

Notes on diet and foraging behaviour of the Spectacled Finch *Callacanthis burtoni* in the western Himalaya, India

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Introduction

The Spectacled Finch *Callacanthis burtoni* is truly one of a kind: a monotypic genus and species endemic to the Himalayas. As a restricted-range species, its breeding range and habitat is limited to the Endemic Bird Area of the western Himalayas (BirdLife International 2020). Its status is described as locally common to scarce, but widespread in limited biotope (Roberts 1992). Outside the breeding season, it is considered to be erratic or seasonal in occurrence in some parts of its range (Clement et al. 1993). Here, I present some field observations, made during 2012–2019, with respect to the diet and foraging behaviour of the species in different habitats in its non-breeding, breeding, and post-breeding seasons. In this note I cover the western Himalayan Indian Union Territory of Jammu & Kashmir, and States of Himachal Pradesh, and Uttarakhand.

Observations

Observations from habitats in nonbreeding season (November to April)

On 20 March 2012, while birding in Landour (30.465°N, 78.094°E; 2,210 m asl), near Mussoorie, Uttarakhand, I came across a 10 m tall bare tree with a rough, scaly-textured bark. An orange-red sap was dripping from its branches and also collecting at their distal ends. The tree was identified as large-leaved dogwood *Cornus macrophylla*, whose fruits are consumed by several birds, especially grosbeaks *Mycerobas* spp. The forest in the area is dominated by deodar *Cedrus deodara* with patches of ban-oak *Quercus leucotrichophora*, and rhododendron *Rhododendron arboreum*. At 1420 h, while scanning the tree for birds, I chanced upon two male Spectacled Finches perched on it. The birds were feeding quietly on the orange-red sap while perched 4 m up on a branch at a fork that was visibly moist and oozing sap. They were drinking the sap (in the manner most birds drink water), keeping their bills stuck to the bark for a few seconds (to fill it with sap), then raising their heads to swallow the liquid. They repeated this a few times [24]. Both birds were engrossed thus, for over a minute, during which time I observed them closely from below. On 07 April 2012 I watched two Spectacled Finch females, under a patch of deodar trees at the Everest Hill area (30.463°N, 78.018 °E; 2,000 m asl) in Mussoorie, drinking water on the ground at the mouth of a well. Both birds were crouched in such a way that their bellies touched the ground while they drank [25].

On 27 December 2016 I watched two Spectacled Finch females foraging on the ground amidst disintegrated cones of *C. deodara*, which were scattered all over the forest-floor at the

ridge above Gallu Temple (32.252°N, 76.318°E; 2,170 m asl), near Dharamkot, Himachal Pradesh. This was near a rainwater-harvesting tank, and they were feeding on the conifer's seeds.



24. A male Spectacled Finch feeding on sap of large-leaved dogwood.



25. A female Spectacled Finch drinking water on the ground beside a well.

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On 28 February 2017, five birds were observed feeding on the ground at Bhora village (31.288°N, 77.443°E; 2,175 m asl), near Narkanda, Himachal Pradesh. Three adult males and two females foraged on the ground, amidst a scattering of disintegrated cones of *C. deodara* and blue pine *Pinus wallichiana* (Sharma 2017). The birds were very confiding and allowed prolonged observations, feeding on the cone-scales in the manner described in the following section.

In the dry winter season, in non-breeding habitats at lower elevations, the species was found near artificial sources of water (e.g., wells, tanks, or near villages). Their intake of liquid, in the form of tree sap, which may possibly be of nutritional value, has not been documented before.

Observations from habitats in breeding and post-breeding seasons (May to October)

During 22–23 August 2013, two family parties of Spectacled Finches, with two fledglings each, were recorded feeding solely on fruits of Wallich's crane's-bill *Geranium wallichianum* in Rakchham-Chitkul Wildlife Sanctuary, Himachal Pradesh (Sharma 2013a; Sharma & Singh 2016). The fledglings were familiar with the fruit, frequently holding it in their bills but unable to consume it. They were entirely dependent on the parents for feeding them by regurgitation, either by following their parents foraging for the fruit on the ground, or by waiting at a vantage point, uttering their constant begging calls as documented in Sharma & Singh (2016), and in videos (Sharma 2013b).

