LONG-TERM CHANGES IN THE MOTH ASSEMBLAGE OF EAST LOCH LOMOND-SIDE: 1968 – 2003

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During the period of 1968 to 2003, moths were caught daily in a Rothamsted light trap located on east Loch Lomondside and operated by the University Field Station. Lepidoptera are a large group of phytophagus insects that have many roles in a natural community and are important indicators of varying climate and land-use change, therefore knowledge of altering community is useful in ascertaining the impact anthropogenic activities are having on the natural ecosystem. Analysis of catch data indicates that there was a significant increase in numbers of individual macro-moths recorded (from a mean of 8,250 in 1968 to 12,863 in 2003) representing a 56% increase in macro-moth abundance. The number of species also increased, from a mean of 137 in 1968 to 188 in 2003 (a 37% increase).

Within the community, three of the five most abundant species, the Northern spinach *Eulithus populata*, July highflier *Hydriomena furcata* and the Small fan-footed wave *Idaea biselata*, showed significant increases in numbers. The remaining two species, the November moth *Epirrita dilutata* and the Mottled umber *Erranis defoliaria*, however showed no change in abundance. Although average annual air temperature in Scotland has increased over this 35 year study period, air temperature did not predict changes in macro-moth species diversity or abundance. Two of the most abundant moth species, the Northern spinach and the Small fan-footed wave showed evidence of earlier emergence times but no evidence of increased flight periods (the time from first to last recording). The July highflier showed evidence of both earlier emergence and longer flight periods over the 35 year study period. The November moth showed no change in either emergence time or flight period. Overall we conclude that dramatic changes in macro-moth abundance and diversity on east Loch Lomond is not the result of simple temperature change but more likely the result of a combination of the stability of the habitat at this site plus possibly more subtle climate change effects.

(A detailed account of these results is being prepared for publication elsewhere).