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The Biotic and Abiotic Qualities of the Wasatch Watershed and Threats Posed to the Catchment Area

Introduction

The Salt Lake Countywide Watershed – Water Quality Stewardship Plan defines a watershed as "land area that drains to a common waterway such as a stream, lake or wetland." A watershed is any area of land where precipitation (in the form or rain or snow) is collected in outlying tributaries and funneled to a single point, either the ocean, a lake or outlet to an aquifer. Watersheds are vital ecosystems which supply the drinking water for populations and habitat for local wildlife.

Introduction to the Wasatch Watershed

The Wasatch Watershed is a closed drainage basin, which is known as a "sink." The repository for this watershed is the Great Salt Lake; all contributing tributaries along the Wasatch, Uintah and Oquirrh mountain ranges flow to this single point. The Wasatch Watershed provides the drinking water for Davis, Salt Lake and Utah counties.

Abiotic Characteristics

The Great Salt Lake, though fed by fresh water tributaries, is itself saline. Annual salinity tests have measured the sodium content of the lake to be 54.5%. In comparisons of sodium only, Great Salt Lake is 26% more sodium dense than the Dead Sea and 10% more sodium dense than a typical ocean. It is estimated that the total salt content of the lake is between 4.5-4.9 billion tons. Due to the sodium content, the lake does not freeze and affects the weather patterns of the Wasatch year-round. As storms travel across the lake they pick up additional moisture and then

rain or snow this excess moisture back onto the Wasatch Mountains, feeding the watershed in a phenomenon known as Lake Effect.

Biotic Characteristics

The Wasatch Watershed is unique in that the elevation of the watershed changes dramatically with little mileage. Adaptive radiation and speciation has occurred in the area because the watershed has divided the ecosystem into "layers" of habitat. Riparian zones have developed along the rivers, streams and creeks functioning as "flood storage, shoreline anchoring, sediment trapping, pollutant interception and storage [and] food chain support" and also create shaded habitat for birds and small animals. The riparian zones have been threatened with the increase in density of the Russian olive plant, which has been determined to be more shade tolerant. Increased shade tolerance reduces water stress, thus providing potential for the continued spread of the species. The watershed is also home to millions of migratory birds which use the wetlands surrounding the Great Salt Lake as winter homes.

Threats Posed

The Wasatch Watershed will be strained with the increase in population along the Wasatch Front. With population increase comes pollution increase which will affect the Total Maximum Daily Load of pollution a stream can carry before it threatens drinking water quality. Global warming will threaten the stratified ecosystems in the watershed as temperatures rise with the:

> …Reduction in snowpack and groundwater, which provide for most of the drinking water in the County; stormwater conveyance and flood control systems may need to be enlarged; wetlands and riparian habitat may be at risk; and perennial streams may become intermittent…With [the] increase in temperature,

surface water resources would be negatively affected, as well as a potential drop in groundwater levels. The Great Salt Lake may be vulnerable to a warmer climate with increasing rates of evaporation and reduced inflows leading to decreases in the size of the lake and increases in salinity (Salt Lake County…)

The Future of the Wasatch Watershed

These changes imposed by global warming all point to a great strain placed on the area-wide watershed. Water will become overall more scare: suitable drinking water will become less available, the longer growing seasons will have less irrigation waters; the wetlands will dry up erasing habitat. Conservation efforts already in place by the State of Utah should be supported to alleviate the severity of the affected habitat areas. Global warming efforts can be supported by reducing one's carbon footprint: reducing dependence upon vehicles, reducing the use of electricity in one's home and purchasing locally (thus removing the need for additional fuel to truck in product) all contribute to the world-wide effort to combat global warming and positively impact the continued balance in the Wasatch Watershed.

Citation

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