On 06 August 2014, in the same area (31.389°N, 78.342°E; 3,300 m asl), three adult males, one female, and one juvenile were observed feeding on fallen conifer seeds scattered on the forest floor. At this elevation the forest was dominated by west Himalayan fir *Abies pindrow* and west Himalayan spruce *Picea smithiana*, with patchy stands of *P. wallichiana*. The birds foraged, assiduously, for the dark red-brown cone-scales. They would pick up each cone-scale at the pointed triangular basal-end in their bills, gleaning and moving slowly, sometimes walking instead of hopping, but always crouched low on the ground, only to pause when consuming the seed removed from the scale. At times, they would drop the scale after vigorously manoeuvring it in their bills, and subsequently pick it up again to successfully remove the seed, before quickly moving on to a fresh cone-scale. Two juveniles were observed later that day, feeding independently, without adult supervision, in a patch of fallen seeds, in the same manner [26]. The juveniles were a uniform brown and showed dark bills and without coloured eyebrows, as described by Sharma & Singh (2016). On 08 August 2014, an adult pair fed on the forest floor in a patch of flowering *Geranium wallichianum* interspersed with fallen fir seeds.



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26. Two juveniles independently feeding on fallen *Abies pindrow* seeds.

On 31 August 2015, while birding and camping at Maruyee Thatch (31.224°N, 77.972°E; 3,365 m asl), en route Chanshal Pass in Himachal Pradesh, two pairs of adult birds were spotted feeding on the forest floor. The forest here was dominated by *Abies pindrow* on the northern aspect, and kharsu oak *Q. semecarpifolia* on the southern, interspersed with bell rhododendron *R. campanulatum*. There was rich herbaceous undergrowth, and narrow channels of rainwater streams. The only human habitation was a family of Van-Gujjars who spent summer on the alpine meadows grazing their buffaloes.

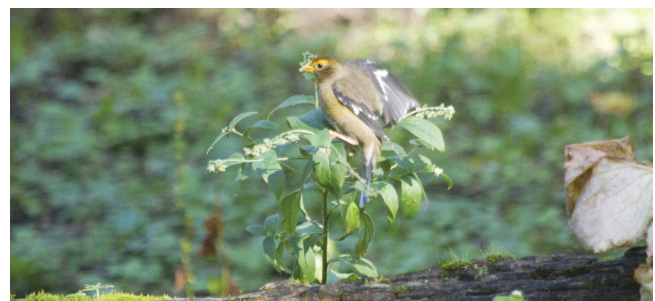
At 0940 h, the female of one pair was observed feeding on the flowering Nepal knotweed *Persicaria nepalensis* which was abundantly flowering on the forest floor [27]. The male of this pair hopped 0.3 m onto a log on the forest floor, beside which a fruiting purple hound's-tongue *Cynoglossum microglochin* grew up to 0.6 m [28]. He then hopped and jumped several times to feed on its the fruits, which were easy to reach, as the flower-stalks of this herb are reflexed. The female's attention was drawn to this herb too and she chased off the male. She then devised a relatively easier method of feeding by jumping onto a flower-stalk of the herb, which bent under her weight; she pinned it underfoot and began feeding on the fruits [29, 30].



27. Female feeding on flowering Nepal knotweed plants.



28. Male hopping to a purple hound's-tongue plant.



29. Female perched on the same purple hound's-tongue plant.



30. Female perched & feeding on the same purple hound's-tongue plant.

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On 01–02 September 2015, I spotted the finches feeding on spurred gentian *Halenia elliptica*, jumping upwards to feed on its fruit as the herb is usually tall. They also fed on fruits of hill geranium *G. collinum*, in the manner as described by Sharma & Singh (2016). The birds usually spent a lot of their time feeding on the ground, allowing prolonged observations of their feeding behaviour. No juveniles were found here.

