

COMMENTARY

ALAN H. BRUSH

Department of Physiology and Neurobiology
 Box U-42, Room TLS 416
 75 North Eagleville Road
 University of Connecticut
 Storrs, Connecticut 06269-3042 USA

A POSSIBLE SOURCE FOR THE RHODOXANTHIN IN SOME
 CEDAR WAXWING TAILS

UNA POSSIBLE FUENTE DE RHODOXANTHIN EN LOS COLAS DE LOS
 BOMBYCILLA CEDRORUM

Cedar Waxwings (*Bombycilla cedrorum*) are highly frugivorous and food selection is apparently opportunistic. In the field, waxwings take the most abundant berries (McPherson, Condor 90:294-306, 1988). In laboratory experiments they prefer small, red berries (McPherson, Anim. Behav. 36:961-969, 1987). Food composition is the only known source of the precursors for the pigments that are deposited in the plumage. Recently, Hudon and Brush (J. Field Ornithol. 60:361-368, 1989) reported that a color change in the retrices of waxwings in the northeast was probably produced by a recent change in the diet.

The changes we described have been relatively rapid and widespread in the northeast. Our success in demonstrating the cause of the color change was incomplete as we could not at that time identify the source of the pigment responsible for the color change. Subsequently we were able to identify a series of likely possibilities among red berry-producing plants. The criteria used, besides berry color, were that the plants were widespread in the northeast, produced their berries close to or during the molt period of the birds and were at least locally abundant. Because individuals with modified plumage were found almost exclusively in the northeast and have appeared within the past 30 yr, we suspected the plants were introduced by humans. The state of the Connecticut Department of Environmental Protection was extremely helpful as a source of both suggestions and plant material.

Of seven plant species that met our criteria, the pigment in Cedar Waxwing feathers was found only in Morrow's Honeysuckle (Table 1). This plant was introduced from Japan and is used as a roadside ornamental. Rhodoxanthin (3'3'-diketo-retrodehydro-β-carotene) has been reported in the berries of two other Eurasian species of honeysuckle (Rahman and Egger, Z. Naturforsch. 28:434-436, 1973). Because rhodoxanthin is deposited directly in feathers and not modified metabolically, it provides an ideal marker.

Received 23 Feb. 1990; accepted 23 Mar. 1990.

TABLE 1. Presence of rhodoxanthin in ornamental plants recently introduced in the north-eastern United States.

Plant	Presence of rhodoxanthin
Native bittersweet (<i>Celestrus scandeus</i>)	no
Asiatic bittersweet (<i>C. orbiculatus</i>)	no
Morrow's honeysuckle (<i>Lonicera morrowii</i>)	yes
Japanese barberry (<i>Berberis thunbergii</i>)	no
Multiflora rose (<i>Rosa multiflora</i>)	no
Autumn olive (<i>Elaeagnus umbellata</i>)	no
Winged euonymus (<i>Euonymus alatus</i>)	no