On the Ontario rock barrens, species-at-risk turtles select nest sites in shallow soil deposits covered in lichen (Cladonia sp.) and moss (Polytrichum sp.). Small crevices and depressions in the bedrock provide critical nest habitat for the species-at-risk turtles. Lichen and moss cover these crevices and depressions. These unique habitats are vulnerable to wildfire, land use change and climate change. Slow growth of lichen and moss limits natural regeneration following disturbance.

Early findings suggest that transplanting lichen and moss mats does not reduce productivity or increase respiration in the 4 months following transplantation, and could be used to restore nesting habitat. Soil deposits covered in lichen and moss are critical nesting habitat for turtles and must be protected and restored on this landscape.

Methods

**Treatments:**
- 6 actual turtle nests, 9 constructed nests
- Lichen, moss, and mixed cover

**CO₂ Exchange**
- CO₂ was measured using a closed static chamber and infrared gas analyzer
- CO₂ and photosynthetic photon flux density (PPFD) were recorded every 5s for 90s
- Measurements were taken under full, dark and half light conditions
- Chamber temperature and relative humidity were measured with an iButton

Preliminary Findings

- Gross primary productivity is defined as the difference between net ecosystem exchange (full light CO₂ measurements) and ecosystem respiration (dark measurements).

- GPP and ER are not significantly different between transplanted and natural lichen and moss mats.

Nest Construction

- A bedrock crevice or ledge within 10m of a confirmed turtle nest was selected. Existing site had shallow soil and was not considered suitable nesting habitat
- Soil depth was increased to a minimum of 20cm using soil cores from the surrounding landscape
- Lichen or moss mats were transplanted to cover the soil
- All sites were instrumented with continuous temperature and moisture probes.

Implications

- Early findings suggest that transplanting lichen and moss mats does not reduce productivity or increase respiration in the 4 months following transplant, and could be used to restore nesting habitat.
- Soil deposits covered in lichen and moss are critical nesting habitat for turtles and must be protected and restored on this landscape.