impact of mountain biking, management considerations and trail user characteristics. Funding for this project was provided by the Vancouver Island University Regional Initiatives Fund, a joint initiative between VIU, the Province of BC and community partners, including Nanaimo Hospitality Association, NMBC, Tourism Nanaimo, Tourism Vancouver Island, and the City of Nanaimo. Administrative and technical support for the project was provided by MABRRI.

Executive Summary

Data was collected with an online survey from February 2021 to Oct 2021. Face to face intercepts took place from May 2021 to July 2021 at popular Nanaimo trail heads including South Benson/Ridge Runner, Dumont, and Westwood Lake. In total, 885 surveys were completed that addressed the following themes:

- Mountain biker characteristics
- Nanaimo as a mountain biking destination
- Riding preferences
- Frequency of mountain biking
- Economic impact of mountain biking
- Management considerations
- Although not its own theme, the survey was reviewed through the lens of access and inclusion

Comparisons to a 2018 Nanaimo trail survey a 2016 Cumberland trail survey and relevant literature are discussed throughout the report, where applicable.

Most of the respondents were local, with 72.02% reporting Nanaimo as their home. Other Vancouver Island residents made up another large portion with 23.75%. Less than 1% were from other locations in Canada and, outside of Canada. Within the Regional District of Nanaimo (RDN), with the exclusion of Nanaimo, most respondents are residents of Parksville (25%), Gabriola Island (21.88%), NanOOSE Bay (17.19%), or Lantzville (12.50%).

Participants indicated that they were well educated, with above average incomes. The majority of respondents were male (74.07%). Respondents between the ages of 25-34 (18.98%), 35-44 (32.88%), and 45-54 (28.25%) combined made up about 80%, compared to only 6% under the age of 25. Almost half of respondents had a university or graduate degree (47.35%). Household incomes of over \$100,000 also accounted for half of respondents. Considering the median household income of Nanaimo in 2019 was \$69,402 (Manhas, 2020) this is well below the average for respondents.

Many respondents (68.71%) were not members of the Nanaimo Mountain Bike Club at the time of the survey. A large proportion were not aware of the Nanaimo Mountain Bike Club (49.62%), while 22.67% forgot to renew membership. A large segment of non-members were not interested in becoming a club member (25.69%) and only 3.27% indicated that the cost of membership was too high.

Most people deemed themselves advanced (54.25%) and intermediate mountain bikers (41.60%). Only a small amount of people (4.14%) considered themselves to be beginners. The lack of beginners may be due to how or where the information was collected. Trail head intercepts focused more on popular Nanaimo trail heads including South Benson/Ridge Runner, Dumont, and Westwood Lake than on beginner locations like the Stevie Smith Bike Park and Mountain Bike Skills Park at Beban Park, Englishman River Provincial Park, the E&N Trail, Saysutshun/Newcastle Island Provincial Park, and the loop around Westwood Lake.

To capture the importance of mountain biking to health and well-being during the pandemic, respondents were asked how they benefitted from mountain biking. Most people strongly agreed that it has added richness to their lives and made them feel revitalized after each experience. Overall, there were numerous social, mental, and physical advantages to mountain biking. While participants indicated

that they do not benefit financially from mountain biking, the importance of mountain biking in terms of economic benefit is substantial with increased mountain bike sales (Zerrouk, 2021) and positive impact on local businesses and local tourism.

The most important decision-making factors for mountain biking in Nanaimo were an abundance of good trails, variety of terrain, wilderness-like environment, and easy access to trail networks. The least important factors were the availability of mountain bike terrain, reputation, and the desire to ride a specific trail.

The primary sources of information for mountain biking in Nanaimo came from apps, friends or family, local bike shops, and social media. The least important sources were guide services, the travel rack aboard BC ferries, visitor centers, and guidebooks. The NMBC ranked among the most important source of information with about half of respondents rating high or very high importance.

Riding preferences are shown in Table 8. The preferred riding types are All mountain / Free Ride and Cross country, with 85% and 77% respectively. However, Downhill riding was also popular with 60.8% of respondents.

The preferred trail difficulty was advanced (black diamond) at 63.1% and more difficult trails (blue square) at 54.4%. The least preferred trails were easy and aMTB trails at 8.7% and <1% respectively.

The most popular destinations in the Nanaimo region were Westwood Lake, Dumont, and South Benson. Some of the less visited riding locations in the region were Horne Lake, South Wellington, and Gabriola Island.

Participants rode mostly with friends, alone, or with their families and rarely with commercially guided trips, races, events, or skill courses.

The COVID-19 pandemic has had a profound effect on the way Canadians recreate. Spending time in nature during the pandemic has been important for mental health. One poll conducted by the Nature Conservancy of Canada revealed that about three-quarters of Canadians agreed that being in nature increased in importance during the pandemic (Thiessen, 2021). Nanaimo Mayor, Leonard Krog commented that “[i]n recent years, Westwood Lake Park has seen increased use by diverse user groups and special events. During the COVID-19 pandemic, demand for outdoor recreational activities has also increased significantly...” (City of Nanaimo, 2022). 57.3% of respondents indicated that their amount of riding increased during the pandemic.

Over the past 30 days riders were mostly on the trails an average of 6 to 10 times (30.1%), closely followed by 11-15 times (24.3%). A small portion of riders would go out over 16 times a month (17%). A larger temporal timeframe was also surveyed. Respondents were asked how many times they had traveled for mountain biking and spent at least one night over the past 5 years. The majority of respondents (30.5%) travelled 1 to 5 times followed by 6-10 times (19.3%) and 20+ times (17.5%).

