The KNOWN FACTS about MORVs and NMATs

At least five times as many BC residents participated in outdoor recreation as Non-Motorized Active Travellers (NMATs) than with Motorized Off-Road Vehicles (MORVs).[1] Over the past five decades, a tremendous growth of MORV use on recreational trails in BC has led to increasing pressure on local, regional, and provincial governments to sanction access through dedicated MORV use areas and shared use with NMATs. Here are definitions, benefits, and impacts with respect to this incompatible conflict.

DEFINITIONS

New acronyms are needed due to rapidly changing technologies that can merge user groups and blur boundaries. **NMATs** = propelled by the muscle power of humans and/or animals and includes various forms of walking, bicycling, snowshoeing, cross-country skiing, canoeing, kayaking, horse riding, dog-sledding, or similar activities with accommodations for adaptive devices (wheelchairs or trail-riders) or assisted machines (e-bikes or other mobility aids). **MORVs** = propelled by anything other than muscular power (electric or internal combustion engines), or are capable of generating forces beyond those from averaged muscle power, and include dirt bikes or motorcycles, quads, all-terrain vehicles, side-by-sides, utility task vehicles, dune buggies, rock crawlers, 2 or 4-wheel drives, snowmobiles, snow bikes, powerboats, jet skis, or similar motor-powered machines for use on land, air, snow or water.[2]

BENEFITS AND IMPACTS

HEALTH. NMATs benefit from all dimensions of well-being that comprise personal health.[3] MORV users are at risk from **air pollution** (two-stroke engines found in MORVs produce 300 times the particulate matter and hydrocarbons than a large passenger truck and less than an hour of outboard engine use produces the same hydrocarbon pollution as driving a new car 8,000 kilometres across Canada),[4 5] **noise** (the national maximum standard of 96dB for MORVs exceeds BC's Occupational Health and Safety Regulations limit of 85dB),[6 7] **vibration** (whole body vibrations generated by MORV use can cause serious musculoskeletal disorders, especially while operating on rough terrain or for extended periods),[8] **morbidity and mortality** (12 deaths and 331 hospitalizations in BC annually).[9] However, a third of these injuries and fatalities are children and youth passengers due to rollovers, collisions, and ejections.[10 11] Half of the past accidents involved alcohol or other substances.[12] In BC, emergency healthcare costs associated with land-based MORV use was CA$55 million (60% direct and 40% indirect costs) in 2015 with 126 partial permanent disabilities and 11 total permanent disabilities.[13] How much does such MORV use additionally cost the province in lost human potential due to deaths and/or disabilities?

ENVIRONMENTAL. The vast majority of both NMATs and MORV users will consume relatively equal quantities of fossil fuels while driving to their respective trailheads. With the exception of electrically-charged mobility, NMATs have negligible impact on the environment. However, MORV use **degrades soil** (greater compaction by vehicles than by pedestrians),[14] **destroys vegetation** (hindering plant regeneration, reducing plant diversity, and promoting the spread of invasive replacement species),[15] and **disrupts animals** (causing significant stress to wildlife, leading to habitat abandonment, reducing reproduction rates, changing feeding behaviours, and spooking cattle and pack animals).[16] In addition, **water pollution** (outboard motor gas or oil poison fish, while watercraft transfer invasive species),[17] **air pollution** (2.1 million MORVs are associated with the highest contributions of PM2.5 and VOC emissions in Canada),[18] **greenhouse gas emissions** (snowmobiles account for 77% of the annual hydrocarbon emissions in Yellowstone National Park),[19] and **fossil-fuel consumption** (in Canada, 663,300 motorized trail users consume an estimated 5.47 billion litres or 12.5% of all motor vehicles),[20 21] all contribute to the global problems of **climate change**. BC has already experienced devastating fires and recent floods accelerated by climate change and these impacts now threaten outdoor recreation resources.[22 23] How much does repairing this extreme weather damage cost the government and its citizens? Should such remediation funding benefit those outdoor recreation users who continue to contribute to the problem?

