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Effects of plantation forest clearfelling on stream temperatures in the Plynlimon experimental catchments, mid-Wales

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Abstract. Hourly stream temperatures monitored over 28 months, which spanned a 3 month period of environmentally sensitive plot-scale harvesting of 20 ha. (20%) of the Nant Tanllwyth catchment (0.89 km²) on the south side of the main stream in early 1996, resulted in a 0.58°C (p < 0.001) increase in monthly mean stream temperature. Over the same 28 month experimental period, there was no significant increase in the monthly mean air temperature recorded at a nearby automatic weather station. Monthly mean temperatures are highest in July and August in the year before and the year after the clearfelling, and one of the main effects of the clearfelling was to decrease the difference between the monthly mean stream and air temperatures. Despite the air temperatures being cooler in the post-clearfelling year, the stream temperatures still showed an increase in the summer months.

Monthly mean maximum stream temperatures, also highest in July and August in the year before and the year after the clearfelling, showed a marked increase of 7.0°C: in July and 5.3°C in August from the pre- to the post-clearfelling years, while monthly mean minimum air temperatures actually showed a slight decrease for the same months. The likely effects on stream fauna are discussed, as are suggestions for, and likely effects of, buffer strips alongside the streams.

Keywords: stream temperature; air temperature; ground surface temperature; clearfelling; Plynlimon

[Final Revised Paper](#) (PDF, 1359 KB)

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