The importance of mountain biking in terms of economic benefits is massive, further amplified by COVID. Mountain biking is an outdoor sport that allowed participants to stay active and socially distance throughout the pandemic. Mountain bike sales were up considerably in BC during COVID (Zerrouk, 2021), which has a large impact on local community businesses and local tourism. Most of the respondents had

spent money on the purchase of a bike (80.8%), bike accessories (94.7%), and bike repairs (88.3%). Only about a third of respondents spent money on guided tours (38.4%).

According to the respondents, the most important management issues were soil erosion, litter on trails, and encountering motorcycles or vehicles. Minor problems included trails being rated higher than expected and encountering people on horseback. Themes of illegal garbage dumping, firearms, forestry partnerships and trail maintenance emerged in the 'additional' comments section. These were not captured in the survey questions and point to some important management considerations.

Possible management actions included Improving trail head parking lots. Proper parking areas improve accessibility, especially for aMTB users. Other important actions were more trail signs and information about trail safety and etiquette.

Trail type preferences will aid in focusing priority for trail building days and workshops. The most frequent trail type chosen was all mountain/ free ride followed by downhill and dirt jumping. While cross country ranked lower than the latter three categories as a very high priority, it was ranked as high' and moderate priority. Trails for younger children were also ranked similarly to cross country.

A final open-ended question provided the space for respondents to express additional thoughts that were not captured in the survey questions. Most comments were overwhelmingly positive and pointed towards promoting Nanaimo as a mountain biking destination and the popularity of mountain biking in Nanaimo, citing successful examples from other destinations and economic benefits. Support from local government and forestry partnerships was identified as key to success.

Methodology

Data was collected with an online survey from February 2021 to Oct 2021. Face to face intercepts took place from May 2021 to July 2021 at popular Nanaimo trail heads including South Benson / Ridge Runner, Dumont, and Westwood Lake. Due to COVID-19, participants either responded to a verbal delivery of the survey, scanned a QR code, or were sent a link to the online survey. The survey was also promoted on social media and websites of the NMBC and local businesses including Rock City Cycles, Coal City Cycles, Arrowsmith Bikes, Front Runners, and Longwood Brewery. Promotional posters were placed around Nanaimo in key locations, at mountain bike trailheads and the above participating businesses. At the end of the survey, participants had the opportunity to enter in a draw for prizes donated by these businesses.

In total 885 surveys were completed that addressed the following themes:

- Mountain biker characteristics
- Nanaimo as a mountain biking destination
- Riding preferences
- Frequency of mountain biking
- Economic Impact of mountain biking
- Management considerations
- Although not its own theme, the survey was reviewed through the lens of access and inclusion

Results

Mountain Biker Characteristics

The primary residence of respondents is shown in Table 1. Most of the respondents were local, with 72.02% reporting Nanaimo as their home. Other Vancouver Island residents made up another large portion with 23.75%. In contrast, less than 1% were from other locations in Canada and, outside of Canada. Within the Regional District of Nanaimo (RDN), with the exclusion of Nanaimo, most respondents are residents of Parksville (25%), Gabriola Island (21.88%), Nanoose Bay (17.19%), or Lantzville (12.50%).

Table 1. Place of origin of all respondents (n=865)

Residence	Frequency	Percent (%)
Nanaimo	623	72.02
Other Vancouver Island	205	23.75
Other BC	28	3.24
Other Canada	6	0.69
Outside Canada	3	0.35
Place of origin within the Regional District of Nanaimo (excluding Nanaimo)		
Parksville	16	25.00
Gabriola Island	14	21.88
Nanoose Bay	11	17.19
Lantzville	8	12.50
Errington	4	6.25
Qualicum Beach	4	6.25
Coombs	2	3.13
Bowser	1	1.56
Cassidy	1	1.56
Cedar	1	1.56
Extension	1	1.56
French Creek	1	1.56

Results are similar to the 2018 trail survey (Parker), with the bulk of respondents from Nanaimo and the RDN. However, there was a large increase in riders from Other Vancouver Island to 23.75% from 14.8% in 2018, and slight increases in participants from Other BC and Other Canada, to 3.24% and 0.69% from 1% and 0%, respectively. Similar to a 2016 (Parker) trail survey in Vancouver Island mountain biking hot spot, Cumberland BC, the majority of riders were local. However, in the current study, respondents from Other Vancouver Island ranked higher (23.7%), than Cumberland (14.5%), demonstrating a rise in mountain biking interest in Nanaimo. This can possibly be attributed to pandemic travel restrictions with riders choosing to explore the out of doors locally (O'Connel, Howard & Hutson, 2020) at a variety of different scales. Interestingly, Outside Canada was slightly up at 0.35% from 2018 (0%) regardless of COVID-19.

Table 2 illustrates socio-demographics for the survey population. Respondents indicated that they were well educated, with above average incomes for Nanaimo of over \$100,000. The median household income of Nanaimo in 2019 was \$69,402 (Manhas, 2020). The majority of respondents were male (74.07%). Respondents between the ages of 25-34 (18.98%), 35-44 (32.88%), and 45-54 (28.25%) combined made up about 80%, compared to only 6.1% under the age of 25. This is slightly different than both the previous Nanaimo and Cumberland surveys (Parker, 2016; 2018), where most riders were in

their 30's and 40's. This can partially be attributed to slightly different age categories in the current survey. The current study employed a more nuanced approach to defining rider age that illustrated high mountain participation in the middle to upper age category.

