

SUPPORTING INFORMATION

Predatory bird species show different patterns of hydroxylated polychlorinated biphenyls (HO-PCBs) and polychlorinated biphenyls (PCBs)

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This supporting information consists of 8 pages, presenting 4 tables and 3 figures.

Details of the validation parameters for the HO-PCBs analysis are presented in Table SI-1, while ion chromatograms are presented in Figure SI-1a and SI-1b. Feeding and migratory habits of the studied bird species are described in Table SI-2. PCBs concentrations in the liver of the different bird species and correlations between levels of major HO-PCBs and PCBs in buzzard liver are presented in Table SI-3 and SI-4, respectively. Figures SI-2 and SI-3 illustrate the PCBs profile in the birds under study.

Table SI-1. Validation parameters for selected HO-PCBs obtained for the optimized method.

Analyte	Recovery				Precision, RSD (%)				Method LOQ
	125 pg/g ww	500 pg/g ww	25 pg/g ww	100 pg/g ww	125 pg/g ww	500 pg/g ww	25 pg/g ww	100 pg/g ww	
4'-HO-CB130	93	92	-	-	2	1	-	-	10
4-HO-CB193	88	85	-	-	2	1	-	-	10
3'-HO-CB180	-	-	96	93	-	-	1	3	10

Table SI-2. Feeding and migratory habits of the studied bird species (Snow & Perrins 1998, Vermeersch et al. 2004).

English Name	Scientific Name	Feeding habits	Migratory habits
Common buzzard	<i>Buteo buteo</i>	Wide diversity of prey, preferably small mammals (e.g. mice, voles, rabbits, squirrels, rats, moles); percentage of birds in the diet varies between a few and 25%, occasionally reptiles, amphibians, larger insects and earthworms.	Western and South-eastern European populations resident or short distance migrants; winter mainly within Europe. In Flanders, mainly resident. Northern and Eastern migratory populations join our breeding population in winter.
Sparrowhawk	<i>Accipiter nisus</i>	Almost entirely birds, in particular, locally available passerines of appropriate size comprise 95 to 99% of the prey items; occasionally voles and mice.	In Flanders non-oriented dispersals, young birds disperse up to 50-100 km. Extent of regular seasonal movement increases progressively to North and North-east Europe.
Long-eared owl	<i>Asio otus</i>	In open countryside dominate small rodents (i.e. voles) with low percentage of birds in the diet; in urban areas, birds can play a prominent role. Diet often more diverse in summer.	Mainly migratory in Northern Europe (> 50°N), however, some birds winter in favourable years. In Flanders mainly resident (apart from post-fledging dispersal of young).
Barn owl	<i>Tyto alba</i>	Small rodents in particular voles and mice; percentage of birds usually low, occasionally amphibians and insects.	West Palaearctic (including Flemish) populations are basically resident, although young birds make dispersals in Europe.
Tawny owl	<i>Strix aluco</i>	Variety of prey. In woodland mainly small rodents, also larger mammals (up to rabbit), birds, amphibians, shrews, earthworms and beetles. In towns largely birds, also small rodents and other prey as available.	Non-migratory and resident predatory bird. Breeding adults sedentary, remaining in territory all year. Post-fledging dispersals usually within a few kilometres from the nest.
Grey heron	<i>Ardea cinerea</i>	Mainly fish, amphibians, small mammals, insects and reptiles. Occasionally also crustaceans, worms, molluscs and birds.	In Flanders partly migratory and partly dispersive. European populations migrate in varying degrees but not to specific wintering areas. Northern populations winter in South-Europe.

Snow D W, Perrins C M. 1998. The birds of the Western Palaearctic, Concise Edition, Volume 1: Non-Passerines. Oxford University Press.

Vermeersch G., Anselin A., Devos K., Herremans M., Stevens J., Gabriëls J., Van Der Krieken B. *Atlas van de Vlaamse broedvogels 2000-2002*; Ministerie van de Vlaamse Gemeenschap, Instituut voor Natuurbehoud: Brussels, 2004.

Table SI-3. Median concentrations and range (ng/g ww) of PCBs in liver samples of predatory birds from Belgium.

