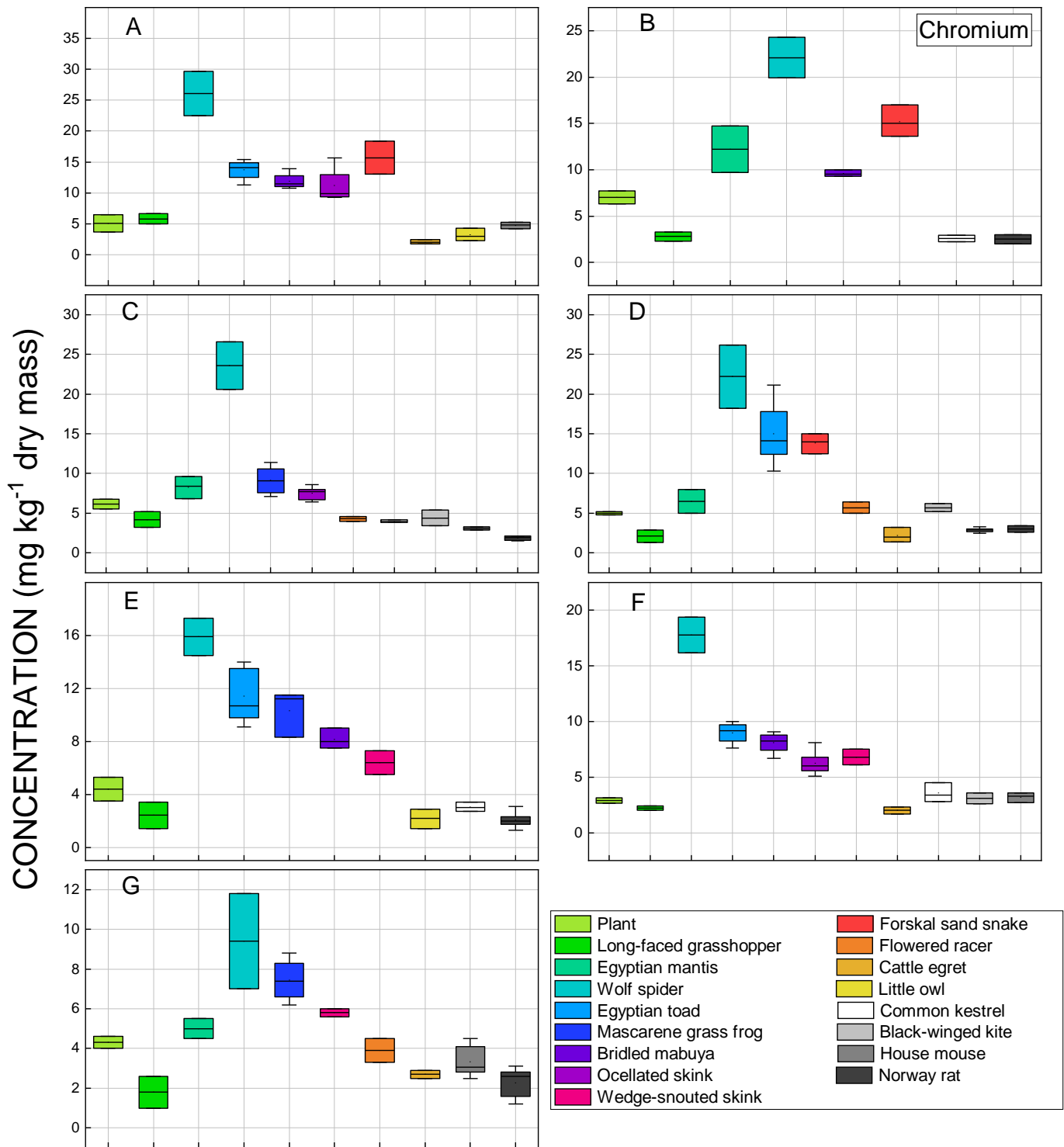


Supplementary Material 1. Map of El-Tebbin in Egypt showing the sites where soil, plants and animals were collected. Each star represents the position of the sampled plots. ArcGIS 10.2 was used to create the location map.

Supplementary Material 2. Presentation of the sampled animal taxa, trophic level, and numbers of animals collected from the seven studied localities (A – F) of El-Tebbin area (Egypt).

Trophic level: Herbivore (Herb); Primary carnivore (1° Carn); Secondary carnivore (2° Carn); Top carnivore (Top Carn); Omnivore (Omni)

