

Stable Nitrogen Isotope Analysis. Samples of phytoplankton (seston), zooplankton, crabs, fishes and seabirds were first homogenized by an analytical mill. The samples were then freeze-dried, and lipids were removed from all samples by methanol extraction for about 12 h to reduce variability due to isotopically lighter lipids. Before isotope analysis, the samples were dried at 80°C for about 4 h. Subsequently, about 0.5 mg samples were set in Sn capsules and combusted at 1000 to 1050°C. Nitrogen gas was then carried through the interface (ConFlo III, Finnigan MAT) and analyzed using a mass spectrometer (Thermo Delta plus, Finnigan MAT). Stable isotope values were expressed as:

$$\delta^{15}\text{N} = \left(\left(\frac{^{15}\text{N}}{^{14}\text{N}} \right)_{\text{sample}} / \left(\frac{^{15}\text{N}}{^{14}\text{N}} \right)_{\text{standard}} - 1 \right) \times 1000 \text{ (‰)}. \quad (1)$$

The $^{15}\text{N} / ^{14}\text{N}_{\text{standard}}$ values were based on atmospheric N_2 (air).

Trophic Level Calculation. Trophic levels of individual aquatic organisms can be calculated using the relationship given by Fisk et al. (1) and Muir et al. (2):

$$\text{TL}_{\text{consumer}} = 2 + \left(\delta^{15}\text{N}_{\text{consumer}} - \delta^{15}\text{N}_{\text{zooplankton}} \right) / 3.8, \quad (2)$$

where $\delta^{15}\text{N}_{\text{consumer}}$ and $\delta^{15}\text{N}_{\text{zooplankton}}$ are stable nitrogen isotope value of consumer and zooplankton; $\text{TL}_{\text{consumer}}$ is the trophic level of consumers, and the TL of zooplankton was assumed to be 2. But for the calculation of trophic level in birds, the diet-tissue isotope fractionation factor is +2.4‰ and the equation should be modified to (1):

$$\text{TL}_{\text{bird}} = 3 + \left(\delta^{15}\text{N}_{\text{bird}} - 2.4 - \delta^{15}\text{N}_{\text{zooplankton}} \right) / 3.8, \quad (3)$$

where TL_{bird} is the trophic level of bird, and $\delta^{15}\text{N}_{\text{bird}}$ is the stable Nitrogen isotope value of birds.

Reference:

(1) Fisk, A.T.; Hobson, K.A.; Norstrom, R.J. Influence of chemical and biological factors on

trophic transfer of persistent organic pollutants in the Northwater Polynya marine food web. *Environ. Sci. Technol.* **2001**, *35*, 732-738.

- (2) Muir, D.; Savinova, T.; Savinov, V.; Alexeeva, L.; Potelov, V.; Svetochev, V. Bioaccumulation of PCBs and chlorinated pesticides in seals fishes and invertebrates from the White Sea, Russia. *Sci. Total Environ.* **2003**, *306*, 111-131.

SUPPORTING INFORMATION TABLE 1. PAHs concentrations (ng/g dry weight) of thirteen marine organisms collected from Bohai Bay, North China.

