Introduction

Many small creeks flow into communities between Bountiful and Brigham City along the Wasatch Front in Northern Utah (Figs. 1-4). These creeks originate in canyons that share similar topography, flow fluctuations, size, and vegetation. Many support populations of trout (Figs. 2 & 9). Suburban growth has isolated the canyon stretches of each creek through diversion of water into pipes for agricultural and culinary purposes. Remaining flow is diverted into municipal storm sewers. Isolation of these similar creeks allows for a unique investigation of factors that influence trout populations. Our goal was to determine the factors associated with presence or absence of trout. An understanding of factors that contribute to a creek’s ability to support trout could benefit future management for recreational fishing and native trout conservation.

Methods

Backpack electrofishing (Fig. 3) was conducted near the mouth of each canyon, upstream of major manmade structures or large waterfalls. One-hundred-meter sections of creek were fished (twice consecutively) and trout were netted, measured, and immediately released. Maximum depth, wetted width, and substrate composition were measured along 20 evenly spaced transects. Creek length, drainage circumference, maximum drainage elevation, and creek slope were taken from USGS topographical maps. Creek measurements were compared among creeks with and without trout, and among nearby creeks of similar size that are yet to be sampled.

Results

Twelve of 28 creeks contained trout (Table 1). All creeks with trout had an average maximum depth of at least 6.3 in. and were nearly 2 ft. wider on average than creeks without trout (Fig. 5). Creeks with trout also averaged 2 mi. longer and had a 1.6 mi. longer drainage circumference than creeks without trout (Fig. 6). Creeks with trout were less steep and had a maximum drainage elevation of at least 8,500 ft. (Fig. 7). There were several creeks lacking trout, despite having similar features to those with trout. Notable examples include Mill and Stone Creeks in Bountiful and Willard Creek near Willard.

Conclusion

In general, larger creeks that were less steep were more likely to contain trout, but these features did not guarantee the presence of trout. Historical events, such as drought, fire, erosion, or even severe flooding and landslides may have destroyed historical trout populations in certain creeks. It is also possible some creeks were never stocked with trout and native trout disappeared over time. In either case, isolated trout populations are at high risk of extinction due to very small distributions and population sizes (Hilderbrand 2003). Nevertheless, it is possible that improved habitat management has reduced the threat of catastrophe, in which case, larger creeks (e.g., Mill Creek, Willard Creek) may be suitable for re-introductions of trout.

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References
