Persistent organic pollutants and mercury in dead and dying glaucous gulls (*Larus hyperboreus*) at Bjørnøya (Svalbard)

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**Abstract**

Dead and dying glaucous gulls (*Larus hyperboreus*) were collected on Bjørnøya in the Barents Sea in 2003, 2004 and 2005. Autopsies of the seabirds only explained a clear cause of death for three (14%) of the 21 birds. A total of 71% of the birds were emaciated. Liver and brain samples were analysed for organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs), polybrominated diphenyl ether (PBDEs), hexabromocyclododecanes (HBCDs) and mercury (Hg). High levels of ΣOCPs, ΣPCBs, ΣPBDEs and α-HBCD were found in liver and brain. Compared to the dead and dying glaucous gulls found 1989, the congeners’ composition tended to change toward more persistent compounds in the 2003–2005 samples. The brain levels of OCPs and PCBs did not differ between 1989 and 2003–2005, while the liver levels were significantly lower. The brain/liver ratio for PCB and PBDE significantly decreased with halogenations of the molecule, indicating a clear discrimination of highly halogenated PCBs and PBDEs entering the brain. There was further a clear negative correlation between contaminant concentrations and body condition. The brain levels were not as high as earlier published lethal levels of p,p'-DDE or PCB. However, more recent studies reported a range of sub-lethal OCP- and PCB-related effects in randomly sampled glaucous gulls. An additional elevation of pollutants due to emaciation may increase the stress of the already affected birds. The high brain levels of OCP, PCB and PBDE of present study might therefore have contributed to the death of weakened individuals of glaucous gull.

**Keywords:** Glaucous gull, *Larus hyperboreus*, PCB, PBDE, Lethal levels?