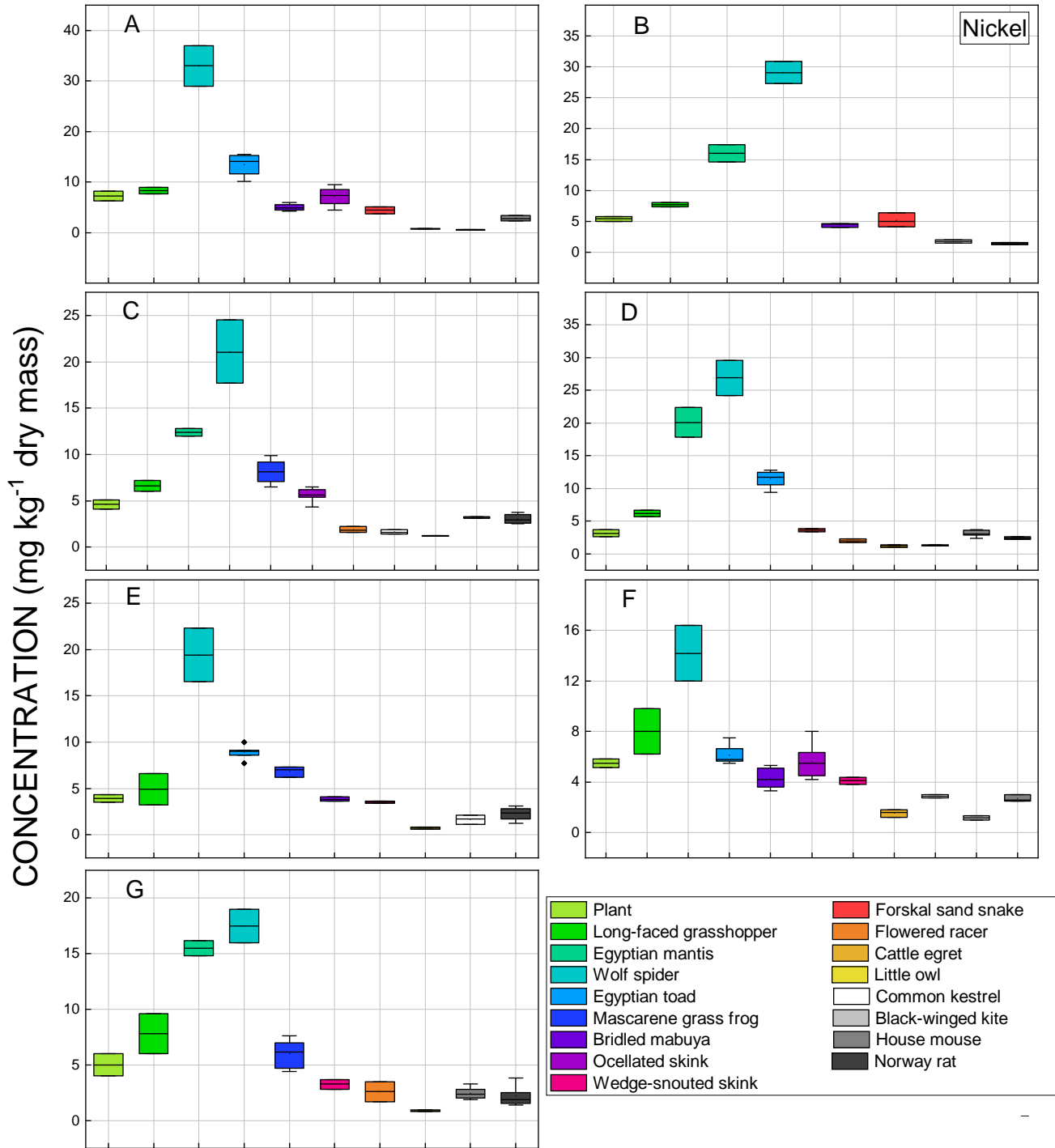
Taxon (Common and Latin names)	Trophic level	Locality							Total
		A	B	C	D	E	F	G	
Arthropods									
Long-faced grasshopper (<i>Truxalis grandis</i> Klug)	Herb	29	33	45	38	50	34	27	256
Egyptian mantis (<i>Miomantis paykullii</i> Stål)	1° Carn		18	12	11			20	61
Wolf spider (<i>Hogna ferox</i> (Lucas))	1° Carn	16	23	18	15	24	20	23	139
Amphibians									
Egyptian toad (<i>Amietophrynus regularis</i> (Reuss))	2° Carn	4			6	5			15
Mascarene grass frog (<i>Ptychadena mascareniensis</i> (Dumeril & Bibron))	2° Carn			7		3	4	6	20
Reptiles									
Lizards									
Bridled mabuya (<i>Trachylepis vittata</i> (Olivier))	2° Carn	4	3			2	6		15
Ocellated skink (<i>Chalcides ocellatus</i> (Forskål))	2° Carn	3		5			8		16
Wedge-snouted skink (<i>Chalcides sepsoides</i> (Audouin))	2° Carn					1	1	2	4
Snakes									
Forskål sand snake (<i>Psammophis schokari</i> (Forskål))	2° Carn	1	2		2				5
Flowered racer (<i>Coluber florulentus</i> (Geoffroy Saint-Hilaire))	2° Carn			1	1			1	3
Birds									
Cattle egret (<i>Bubulcus ibis</i> (Linnaeus))	2° Carn	3			2		1	1	7
Little owl (<i>Athene noctua</i> (Scopoli))	Top Carn	2				2			4
Common kestrel (<i>Falco tinnunculus</i> (Linnaeus))	Top Carn		1	2		2	2		7
Black-winged kite (<i>Elanus caeruleus</i> (Desfontaines))	Top Carn			1	1		1		3
Small mammals									
House mouse (<i>Mus musculus</i> (Linnaeus))	Omni	3		1	5		2	6	17
Norway rat (<i>Rattus norvegicus</i> (Berkenhout))	Omni	2	1	4	1	6		5	19



Supplementary material 3. Boxplot presentation for Chromium concentration measured from the flora and fauna at different trophic levels sampled from seven localities of the El-Tebbin region (Egypt), as function of the distance to the main pollution source (from site A to site G). [For arthropods, individuals were pooled for the analysis so that a dry mass of 0.5 g was obtained for each replicate and each species. In the case of the wedge-snouted skink \(lizards, *Chalcides sepsoides*\), flowered racer \(snakes, *Coluber florulentus*\), birds \(all species\), and small mammals \(all species\), it was very hard to sample a large amount of individuals, which would have additionally](#)

impacted their population dynamics. As small sample size (<3 individuals per site) were obtained for these species, two (when two individuals were collected, Supplementary material 2) to three replicates (when a single individual was collected, Supplementary material 2) were obtained from a single individual to ensure that we would have 3 to 6 measures.