Table 2. Respondent Characteristics

Sex (n=883)		Frequency	Percent (%)
	Male	654	74.07
	Female	227	25.71
	Other	2	0.23
Age (n=885)			
	Under 18	9	1.02
	18-24	45	5.08
	25-34	168	18.98
	35-44	297	32.88
	45-54	250	28.25
	55-64	89	10.06
	65+	33	3.73
Education (n=885)			
	Less than high school	12	1.36
	High school graduation	95	10.73
	College or technical diploma	359	40.56
	University degree	286	32.32
	Graduate degree	133	15.03
Income (n=869)			
	Under \$20,000	25	2.88
	\$20,000 to \$29,999	22	2.53
	\$30,000 to \$39,999	27	3.11
	\$40,000 to \$49,999	43	4.95
	\$50,000 to \$59,999	47	5.41
	\$60,000 to \$69,999	44	5.06
	\$70,000 to \$79,999	51	5.87
	\$80,000 to \$89,999	64	7.36
	\$90,000 to \$99,999	76	8.75
	Over \$100,000	470	54.09

Recent studies identify riders as wealthy middle-aged men (Bordelon & Fereira, 2019). This contrasts with early mountain bike studies that identified participants as young, lifestyle-oriented males (Cessford, 1995; King & Church, 2013) and other studies that demonstrated riders to be males in their 30's with professional careers (Morey, Buchanan, & Waldman, 2002; Getz & McConnell, 2011). What is consistent with the latter studies and the Nanaimo and Cumberland studies (Parker 2016; 2018) is the upper income bracket and the high proportion of university or graduate degrees among participants.

Proportionately, the number of male (74.07%) and female riders (25.71%) remained similar to the 2018 Nanaimo study (73.5% male and 26.6% female) (Parker). However, the Cumberland study (Parker, 2016) participants were much more evenly distributed at 53% and 47% with males and females, respectively.

Table 3. Nanaimo Mountain Bike Club membership

Are you a member? (n=882)	Frequency	Percent (%)
Yes	276	31.29
No	606	68.71
If not a member, why? (n=397)		
Didn't know about the membership	197	49.62
Forgot to renew my membership	90	22.67
Not interested	102	25.69
Too expensive	13	3.27

Table 3 demonstrates that 68.71% of respondents are currently not members of the Nanaimo Mountain Bike Club. While 31.29% were NMBC members, this is a decrease from 37.7% in 2018 (Parker). Primarily, respondents were not aware of the Nanaimo Mountain Bike Club (49.62%), while 22.67% forgot to renew. A large segment of non-members were not interested in becoming a club member (25.69%) and only 3.27% indicated that the cost of membership was too high.

Table 4. Which of the following best describes your involvement in mountain biking (n=870) biking (n=870)

	Frequency	Percent (%)
BEGINNER. Mountain biking is an enjoyable but infrequent activity that is incidental to other outdoor activities. I am not highly skilled in mountain biking, rarely read about mountain biking, and do not own much mountain biking equipment	36	4.14%
INTERMEDIATE. Mountain biking is important but not exclusive activity for me. I sometimes read about mountain biking and have purchased some mountain biking equipment. I am moderately skilled, but my participation in mountain biking is inconsistent.	362	41.60%
ADVANCED. Mountain biking is my primary outdoor activity. I purchase ever increasing amounts of mountain biking equipment, go mountain biking whenever I can, consider myself to be highly skilled in mountain biking, and frequently read about mountain biking.	472	54.25%

Table 4 shows the respondents involvement in mountain biking. Most people deemed themselves advanced (54.25%) and intermediate riders (41.60%). Only a small amount of people (4.14%) considered themselves to be beginners. The lack of beginners may be due to how or where the information was collected. Trail head intercepts focused more on popular Nanaimo trail heads including South Benson/Ridge Runner, Dumont, and Westwood Lake than on beginner locations like the Stevie Smith Bike Park and Mountain Bike Skills Park at Beban Park, Englishman River Provincial Park, the E&N Trail, Saysutshun/Newcastle Island Provincial Park, and the loop around Westwood Lake.

Table 5. How important is mountain biking to you? (n=881)

	Strongly disagree (1)	Somewhat disagree (2)	Not sure (3)	Somewhat agree (4)	Strongly agree (5)	Average
Mountain biking is enjoyable to me	0.3%	0.0%	0.6%	7.8%	91.3%	4.90
I feel revitalized after a mountain biking experience	0.6%	0.1%	1.2%	14.4%	83.7%	4.81
I have improved at mountain biking since I began participating	0.8%	0.3%	1.6%	15.2%	82.0%	4.77
I try hard to become more competent in mountain biking	1.1%	1.8%	2.7%	32.8%	61.5%	4.52
I overcome difficulties in mountain biking by being persistent	0.7%	1.4%	4.0%	38.5%	55.5%	4.47
I enjoy interacting with other mountain biking enthusiasts	0.9%	1.5%	7.4%	41.0%	49.1%	4.36
People that know me understand that mountain biking is a part of who I am	2.5%	4.8%	11.8%	31.1%	49.8%	4.21
There are defining moments within mountain biking that have significantly shaped my involvement in it	1.3%	3.1%	16.3%	34.2%	45.1%	4.19
I share many of the sentiments of my fellow mountain biking devotees	1.5%	2.2%	20.8%	40.0%	35.6%	4.06
Mountain biking has enhanced my self image	3.1%	6.6%	16.7%	36.4%	37.2%	3.98
For me, mountain biking is an expression of myself	2.8%	8.4%	15.3%	36.9%	36.7%	3.96
Mountain biking is a way to display my skills and abilities	2.4%	10.2%	17.2%	33.7%	36.5%	3.92
The development and cohesiveness of my mountain biking group is important to me	4.6%	4.6%	21.4%	39.3%	30.2%	3.86
I have benefited financially from mountain biking	54.2%	20.9%	13.5%	5.3%	6.1%	1.88

Mountain biking takes place in nature and can benefit well-being and mental health (Roberts, Jones & Brooks, 2018), during the pandemic (Fagerholm, Eilola, Arki, 2021). To capture the importance of

mountain biking to health and well-being during the pandemic, a serious leisure scale (Stebbins, 1992) was adapted in Table 5, using a scale that varied from 1 = strongly disagree, to 5 = strongly agree.

