

The expansion of woody riparian vegetation, and subsequent stream restoration, influences the metabolism of prairie streams

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SUMMARY

1. Tallgrass prairies and their streams are highly endangered ecosystems, and many remaining streams are threatened by the encroachment of woody riparian vegetation. An increase in riparian vegetation converts the naturally open-canopy prairie streams to closed-canopy systems. The

numerous perennial forbs. NR-B, NCU and NCD were dominated by *Ulnus americana* (American elm) and *Gleditsia triacanthos* (honey locust). KR-B, KCU and KCD were dominated by *Quercus macrocarpa* (bur oak) and *Quercus muehlenbergii*

area (SigmaScan 5, Systat Software Inc., San Jose CA, U.S.A.). Chlorophyll a concentration was measured using either a fluorometer (Turner model 112) or a Hitachi UV/VIS U-2900 spectrophotometer (Hitachi High Tech-

Discussion

Temperature and metabolism

We found neither CR nor 149151.9519TD(Temperatu)v244correlynD(

grouped into open or closed canopy (Fig. 7). A factorial ANOVA indicated marginally significant greater chlorophyll in open- than in closed-canopy reaches ($P = 0.057$). This test also showed that chlorophyll a did differ significantly between seasons ($P = 0.031$). During the spring, mean chlorophyll a concentration was $2.7 \mu\text{g cm}^{-2}$ greater in open- than in closed-canopy reaches. Mean chlorophyll concentrations were lower in summer, and open-canopy reaches had mean chlorophyll a concentration of $2.3 \mu\text{g cm}^{-2}$ more than closed canopy. Open-canopy reaches had the highest chlorophyll values in autumn, and the average chlorophyll concentration was 1.5 times greater than closed-canopy reaches.

stream or the amount of available sunlight. The eight

removal reach (KR) could get more direct sunlight than the grazed removal reach (NR) driving higher GPP.