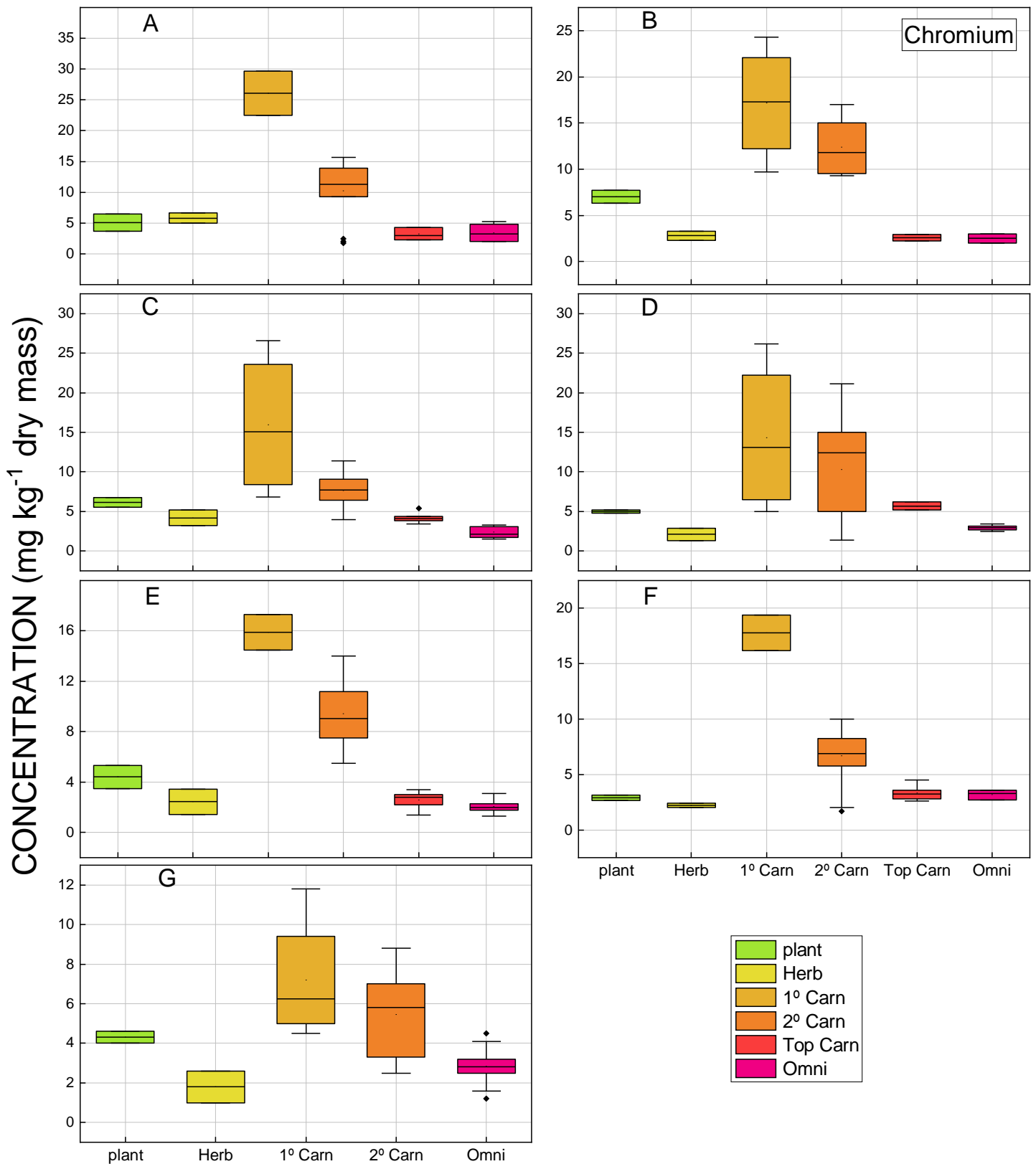
A: El Shobak, **B:** El Shobak, **C:** El-Sharqi, **C:** El Shurafa, **D:** Kafr Turkhan, **E:** Ghammazah Al Kubra, **F:** Al Ikhsas Al Qiblyyah, and **G:** Arab Ghammazah Al Kubra.



Supplementary material 4. Boxplot presentation for Nickel concentration measured from the flora and fauna at different trophic levels sampled from seven localities of the El-Tebbin region (Egypt), as function of the distance to the main pollution source (from site A to site G). For arthropods, individuals were pooled for the analysis so that a dry mass of 0.5 g was obtained for each replicate and each species. In the case of the wedge-snouted skink (lizards, *Chalcides sepsoides*), flowered racer (snakes, *Coluber florulentus*), birds (all species), and small mammals (all species), it was very hard to sample a large amount of individuals, which would have additionally impacted their

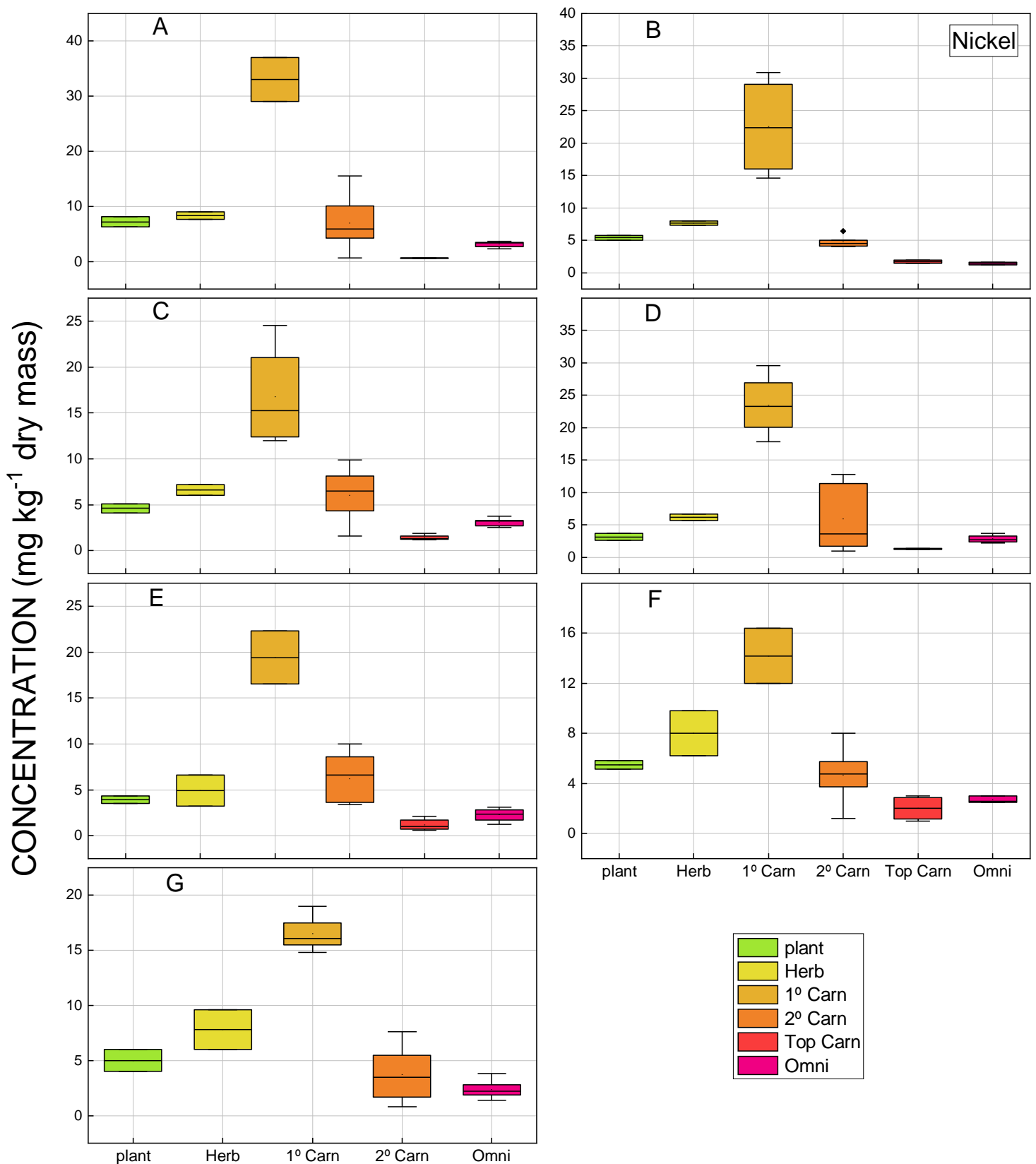
population dynamics. As small sample size (<3 individuals per site) were obtained for these species, two (when two individuals were collected, Supplementary material 2) to three replicates (when a single individual was collected, Supplementary material 2) were obtained from a single individual to ensure that we would have 3 to 6 measures.