The majority of respondents indicated that they benefited from mountain biking. Most people strongly agreed that mountain biking has added richness to their lives and made them feel revitalized after each experience. Overall, there were numerous social, mental, and physical advantages to mountain biking. While most participants indicated that they did not benefit financially, the importance of mountain biking in terms of economic benefit is massive, further amplified by COVID. Mountain biking is an outdoor sport that allowed participants to stay active and socially distance. Mountain bike sales were up considerably in BC during COVID (Zerrouk, 2021) which has a large impact on local businesses and tourism.

Nanaimo as a Mountain Biking Destination

Table 6. How important were each of the following when choosing Nanaimo as a place for mountain biking? (n=877)

Reason for choosing Nanaimo	Not at all important (1)	Low importance (2)	Moderate importance (3)	High importance (4)	Very high importance (5)	Average
Abundance of good trails	2.1%	0.9%	11.8%	50.0%	34.9%	4.14
Variety of terrain	2.2%	1.5%	22.2%	52.0%	22.2%	3.91
Wilderness-like environment	1.8%	4.1%	23.8%	45.5%	24.7%	3.87
Ease of access to trails	2.1%	3.8%	24.4%	46.8%	23.0%	3.85
Lack of crowds	3.6%	13.7%	39.9%	30.9%	12.0%	3.34
Long distance trails	5.1%	20.2%	41.1%	24.0%	9.8%	3.13
Local mountain bike culture	7.7%	19.2%	37.7%	26.7%	8.7%	3.10
Desire to ride a specific trail	11.0%	19.5%	33.4%	25.5%	10.6%	3.05
Reputation	15.2%	25.8%	32.0%	20.5%	6.5%	2.77
Availability of aMTB terrain	35.5%	24.9%	23.9%	12.1%	3.6%	2.23

Table 6 describes the importance of various factors when choosing Nanaimo as a mountain biking destination, where importance was measured on a 5-point scale, from 1 = not all important, and 5 = very high importance. Similar to the previous Nanaimo and Cumberland studies (Parker 2016; 2018), two of the most important decision-making factors were an abundance of good trails and variety of terrain. However, wilderness-like environment, and easy access to trail networks were also ranked high. The least important factors were the availability of aMTB terrain, reputation, and the desire to ride a specific trail.

Table 7 describes the importance of each of the following sources of information, where 1 = not all important, and 5 = very high importance. The results indicate that the primary sources of information came from apps, friends or family, local bike shops, and social media. The least important sources were guide services, the travel rack aboard BC ferries, visitor centers, and guidebooks. The NMBC ranked among the most important source with about half of the respondents rating it high or very high importance. Club information was not included in the previous Nanaimo and Cumberland surveys (Parker 2016; 2018). However friends and family, apps, websites, and social media were important sources.

Table 7. Sources Mountain Biking Information (n=878)

How important to you are each of the following sources of information about MTB?						
Source	Not at all (1)	Low (2)	Moderate (3)	High (4)	Very high (5)	Average
Apps	2.1%	1.7%	9.7%	28.8%	57.8%	4.38
Friends or family	4.2%	4.9%	25.7%	42.4%	22.8%	3.75
Bike shop	3.2%	7.6%	31.7%	40.3%	17.2%	3.61
Social media	7.5%	11.1%	32.4%	34.7%	14.4%	3.37
Websites	9.1%	11.8%	31.0%	31.3%	16.8%	3.35
NMBC	11.7%	14.0%	25.5%	29.3%	19.6%	3.31
Colleagues	17.0%	19.7%	33.7%	21.5%	8.1%	2.84
Films and videos	16.3%	21.6%	32.6%	21.1%	8.3%	2.83
Regional tourism guides	35.5%	31.2%	24.2%	7.4%	1.7%	2.09
Guidebook	48.2%	26.5%	18.5%	5.6%	1.2%	1.85
Visitor centre	56.1%	22.1%	14.5%	5.4%	1.9%	1.75
Travel rack on BC ferries	60.9%	18.8%	13.6%	4.8%	2.0%	1.68
Guide service	60.5%	24.0%	12.2%	2.5%	0.9%	1.59

Riding Preferences

Riding preferences are shown in Table 8. The preferred riding types were All mountain/Free Ride and Cross country, with 85% and 77% respectively. However, Downhill riding was also popular with 60.8% of respondents. These categories are all up from the previous Nanaimo study with All mountain/Free Ride: 50.4%, Cross Country: 35.2% and Downhill: 7.8% (Parker, 2018).