	Grey heron (n = 7)	Barn owl (n = 5)	Long eared owl (n = 3)	Tawny owl (n = 1)	Common buzzard (n = 15)	Sparrowhawk (n = 5)
Lipid %	2.5 – 3.7	3.5 – 6.6	3.3 – 4.2	4.1	0.5 – 6.1	1.1 – 4.1
CB 28	14	0.21	2.0	< 0.25	2.6	0.7
CB 74	52	1.0	2.3	2.4	2.8	5.6
CB 95	2.2	0.43	0.12	< 0.15	0.5	0.7
CB 101	4	2.3	2.5	0,4	4.7	15
CB 99	102	16	16	22	11	28
CB 110	4.1	1.2	0.40	< 0.15	1,1	1.9
CB 118	65	7.0	6.3	24	25	43
CB 149	108	3.5	23	0.5	4.7	20
CB 132	26	0.18	3.6	< 0.15	0.58	0.5
CB 105	5.2	1.2	0.14	2.7	4.7	8.0
CB 146	100	21	40	21	16	54
CB 153	627	200	218	230	160	346
CB 138	529	155	149	131	92	250
CB 128	241	13	17	19	9.9	31
CB 167	77	0.99	4.0	5.3	5.5	7.8
CB 177	96	7.8	34	6,5	7.9	27
CB 156	35	6.1	8.3	18	9.0	24
CB 187	173	93	25	51	50	197
CB 183	74	13	25	17	19	35
CB 180	432	166	122	135	113	170
CB 170	142	67	45	52	78	67
CB 199	48	54	32	14	21	40
CB 194	62	40	20	20	39	34
CB 196	56	17	18	13	23	31
sum PCBs	2773 (1441 – 8694)	861 (285 – 8960)	942 (285 – 1625)	784	651 (352 – 11051)	1498 (520 – 1977)

Table SI-4. Pearson correlation coefficients (r) between the log-transformed levels of major HO-PCBs and their possible parent PCBs in the liver of the common buzzard (n = 15).

	4'-HO-CB 130	3'-HO-CB138	4-HO-CB146	4-HO-CB163	4-HO-CB187	4-HO-CB107
CB 146	0.82 *	0.55 *	0.50 ^(†)	0.49 ^(†)	0.47 ^(†)	0.68*
CB 153	0.85 *	0.65 *	0.53 *	0.54 *	0.46 ^(†)	0.73*
CB 138	0.85 *	0.62 *	0.53 *	0.54 *	0.48 ^(†)	0.71*
CB 180	0.65 *	0.65 *	0.52 *	0.53 *	0.44 ^(†)	0.73*
CB 187	0.85 *	0.51 ^(†)	0.41	0.34	0.35	0.56*

^(†) p < 0.1. * p < 0.05

Figure SI-1a. Ion chromatograms for hydroxylated tetra- to hexaPCBs.

