

JOHN STEFFEN, Dept of Biology, Shepherd University, Shepherdstown, WV, 25443. You are MORE than what you eat! The dietary basis to painted turtle spot and stripe color.

Carotenoid pigments are important condition-dependent indicator traits that generate sexually selected color in birds, fish, and reptiles. One reason carotenoids are indicator traits is because the identity and amount of carotenoid pigments ingested in an animal's food are often different from amounts and identities of carotenoids deposited in the animal's skin. Painted turtle spots and stripes are pigmented by yellow xanthophylls and orange-red keto-carotenoids. The objective of this study was twofold: to feed male and female painted turtles nutritious diets with-, or without-, moderate amounts of orange beta-carotene, and investigate 1) how beta-carotene access changed turtle color in male and female turtles, and 2) whether the identities and concentrations of carotenoids in the blood of turtles given access to— or deprived of—beta-carotene differed from those ingested and those deposited in the skin. Results showed that orange beta-carotene access reduced overall brightness of yellow chin stripes and post orbital spots, reduced ultra-violet chroma in the yellow post-orbital spots, and increased yellow chroma in the orange-red fore-limb stripes. There was no sex effect to these color changes. Moreover, beta-carotene access significantly increased circulating levels of beta-carotene only, and did not increase circulating levels of lutein, zeaxanthin, beta cryptoxanthin or neoxanthin. There was no sex effect to the circulating carotenoid levels. Nevertheless, because the identity of carotenoids in the skin differs from the carotenoids circulating in the blood, the yellow, orange and red colors of painted turtle stripes and spots are in part the result of physiological conversion of available carotenoids.