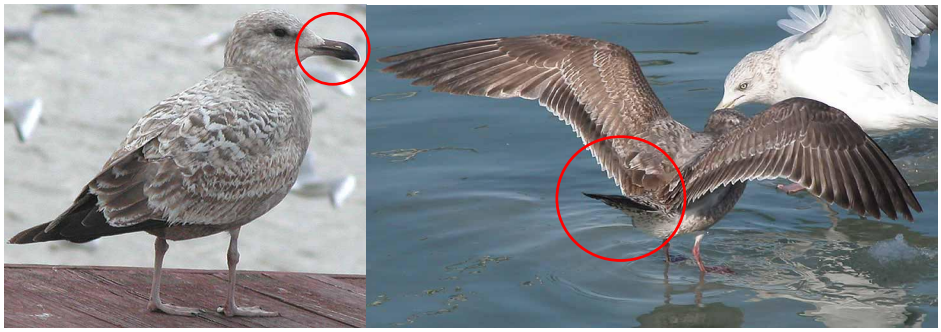
**SUPPORTING INFORMATION**

**Instrumental conditions of dioxin analysis.** Identification and quantification of PCDD/Fs, non- and mono-ortho PCBs were performed by use of a Hwelett-Packard 6890 series high-resolution gas chromatograph interfaced with a Micromass Autospec-Ultima high-resolution mass spectrometer (HRGC-HRMS). The separation was achieved by a BPX5 fused silica capillary column (60 m length, 0.25 mm ID, 0.25 μm film thickness, SGE, Australia) for TeCDDs-OCDD and TeCDFs-OCDF. The column oven temperature was programmed to increase from 130°C (1 min) to 210°C at a rate of 15°C /min, then to 290°C at a rate of 3°C/min, and then at 10°C/min to 330°C. The congeners of non- and mono-ortho PCBs were separated on HT8-PCB fused silica capillary column (60 m length, 0.25 mm ID, 0.25 μm film thickness, SGE, Australia). The column oven temperature increase from 120°C (1 min) to 210°C at a rate of 20°C/min, then to 250°C at a rate of 2°C/min, and then at 10°C/min to 330°C. The fused silica capillary column coated with RH-17 (60 m length, 0.25 mm ID, 0.25 μm film thickness, SGE, Australia) was used for separating PeCDFs and HxCDFs. And the column oven temperature programmed to increase from 130°C (1 min) to 210°C at a rate of 15°C/min, then to 290°C at a rate of 5°C/min, and then at 15°C/min to 310°C. The interface temperature of the mass spectrometer was 310°C for TeCDDs-OCDD and TeCDFs-OCDF analysis and 300°C for PeCDFs, HxCDFs, non- and mono-ortho PCBs analysis. The mass spectrometer was operated at a resolution of more than 10000 and in a selected ion-monitoring (SIM) mode. The injector temperature was held at 280°C and the ion source was kept at 320°C. The electron-impact ionization energy was 34 eV and the ion current was at 500 μA.

**Quantitation and Quality Assurance Quality Control (QA/QC).** The concentrations of all the congeners were quantified by the internal standard isotope-dilution method using mean relative response factors determined from calibration standard runs. All equipment rinses were done with acetone and hexane to avoid sample contamination, and a laboratory blank was incorporated in the analytical procedure. Recoveries of $^{13}$C-labeled PCDD/Fs and coplanar PCBs internal standards averaged from 56 to 120%.

**Lipid Content Analysis.** About 5 g wet samples were ground with anhydrous sodium sulfate and Soxhlet extracted for 24 h using 200 ml dichloromethane / methanol (7:3 v/v) mixture solution. The extracts were then rotated to dry and heated at 65°C for about 30 min, and lipid amounts were determined gravimetrically.

