



Figure S1. The primary food components of black-winged stilts in the study area. (a) Corydalidae larva; (b) Nepidae; (c) (d) (e) (g) Odonata nymphs; (f) Hydrophilidae; (i) Chironomidae larvae; (h)(j)(k) Corixidae.

Table S1. Soil geo-accumulation index (I_{geo} , mean $\pm$ standard deviation) in habitat of black-winged stilt in Shizuishan.

	As	Pb	Cd	Cr	Cu	Zn
DWK	- 4.09 $\pm$ 0.34 ^a	- 0.34 $\pm$ 0.28 ^a	2.38 $\pm$ 0.26 ^a	0.71 $\pm$ 0.30 ^{ab}	- 0.85 $\pm$ 0.49 ^{ab}	- 0.32 $\pm$ 0.19 ^a
HN	- 4.52 $\pm$ 0.24 ^b	- 0.66 $\pm$ 0.27 ^b	2.19 $\pm$ 0.49 ^a	0.47 $\pm$ 0.34 ^a	- 1.21 $\pm$ 0.64 ^a	- 0.65 $\pm$ 0.32 ^b
PL	- 4.36 $\pm$ 0.29 ^b	- 0.53 $\pm$ 0.21 ^b	2.26 $\pm$ 0.20 ^a	0.88 $\pm$ 0.29 ^b	- 0.68 $\pm$ 0.34 ^b	- 0.46 $\pm$ 0.21 ^{ab}
<i>H</i>	12.151	12.327	1.842	6.041	7.226	10.978
<i>P</i>	0.002	0.002	0.398	0.049	0.027	0.004

DWK: Dawukou District. HN: Huinong District. PL: Pingluo County. Different lowercase letters in each column denote significant differences among districts ($P < 0.05$).

Table S2. The contamination index of heavy metal (Q_i) and the water pollution index

(WPI) in habitat of black-winged stilt in Shizuishan (mean $\pm$ standard deviation).

	Q _i						WPI
	As	Pb	Cd	Cr	Cu	Zn	
DWK	0.05 $\pm$ 0.08	0.28 $\pm$ 0.93	1.16 $\pm$ 1.14	11.53 $\pm$ 10.56	-	0.00 $\pm$ 0.00	2.17 $\pm$ 1.98
HN	0.04 $\pm$ 0.06	2.16 $\pm$ 3.57	0.16 $\pm$ 0.20	17.42 $\pm$ 13.79	-	0.01 $\pm$ 0.01	3.33 $\pm$ 2.90
PL	0.04 $\pm$ 0.06	0.33 $\pm$ 0.66	0.16 $\pm$ 0.14	19.15 $\pm$ 10.67	-	0.00 $\pm$ 0.01	3.28 $\pm$ 1.88

DWK: Dawukou District. HN: Huinong District. PL: Pingluo County.

Table S3. Toxicity parameters of NOAEL and LOAEL of heavy metals indicating the most conservative tolerable daily intake (mcTDI) and the most dangerous tolerable daily intake (mdTDI) (mg/kg/day).

	Cr	Cu	Pb	Cd	As	Zn
NOAEL	3.28	11.7	1.13	1.45	2.46	14.5
LOAEL	13.14	15.4	11.3	20	7.38	131
mcTDI	0.66	1.34	0.36	0.54	0.43	4.36
mdTDI	0.066	0.134	0.036	0.054	0.043	0.436

Table S4. Heavy metal concentrations in food of black-winged stilt in Shizuishan (mg/kg, dry weight)

	Heavy metals [mean $\pm$ standard deviation (range)]					
	As	Pb	Cd	Cr	Cu	Zn
DWK	0.25 $\pm$ 0.23 ^a (0.00-0.80)	2.79 $\pm$ 2.03 ^a (0.79-7.30)	1.01 $\pm$ 0.28 ^a (0.55-1.71)	70.98 $\pm$ 19.59 ^a (27.72-105.49)	0.42 $\pm$ 0.7 ^a (0.00-2.02)	29.01 $\pm$ 10.98 ^a (14.30-62.12)
HN	0.79 $\pm$ 0.95 ^b (0.16-3.86)	2.56 $\pm$ 2.75 ^b (0.81-9.63)	0.90 $\pm$ 0.38 ^a (0.54-1.84)	70.48 $\pm$ 25.29 ^a (25.99-109.38)	0.90 $\pm$ 2.01 ^a (0.00-7.00)	28.78 $\pm$ 9.18 ^a (16.70-51.57)
PL	0.69 $\pm$ 0.37 ^b (0.25-1.66)	4.35 $\pm$ 1.90 ^a (0.87-7.26)	0.78 $\pm$ 0.39 ^a (0.15-1.52)	54.85 $\pm$ 82.08 ^a (25.86-82.08)	2.30 $\pm$ 1.73 ^b (0.00-6.84)	32.24 $\pm$ 11.62 ^a (18.82-62.27)

DWK: Dawukou District. HN: Huinong District. PL: Pingluo County. Different lowercase letters in each column denote significant differences among districts ($P < 0.05$).