Table 8. Riding types (n=881)	Frequency	Percent (%)
All mountain / free ride	749	85.0
Cross country	678	77.0
Downhill	536	60.8
Double track / fire roads	374	42.5
Gravel	247	28.0
Dirt jumping	227	25.8
aMTB	13	1.5

Preferred Trail difficulty (n=883)

Advanced (black diamond)	557	63.1
More difficult (blue Square)	480	54.4
Expert (double black diamond)	208	23.6
Easy (green circle)	77	8.7
aMTB (inclusive/adaptive)	2	0.2

There was also an increase in Dirt Jumping from 0.4% to 25.8% and Double track/fire roads, 1.6% to 42.5%. Expert also increased from 2018 (Parker) from 8.7% to 23.6%. Since 2018 (Parker), Gravel and aMTB have emerged as new categories. The least frequent riding type was aMTB with 1.5%. The preferred trail difficulty is advanced (black diamond) at 63.1%, considerably up from 33.3% in 2018 (Parker) and more difficult trails (blue square) with 54.4 percent, similar to 56.1% in 2018 (Parker). Most trails in the Dumont and Westwood Lake areas reflected the trail preference with the majority being blue,

or black diamond (NMBC, 2021). The least preferred trails were easy and aMTB trails with 8.7% and <1% respectively.

Table 9 presents how frequently riding locations in the Nanaimo area were visited, where responses were rated on a scale that varied between 1 = very infrequently, to 5 = very frequently. The most popular destinations in the Nanaimo region are Westwood Lake, Dumont, and South Benson. Westwood Lake has a wide, multi-use main path and an abundance of trails beyond the lake. “Dumont is (arguably) where mountain biking began in Nanaimo” (NMBC, 2021). It has some of the most popular trails in the region including ASOP, Fine China, Finer China, and Hayden. Some of the less visited riding locations in the region are Horne Lake, South Wellington, and Gabriola Island.

Table 9. Riding location in Nanaimo area (n=873)

Riding Location	Very infrequently (1)	Somewhat infrequently (2)	Occasionally (3)	Somewhat frequently (4)	Very frequently (5)	Average
Westwood	14.6%	9.8%	22.6%	28.5%	24.6%	3.39
Dumont	12.6%	10.0%	29.4%	25.5%	22.4%	3.35
South Benson	18.4%	11.1%	23.0%	22.2%	25.3%	3.25
Abyss	30.9%	15.0%	26.0%	18.4%	9.8%	2.61
Ridge Runner	36.6%	11.8%	22.3%	18.0%	11.4%	2.56
Hammerfest	31.7%	17.7%	30.7%	12.6%	7.3%	2.46
Extension	43.0%	14.0%	21.9%	12.9%	8.3%	2.29
Englishman River Provincial Park	59.9%	16.8%	16.6%	4.9%	1.8%	1.72
Nanoose	67.1%	12.9%	13.8%	4.0%	2.3%	1.62
Linley	70.6%	11.6%	10.0%	3.8%	4.0%	1.59
Top Bridge / Englishman River	70.4%	16.5%	9.4%	2.5%	1.3%	1.48
Jamison	72.7%	12.7%	10.6%	2.9%	1.2%	1.47
South Wellington	80.8%	8.5%	7.6%	2.5%	0.5%	1.33
Horne Lake	92.6%	4.1%	2.5%	0.5%	0.3%	1.12

Table 10 shows with whom respondents have biked with over the past year. Similar to the previous Nanaimo and Cumberland studies, (Parker 2016; 2018), riders mostly went out with friends, alone, or with their families and rarely went out on commercially guided trips, races, events, or skill courses.

Table 10. Who have you biked with in the past year? (n=881)

	Frequency	Percent (%)
With friends	812	92.2
Alone	704	79.9
With family	537	61.0
With colleagues	192	21.8
With a club	139	15.8
On an MTB skills course	108	12.3
In an MTB race or event	83	9.4
On a commercial guided trip	17	1.9
Adaptive event	2	0.2

Frequency of Mountain Biking

Mountain biking and the natural environment in which it occurs can be a catalyst for improved well-being and positive mental health (Roberts, Jones & Brooks, 2018). The COVID-19 pandemic has had a profound effect on the way Canadians recreate (O'Connel, Howard & Hutson, 2020). Spending time in nature during the pandemic has been important for mental health with increases in outdoor recreation in some cases (Fagerholm, Eilola, Arki, 2021). Results from Table 5 indicate that the majority of respondents benefited greatly from mountain biking by adding richness to their lives making them feel revitalized after each experience. One poll conducted by the Nature Conservancy of Canada revealed that about three-quarters of Canadians agreed that being in nature increased in importance during the pandemic (Thiessen, 2021). Nanaimo Mayor, Leonard Krog commented that "[i]n recent years, Westwood Lake Park has seen increased use by diverse user groups and special events. During the COVID-19 pandemic, demand for outdoor recreational activities has also increased significantly..." (City of Nanaimo, 2022). Table 11 reveals that about 57.3% of respondents of this survey indicated that their amount of riding increased during the pandemic.

Table 11. Amount of riding during the pandemic (n=881)

	Frequency	Percent (%)
Increased	505	57.3
Decreased	57	6.5
About the same	322	36.6

The regularity of mountain biking is presented in Table 12. Over the past 30 days riders were mostly, on the trails an average of 6 to 10 times (30.1%), closely followed by 11-15 times (24.3%). A small portion of riders would go out over 16 times a month (15.75%). A larger temporal timeframe was also surveyed. Respondents were asked how many times they have traveled for mountain biking and spent at least one night over the past 5 years. The majority of respondents (30.5%) travelled 1 to 5 times followed by 6-10 times (19.3%) and 20+ times (17.5%).