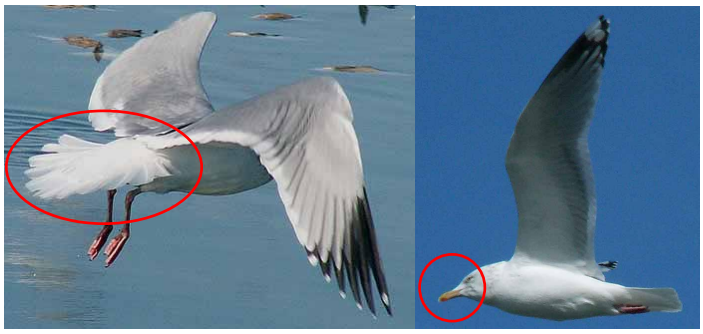
(a)



(b)

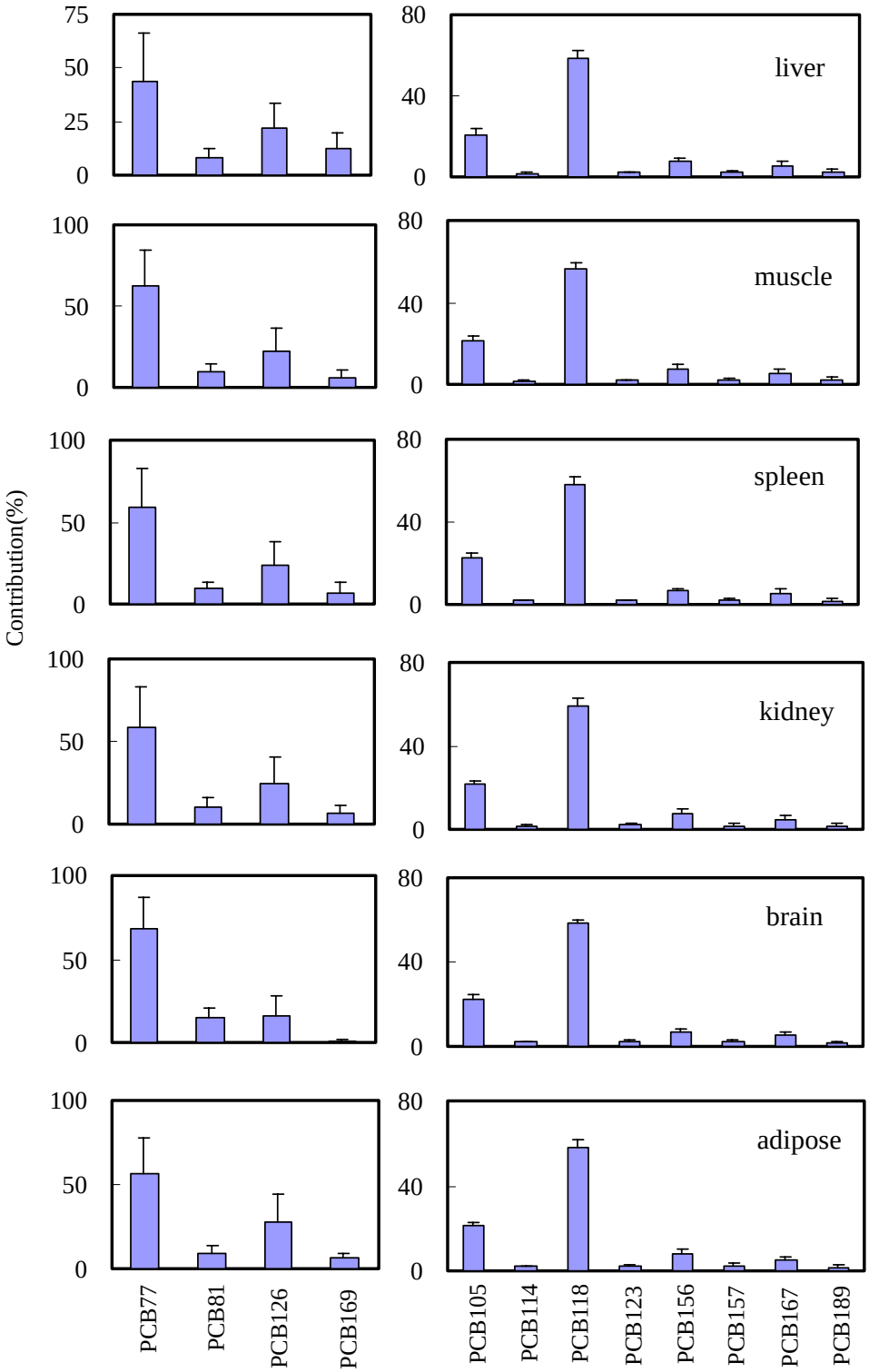
(c)

