

Lerp-feeding behaviour of the Australian King-Parrot *Alisterus scapularis* in suburban Sydney, New South Wales

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Abstract. The staple food of the Australian King-Parrot *Alisterus scapularis* is fruits and seeds, in addition to nectar and insects, but the extent of use of lerps is poorly known. Here we describe and illustrate feeding behaviour of the King-Parrot on lerps and nymphs of the Aphalaridae psylloid *Eucalyptolyma* sp. The lerps were spread over young leaves of a Rough-barked Apple *Angophora floribunda*, and the King-Parrots took one leaf delicately between the mandibles at a time and scraped the lerps and the nymphs with the tongue. This observation of lerp-feeding by King-Parrots contributes to a better understanding of lerps as a food resource, including the seasonality and the frequency of use by parrots and other lerp-feeding birds.

Introduction

Several Australian parrots, rosellas and lorikeets (Family Psittaculidae) are known to take lerps from *Eucalyptus* leaves as a food source (Higgins 1999; Endersby 2005; Adams 2018; Sazima & Sazima 2021). Lerps are structures produced by the nymphs of hemipteran insects of the superfamily Psylloidea, usually referred to as lerp bugs (Basden 1970; Burckhardt & Ouvrard 2012). Lerps are rich in starch and sugars and low in proteins and fats (Gilby *et al.* 1976; Endersby 2005; Faast *et al.* 2020) and are an animal-derived addition to the diet of fruits, seeds, and nectar of Psittaculidae and other nectar-feeding birds, e.g. Meliphagidae (Paton 1980; Endersby 2005).

The diet of the Australian King-Parrot *Alisterus scapularis* is composed mostly of seeds and fruits, in addition to nectar, flowers, and insects (Forshaw & Cooper 1981; Barker & Vestjens 1989; Higgins 1999; Adams 2018; Menkhorst *et al.* 2019). Although there are reports of Australian King-Parrot foraging behaviour on seeds and fruits, lerps are mentioned only briefly (compiled in Higgins 1999). We are unaware of a published description of its foraging on lerps, and herein we describe and illustrate the feeding behaviour of the Australian King-Parrot on psylloid lerps *Eucalyptolyma* sp. (Aphalaridae, Spondylaspidinae) in suburban Sydney, New South Wales (NSW).

Methods

We observed a group of Australian King-Parrots foraging at the margin of Louise Sauvage Pathway (33°50'S, 151°04'E, 5 m above sea level), on a degraded area with a eucalypt stand bordered by a lawn and a marsh, at Richmond, NSW, on 3 September 2024 (34 minutes), and a single individual at the same location on 9 September 2024 (14 minutes). Throughout the observational sessions we used *ad libitum* sampling (Altmann 1974), which meant that birds were observed for the duration of the foraging bouts with a focus on any feeding behaviours displayed. We documented the parrots' feeding behaviour with a 55–250-mm-lens digital camera. Postures used by the parrots while feeding follow Stanford & Lill (2008), the

basic ones being perching upright, perching leaning, and hanging inverted.

Results

The group of three King-Parrots observed on 3 September was composed of an adult male and two juvenile males that foraged on lerps on a Rough-barked Apple *Angophora floribunda* ~15 m tall. The single juvenile male observed on 9 September foraged on another Rough-barked Apple ~20 m tall. The grouped birds were feeding on branches ~4–5 m above ground, and one individual was more easily



Figure 1. A juvenile male Australian King-Parrot hangs inverted and holds between the mandibles a Rough-barked Apple leaf, scraping the psylloid lerps *Eucalyptolyma* sp. with the tongue clearly visible. Photo: Ivan and Marlies Sazima



Figure 2. Leaves of the Rough-barked Apple, viewed from the underside, infested by psyllid lerps *Eucalyptolyma* sp. Photo: Ivan and Marlies Sazima

viewed (Figure 1), the others being partially hidden by the branches and leaves. The single bird was feeding at ~8–9 m above ground level. The Rough-barked Apples were not flowering and the underside of their young leaves was infested by psyllid lerps *Eucalyptolyma* sp. (Figure 2). The parrots foraged on the lerps in a distinct way, mostly using a hanging inverted posture (Figures 1, 3), although perching upright – reaching and perching upright – twisting were used as well. The birds usually grasped the leaf within the bill and began to work on



Figure 3. (a) A juvenile male Australian King-Parrot hangs inverted and holds a leaf of the Rough-barked Apple between the mandibles, scraping off the psyllid lerps *Eucalyptolyma* sp. with the tongue. (b) The same individual scrapes the next leaf to feed on the lerps. Photos: Ivan and Marlies Sazima

it using both mandibles (Figures 1, 3). The leaves remained on the branches, and the parrots delicately passed the leaves lengthwise between the mandibles, scraping the lerps off with the tongue. The parrots clambered from one branch to another, and occasionally took a branch with the left or right foot and pulled the branch near the bill to scrape the lerps off the leaves (Figure 4). In the lerp-eating process, a few branch pieces fell under the tree and, upon inspection we noted that the lerps had been removed and no nymphs remained. After the lerp-feeding bout, the parrots moved up to thicker branches, cleaned their bills and preened before flying off. The observation of the group lasted from 0921 to 0955 h (34 min.) from the time that we spotted the foraging birds to their retreat, whereas the observation of the single individual lasted from 0921 to 0935 h (14 min.) before it flew off.

