

Claire Leah Model

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Professor Else

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How Does Outdoor Recreation Affect the Environment,  
and What Steps Can Be Taken to Protect It?

Every day, millions of outdoor enthusiasts will unknowingly and unwillingly have an impact on climate change, contribute to pollution, and significantly alter the landscape as we know it today. Whether out on a hike, mountain biking, skiing, sailing, or just lying on the beach, our actions have an environmental impact. My experience as a mountain biker, a climber, and a guide has shown me that we impact the environment in two ways: first, directly through the way we interact with the environment, and second, indirectly through the purchasing and use of equipment and clothing made of toxic, non-biodegradable materials. This realization led me to change many of my habits and made me think twice when I was out looking for a new rain jacket. I became more aware of how difficult it is to find information about how equipment like used bicycle parts, worn-out tires, blown-out inner tubes, and even cracked frames can be recycled. I thought to myself that the waterproof clothing I wear isn't very earth-friendly, either. With all the concern today about pollution and climate change, how could activities done for the pleasure of being in nature cause so much destruction, and why is an industry that promotes the enjoyment of the outdoors not making its customers aware of how these products are manufactured? After all, someone who spends time outdoors should have a very intimate relationship with nature.

Current research shows that there isn't enough information out there about the environmental impact of outdoor recreation, and, with the increase in access and use of public lands and water, in order to protect the environment, the users must be educated on how their actions affect the local flora and fauna when they are participating in outdoor recreation. Ultimately, what is at stake here is the future of our planet. I say that, when it comes to the environment, if you're not a part of the solution, then there's a good chance that you're a part of the problem.

One example in particular of impact from outdoor recreation on the environment is the growing sport of mountain biking. As a relatively new sport, it has grown very quickly since the 1970s when it originated, presumably in the U.S. It now has global participation and has become probably the most popular land-based recreation in the world (Burgin and Hardiman 201). What started as a sport that utilized existing hiking trail systems and fire roads, however, has evolved into massive communities of mountain bikers requiring the construction of trail systems and infrastructure to accommodate the participants (Burgin and Hardiman 201) and the spectators at racing events. Building trails requires research and knowledge in order to have a minimal impact on the local flora and fauna. Erosion is a main concern; therefore, structures need to be built over wetlands, and "rock armoring" must be done in areas where run-off waters pool. Another requirement on steep terrain is bench cutting, which makes traversing an incline possible. With all the complications of trail building, it is very common to find yourself on a trail that has substantial erosion and trail widening due to poor trail-building techniques. With the tremendous growth of the sport, "rogue" trails are popping up everywhere, disturbing the natural environment and the wild animals that inhabit it. These techniques are very invasive and involve cutting into roots and disturbing the natural flow of the landscape for the sake of building a trail

for recreation. Nevertheless, the truth about mountain biking is that it is seldom done for the appreciation of nature.

The “scarred” landscape I observed when I last visited Utah was evidence of how impactful the sport has become to the local topography. Aside from the impact on the environment from trail widening, erosion, and manmade structures, another concern is the local fauna. The high speeds at which cyclists ride leave little chance for small mammals to avoid death, and noisy drivetrains disturb wildlife, causing behavioral changes and thereby becoming a major threat to populations (Burgin and Hardiman 204). With the advancement in technology, mountain bikes are getting lighter and faster. This, combined with the fact that wet- and cold-weather gear is becoming more efficient, allows mountain bikers to venture deeper into the back country where animals have seldom, if ever, experienced the presence of humans. My feelings on this issue are mixed, because, as a mountain biker, I benefit from new trails being built and increased access to national parks, but sometimes when I’m out in nature I feel like an intruder or, even worse, an invader.

Carbon fiber bicycles, breathable waterproof base layers, and lightweight synthetic insulation have made the outdoors more comfortable and allowed many outdoor activities to become popular. But at what cost? Many of these materials are made using toxic chemical processes and still have no way of being recycled or even upcycled. Is it really necessary to own a twenty-pound carbon fiber mountain bike or have a negative-thirty-degree sleeping bag? Many outdoor enthusiasts get caught up in the minutiae with no regard to the manufacturing processes involved in creating the products. Some clothing manufacturers, seeing that there is money to be made here, are of the “pile it high, sell it cheap” mentality, making a cheaper, more disposable product while using questionable manufacturing techniques (Kaminski 4). The first signs of

pollution are witnessed by outdoor enthusiasts. One would think that they would be more concerned about how environmentally friendly the products they are using are when they see a blown-out mountain bike tire on the side of the trail or broken bits of a polyurethane surfboard washed up on the beach.

Longer beach seasons make it more likely that one will see non-biodegradable gear washed up on the shore, and you can thank climate change for that. Outdoor recreation and climate change have an interesting relationship. On the one hand, climate change can directly affect how a recreational area is used and for how long it is used. For example, warmer temperatures may make it unnecessary to travel to warmer beaches down south, so northern beaches will experience more use and therefore more erosion. Ski resorts may rely on warm weather activities such as mountain biking or zip-lining to make up for lost revenue due to a shorter ski season (which comes with all the problems I mentioned earlier, such as the building of trails and infrastructure). On the other hand, outdoor recreation impacts climate change due to an increase in fossil fuel usage. Take for example the need to travel farther, either by air or ground, to destinations farther north in order to find good ski conditions. Also, when traveling by ground, roof carriers used for extra storage increase consumption of fuel by 30%. Whichever method you choose for travel, fossil fuel consumption increases our carbon footprint and therefore contributes to climate change. While I'm not trying to take the fun out of it, I personally feel that these are some important things to consider when we are deciding how and when to travel.

