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DIET OF THE EXOTIC AMERICAN BULLFROG, *LITHOBATES CATESBEIANUS,* IN A STREAM OF NORTHWESTERN BAJA CALIFORNIA, MEXICO

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Abstract.—We studied the diet of the exotic American bullfrog (*Lithobates catesbeianus*) in Arroyo San Carlos, located in northwestern Baja California, Mexico, during spring and summer 2009. Analysis of 64 stomach contents revealed 15 prey types, of which the exotic red crayfish (*Procambarus clarkii*) and terrestrial isopods (Armadillidiidae) were the most significant items (according to an index of their relative importance), making up 64% and 31% of the bullfrog's diet, respectively. Diet differed between the sexes, with red crayfish eaten more frequently by males (84%) than females (69%). Bullfrog diet changed with body size, with smaller individuals (≤86 mm) containing woodlice (61%) as the dominant prey type and larger individuals (≥129 mm) containing red crayfish (97%) as the dominant prey type. The average prey size consumed was significantly correlated with body length.

Resumen—Estudiamos la dieta de la rana toro americana exótica (*Lithobates catesbeianus*) del Arroyo San Carlos, noroeste de Baja California, México, durante la primavera y verano de 2009. Análisis de 64 contenidos estomacales revelaron 15 tipos de presas, de los cuales el langostino rojo exótico (*Procambarus clarkii*) y el isópodo terrestre (Armadilliidae) fueron las presas más significativas en términos del índice de importancia relativa, con 64% y 31% de su dieta, respectivamente. La dieta fue diferente entre sexos siendo el langostino rojo (84%) más frecuentemente consumido en los machos que en las hembras (69%). La dieta de la rana toro cambió con la talla corporal, dominando los isópodos terrestres (61%) en ejemplares ≤86 mm y los langostinos rojos (97%) en ejemplares ≥129 mm. El tamaño promedio de presa consumida por la rana toro presentó una correlación significativa con la longitud corporal.

The American bullfrog, *Lithobates catesbeianus* (Shaw, 1802), has the largest range of any North American amphibian and is reported to be native across most of the United States east of the Rocky Mountains to Nova Scotia and northeastern Mexico (Casper and Hendricks 2005). Over the past several decades, American bullfrogs (hereafter, also referred to as bullfrogs) have been introduced as a food resource in many areas throughout the world (Storer 1922, Moyle 1973, Bury and Whelan 1984, Giovanelli et al. 2008), including the western continental United States of America (California and Colorado), Hawaii, western Canada (Jancowski and Orchard 2013), northwestern Mexico, Caribbean islands, South America, Asia (Bury and Whelan 1984, Kupferberg 1997), and some European countries (Stumpel 1992, Thiesmeier et al. 1994). Bullfrogs have also been introduced to the northern region of Baja California (Grismer 2002, Mahrdt et al. 2002) and several oases of Baja California Sur (Grismer 2002, Luja and Rodríguez-Estrella 2010).

The American bullfrog is the largest frog in North America, reaching 185 mm in length (Blair 1957). This species establishes in new areas relatively easily due to its generalist diet, wide ecological plasticity, and high competitive capacity (Maeda and Matsui 1999), which also promotes the extirpation or decline of populations of native anurans (Moyle 1973, Hammerson 1982, Hayes and Jennings 1986, Lannoo et al. 1994, Rosen and Schwalbe 1995, Kupferberg 1997, Kiesecker and Blaustein 1998, Luja and Rodríguez-Estrella 2010).

Although bullfrogs have become established in some oases of the Baja California Peninsula (BCP) and are associated with the extirpation of native anurans in many of these oases (Luja and Rodríguez-Estrella 2010), no study has evaluated the diet composition of this exotic frog in the BCP. Thus, we analyzed the diet composition of the American Bullfrog during the spring and summer from an established population in northwestern Baja California, México, in order to provide information on its

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