Discussion

To our knowledge, this is the first illustrated description of the Australian King-Parrot foraging on psyllid lerps *Eucalyptolyma* sp. (Aphalaridae, Spondyliaspidae). A noteworthy feature of the parrots' behaviour was their delicate handling of a leaf between the mandibles and removing the lerps with the tongue. As we found no psyllid nymphs on the branch pieces discarded below the tree, we

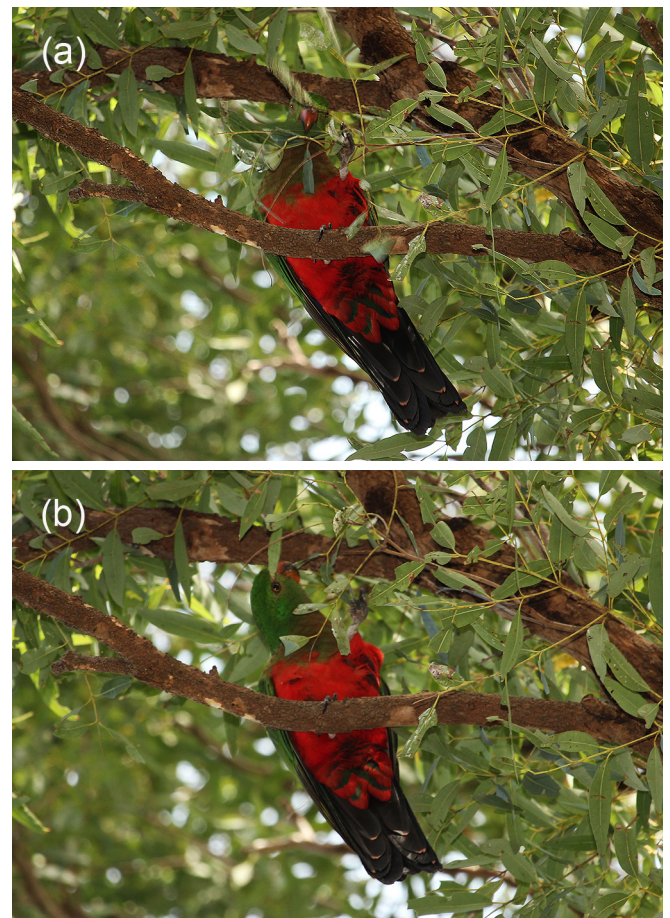


Figure 4. (a) A juvenile male Australian King-Parrot perches upright-twisting and grasps a branch of the Rough-barked Apple with the left foot, while holding a leaf between the mandibles and scraping off the psyllid lerps *Eucalyptolyma* sp. with the tongue. (b) The same individual releases the branch while still holding another leaf between the mandibles and scraping off the lerps. Photos: Ivan and Marlies Sazima

believe that both the starchy lerp and the nymph inside were eaten by the parrots, possibly because of the small size of both the lerps and the nymphs. The Musk Lorikeet *Glossopsitta concinna* swallows *Lasiopsylla* sp. lerps with nymphs, but these are substantially larger than those of *Eucalyptolyma* sp. (Sazima & Sazima 2021). On the other hand, when feeding on *Lasiopsylla rotundipennis* lerps, the Rainbow Lorikeet *Trichoglossus moluccanus* uses its tongue to extract the honeydew produced by the nymphs and discards the lerp, but it is unclear if the bird also eats the nymph (Endersby 2005).

Lerps contain starch and sugars, are energy-rich (Basden 1970; Gilby *et al.* 1976; Endersby 2005; Faast *et al.* 2020), and we regard them as an animal-derived addition to the diet of seed-, fruit-, and nectar-eating birds including Australian King-Parrots and other Psittaculidae species and Meliphagidae (Forshaw & Cooper 1981; Barker & Vestjens 1989; Higgins 1999; Endersby 2005; Adams 2018; Menkhorst *et al.* 2019). It would be instructive to document lerp-foraging across Australian members of the Family Psittaculidae to gain a better understanding of the food link between these birds and lerps, including the seasonality, the frequency of use of this energy source, and variations in lerp-collecting behaviour, which seems to vary greatly between bird species and lerp type (e.g. Jenkins 1969; Nichols 1978; Endersby 2005; Sazima & Sazima 2021; this paper).

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