Table S5. The total exposure doses of heavy metals (mg/kg/d) to black-winged stilts in Shizuishan.

	As	Pb	Cd	Cr	Zn	Cu
DWK	0.05 ± 0.03 ^a	0.75 ± 0.24 ^{ab}	0.12 ± 0.03 ^a	10.38 ± 2.06 ^a	4.41 ± 1.26 ^a	0.40 ± 0.14 ^a
HN	0.10 ± 0.11 ^b	0.64 ± 0.32 ^a	0.11 ± 0.04 ^a	9.95 ± 2.93 ^a	4.12 ± 1.06 ^a	0.55 ± 0.64 ^a
PL	0.09 ± 0.04 ^b	0.86 ± 0.20 ^b	0.10 ± 0.04 ^a	9.03 ± 1.54 ^a	4.62 ± 1.25 ^a	0.63 ± 0.17 ^b
<i>H</i>	14.997	8.101	3.841	4.453	1.375	13.326
<i>P</i>	0.001	0.017	0.147	0.108	0.503	0.001

DWK: Dawukou District. HN: Huinong District. PL: Pingluo County. Different lowercase letters in each column denote significant differences among districts ($P < 0.05$).

Table S6. The hazard quotient (HQ, mean ± standard deviation) and hazard index (HI) of heavy metals for black-winged stilt in Shizuishan (mean ± standard deviation).

	As	Pb	Cd	Cr	Cu	Zn	HI
DWK	0.11 ± 0.06 ^a	2.08 ± 0.66 ^{ab}	0.23 ± 0.06 ^a	15.72 ± 3.13 ^a	0.30 ± 0.11 ^a	1.01 ± 0.29 ^a	11.35 ± 2.23 ^a
HN	0.23 ± 0.25 ^b	1.77 ± 0.89 ^a	0.21 ± 0.08 ^a	15.08 ± 4.43 ^a	0.41 ± 0.47 ^a	0.94 ± 0.24 ^a	10.03 ± 1.92 ^{ab}
PL	0.21 ± 0.09 ^b	2.39 ± 0.56 ^b	0.18 ± 0.08 ^a	13.68 ± 2.34 ^a	0.47 ± 0.13 ^b	1.06 ± 0.29 ^a	9.72 ± 1.58 ^b
<i>H</i>	15.708	8.102	3.905	4.434	13.727	1.492	6.849
<i>P</i>	< 0.001	0.017	0.142	0.109	0.001	0.474	0.033

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Table S7 Heavy metal concentrations in eggshell of black-winged stilts in Shizuishan (mg/kg, dry weight)

	Heavy metals (mean $\pm$ standard deviation)					
	As	Pb	Cd	Cr	Zn	Cu
DWK (n = 16)	0.12 $\pm$ 0.17 ^a	36.47 $\pm$ 12.33 ^a	5.10 $\pm$ 1.09 ^a	0.00 $\pm$ 0.00 ^a	19.07 $\pm$ 5.27 ^a	7.03 $\pm$ 2.95 ^a
HN (n = 15)	0.02 $\pm$ 0.05 ^b	30.78 $\pm$ 9.65 ^a	4.06 $\pm$ 1.02 ^b	5.50 $\pm$ 10.73 ^b	15.19 $\pm$ 5.56 ^b	6.66 $\pm$ 1.69 ^a
PL (n = 15)	0.05 $\pm$ 0.05 ^a	37.52 $\pm$ 12.02 ^a	2.35 $\pm$ 0.81 ^c	5.04 $\pm$ 14.33 ^{ab}	13.58 $\pm$ 2.66 ^b	7.57 $\pm$ 1.23 ^a
<i>H</i>	9.463	2.608	28.118	6.011	11.886	2.117
<i>P</i>	0.009	0.271	0.000	0.050	0.003	0.347

DWK: Dawukou District. HN: Huinong District. PL: Pingluo County. Different lowercase letters in each column denote significant differences among districts ($P < 0.05$).