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RELATIONSHIP BETWEEN ORGANOCHLORINE RESIDUES IN LIVERS AND WHOLE BODIES OF GUILLEMOTS

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ABSTRACT

Two groups of Guillemots Uria aalge *from the Irish Sea region, one shot and the other found dead after a period of starvation, were analysed for organochlorine insecticide (DDE and dieldrin) and PCB residues to determine whether a relationship existed between the amounts present in the livers and the amounts present in whole bodies. Within each group a significant relationship between liver and whole body residues was found for all materials except dieldrin in the birds discovered dead. The found-dead group had lost about 40% of their body weight and, due to the mobilisation of depot fat, organochlorine residues in their livers were much higher than in the livers of the shot birds: at mean body loads, the livers of the latter contained only 0·9, 0·8 and 1·1%, respectively, of the total PCB, DDE and dieldrin in the bodies, while among the birds found dead the respective proportions of body loads in the livers were 22·5, 18·8 and 12·3%.*

Regression equations for the liver load: body load relationship for each material were calculated and, using the equation for PCB in birds found dead, it has been possible to calculate, from known amounts in the livers, the total body loads of 39 Guillemots found dead during the massive wreck of this species in the Irish Sea in the autumn of 1969. Together with other evidence, it is shown that the birds which died in this wreck contained mean PCB residues of 4660 μg, or about twice as high as in healthy birds shot in the same general area. This finding invalidates an earlier conclusion that PCB residues in birds which died in the incident were similar to those in healthy birds in the same area, and strengthens the possibility that PCB (together with natural stress factors) was implicated in the mortality.

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