(d)

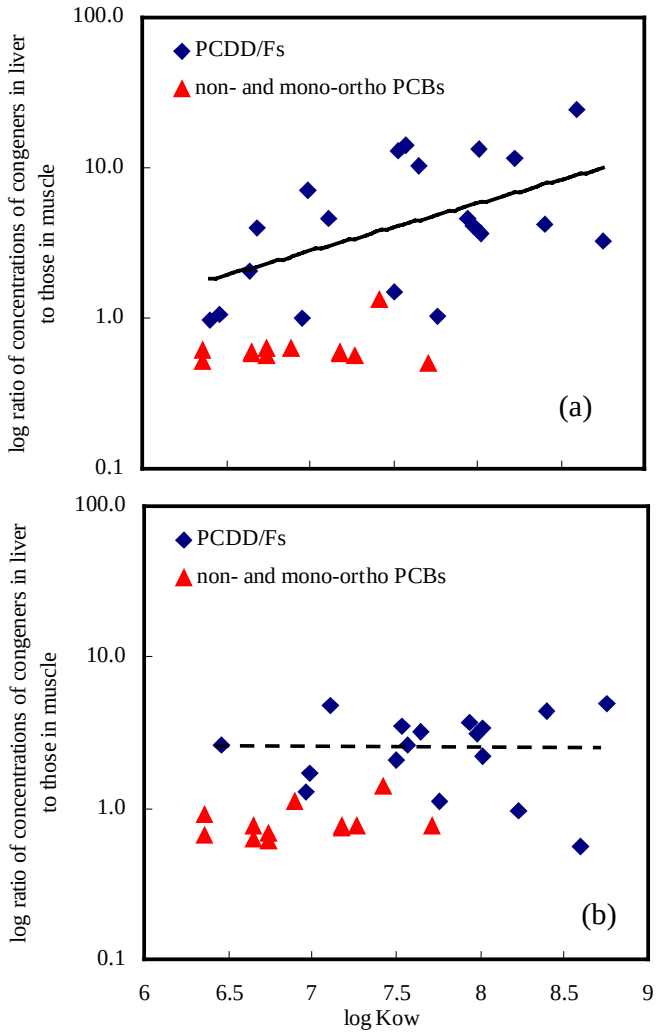


(e) 

**SUPPORTING INFORMATION Figure 1.** Identify the age of herring gull collected from Bohai Bay. (a)First-winter herring gull: brown body plumage, dark barred rump and dark tail, beak is black; (b) Second-winter herring gull: dark brown plumage, tail becomes white with black terminal band, beak becomes pinkish with black tip; (c) Third-winter herring gull: slate-gray plumage, tail becomes white with a little black terminal, beak becomes pinkish with a little black tip; (d): Fourth-winter herring gull: plumage of slate-gray back and wings, a white body and head, and black wingtips spotted with white. The beak is yellow with a red spot on the lower mandible; (*21*) (e) Collected Herring gulls from Bohai Bay: similar with third-winter birds.




**SUPPORTING INFORMATION Figure 2.**. Relative contribution (percent) of coplanar PCB congeners to total coplanar PCB concentrations in different tissues of herring gulls.




**SUPPORTING INFORMATION Figure 3.** Relationships between liver/muscle concentration ratios and log Kow of PCDD/Fs, non-, and mono-ortho PCBs in wild birds. a): herring gulls (present study: log liver/muscle ratios=0.3169×log Kow-1.7734 $r^2$=0.2666, *p*=0.02), b): Common cormorants from Lake Biwa, Japan. (*17*) (log liver/muscle ratios=-0.0191×log Kow+0.5162 $r^2$=0.0019, *p*=0.867). Dotted line: correlations were not statistically significant, line: correlations were statistically significant.