A: El Shobak, **B:** El Shobak, **C:** El-Sharqi, **C:** El Shurafa, **D:** Kafr Turkhan, **E:** Ghammazah Al Kubra, **F:** Al Ikhsas Al Qiblyyah, and **G:** Arab Ghammazah Al Kubra.



Supplementary material 4. Boxplot presentation for Chromium concentration measured from the flora and fauna at different trophic levels sampled from seven localities of the El-Tebbin region (Egypt), as function of the distance to the main pollution source (from site A to site G).

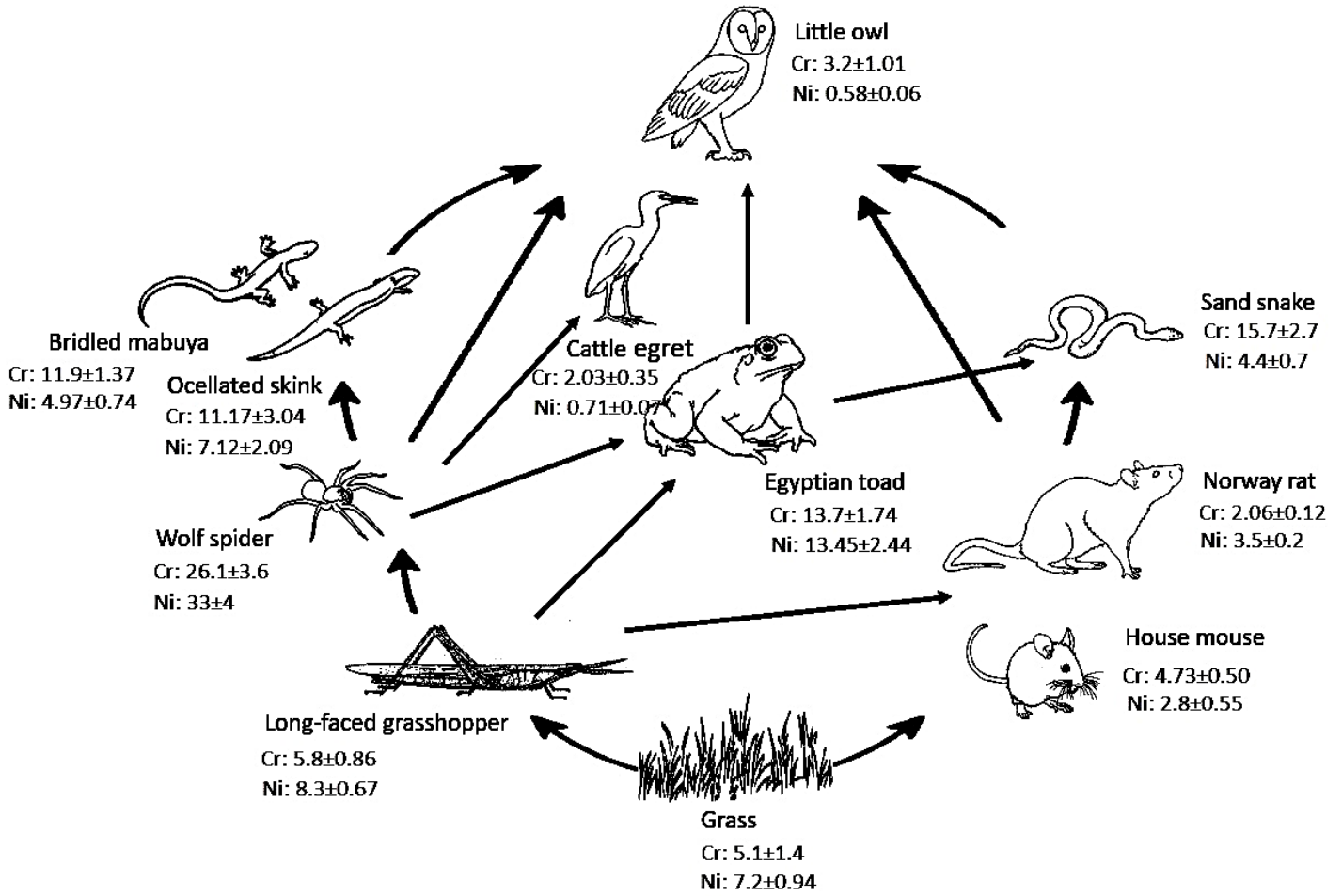
A: El Shobak, **B:** El Shobak, **C:** El-Sharqi, **C:** El Shurafa, **D:** Kafr Turkhan, **E:** Ghammazah Al Kubra, **F:** Al Ikhlas Al Qiblyyah, and **G:** Arab Ghammazah Al Kubra.



