Impacts of New Highways and Subsequent Landscapes on Streams: A Review of Recent Literature and Implications for Future Research.
Although highway construction can be highly profitable in financially advanced societies, it is rarely free of controversy. Controversy in the United States, among millions of public, political, and economic battles, is often a necessary part of the advancement of highway construction. Controversy can arise from the need to balance the benefits of highway construction, such as improved mobility, increased economic opportunities, and reduced commuting times, with the costs, such as environmental degradation, loss of open space, and increased traffic congestion. Controversy can also arise from the potential for highway construction to exacerbate social inequalities, as it often benefits those who are already economically advantaged and may have more political clout. Controversy can also arise from the potential for highway construction to displace indigenous communities and to disrupt their cultural and traditional practices. Controversy can also arise from the potential for highway construction to exacerbate climate change, as it often requires significant amounts of fossil fuels and contributes to greenhouse gas emissions. Controversy can also arise from the potential for highway construction to harm wildlife and ecosystems, as it often requires the destruction of natural habitats and the fragmentation of landscapes. Controversy can also arise from the potential for highway construction to exacerbate social conflicts, as it often requires the displacement of people and the disruption of communities. Controversy can also arise from the potential for highway construction to exacerbate economic inequalities, as it often benefits those who are already economically advantaged and may have more political clout.
Highways and Stormwater Runoff

Highways, much like urban area streets, collect a variety of pollutants from stormwater runoff. Stormwater runoff is the water that collects in streets and flows into drainage ditches and storm drains, often carrying a variety of pollutants from its path. This runoff can include items such as road salt, dirt, and debris. The pollutants in stormwater runoff can then enter water bodies, such as rivers and lakes, and affect the environment.

Impact of Pollutants

Pollutants from highway runoff can affect water bodies and ecosystems downstream. This can lead to a variety of environmental issues, including water quality degradation, habitat destruction, and increased risk of flooding. These issues can have cascading effects on other ecosystems and human activities that rely on healthy water bodies.

To address these issues, various strategies are employed to manage stormwater runoff from highways. These strategies include the use of Best Management Practices (BMPs), which are designed to reduce the amount of pollutants that enter water bodies. BMPs can include practices such as the use of permeable pavement, rain gardens, and vegetation strips.

In conclusion, the management of stormwater runoff from highways is a critical component of environmental protection. By implementing effective strategies to manage runoff, we can help mitigate the impacts of highway runoff on our water bodies and ecosystems.
With the increasing demand for urban areas, the natural ecosystem is threatened by various land use changes, such as agricultural expansion, urbanization, and infrastructure development. These changes can disrupt the ecological balance and lead to negative impacts on biodiversity and ecosystem services. For example, the construction of new highways often involves the clearance of natural habitats, which can result in the loss of species and the degradation of ecosystems. Additionally, the development of new highways also increases the price of agricultural land, leading to increased economic activities in areas with higher land value. As a result, the aggregation of land use changes can have significant impacts on the overall ecological system, leading to the degradation of natural resources and the loss of biodiversity. It is crucial to implement sustainable development strategies to mitigate these negative impacts and to preserve the natural environment.
Urbanization and Water Quality

Urbanization, and its impact on water quality, is a significant concern. Urban areas typically experience increased pollution from various sources, including stormwater runoff, sewage, and industrial emissions. This pollution can negatively affect water quality, leading to issues such as eutrophication, increased nutrient levels, and decreased water clarity.

Impacts of Stormwater and Landuse Conversions

Stormwater runoff is a major contributor to water pollution in urban areas. It carries a variety of pollutants, including sediments, oils, and重金属s, which can enter water bodies and affect aquatic life.

Biological Impact of Pollution

Biological factors, such as the presence of pollutants, can impact aquatic ecosystems. For example, increased nutrient levels from runoff can lead to the growth of algae, which can deplete oxygen levels and harm aquatic organisms.

Urbanization and Ecosystem Services

Urbanization can also impact ecosystem services. For example, green infrastructure can help mitigate stormwater runoff and improve water quality, while also providing benefits such as habitat creation and climate regulation.

Conclusion

Urbanization and water quality are complex issues that require a multifaceted approach. Addressing these issues requires a combination of strategies, including pollution reduction, green infrastructure implementation, and community engagement.

References

The threshold effect of urbanization on the local climate was found to be significant. Small urban patches, as in smaller towns and cities, lead to small changes in local temperatures (Amiridis and Bais, 2003). However, the effect of urbanization on local climate becomes more pronounced as the built-up area increases (Bolin et al., 1992; Shahid and Khan, 1996; Wang et al., 2004). Temperature increases in urban areas are due to the warm-up effect of urbanization, which is caused by the reduction of vegetation, the increase of impervious surfaces, and the decrease of water bodies (Knutti and Platt, 1995). This effect is more pronounced in larger cities, where the compact high-rise buildings and the increased density of buildings lead to a greater heat island effect (Wang et al., 2004). In addition, the increased use of air conditioning and other energy-intensive activities in urban areas contributes to the temperature increase (Bolin et al., 1992).

For the urban heat island effect to be significant, the urban area must be large enough to exert a strong influence on the surrounding environment. In smaller urban areas, the heat island effect is less pronounced because the urban area does not exert a strong influence on the surrounding environment (Bolin et al., 1992). However, in larger urban areas, the heat island effect is more pronounced because the urban area exerts a strong influence on the surrounding environment (Bolin et al., 1992). The heat island effect is also more pronounced in areas with high population densities, where the compact high-rise buildings and the increased density of buildings lead to a greater heat island effect (Bolin et al., 1992).

The urban heat island effect is exacerbated by the increased use of energy-intensive activities in urban areas, such as air conditioning and heating systems (Knutti and Platt, 1995). In addition, the increased use of vehicles in urban areas also contributes to the temperature increase (Knutti and Platt, 1995). This is because the exhaust gases from vehicles contain greenhouse gases, such as carbon dioxide and methane, which contribute to the greenhouse effect and, therefore, lead to an increase in temperature (Knutti and Platt, 1995). In conclusion, the urban heat island effect is a significant problem in urban areas, and it is exacerbated by the increased use of energy-intensive activities and vehicles in urban areas.