

Over the years, a number of similar ground colour aberrations of this species have been noted by lepidopterists in an area of N. England. Both sexes have been affected. No investigative work re their exact nature is available and this author assumes them to be of autosomal origin and referable to *ab. pallida* Tutt. An historic female is figured:



This author has long been interested in the use of temperature shock to reveal the many variables that can occur during wing pattern differentiation and subsequent pigment formation under captive breeding conditions using commercially available breeding stock. In 2011, a new routine was tried. During the first 48 hours, the 'critical period', each pupa was exposed to 6 separate 2 hour shocks at 43c to 45c, 3 females similar to *ab. pallida* appeared at a rate of 20%. These were exhibited at the 2011 BENHS exhibition. During 2021 and 2022, several more appeared after cold shock and a 3 hour heatshock at 46c. In the final specimen to emerge there is also some remaining non-differentiation of the hindwing pattern. It is here figured:



The appearance of these aberrations suggests that they are true phenocopies. Since no male has appeared amongst these aberrations and only a percentage of females have responded the author concludes that a sex linked gene on the X chromosome responsible for pigment formation has been affected at a critical moment giving a narrow window of sensitivity to heat shock. The author suggests the name *ab. pseudopallida* for this novel form.

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