

Wienburg, C. L.; Shore, R. F. (2004). **Factors influencing liver PCB concentrations in sparrowhawks (*Accipiter nisus*), kestrels (*Falco tinnunculus*) and herons (*Ardea cinerea*) in Britain.** *Environmental Pollution* 132(1): 41-50

Abstract: Large scale temporal and spatial changes in the exposure of terrestrial vertebrates to PCBs have been monitored in the UK by measuring liver residues in sparrowhawks (*Accipiter nisus*), kestrels (*Falco tinnunculus*) and grey herons (*Ardea cinerea*) from throughout the country. Residues in the three species are typically characterised by large intra- and inter-specific variation. Data for 306 sparrowhawks, 186 kestrels and 47 herons collected between 1992 and 1997 as part of a national Predatory Bird Monitoring Scheme were examined to determine how much of this variation was explained by body condition, age and sex, rather than other factors. In all three species, body condition was the single most important factor and accounted for up to 49% of the variation in PCB liver residues; starved birds had the highest liver concentrations. Age and sex were also significant but of lesser importance. Adult sparrowhawks and kestrels had liver PCB residues that were 2 to 10-fold higher than in first-year birds. Sex did not affect residue magnitude in a consistent manner. PCB concentrations in the liver were higher in males than females in both first-year and adult kestrels and in first-year sparrowhawks, but adult female sparrowhawks had similar PCB residues to adult males. Liver residues also varied seasonally. PCB concentrations in first-year sparrowhawks increased during the first year following fledging and a similar pattern was detected in adult female sparrowhawks following egg laying. When these physiological factors were taken into account, it was evident that while kestrels with high fat scores had significantly lower PCB concentrations than either sparrowhawks or herons, liver residues were similar in all three species when birds were in a starved condition. Overall during 1992-1997, the combined influence of body condition, age and sex explained more of the variation in liver PCB concentrations than species differences or other factors, such as geographical variation in exposure. (C) 2004 Elsevier Ltd. All rights reserved.

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