Table 12. Mountain biking frequency

How many times in the past 30 days (n=873)							
0	1-5	6-10	11-15	16-20	21-25	26-30	30+
5.0%	23.5%	30.1%	24.3%	11.6%	4.0%	0.7%	0.8%
Over past 5 years, how many times have you traveled for the main purpose of mountain biking to a place located at least 40 km away from home, where you spent at least one night (n=878)							
0	1-5	6-10	11-15	15-20	20+		
16.9%	30.5%	19.3%	8.7%	7.2%	17.5%		

Economic Impact of Mountain Biking

The importance of mountain biking in terms of economic benefit is massive, further amplified by COVID. Mountain biking is an outdoor sport that allowed participants to stay active and socially distanced. Mountain bike sales were up considerably in BC (Zerrouk, 2021), the US (Newcomb, 2020) with an increase in bike sales overall in Canada (Mazerolle, 2021) during the pandemic, indicating a surge in interest in mountain biking and cycling in general. This has had a massive impact on local community businesses and local tourism. Respondents were asked their spending habits on mountain bike related

expenses in the past year, such as a bike, accessories, guided tours, and repairs. Table 13 revealed that most of the respondents had spent money on large expenses such as the purchase of a bike (80.8%) and mountain biking trips (69%), bike accessories (94.7%), and bike repairs (88.3%). Only about a third of respondents spent money on guided tours (38.4%).

Table 13. During the past year, where did you spend money on each of the following aspects of MTB? (n=843)

Type of MTB Expense	Total \$ Spent	Average \$ Spent	Frequency	Percent (%)
Bike accessories	\$721,440	\$938	798	94.7
Bike repair	\$490,027	\$684	744	88.3
Purchase of bike	\$2,805,399	\$5,313	681	80.8
Mountain biking trips	\$1,211,554	\$1,543	582	69.0
Club dues	\$24,991	\$68	520	61.7
Biking magazines or books	\$6,961	\$60	370	43.9
MTB skills course	\$24,453	\$360	363	43.1
Rental of bikes	\$16,705	\$269	349	41.4
Guided tours	\$4,350	\$311	324	38.4

Management Considerations

One of the major challenges is that much of the land in Nanaimo where mountain biking takes place is owned by Mosaic Forest Management. In Nanaimo, a prime recreational area owned by the city, Westwood Lake, is also adjacent to a Department of National Defense (DND) property. Effective management has the potential to address some of these challenges, but effective decisions require a good understanding of mountain biker needs and preferences.

Mosaic management is challenging because there are land-use agreements that need to be in place. In addition, NMBC is responsible for trail management. There are conflicting interests between trail users, which can happen when one of the trail user groups is responsible for the design, build and maintenance of multi-use trails.

The second aspect of Mosaic trail management is that without long-term agreements, specifically for hosting mountain biking events, there is the risk of committing to an event with a particular trail system in mind to have it clear cut and unusable as a trail in the future. Additionally, most trails are on RDN land, but active mobility and many users rely on Nanaimo infrastructure to access the trail systems.

A further management consideration is that funding is often available for trail building and management, but not the labour to make it happen. There is also the workload for a full time individual, given all the lobbying efforts, inquiries, stakeholder management, First Nations consultation, accessibility and inclusion initiatives, land conservancy, etc. However, it is managed disparately at present and there is not enough consideration given to stakeholder coordination and consultation.

Table 14. Mountain biking problems in the Nanaimo area (n=878)

Problem	Not at all (1)	Small (2)	Moderate (3)	High (4)	Very high (5)	Average
Soil erosion	10.8%	31.5%	42.3%	12.4%	3.0%	2.65
Encountering motorcycles or vehicles	25.6%	29.4%	23.9%	14.3%	6.9%	2.48
Litter on trails	24.5%	38.1%	19.2%	10.8%	7.5%	2.39
Trail users ignoring rules and regulations	36.9%	38.6%	16.8%	4.4%	3.3%	1.98
People riding off established trails	36.8%	38.8%	18.2%	4.5%	1.7%	1.96
Trail users ignoring signs	39.8%	35.5%	17.5%	4.5%	2.8%	1.95
Trail users going the wrong way on 1-way trails	39.9%	38.1%	14.4%	5.4%	2.2%	1.92
Graffiti or other vandalism	44.6%	35.2%	12.2%	5.2%	2.8%	1.86
Unsafe mountain bike structures	41.2%	38.0%	16.2%	3.1%	1.5%	1.86
Inexperienced riders on expert trails	40.4%	39.5%	15.2%	3.9%	1.0%	1.86
Encountering people on horseback	64.3%	24.9%	7.3%	2.2%	1.4%	1.51
E-MTB on mountain bike trails	71.1%	17.9%	6.7%	2.3%	2.0%	1.46
Encountering hikers or joggers	45.5%	30.3%	16.1%	5.2%	3.0%	1.9
Trail rating higher than expected	68.1%	25.3%	5.5%	0.8%	0.4%	1.4

Table 14 presents trail management factors. Respondents were given a list of 14 mountain biking trail issues in the Nanaimo area and asked to rank their significance, with a scale that ranged from 1 = not a problem to 5 = very high problem. Similar to the previous studies (Parker 2016; 2018), the most important issues were soil erosion, litter on trails, and encountering motorcycles or vehicles. However, litter on trails ranked much lower and unsafe structures higher in Cumberland, than in Nanaimo. Minor problems included trails being rated higher than expected and encountering people on horseback.

Additional Comments on Problems in the Nanaimo Area and Management Considerations

Themes of illegal garbage dumping, firearms, forestry partnerships and trail maintenance emerged in the 'additional' comments section. These were not captured in the survey questions and point to some important management considerations.

Garbage Dumping

"It's mind blowing how much garbage I see dumped on FSR's (forest service roads)." The "[e]xcess garbage dumping and fires around Dumont and Ridge Runner...sends a terrible message to anyone from outside Nanaimo. [With] piles of garbage bags or just open dumps of refuse on the roadside or trail, it's hard to 'sell' a mountain bike destination if the impression is that the locals care so little for the area that they use it as a garbage dump. One common suggestion was 'gates...at Dumont to prevent the vehicle access to the top of fine China. In addition to "[g]arbage, needles, and firearm casings, [are] still being found up there on a regular basis. One respondent noted a "burned out car at Dumont. Gross! I wonder why in the world this would be allowed to continue."

