



## Assimilation and retention of selenium and other trace elements from crustacean food by juvenile striped bass (*Morone saxatilis*)

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**ABSTRACT:** Estimates of the assimilation and retention of trace elements from food by fish are useful for linking toxicity with the biogeochemical cycling of these elements through aquatic food webs. Here we use pulse-chase radiotracer techniques to estimate the assimilation and retention of Se and four trace metals, Ag, Am, Zn, and Cd, by 43- and 88-d-old juvenile striped bass, *Morone saxatilis*, from crustacean food. Brine shrimp nauplii, *Artemia franciscana*, or adult copepods, *Acartia tonsa*, were fed radiolabeled diatoms and then fed to juvenile striped bass. Assimilation efficiencies (AEs  $\pm$  SD) for 43-d-old fish were  $18 \pm 2\%$ ,  $6 \pm 1\%$ ,  $23 \pm 4\%$ ,  $33 \pm 3\%$ , and  $23 \pm 2\%$  for Ag, Am, Cd, Se, and Zn, respectively. For 88-d-old fish, the AEs were  $28 \pm 1\%$ ,  $42 \pm 5\%$ , and  $40 \pm 5\%$  for Cd, Se, and Zn, respectively. The higher AEs in the older fish may result from longer gut passage times for larger fish. The 44-d-old fish excreted  $5 \pm 0.8\%$ ,  $4 \pm 2.0\%$ ,  $7 \pm 0.3\%$ ,  $9 \pm 0.4\%$ , and  $1.3 \pm 0.9\%$  of the Ag, Am, Cd, Se, and Zn, respectively, they ingested from food per day, whereas the 88-d-old fish excreted  $3 \pm 1.0\%$ ,  $8 \pm 0.5\%$ , and  $3 \pm 0.5\%$  of the assimilated Cd, Se, and Zn per day, respectively. Predictions of steady state Se concentrations in juvenile striped bass tissues made using a biokinetic model and the measured AE and efflux rates ranged from 1.8 to 3.0 mg Se g<sup>-1</sup> dry wt for muscle tissue and 6.8 to 11.6 mg Se g<sup>-1</sup> dry wt for gut tissue. These predictions agreed well with average values of 2.1 and 13 mg Se g<sup>-1</sup> dry wt measured independently in North San Francisco Bay, where elevated Se concentrations are of concern. The model results imply that the planktonic food web, including juvenile striped bass, does not transfer Se as efficiently to top consumers as does the benthic food web.

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