I find that whether I am traveling to a ski destination, a beach resort, or a trailhead, there will most likely be a local community that benefits from the tourism. This industry is huge, and gateway communities rely on seasonal and annual outdoor recreation. In the "war" against the

impact of outdoor recreation on the environment, this is where you would find the frontlines. The locals not only get to enjoy these beautiful natural environments year-round, but they also have the added economic benefits that come with living there, so they can become the best advocates for protection of their local wilderness. Take for example one study done in 2016 at a heavily-visited wilderness area in Minnesota with strong conservation management called the Boundary Waters Canoe Area Wilderness (BWCAW). Researchers collected data to determine the symbiotic relationship between sustainability and the regional economic impact of tourism and found that the areas surrounding the BWCAW generated a total of \$78 million dollars and created 1100 full- and part-time jobs. This combination of high visitation and strong conservation management represents a sustainable symbiotic relationship where visitor expenditures help maintain ecosystem protection (Hjerpe 60). These statistics add weight to the argument that gateway communities benefit from being proactive when it comes to environmental protection due to the fact that they depend on these areas for their survival.

Protecting the environment, however, is more than just economics, so it's crucial to find an effective method to turn outdoor enthusiasts into "environmental activists". The Leave No Trace Program, which originated in the U.S, was created with the mission to "promote and inspire responsible outdoor recreation through education, research, and partnerships" (Reid 72) as an answer to the environmental impact caused by the boom in outdoor recreation in the 1970s. Over the years, it has been adapted to address issues in the back country as well as in front country areas, since 80% of recreation is done in day-use areas (Reid 72). Today, LNT is based on seven principles:

1. Plan ahead and prepare
2. Travel and camp on durable surfaces

3. Dispose of waste properly
4. Leave what you find
5. Minimize campfire impacts (be careful with fire)
6. Respect wildlife
7. Be considerate of other visitors

This seems like common sense, but I suggest that you look around next time you visit a wilderness area or your local park. You will notice that, most of the time, people will put having fun in the moment and convenience over protecting the environment for future use. An observational study done in Boulder, CO, based on LNT guidelines, revealed that when visitors were presented with LNT literature at the trailhead, 87% of them followed the guidelines. However, of the 13% that did not, 80% of them failed to follow one simple guideline: to collect their dog's waste (Reid 76). The point I am trying to make here is that, in order to lessen our impact on the environment, we can start from something as simple as cleaning up after our dogs.

Some may say that the complexity of protecting the environment from recreational impact is not fully covered by the seven principles of LNT and that there are larger issues that need to be addressed. Simon and Alagona argue that "Leave No Trace masks the broader social and ecological consequences of wilderness recreation." I agree that handing out brochures at a trailhead for example is not the best use of natural resources, and packing garbage in plastic bags as LNT suggests is not really taking into consideration the bigger picture of waste management and plastic bags. However, LNT has been successful in educating and promoting environmentally-conscious practices to the millions of Americans who visit wilderness areas and even critics of LNT admit to this success. Proof of this can be found in the passage below:

Even with minimal enforcement, many people who enter wilderness areas after being exposed to LNT programs show a greater respect for the land. They do so because they have become educated. They do so in order to avoid appearing irresponsible, and to set a good example for others. They do so in order to maintain access to wild areas, and to protect their well-being. They do so because practicing LNT has become a part of their identity as an educated outdoor enthusiast. They do so because LNT has become an essential part of the American wilderness culture and experience. They do so because they have seen—or perhaps feel responsible for—the degradation of beautiful places that occurred in a less enlightened time. (Simon and Alagona 2009)

These statements emphasize the importance of educating outdoor enthusiast about how they can make a difference and perhaps will even convince them to become advocates for the protection of their local wilderness areas.

My own view is that protecting our planet starts with our day-to-day activities. If we become more conscientious of even the type of packaging that our snacks are in, then maybe there won't *be* a plastic wrapper to throw out when we are camping in the wilderness. Perhaps a wool sweater will suffice so that we don't need to purchase a jacket with synthetic insulation. I'm not trying to say that natural materials are always the answer, because there are animal welfare concerns, but leather boots can last a lifetime if properly cared for. I have owned my fair share of Gore-Tex jackets and faced the dilemma of throwing out old bicycle tubes and tires. It's probably the reason why I am trying to discover the impact of outdoor recreation on the environment. Something about my gear ending up in a landfill just didn't sit right with me. My opinion is that manufacturers of outdoor gear and equipment should offer ways to recycle or upcycle used clothing and gear. Take for example Patagonia, which is an outdoor clothing

company that invites its customers to send back their worn-out clothing, which they then recycle and repurpose. The same applies to bicycle components, surfboards, synthetic hiking boots, climbing gear, and ski and snowboard equipment. Ask yourself this question: where will all this equipment end up? Probably in a landfill. My point is this: becoming more aware of how all our actions affect the environment is pertinent to its enjoyment and we must always keep in mind that we are not alone on this planet. In 1997, a national survey indicated that more than 94% of American citizens enjoyed some form of outdoor activity (Reid 71). We are just visitors in wilderness areas and we should respect the organisms that live there. The most respectful thing we could do perhaps is to leave no trace.

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