Firearm Use

“At Dumont, the gun activity that goes on is a big turn off. I've been up there on a number of occasions where shooting was taking place in close proximity to the trails or, in one case, overtop of trails. It's a very scary situation to be in and one that makes me think twice about riding there. “

A related issue are the Department of National Defence (DND) lands, its active rifle range and trails that overlap into the Westwood Lake trail system. The range is used for live fire training during the day, at night and throughout the weekends. All other trails in that area are on private land, most of which fall upon the Military Rifle Range property. The rifle range property has never been officially cleared for public access but is heavily used by mountain bikers.

One respondent wondered “[w]hy is there a ... military range in prime location, while another asserted that “...the rifle range should be moved to somewhere away from trail users and homes.” This sentiment was expressed with frustration in blocked access by the DND to its federally owned lands. “The recent [c]losure of the Westwood DND section of trails is a major blow... a lot of the nicest trails in the city are now off limits. The “DND land takes up a giant area of land and over 30km of trails. Having this swath cut out means lack of connectivity.”

Trail Maintenance

This theme is closely linked to erosion and built infrastructure in Table 12 and soils vegetation and wildlife in table 13. However, these do not capture the overall importance of ongoing general trail maintenance expressed by respondent survey participants and the survey “[s]hould add proper trail maintenance to the possible answers. People largely do not care about anything other than trail quality...” “Soil will always erode but the fix is maintenance and proper building in the first place.” While some noted a perceived ‘...lack of [trail] maintenance, others asserted that “[h]aving a dedicated maintenance crew has greatly improved the trail network over the past few months.

Forestry and Partnerships

Tensions often exist between forestry and ecotourism and can manifest in lack of support from the forestry sector (Connell, Hall & Shultis, 2017). What makes Nanaimo unique is that much of the forest around Nanaimo is privately owned by Mosaic Forest Management. The NMBC does have land management agreements with Mosaic. Survey participants acknowledged that “[t]he majority of ... trails [are] unauthorized and on Mosaic Private Forest Land,” noting [v]isual degradation from logging operations [and] destruction of trails from logging ops.” One particular issue is the “[l]ogging of trails that are already established. While Dumont has a land use agreement, main trails are still being decimated by logging.” Overall, participants felt that “[the] NMBC needs a comprehensive (sign, build, maintain, and promote) long-term access agreement with Mosaic,” reiterating the importance of working together to support mountain biking in Nanaimo.

Possible management actions were ranked by urgency, from 1 = no action needed, to 5 = very high priority (Table 15). Improving trail head parking lots had the highest weighted average. Proper parking areas improve accessibility, especially for aMTB users. Other management actions to consider include providing more trail signs and information about trail safety and etiquette. With the exception of providing more trail information these items ranked much lower in the previous Nanaimo and Cumberland studies (Parker, 2016; 2018).

Table 15. Management Actions (n= 878)

Action	None (1)	Low (2)	Moderate (3)	High (4)	Very high (5)	Average
Improve trail head parking	5.5%	12.6%	38.3%	28.3%	15.3%	3.4
Provide more trail info signs	5.9%	16.4%	40.8%	27.5%	9.4%	3.2
Provide information about trail safety and etiquette	9.7%	23.8%	38.5%	20.1%	8.0%	2.9
Reduce impact on soils	13.3%	21.2%	37.4%	21.2%	6.8%	2.9
Provide a bike washing station	15.5%	23.4%	35.0%	18.2%	7.9%	2.8
Reduce impact on wildlife	15.3%	24.8%	33.5%	18.7%	7.7%	2.8
Reduce impact on natural vegetation	15.6%	22.2%	37.8%	17.6%	6.8%	2.8
Provide trail maps	16.2%	26.3%	31.6%	19.3%	6.6%	2.7
Provide trail descriptions	12.0%	29.0%	37.5%	16.1%	5.4%	2.7
Provide enforcement of regulations	28.5%	35.1%	23.6%	9.7%	3.1%	2.2
Improve access for aMTB riders	25.6%	33.1%	30.3%	8.2%	2.8%	2.3
Control the number of bikers on some trails	57.3%	33.3%	8.1%	0.7%	0.7%	1.5

Respondents were asked what types of trails they would like to see constructed in the future (Table 16). Trail type preferences will aid in focusing priority for trail building days and workshops. The most frequent trail type chosen was all mountain/ free ride followed by downhill and dirt jumping. While cross country ranked lower than the latter three categories as a very high priority, it was ranked as high and moderate priority. Trails for younger children were also ranked similarly to cross country. While all mountain and freeride was ranked as high priority in the 2018 (Parker) Nanaimo and 2016 (Parker) Cumberland studies, downhill and dirt jumping were ranked much lower of a priority in Nanaimo, compared to the current study, where preferences were more in line with Cumberland. The exception was cross country trails, which were ranked much higher in the former studies. New categories of gravel and aMTB were added to the present study.

