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## AVIAN USE OF CHINESE TALLOW SEEDS IN COASTAL TEXAS

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**ABSTRACT**—The Chinese tallow tree (*Sapium sebiferum*) (Euphorbiaceae) was introduced into coastal Texas in the late 1800s and forms monotypic woodlands once naturalized. However, few studies have examined avian use of tallow seeds during fall migration in coastal Texas. We documented use of Chinese tallow seeds and compared foraging frequency on Chinese tallow seeds among permanent, summer, and winter residents and migrants. We also tested the hypothesis that Chinese tallow seed germination was enhanced by foraging activities of yellow-rumped warblers (*Dendroica coronata*), the most common species observed foraging on tallow seeds. During fall migration 1995 and 1996, 24 species were observed foraging on Chinese tallow seeds. Yellow-rumped warblers and Baltimore orioles (*Icterus galbula*) accounted for 72% of all tallow seed feeding observations. Winter residents foraged upon Chinese tallow seeds more frequently ( $P < 0.001$ ) than summer residents, permanent residents, and migrants. Chinese tallow seed germination rates did not vary ( $P = 1.0$ ) between seeds collected after yellow-rumped warbler feeding activities (2.5%) and those collected directly from seed bearing trees (2.5%). The high levels of fatty acids and oils in Chinese tallow seeds may be more important for winter residents than migrants or other groups of birds. Although germination is not enhanced by yellow-rumped warbler feeding activities, they may serve as dispersal agents, potentially enhancing future tallow expansion.

**RESUMEN**—El árbol Chino de sebo (*Sapium sebiferum*) (Euphorbiaceae) fue introducido en la costa de Texas a fines del siglo XIX, y estableció bosques monotípicos una vez que se aclimató. Sin embargo, pocos estudios han examinado el uso de sus semillas por aves durante su migración otoñal por las costas de Texas. Documentamos el uso de las semillas del árbol Chino de sebo y comparamos la frecuencia de consumo de estas semillas entre residentes permanentes, de verano, de invierno, y emigrantes. Adicionalmente, probamos la hipótesis de que la frecuencia de germinación de las semillas del árbol Chino de sebo aumentó por el consumo del chipe rabadilla-amarilla (*Dendroica coronata*), la especie más comúnmente observada consumiendo sus semillas. Durante las migraciones de otoño de 1995 y 1996, 24 especies fueron observadas consumiendo semillas del árbol Chino de sebo. El chipe rabadilla-amarilla y el bolsero de Baltimore (*Icterus galbula*) representaron 72% del total de observaciones de consumo de semillas del árbol Chino de sebo. Los residentes de invierno fueron observados consumiendo sus semillas más frecuentemente ( $P < 0.001$ ) que los residentes de verano, residentes permanentes y emigrantes. La tasa de germinación de las semillas del árbol Chino de sebo no varió ( $P = 1.0$ ) entre semillas colectadas luego de ser consumidas por el chipe rabadilla-amarilla (2.5%) y semillas colectadas directamente del árbol (2.5%). Los altos niveles de ácidos grasos y aceites en las semillas del árbol Chino de sebo pueden ser más importantes para los residentes de invierno que para los emigrantes y otros grupos de aves. Aunque el consumo por el chipe rabadilla-amarilla no afecta la tasa de germinación, estos podrían servir como agentes de dispersión, quizás incrementando la expansión del árbol Chino de sebo.

Chinese tallow (*Sapium sebiferum*) (Euphorbiaceae) was introduced from China into the United States in the 1800s and has established in habitats throughout the southeastern United States (Scheld et al., 1984; Bruce et al.,

1997; Renne et al., 2000). This exotic invasive tree continues to expand its range and dominates more than 200,000 ha along the upper Texas Coast (Natural Resources Conservation Service, 1993). Tallow is fast growing and often