On 06 October 2015, while hiking in Liddar Valley in Overa-Aru Wildlife Sanctuary, Union Territory of Kashmir, I found five birds at the shepherd settlement of Zaidnag (34.060°N, 75.275°E; 2,400 m asl), near Mandalan village, at the forest's edge. The forest here was dominated by *Abies pindrow* with some stands of *Pinus wallichiana* and *Picea smithiana*, and an understory of grand viburnum *Viburnum grandiflorum* shrubs with a fair amount of undergrowth and large open clearings. At 0830 h, an adult pair, one sub-adult male showing a faint reddish streak on its eyebrow, and two juveniles were found feeding in the undergrowth in a patch of *V. grandiflorum* shrubs with lots of Falconer's thistle *Cirsium falconeri* growing nearby. The plumage of these two juveniles was uniform brown with no coloured eyebrows and showed dark bills as described by Sharma & Singh (2016). All birds in this flock were feeding on fruits of herb-robot *Geranium robertianum*, which was fruiting abundantly; some plants were also in flower, which helped to identify the species and is video-graphed (Sharma 2015). The birds fed on the geranium fruit in the same manner as described by Sharma & Singh (2016). The juveniles fed on the fruits independently [31]. One adult male and one juvenile were also observed feeding on *Persicaria nepalensis*. I observed them for two hours and they kept returning to feed at the same spot in the undergrowth, which also had a small stream flowing through it.



31. A juvenile feeding on fruit of herb-robot.

On 10 August 2018, while birding in Rakchham-Chitkul Wildlife Sanctuary in Himachal Pradesh (31.389°N, 78.342°E; 3,325 m asl), two pairs of adults were found. All birds were foraging on the ground, in a small flock, amongst the roots of *Abies pindrow* trees, which were scattered with its cone-scales, and feeding on the seeds as described above and video-graphed (Sharma 2018). No juveniles were observed at the time.

On 21 June 2019, while hiking and birding at Liddarwat (34.157°N, 75.242°E; 2760 m asl), in Overa-Aru Wildlife Sanctuary, three birds were found feeding on the ground near a shepherd's settlement adjoining a wide water-stream. The forest in this patch was dominated by *Abies pindrow* with an understory of shrubby *Viburnum grandiflorum*, which was 0.3–

m high; several open clearings of grassy meadows were also present. Two adult males and one female were observed feeding in a damp muddy patch, which appeared to be freshly dug up but was bordered with green grass and plenty of Nepal dock *Rumex nepalensis*. Despite the disturbance of people passing by, the birds would return to the muddy patch and would take in mouthfuls of matter, in such a way that their bills were caked with mud, vigorously chewing it in their bills (Sharma 2019a). On inspecting the mud-patch I did not find any conifer seeds, and conjectured that the birds were possibly ingesting minerals, or plant seeds, from it.

On 23 June 2019, while birding at the left bank of the Liddar River (34.164°N, 75.249°E; 2875 m asl), small flocks of a total ten birds were found during a period of six hours in the morning. At 1130 h, after a respite from a short downpour, a pair was observed feeding in a fairly open meadow with herbaceous grassy undergrowth fed by rainwater runoffs. The male of the pair would carefully probe the wet grassy undergrowth and often pause to nibble on organic matter in the mud or plant seeds fallen on the ground. Their bills were caked with mud while they were foraging, which they did not bother to clean. The male was observed specifically feeding on fruiting dandelion *Taraxacum* agg., which was abundant in this meadow, with a majority of plants in early fruiting stages and some still in flower. It would prefer to feed on the plants still in early fruiting stages with the fruit-capsules (achenes) still immature and enclosed inside the inflorescence (involucral bracts). The bird would carefully pick out the fruit either by tearing a number of fruit-capsules (achene bodies) together off the flower-head (capitulum), or by tearing out fruit-capsule (achene) strands one by one. It would then vigorously chew on the basal ends of the fruit-capsules (achene bodies) and discard the feathery pappus¹ by quick jerks of its head.