Table 16. Trail type (n= 877)	None (1)	Low (2)	Moderate (3)	High (4)	Very high (5)	Average
All mountain / free ride	1.8%	5.4%	24.4%	37.6%	30.7%	3.9
Downhill	6.1%	20.3%	33.0%	21.7%	18.9%	3.3
Dirt jumping	21.4%	37.2%	30.3%	21.7%	18.9%	3.3
Cross country trails	10.1%	21.7%	29.2%	28.0%	11.1%	3.1
Trails for younger children	10.7%	15.9%	36.2%	24.4%	12.9%	3.1
aMTB	33.3%	28.3%	27.7%	8.0%	2.7%	2.2
Double track / fire roads	52.1%	29.3%	12.1%	5.0%	1.5%	1.8
Gravel	53.3%	28.9%	10.4%	5.6%	1.8%	1.7

Final Additional Comments

A final open-ended question provided the space for respondents to express additional thoughts that were not captured in the survey questions. Most comments were overwhelmingly positive and pointed towards promoting Nanaimo as a mountain biking destination and the popularity of mountain biking in Nanaimo, citing successful examples from other destinations and economic benefits. Support from local government and forestry partnerships were identified as keys to success.

“It feels untapped. So much opportunity with great trails so close to town.”

“Nanaimo needs to do a much better job marketing itself as a tourist destination.

“It’s completely under-discussed how big mountain biking is in Nanaimo and Vancouver Island. It could be such a massive part of bringing in \$ and tourism to the city. Look at Cumberland. It drastically changed that small town. Nanaimo could easily be (and somewhat already is) a MASSIVE mountain bike destination city. No amount of \$ the city puts into it will be wasted \$.”

“Following the lead of municipalities like Cumberland, Squamish, the Sunshine Coast and Duncan, Nanaimo is well placed to become a biking destination. The amount of quality terrain in Nanaimo is substantial but needs buy-in from multiple organizations.”

“Nanaimo can become [like other regions] if local government and other agencies work together to improve the experience of trails for both hikers, mountain bikers, and off-road vehicles. There is too much conflict between users such as logging, biosolids, and illegal dumping. More logging buffers are needed to maintain the pristine trail networks. “

“Nanaimo has always dropped the ball on economic tourism opportunities mountain biking could be the avenue to turn Nanaimo into a Mecca for the sport is done right drawing in international crowds. Just requires healthy investment and good marketing. We would have up our facilities game and provide robust climb trails. This is as well as having the full support from forestry enterprises! “

“I grew up in Nanaimo and have ridden in dozens of other locations (Whistler, Squamish, North Shore, Kamloops, Kelowna, Canmore, Bellingham, Duncan, Cumberland, Hammerfest, Los Angeles, Laguna Beach, St George Utah, Blue Mountain Ontario, etc.) and Nanaimo does have some of the best riding out of all of those. But what it severely lacks are infrastructure, land use agreements, and even local coffee shops, brewpubs, and affordable accommodation NEAR the trails. I don’t know how to do those things given how spread out the trail network is, but if you can, it will drive a ton of economic benefit to the region and just as importantly, make Nanaimo a Mecca of mtn biking in the world. Time to strive to be the best!”

“Mountain biking is here and is only going to get bigger. The sport is only 40 years old, think of how big it will be in another 40 years! We need to be forward thinking and get on management of trails and networks now while we still have a chance! The best municipalities in the world are the ones who embrace a growing sport and exploit it not just for the tourism dollars, but for its people!”

“The strip mall feeling of the Nanaimo on display, and the ugly downtown does make me overlook the nicer parts of the community and the outdoor / biking opportunities that I rarely see. I would like to learn more about the trails in Nanaimo but don’t hear a lot about them – so the area is not a top-of-mind destination. I think there’s great potential and wish you the best of luck.”

“Nanaimo has some of the beat riding areas on Vancouver Island that no one knows about! Great opportunity for local economy, we should look at other “drive-through” Cities like Williams like who have made it a large part of their tourism and replicate their model to help our city and its small businesses grow.”

“Nanaimo really does have great trails, but it simply has not embraced the massive economic benefits by bringing better infrastructure to draw more riders from all over the world. That coupled with the lack of

land use agreements with the Crown land and Forestry companies is quite sad as Nanaimo could (and should) be the place to ride for locals and tourists because it does have so many great areas.”

Conclusion

The goal of this project was to identify the economic impact of mountain biking, management considerations and trail user characteristics. Mountain biking is growing in Canada and mountain bike tourism can promote economic development in local communities. The expansive network and diversity of trails in such close proximity to Nanaimo is a major asset for the city and the region. However, one of the major challenges is that much of this land is privately owned by forestry companies, requiring land use agreements and good relationships with landowners. Effective management has the potential to address some of these challenges, but effective decisions require a good understanding of mountain bikers’ needs and preferences.

The NMBC currently works with landowners Mosaic Forest Management, managing the Dumont trails, and the City of Nanaimo, with the popular Westwood Lake trail system. Relationships are being built with local First Nations and the RDN. The RDN has begun work on a Regional Trail Strategy (RDN 2022) with the intent of increasing mountain bike tourism across the region. This will tie in with the work of Toa Consulting (2022) and the Nanaimo Hospitality Association, the City and Tourism Nanaimo on the Nanaimo Sport Tourism Strategy (“All Things Cycling” being one of the six pillars of the strategy). In addition, Kootenay Adaptive Sport Association (KASA) and Toa Consulting will continue their work to assess accessibility and inclusion for all trail users by using aMTB trail standards. For Nanaimo to gain legitimacy as a mountain biking destination, and diversify and grow mountain bike tourism, a strong relationship between Mosaic, the City of Nanaimo, local First Nations, the RDN, Nanaimo Hospitality Association, Tourism Nanaimo, Tourism Vancouver Island, the NMBC, and supporting agencies like Toa Consulting needs to be fostered to establish more managed ‘legal’ and insured trails to promote to a wider cycling audience and ‘put Nanaimo on the map.’

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