Species ^a	PK	ZK	AI	RP	RV	US	PT	LS	OR	PI	CS	LJ	LA
	PAH concentrations												
Na	1.33	4.33	0.62±0.89	6.26±1.52	6.11±4.87	1.70±1.73	ND	ND	4.76±5.82	0.31±0.35	ND	ND	10.40±5.92
Acy	0.95	3.82	1.30±0.95	2.12±0.37	0.45±0.70	0.85±0.08	0.40±0.09	0.75±0.27	0.33±0.49	0.81±0.53	0.33±0.28	0.17±0.15	0.68±0.94
Ace	0.10	2.55	0.75±0.03	1.94±0.22	0.76±0.81	0.40±0.26	0.17±0.15	0.48±0.22	1.08±1.62	0.38±0.40	0.54±0.22	0.36±0.19	5.70±3.60
FE	0.07	1.28	2.06±0.25	17.55±1.54	0.67±0.41	0.38±0.25	0.20±0.03	0.33±0.20	1.15±1.55	0.48±0.62	1.47±1.14	0.35±0.20	10.11±9.96
Ph	5.47	45.78	21.22±11.47	35.90±14.04	2.79±2.62	6.24±3.70	ND	1.76±0.70	6.93±6.18	4.45±3.22	2.48±2.60	1.63±0.40	15.14±5.64
An	0.71	3.22	3.43±2.00	5.26±2.43	0.23±0.18	0.71±0.32	0.34±0.36	0.28±0.30	0.78±0.62	0.30±0.44	0.23±0.32	0.12±0.09	0.49±0.09
Fl	26.17	165.07	18.97±9.23	38.62±5.00	1.88±1.78	1.93±1.29	0.20±0.03	0.57±0.73	1.91±1.20	1.52±1.18	0.57±0.63	ND	12.45±6.96
Py	14.95	112.26	16.74±9.46	17.82±2.63	2.77±2.96	2.61±1.41	0.43±0.61	1.68±1.01	3.40±0.77	3.26±0.39	0.68±0.84	0.20±0.24	2.59±0.67
BaA	10.74	56.71	7.11±7.81	20.28±17.51	2.13±1.76	5.32±1.16	2.09±0.39	1.07±0.48	5.51±4.19	0.49±0.03	0.47±0.02	0.31±0.02	1.85±0.53
Ch	25.68	80.75	29.68±17.06	6.32±3.21	3.79±1.24	22.46±6.42	6.41±2.31	1.90±0.43	5.23±3.04	1.61±0.11	2.02±0.68	1.19±0.17	3.59±0.42
BbF+BkF	19.71	35.61	13.78±8.39	5.39±1.71	0.75±0.34	0.80±0.25	1.48±1.16	1.63±0.70	3.60±3.62	0.92±0.12	1.79±1.07	0.64±0.10	2.93±0.58
BeP	33.72	58.50	36.24±20.84	9.55±3.29	1.44±1.04	1.85±0.54	2.40±1.43	2.16±0.62	3.57±4.25	1.58±0.08	3.03±1.93	1.31±0.27	4.36±4.06
BaP	9.76	29.96	14.14±13.13	3.74±0.72	0.97±0.25	0.71±0.13	1.39±1.01	1.58±0.64	3.88±3.15	0.76±0.13	1.00±0.24	0.47±0.09	7.44±1.88
Pery	6.52	20.55	29.17±4.94	ND	0.35±0.11	0.92±0.86	0.97±0.87	1.31±0.59	2.86±3.52	0.51±0.07	0.67±0.11	0.31±0.10	ND
IP	7.02	8.88	8.07±6.36	ND	0.34±0.13	0.52±0.18	0.86±0.56	1.84±0.81	4.77±5.76	0.95±0.13	2.10±1.46	0.56±0.11	16.83±6.13
BP	8.83	9.27	8.23±6.25	ND	0.39±0.17	0.58±0.18	0.84±0.54	1.58±0.67	3.41±4.08	0.96±0.11	1.91±1.26	0.54±0.02	7.76±1.11
DA	3.09	6.08	3.75±2.44	ND	ND	0.33±0.41	0.88±0.70	1.96±1.05	5.61±6.49	0.77±0.46	1.64±0.65	0.34±0.01	5.50±2.66

a: pooled sample collected from six locations

Species: PK = phytoplankton/season; ZK = zooplankton; AI = bay scallop (*Argopecten irradians*); RP = short-necked clam (*Ruditapes philippinarum*); RV = veined rapa whelk (*Rapana venosa*); US = burrowing shrimp (*Upogebia sp.*); PT = crab (*Portunus trituberculatus*); LS = mullet (*Liza so-uy*); OR = wolffish (*Obontamblyopus rubicundus*); PI = bartail flathead (*Platycephalus indicus*); CS = catfish (*Chaeturichthys stigmatias*); LJ = weever (*Lateolabrus japonicus*); LA = herring gull (*Larus argentatus*). TL = trophic level; ND = not detected; data were

expressed as “mean \pm standard deviation (SD)” of three replicates. Lipid content was calculated on wet weight basis.