32. A female feeding on dandelion.

Both: Puja Sharma

On 24 June 2019, in the same area, two pairs were found and all birds were observed feeding on fruiting dandelions as described above [32]. At 0800 h, a probable pair foraged in close proximity to one another and the female was observed rapidly feeding on one fruiting dandelion. It had scattered all the fruits from its inflorescence and decided to pick a few fruit strands (achene bodies) one by one to chew for over 40 seconds until it was satisfied with what the plant had to offer. It then resumed

1. Pappus: A structure made of scales, bristles, or featherlike hairs attached to the seeds of plants of the *Asteraceae* family and that aids in dispersal by wind (Polunin & Stainton 1997).

foraging and was observed feeding on the green coloured heart-shaped fruits of shepherd's purse *Capsella bursa-pastoris*, which was abundant on the meadow and is video-graphed (Sharma 2019b). The bird would move quickly, by way of walking and small hops, from one plant to the other, feeding on its fruits without pausing.

On 27 June 2019, while camping at Bangus Meadows (34.366°N, 74.030°E; 3140 m asl), two pairs of birds were found in the late evening. One male was perched on top of a bare 35 m tall *Abies pindrow* tree, singing its monotonous song, with drooped wings and slightly vibrating tail (Sharma 2019c). The forest in this patch was entirely dominated by *Abies pindrow* and scattered with Himalayan birch *Betula utilis* at the treeline. The birds were confined to the conifer forest and the males would deliver their songs from the tops of bare fir trees, in the early mornings and late evenings. Their singing perches remain fixed during the period of observation. After singing, they would usually drop down on the ground and resume feeding in small congenial mixed flocks (Sharma 2019d). However, on one occasion, an adult male was observed scampering towards and chasing another male feeding on the ground, with its tail cocked and wings drooped, probably as a sign of territorial display. No other such disputes occurred during feeding and no juveniles were observed. On 28–29 June 2019, while hiking in the same

area, small mixed flocks of up to nine birds were found foraging on the ground at the edge of melting snow patches, under the shade of fir trees. They fed amicably in the herbaceous grassy meadow, often wiping their bills on fallen twigs, which would get caked with mud.

Discussion

Despite earlier works testifying to the tameness and confiding nature of the species (Roberts 1992), there is limited information published on its foraging habits and diet in different seasons. Moreover, its movements are poorly known or understood (Clement et al. 1993). Four primary authors have documented that the birds specifically feed on seeds of conifer or fruit of other trees, out which three observations are in winter or non-breeding season: Jones (1948) observed flocks around Shimla, in Himachal Pradesh, feeding on the ground in winter on the seeds of the deodar *C. deodara* and noted that their beaks got caked with resin; Koelz (1940) recorded numbers feeding on *C. deodara* seeds around Naggar, in Himachal Pradesh, in January 1932; Hudson (1930) noted the birds feeding on the dried seeds of the mountain ash *Fraxinus* spp. around Naini Tal during December–April. Roberts (1992) noted that their stout bills enable them to de-husk the fallen seeds of *C. deodara* and *P. smithiana*, and when in season, they feed on the berries of