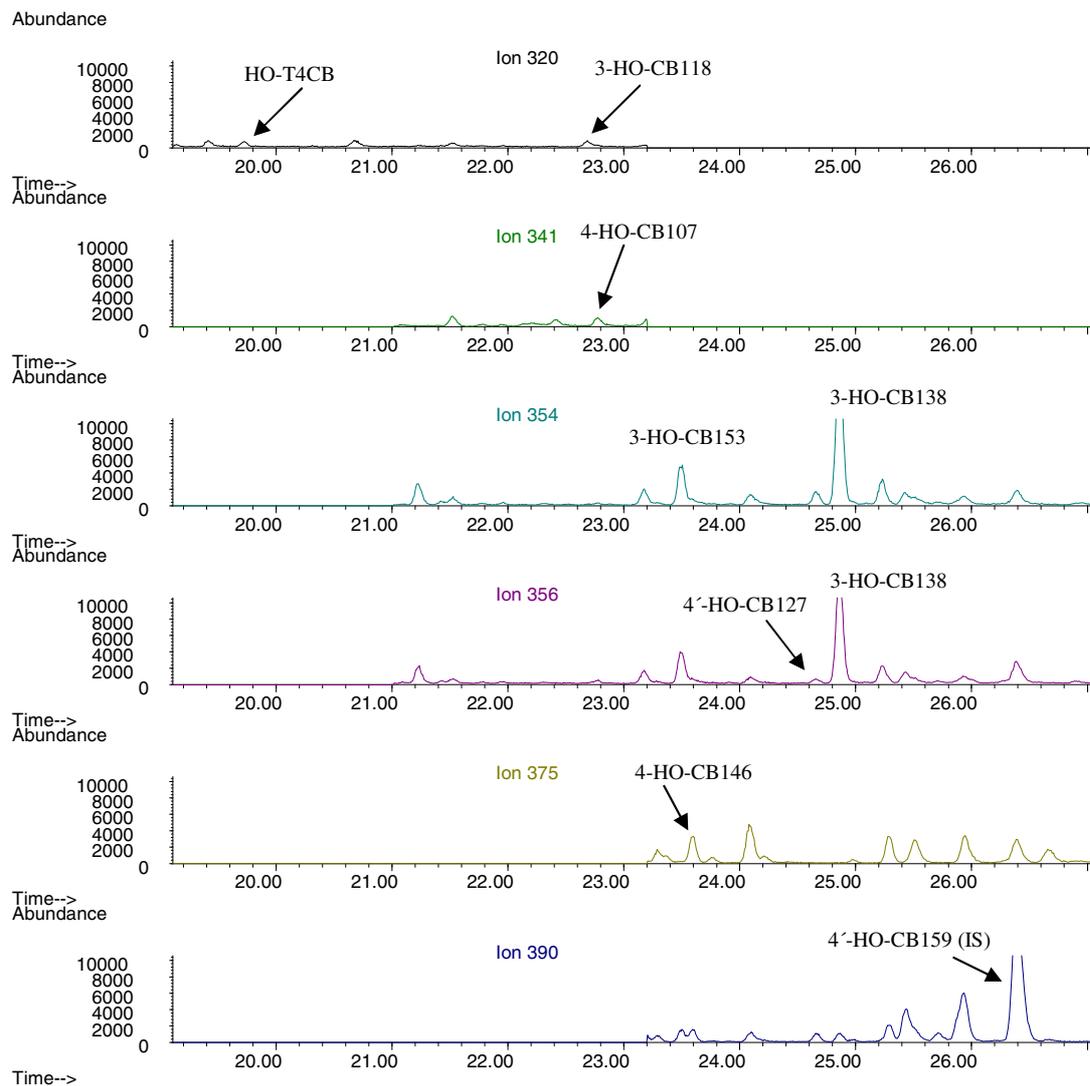


Figure SI-1b. Ion chromatograms for hydroxylated hexa- to heptaPCBs.