ECONOMIC. Outdoor recreation spending data are limited in BC and the province could benefit from conducting some unbiased estimations. The data available from provincial, national and international studies suggest the economic value of outdoor recreation in terms of tourism revenue, local spending, taxes, and jobs sustained or created. Both NMATs and MORV users claim enormous and relatively equal financial benefits for local and provincial economies. The difference is that hikers and bikers purchase equipment with the spending distributed throughout BC and the country. However, most MORV users purchase machines with the funds going out of province to manufacturers in Quebec, USA, and Japan.[24]

CONFLICT. NMATs and MORV users seek different goals for their outdoor recreation experiences. NMATs seek serenity, untamed landscapes, wildlife watching, naturalness, and solitude, while MORV users seek optimal arousal and physical performance through pushing the limits of their machines.[25] [26] Unfortunately, the incompatible conflict is asymmetrical with NMAT's goals being totally eclipsed by the presence or signs of past MORV use and even the possibility of conflict has caused NMATs to displace elsewhere or abandon participation altogether. MORV users tend to be unaware of these concerns.[27]

SOLUTIONS

EDUCATION. The four motorized organizations and their constituent clubs do a good job of educating their up to 60,000 members in BC (18% of users).[28] However, the remaining 276,000 motorized users in BC (82%),[29] who do not belong to these groups, receive little or no information and assume they can go anywhere they like: "everything is open unless it is signed closed!" Could the purchase of MORVs in BC include mandatory training in restrictions, safety, environmental impact, and user conflict avoidance?

SEPARATION. Incompatible user groups should be spatially separated into regional zones.[30] [31] This is the most effective solution used internationally by land planners and resource managers.[32] [33] Temporal separation is mostly ineffective at reducing conflict due to the persistent signs of past MORV use.[34] Seasonal separation works reasonably well, but only for some winter and non-winter activities.[35] How can BC best divide motorized and non-motorized outdoor recreation users for the benefit of all?

CONCLUSION

In summary, motorized recreation remains an incompatible with non-motorized use and is considered by most global experts to be unsustainably consumptive, unhealthy, unsafe for users and others, while increasing resource repair costs and diminishing tourism draw, solitude, naturalness, or wild habitat.[36]

TOURISM. Tourists do **not** want to visit beautiful landscapes, verdant forests, and wide-open grasslands where MORVs are operating. Instead they will displace to other countries, such as New Zealand, where MORVs are tightly controlled for Kiwi agricultural or industrial use. These don't normally roam for recreation on highways, rail trails, or backcountry and are heavily restricted from environmentally sensitive forests, beaches, lakes, and rivers. This control contributes to New Zealand being the world's top destination for outdoor recreation, with outdoor tourism generating 10% of their GDP,[37] [38] and with NZ$1 billion ($90 million domestic, plus $910 million international) and NZ$1.28 billion contributed just from hiking and biking NMAT forms respectively.[39] [40] With similar visitor revenues, climate, geography, indigenous cultures, and citizen populations, but six times the land mass, how BC could easily resolve its incompatible outdoor recreation conflicts to surpass New Zealand and contribute to doubling the gross provincial tourism revenue, currently estimated at CA$23 billion, to reach CA$48 billion by 2036?[41] [42]

The literature from academic journals has a wealth of evidence in opposition to using MORVs in many settings. In researching this document, no scholarly evidence in support of MORV use could be found.

AUTHOR: Dr. Simon Priest was a full professor of outdoor recreation, a university administrator, and a ministerial advisor. He has participated in several power-propelled outdoor sports (motorcycles, ATVs, 4x4s, snowmobiles, jet skis, and motorboats) and in active travel or adventure activities (hiking, biking, surfing, diving, canoeing, kayaking, caving, climbing, snowshoeing, backcountry skiing, and horse riding).

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