Table 1. Diet of the Spectacled Finch from habitats in different seasons

Date	Location	Coordinates	Elevation (m asl)	Food-type	Species
Observations from habitats in non-breeding season (November–April)					
20 March 2012	Landour, Uttarakhand	30.465°N, 78.094 °E	2,210	tree sap	<i>Cornus macrophylla</i>
07 April 2012	Mussoorie, Uttarakhand	30.463°N, 78.018 °E	2,000	drinking water	under <i>Cedrus deodara</i> patch
27 December 2016	Gallu temple, Himachal Pradesh	32.252°N, 76.318°E	2,170	tree seeds	<i>Cedrus deodara</i>
28 February 2017	Bhora village, Himachal Pradesh	31.288°N, 77.443°E	2,175	tree seeds	<i>Cedrus deodara</i> <i>Pinus wallichiana</i>
Observations from habitats in breeding and post-breeding seasons (May–October)					
22–23 August 2013	Rakchham-Chitkul Wildlife Sanctuary, Himachal Pradesh	31.388°N, 78.349°E	3,200	herb fruit	<i>Geranium wallichianum</i>
06–08 August 2014	Rakchham-Chitkul Wildlife Sanctuary, Himachal Pradesh	31.389°N, 78.342°E	3,300	tree seeds	<i>Abies pindrow</i> <i>Picea smithiana</i>
				herb fruit	<i>Geranium wallichianum</i>
31 August–02 September 2015	Maruyee Thatch, Himachal Pradesh	31.224°N, 77.972°E	3,365	herb fruit	<i>Persicaria nepalensis</i> <i>Cynoglossum microglochin</i> <i>Halenia elliptica</i> <i>Geranium collinum</i>
06 October 2015	Zaidnag, Overa-Aru Wildlife Sanctuary, Jammu & Kashmir	34.060°N, 75.275°E	2,400	herb fruit	<i>Geranium robertianum</i> <i>Persicaria nepalensis</i>
10 August 2018	Rakchham-Chitkul Wildlife Sanctuary, Himachal Pradesh	31.389°N, 78.342°E	3,325	tree seeds	<i>Abies pindrow</i>
21–24 June 2019	Liddarwat, Overa-Aru Wildlife Sanctuary, Jammu & Kashmir	34.157°N, 75.242°E	2,760	mud	Possibly ingesting minerals or plant seeds from mud
		34.164°N, 75.249°E	2,875	herb fruit	<i>Taraxacum agg.</i> <i>Capsella bursa-pastoris</i>
27–29 June 2019	Bangus Meadows, Jammu & Kashmir	34.366°N, 74.030°E	3,140	mud	Possibly ingesting minerals or plant seeds from mud

Viburnum nervosum and Indian barberry *Berberis lycium*. This paper documents the birds feeding on seeds of two additional tree species: *P. wallichiana* and *A. pindrow*, in their non-breeding and breeding seasons respectively.

Only two authors have documented the birds feeding on herbaceous plants, but neither mentions specific details nor identifies the plants: Roberts (1992) observed that the birds mostly fed on the ground and gleaned all kinds of fallen seeds, but also in spring consumed some buds and young shoots, as they were seen pecking at some young succulent leaves in a forest clearing. Fleming et al. (1984) observed the birds pecking deep into flowers and eating the bark of *Rhododendron barbatum* on the slopes of Ganesh Himal (3,355 m asl) in Nepal. The observations presented in this paper describe the diet of the species, identifying the types of food-items it consumed in different habitats (see Table 1).

Several observations describe and document the Spectacled Finch's feeding behaviour but without specific details of diet: Magrath (1912a) noted that the species hops about the forest undergrowth picking up seeds in the same assiduous manner as the Black-and-yellow Grosbeak *Mycerobas icteroides*, feeding on seeds of the succulent undergrowth. Wathen (1923) observed them on 11 July 1922, feeding on fallen grass seeds in a birch grove at Baltal near Sonamarg. Osmaston (1927) mentioned that the birds feed chiefly on ground in recent snowmelts, or on low shrubs in the undergrowth in fir forests. Bates (1935), and Bates & Lowther (1952) noted that the birds fed quietly on the ground in small parties and would resume feeding as soon as any disturbance would pass. The observations presented in this paper describe the foraging behaviour of the species with respect to seasons, and also specify the microhabitats where the species was found feeding.

Magrath (1912a) makes one significant observation of the feeding behaviour of the species, with respect to its breeding. He noted that the species is typically a woodland bird and, when actually nesting, a forest bird. However, when the young fledged, it often ventures into open areas, though never away from the vicinity of trees. Sharma & Singh's (2016) observations from August 2013 are analogous with this statement as well. However, the observations of family parties and juveniles, as described in this paper, feeding in deep forests on conifer seeds in August 2014, during the breeding season, and feeding on plants in more open clearings at the edge of forest in September and October 2015, in the post-breeding season, indicate that the species is versatile in its choice of feeding habitats.

As a Himalayan endemic, the Spectacled Finch is entirely dependent on suitable habitat in the upper temperate zones, and any loss or degradation of forests, combined with unchecked overgrazing in high-altitude meadows, or any other pressures resulting from the activities of nomadic shepherd communities (e.g., firewood, fodder collection) might directly impact this poorly-known species and its population.

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