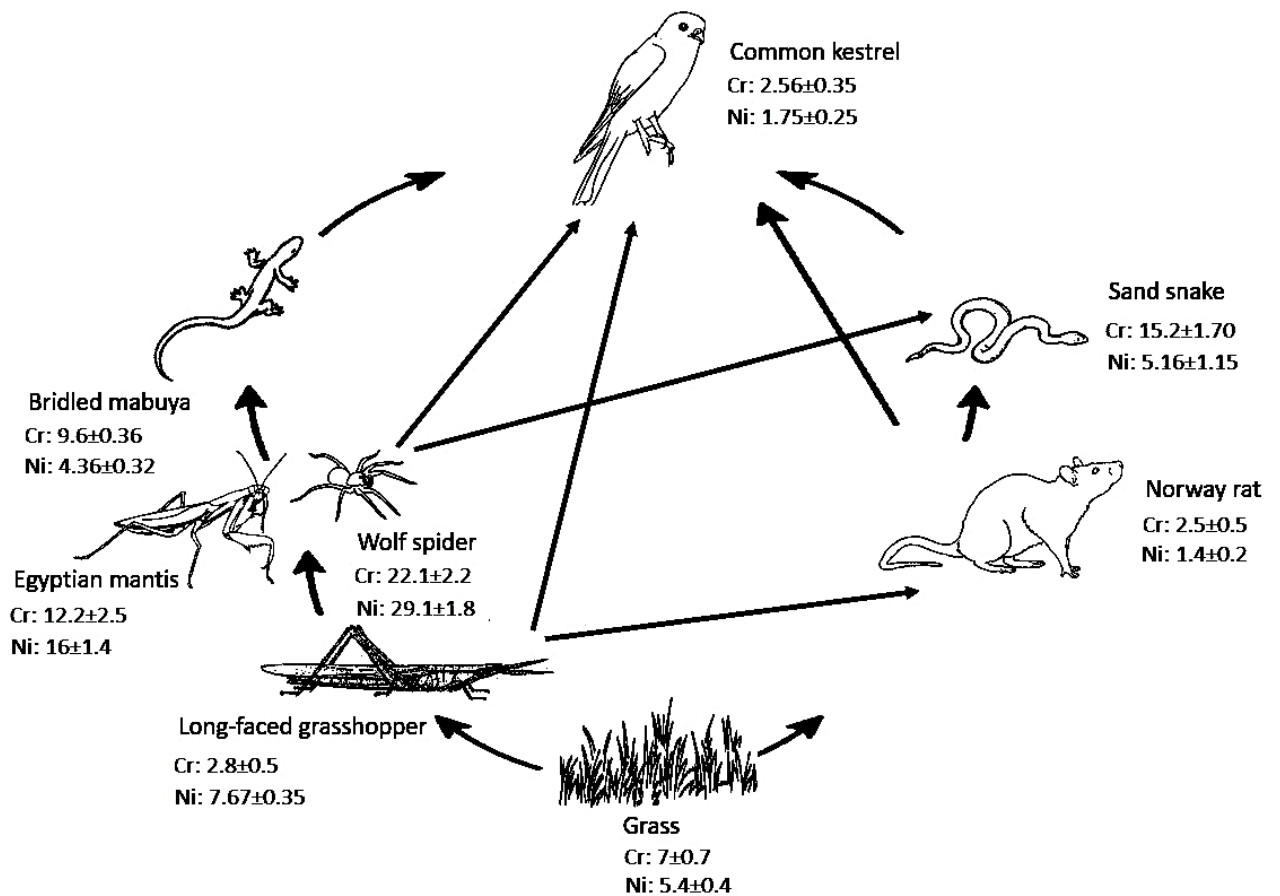
Supplementary Material 6. Boxplot presentation for Nickel concentration measured from the flora and fauna at different trophic levels sampled from seven localities of the El-Tebbin region (Egypt), as function of the distance to the main pollution source (from site A to site G).

A: El Shobak, **B:** El Shobak, **C:** El-Sharqi, **C:** El Shurafa, **D:** Kafr Turkhan, **E:** Ghammazah Al Kubra, **F:** Al Ikhsas Al Qiblyyah, and **G:** Arab Ghammazah Al Kubra.

