

Urban White-tailed Jackrabbits (*Lepus townsendii*) Eat Spike Plants (*Cordyline australis*) in Winter

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We observed White-tailed Jackrabbits (*Lepus townsendii*) eating spike plants (*Cordyline australis*), a non-native ornamental garden plant, in our front yard within the city of Edmonton, Alberta. We have noted this persistent behaviour every winter between 2006–2007 and 2011–2012. By late January, the plants were usually eaten right down to the stem base. We suggest that the White-tailed Jackrabbits turn to this food source in winter when more preferred foods are lacking, are in short supply, or are not as readily accessible. Our observations add another plant species to the list of non-native plants consumed by White-tailed Jackrabbits.

Key Words: *Lepus townsendii*, White-tailed Jackrabbit, diet, ecology, animal behaviour, urban wildlife, Edmonton, garden plants, *Cordyline australis*.

Each winter between 2006–2007 and 2011–2012, we have observed White-tailed Jackrabbits (*Lepus townsendii*) eating spike plants (*Cordyline australis*), a non-native ornamental garden plant, in our front yard within the city of Edmonton, Alberta. The White-tailed Jackrabbit is native to interior North American (Banfield 1974), and the Edmonton area is near the northwestern limit of its range (Smith 1993). The preferred habitat of the White-tailed Jackrabbit is open grasslands, including native prairie, pastures, and cultivated grain fields (Banfield 1974). The White-tailed Jackrabbit expanded its range during the previous century as more suitable habitat became available, primarily as a result of human activities (Wood et al. 2006). At its northern limit, the White-tailed Jackrabbit has taken advantage of cleared and more open landscapes in the Parkland ecoregion (Natural Regions Committee 2006), which includes the Edmonton area (Wood et al. 2006).

White-tailed Jackrabbits were observed in our urban neighbourhood in the west end of Edmonton (53°31.3'N, 113°33.6'W). The neighbourhood, Valleyview, is bordered to the east by the North Saskatchewan River valley, which forms part of an extensive urban parkland and greenspace within the city. It is an older residential neighbourhood that was mostly developed in the 1960s. Most older homes are set well back from the lot lines and have mature landscaping, providing plenty of open space, with cover provided by horticultural perennials, shrubs, large conifers, and deciduous trees. Neighbourhood roads are usually quiet and carry little traffic, mostly vehicles travelling at low speed.

We have three large wooden barrels (diameter of approximately 65 cm) in the front yard of our house, and we plant them with annuals in late spring each year (Figure 1). The centrepiece of each arrangement is a spike plant. Immature forms of *Cordyline australis* (Cabbage Tree), which is native to New Zealand, have

become popular annuals under the common name “spikes” or spike plant (also known as a dracaena or cane plant). We also plant one spike plant in a raised brick-edged flowerbed immediately adjacent to the front steps of the house. The local garden centre sells these plants as *Dracaena indivisa*. However, the *Dracaena* genus was synonymized with *Cordyline* (Dunlop 2009; NZ Plant Conservation Network 2012*) and, based on vegetative characters, these container plants are most likely cultivars of *Cordyline australis* (Figure 1a) (Armitage and Clarkson 2008). Spike plants often remain green after frost kills the other annuals. In their native New Zealand habitat, *Cordyline* species are perennials but are susceptible to cold damage when temperatures fall below about –10°C (Harris et al. 2001). In Edmonton, with average winter temperatures around –11.8°C (National Climate Data and Information Archive 2012*), spike plants do not survive over the winter outdoors.

White-tailed Jackrabbits usually start consuming spike leaves after the first snowfall. The White-tailed Jackrabbits start with the plant in the container furthest from the house (Figure 1d). As that plant is consumed and winter conditions become more severe, the plants in the containers closer to the house are gradually consumed. The plant in the flowerbed has never been eaten. By late January, all the container plants are eaten right down to the stem base. On 13 January 2007, we watched one White-tailed Jackrabbit for about 30 minutes in the early evening, just after dark. It hopped up onto one of the barrels by the driveway and browsed the remaining leaf bases on the spike plant (by this date, there was little foliage left). Tracks and droppings left on and around the barrel and the adjacent barrels provide evidence of the White-tailed Jackrabbits' feeding behaviour (Figure 1b). We have seen this feeding behaviour repeated on several occasions (Figure 1c).



FIGURE 1. Barrels (diameter ca. 65 cm, height ca. 44 cm) containing *Cordyline australis* plants eaten by White-tailed Jackrabbits, 2006-2007 to 2011-2012. 1a) Spike foliage next to the solar light has fallen over after frosts but is still green, 23 December 2011. 1b) Plant eaten to the stem base, 14 January 2007. Note tracks and droppings. 1c) Clear outline of White-tailed Jackrabbit's body in the snow, 24 December 2008. 1d) Following heavy snowfall in late December and early January, foliage in the barrel farthest from the house (upper part of photograph) has been consumed, 9 January 2011. Image credits: A. B. Beaudoin and Y. Beaudoin.

We have not seen White-tailed Jackrabbits eating spike plants during the summer and have only rarely noticed any browsing damage to the plants before winter. Our supposition is that White-tailed Jackrabbits use this food source in winter, when more preferred foods are lacking, are in short supply, or are not as readily accessible. Far from specializing on a few native plants, White-tailed Jackrabbits are generalists in their food consumption, taking advantage of a variety of different food sources, including woody shrubs and non-native forage crops such as Alfalfa (*Medicago sativa*) (Bear and Hansen 1966; Brunton 1981; Swihart and Yahner 1983; Lim 1987). Presumably, this accounts in part for their broad geographic range and success in disturbed open habitats. The winter consumption of spike plants

is thus consistent with White-tailed Jackrabbits' broad dietary habits.

Cambie and Ferguson (2003) report nutritive values for *Cordyline australis* roots, stems, and tops (that is, foliage) derived from a study by Fankhauser (1986). No toxins are reported. The data indicate that the tops are lower in carbohydrate than the roots (8.8% compared to 23.6%) but contain more protein (1.4% compared to 0.4%) and have a modest caloric yield (283 kJ/100g). In comparison, alfalfa hay has a caloric yield of 922.4 kJ/100g (Stanton and LeValley 2010*). The White-tailed Jackrabbits are therefore getting some nutritional benefit by consuming the spike plant material.

Our observations of White-tailed Jackrabbits' behaviour and winter feeding habits, though admittedly lim-

ited, suggest several intriguing avenues for further research. An analysis of faecal pellets would provide more insights into the relative contribution of non-native horticultural plants to their overall diet, would identify any other horticultural plants being consumed, and would indicate whether spike plants are preferentially consumed. Investigation of the nutritional composition of native and non-native plants consumed by White-tailed Jackrabbits could help in the assessment of the long-term viability of these urban populations and the persistence of this species near the limit of its range.

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