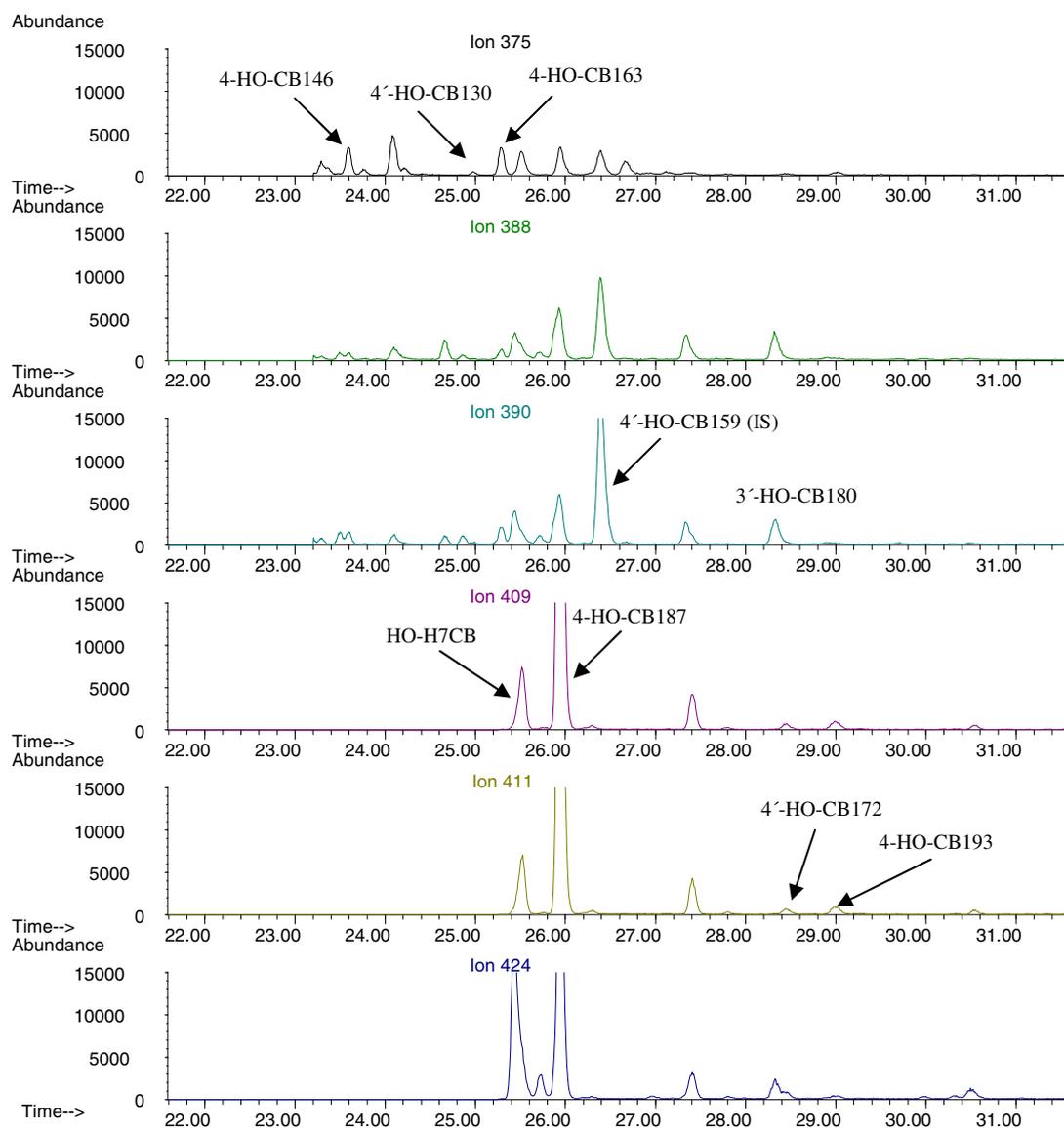


Figure SI-2. Contribution of single PCB congeners to the total sum of PCBs (mean % + 2SE) in liver of different predatory bird species from Belgium.

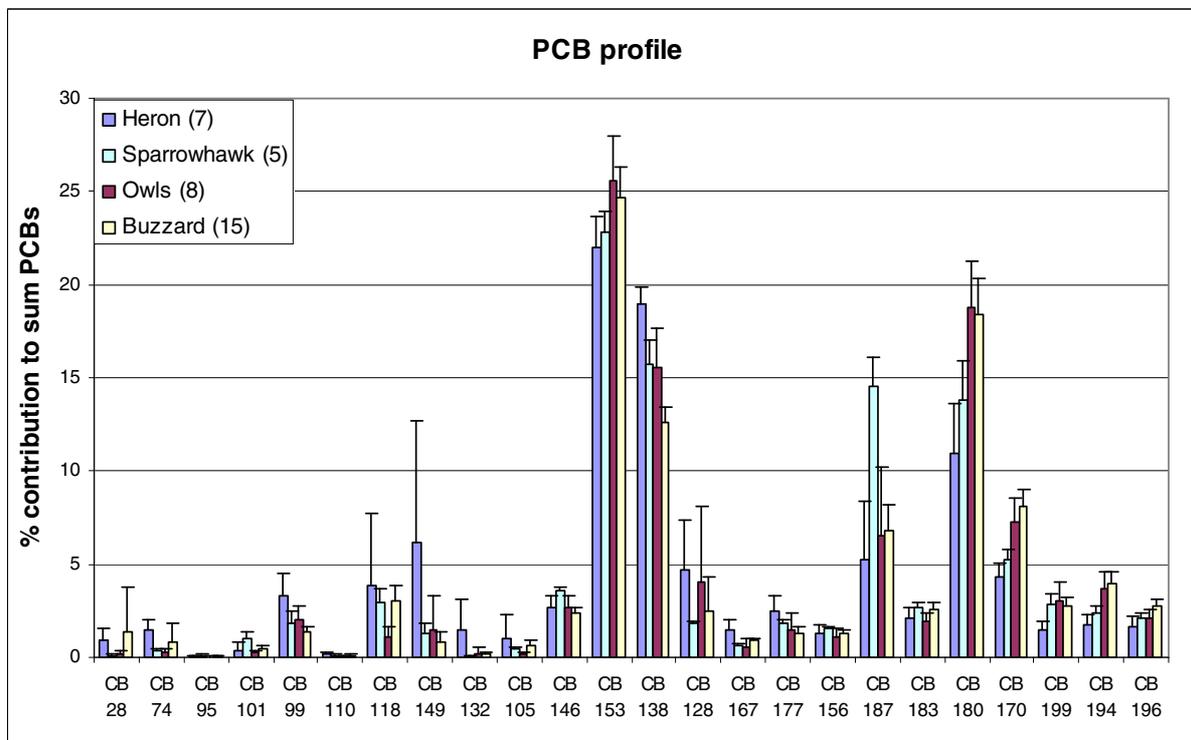


Figure SI-3. Distance biplot from the Principal Component Analysis performed for PCBs in the liver of different predatory birds from Belgium. Mean factor scores for each species are presented as dots with SE, while factor loadings for the different compounds are presented as lines. B: common buzzard (n=15), O: owl species (n=8), SH: sparrowhawk (n=5), H: grey heron (n=7).