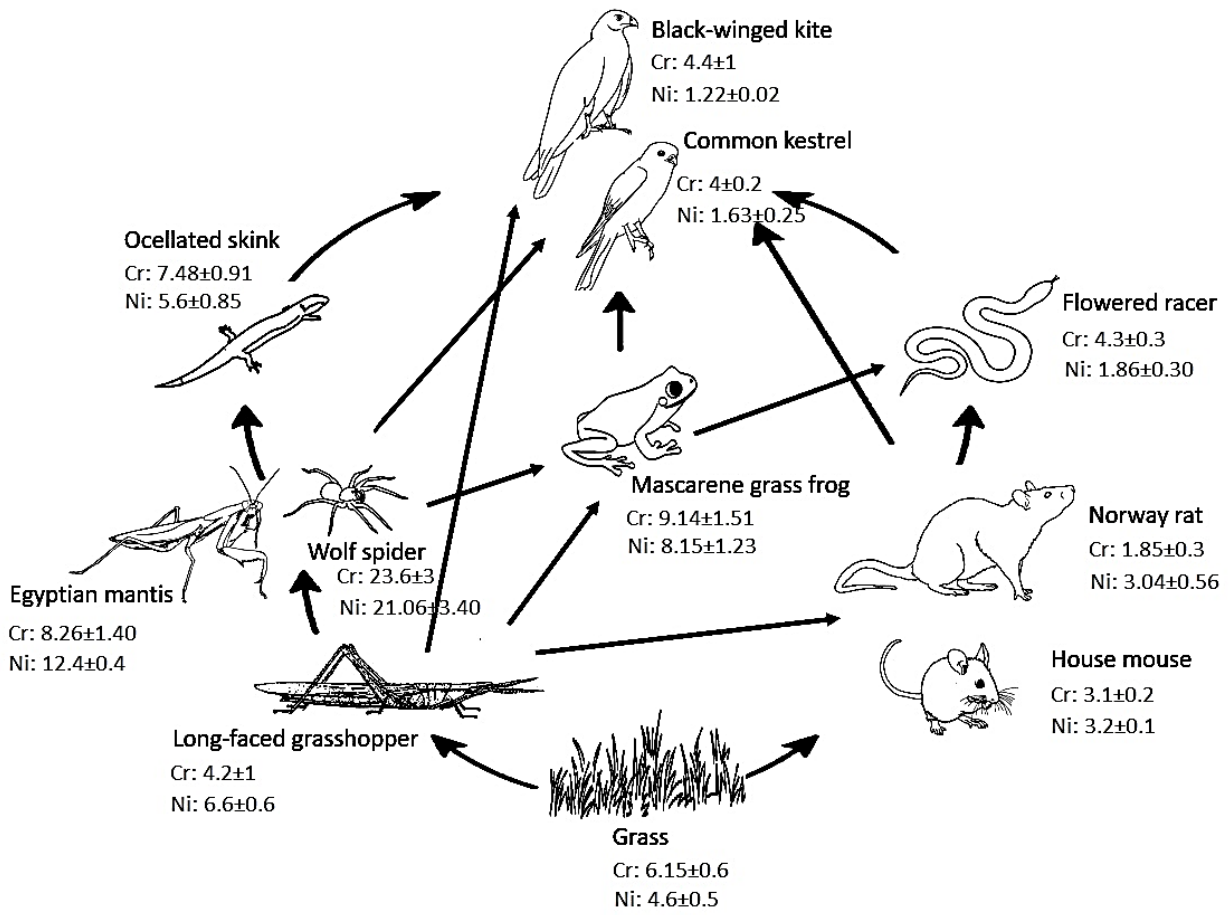
A



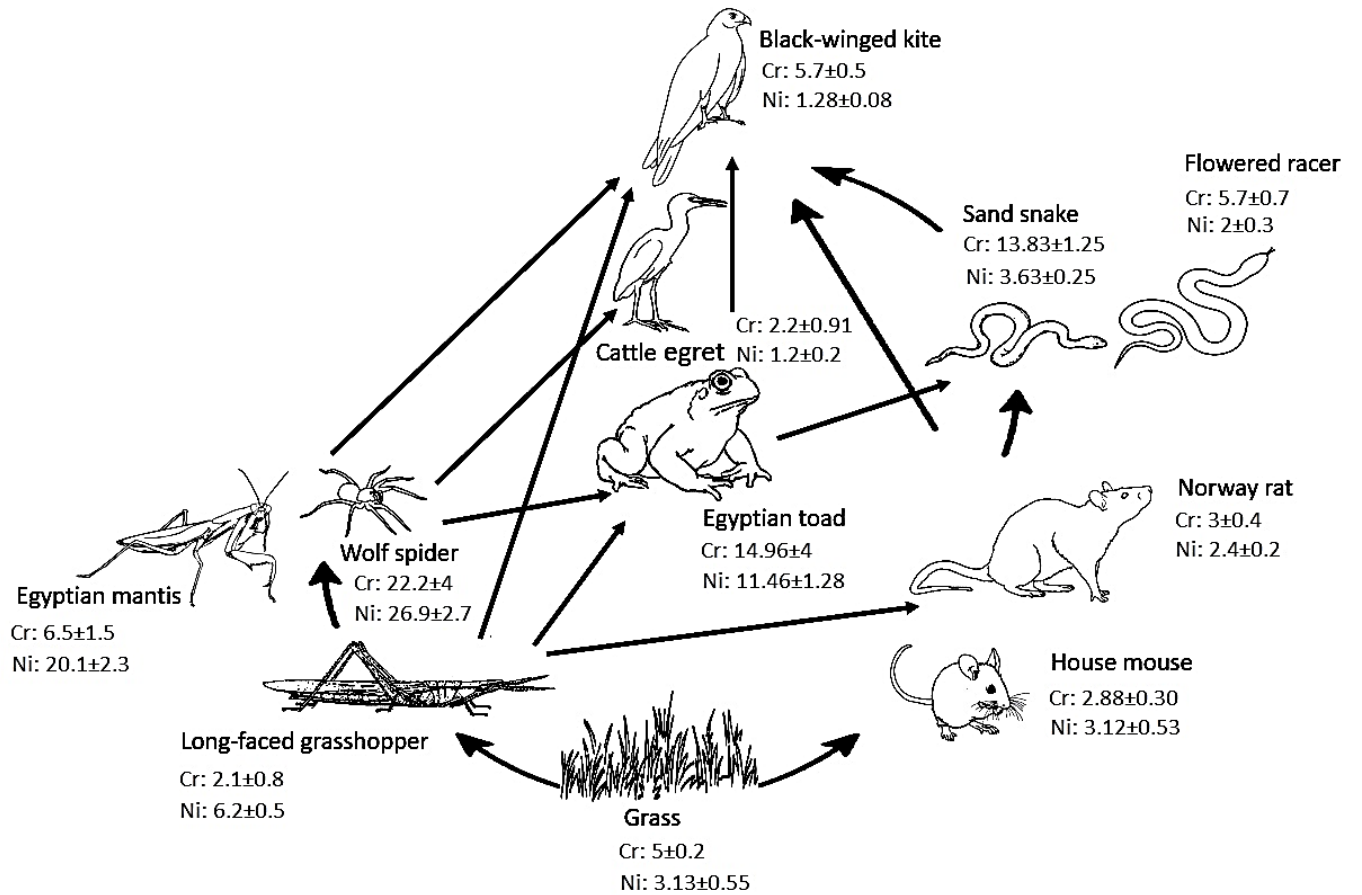
B



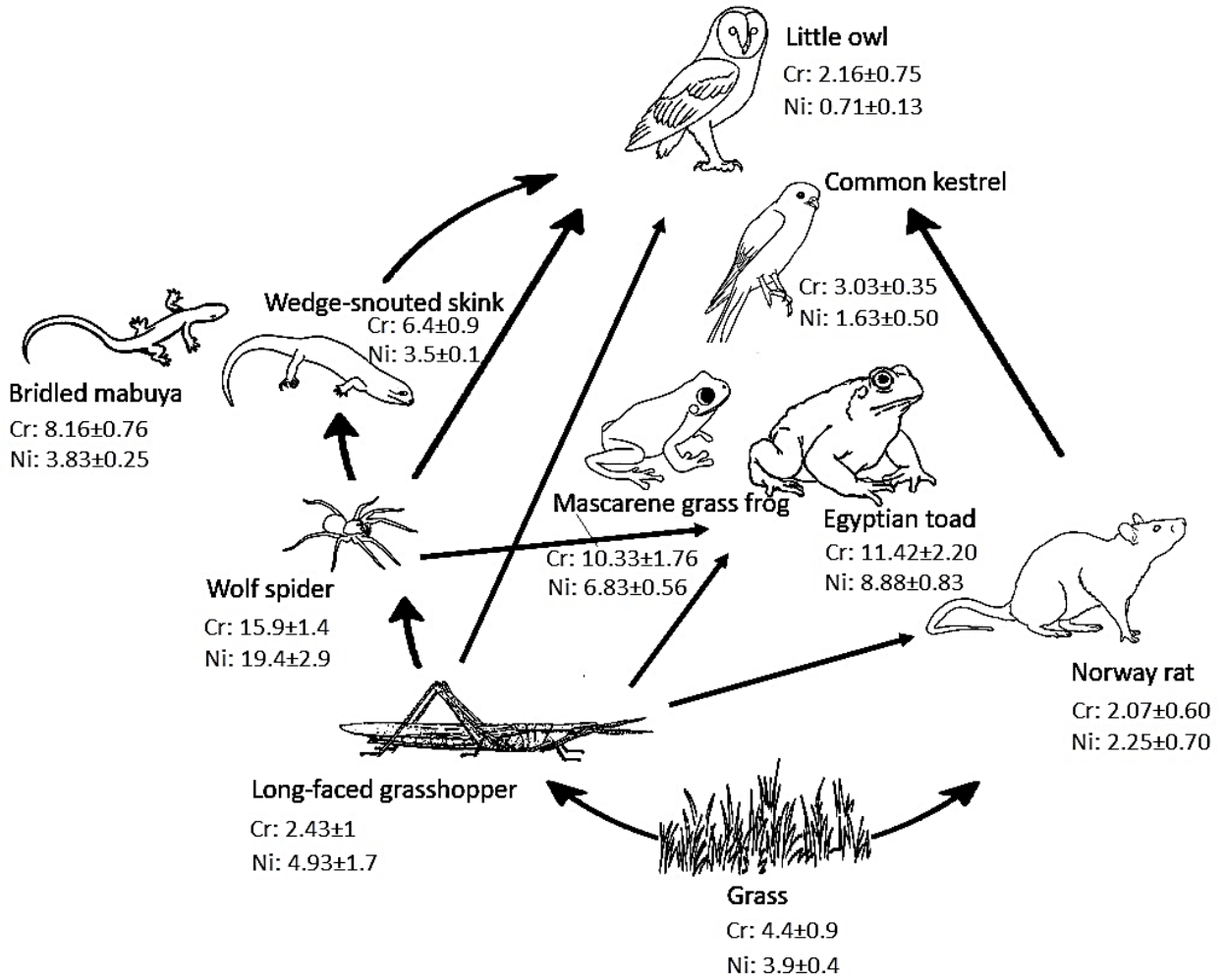
C



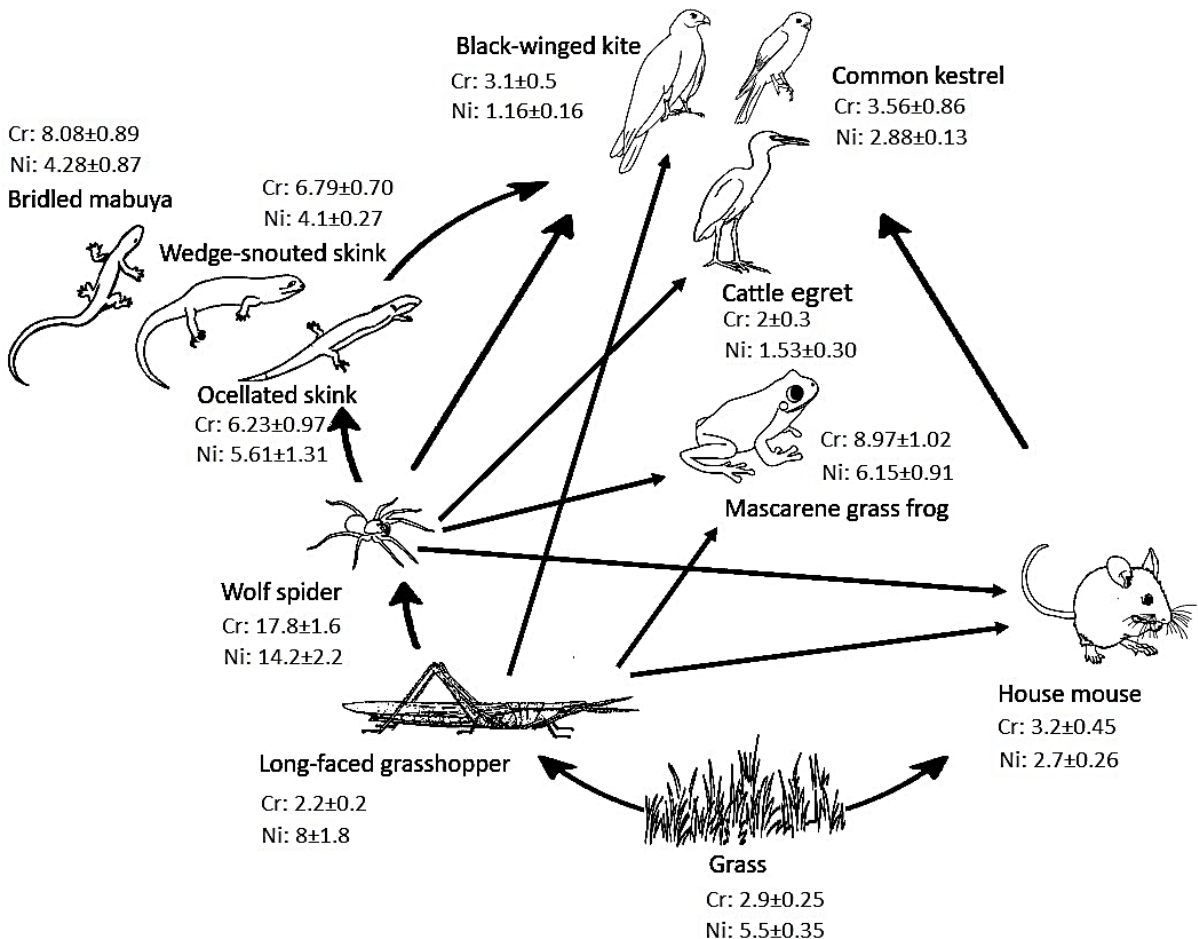
D

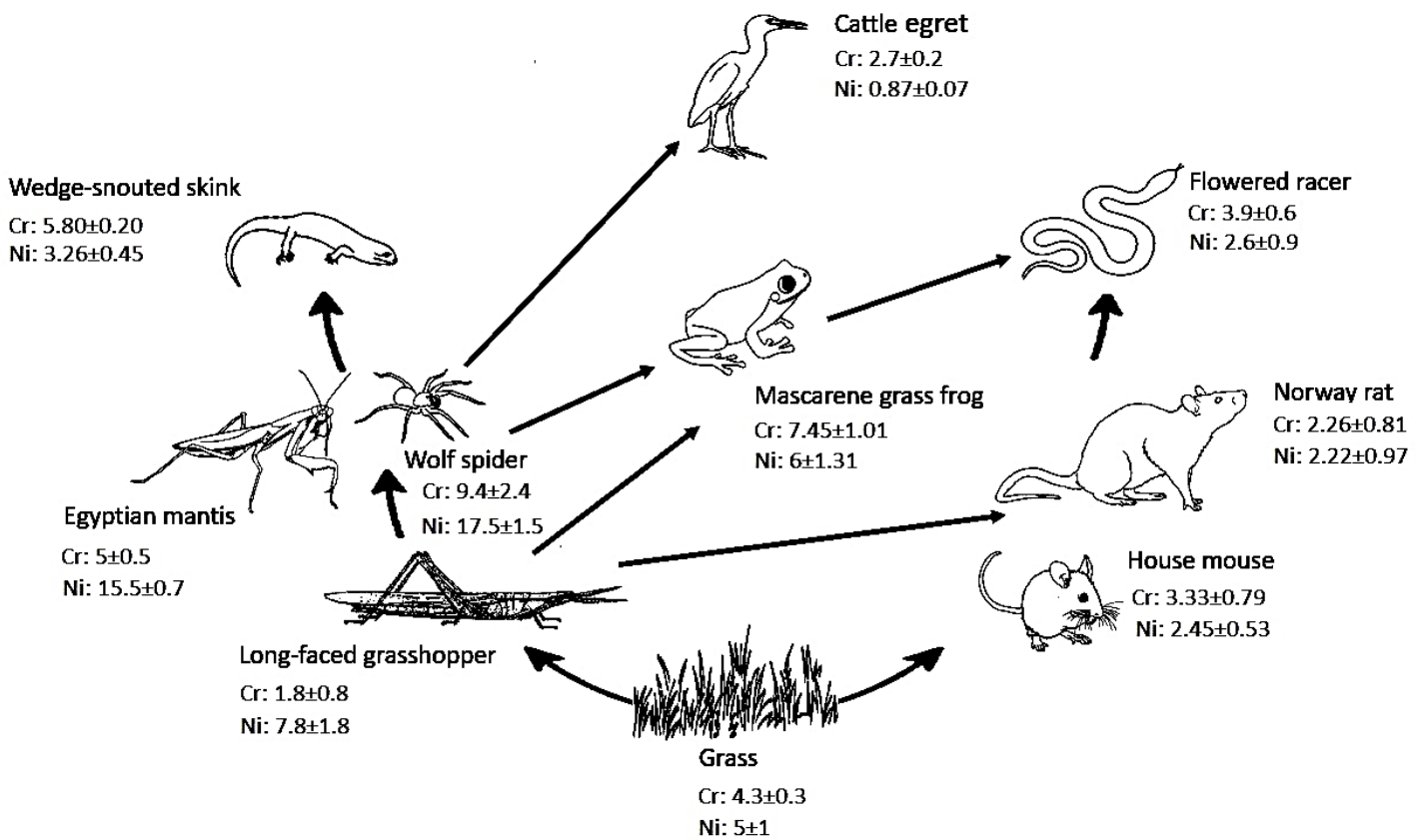


E



F



G

Supplementary material S7. Putative trophic interactions among the species in the trophic chain (flora and fauna), collected from the seven localities along a pollution gradient (sites A–G, with site A being the pollution source) in El-Tebbin area (Egypt). Chromium (Cr) and Nickel (Ni) concentrations measured from the species are presented as mean ± SD in mg/kg dry mass.

A: El Shobak, **B:** El Shobak, **C:** El-Sharqi, **C:** El Shurafa, **D:** Kafr Turkhan, **E:** Ghammazah Al Kubra, **F:** Al Ikhsas Al Qiblyyah, and **G:** Arab Ghammazah Al Kubra.

Supplementary Material 8. Ratio of Cr and Ni concentrations in soil, plant and animals from the polluted site (A: El Shobak) to gradually distant sites (D: Kafr Turkhan and G: Arab Ghammazah Al Kubra).

Taxon	Cr		Ni	
	Ratio A/D	Ratio A/G	Ratio A/D	Ratio A/G
Soil	1.4	1.5	1.1	1.3
Plant	1.0	1.2	2.3	7.2
Long-faced grasshopper	2.8	3.2	1.3	4.6
Wolf spider	1.2	2.8	1.2	22.0
Egyptian toad	0.91	–	1.1	–
Forskal sand snake	–	–	1.2	–
Cattle egret	0.92	0.75	0.59	10.2
House mouse	1.6	1.4	0.89	5.3
Norway rat	0.68	0.91	1.5	3.6