Diet of the Racerunner
Callopistes palluma in
North-central Chile

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The racerunner *Callopistes palluma* is the only member of the family Teiidae in Chile (Donoso-Barros, 1966; Valencia and Veloso, 1981). In two separate studies of ecological convergence of lizard faunas between Chile and California, *C. palluma* was considered the functional analog of the teiid *Cnemidophorus tigris* because of their similar morphologies and habitat uses (Sage, 1973; Fuentes, 1976). Their foraging behavior seems to be similar as well: Chilean racerunners are wide foragers that actively search for prey both in exposed areas and underneath bushes. However, little is known about the biology of *C. palluma* aside from limited data on body temperatures (Fuentes and Jaksić, 1979; Barahona and Núñez, 1981), escape behavior (Jaksić et al., 1982), and predatory efficiency in the laboratory (Medel et al., 1988).

Reports on the diet of *C. palluma* are few, based on small sample sizes, and contradictory. Donoso-Barros (1966:382) stated that it feeds on insects and small lizards, but did not report the sample size examined. Sage (1973) reported that *C. palluma* is primarily insectivorous and secondarily carnivorous, but acknowledged that his source was Donoso-Barros (1966). Fuentes (1976) reported that during the summer of 1973 in Santa Laura (33°04'S; 71°00'W), it fed primarily on vegetation (flower buds accounting for 69% of the diet by volume), and secondarily on arthropods (31%), but the sample examined was only three stomachs. Mellado (1982) reported that during December 1980 in Fray Jorge (30°38'S; 71°40'W), *C. palluma* preyed primarily on the cricetid rodent *Akodon olivaceus* (74.3% by frequency; over 66 feces examined), secondarily on arthropods (21.2%), and lastly on *Liolaemus* lizards (4.5%). He explicitly stated that he found no vegetation among the feces examined. Finally, Simonetti and Yáñez (1984) reported that during December 1981 in Los Dominicos (33°23'S; 70°31'W), they observed *C. palluma* scavenging on rodents killed by snap traps on three occasions (twice on *Akodon olivaceus*, once on the octodontid *Octodon degus*). Consequently, according to these different authors, Chilean racerunners could be labeled as insectivorous, herbivorous, carnivorous, or as scavengers. Either *C. palluma* is very plastic in diet, or the different reports constitute only random deviations expected from the small sample sizes examined, over unspecified or very short periods. Here we examine a larger sample size, over the entire activity period of *C. palluma* in a locality in north-central Chile.

We captured, sexed, measured, and subsequently released 24 Chilean racerunners in the Reserva Nacional Las Chinchillas (31°30'S; 71°06'W) near the village of Aucó, while live-trapping rodents with Tomahawk traps baited with rolled oats. Rodent trapping started in February 1987 and continued on a monthly basis through March 1988 (14 months). Captures of Chilean racerunners occurred in February 1987 (two individuals), October (six), November (three), December (six), January 1988 (five), February (one), and March (one). Nine individuals were males, 10 were females, and five subadults were not sexed. There were no statistical differences between dimensions or weights of males and females, thus all the data were pooled (two individuals escaped while being handled and could not be measured). SVL ranged from 93 to 165 mm ($\bar{x}$ = 132.0 mm; SD = 20.2; N = 22); tail length from 160 to 315 mm ($\bar{x}$ = 260.3 mm, SD = 49.8; N = 22); and weight from 27 to 164 g ($\bar{x}$ = 96.9; SD = 45.3; N = 22).

Feces deposited by *C. palluma* in the traps enabled us to form a search image for detecting and sorting out feces in the field: they were 40–60 mm long, 5–7 mm diameter, slightly arched, blackish, and with a terminal white deposit of uric acid; they were longer than the feces of any small mammal, bird, or other reptile in the Reserve. We collected feces of *C. palluma* scattered in the field on a monthly basis from January to December 1988, always during the last week of the month. The racerunners were not observed in aboveground activities between May and November 1988 (austral winter and early spring), and thus we found no feces during these months. In the laboratory, we carefully teased feces apart, and with a microscope we identified prey to the finest possible level of identification (often to species level), using voucher specimens collected locally. We also estimated the minimum number of individual prey present in the feces, based on the number of known double or single anatomical elements such as crania, mandibles, teeth rows, wings, elytra, antennae, stings, etc. Because *C. palluma* feeds on vertebrates and rather large arthropods (see below), we think that we did not overlook the presence of any species in its diet. We do not know, however, if there is any bias in diet assessments based on feces, in comparison to stomach content analysis. We examined 500 feces and identified 1143 prey items; we found no vegetation remains.

Overall, the most frequent prey were insects, accounting for over 60% of the prey by number throughout the year (Table 1). By far the most frequent insects were coleopterans, particularly tenebrionids and curculionids. Insects in other families were rare. Arachnids accounted for only 0–8% of the prey in monthly samples, and they were all scorpions. Reptiles represented 3–4% of the prey, and except for a single case (a snake) they were all lizards. Mammals accounted for 1–36% of the prey, and all were juvenile rodents. There was no clear temporal trend in the consumption of reptiles and arachnids (Table 1). There was, however, a trend for mammalian prey to appear in decreasing frequency from January through December 1988, with insect prey showing the opposite phenomenon. Simultaneous live-trapping of local small mammals demonstrated that they were decreasing in abundance with time, as a result of their decline to normal densities after a population outbreak that occurred in the spring of 1987 (Jaksić and Jiménez, unpubl. data). Although reptiles and mammals combined represented on average only 16% of the prey by number, their biomass contribution to the diet was certainly more substantial than that. These results

TABLE 1. Percent of prey taken (by number) by *Callopistes palluma* in Aucó, north-central Chile. Figures in parentheses are subtotals by class.

Prey	Jan.	Feb.	Mar.	Apr.	Dec.	Total
Mammals	(35.8)	(12.8)	(12.6)	(0.9)	(2.0)	(8.9)
Rodentia: unidentified	26.8	12.3	12.1	0.9	2.0	8.2
Cricetidae: unidentified	1.8	0.0	0.0	0.0	0.0	0.1
Oryzomys longicaudatus	1.8	0.0	0.0	0.0	0.0	0.1
Phyllotis darwini	3.6	0.5	0.5	0.0	0.0	0.4
Octodontidae: Octodon degus	1.8	0.0	0.0	0.0	0.0	0.1
Reptiles	(3.6)	(3.0)	(3.4)	(4.3)	(3.8)	(3.5)
Iguanidae: Liolaemus sp.	0.0	2.2	1.0	4.3	3.3	2.4
Liolaemus nitidus	1.8	0.8	2.4	0.0	0.5	1.0
Colubridae: Philodryas chamissonis	1.8	0.0	0.0	0.0	0.0	0.1
Insects	(60.6)	(81.7)	(76.3)	(93.1)	(89.9)	(83.8)
Coleoptera: unidentified adult	12.3	12.0	18.4	11.3	16.6	14.7
Buprestidae: unidentified adult	1.8	0.0	0.5	0.0	0.0	0.2
Ectinogonia buqueti	7.1	3.0	1.9	0.0	1.5	2.2
Pygicera scripta	0.0	0.5	0.5	0.0	0.0	0.3
Tyndaris planata	0.0	0.3	0.0	0.0	0.0	0.1
Curculionidae: unidentified adult	0.0	1.4	0.0	0.0	0.0	0.4
Listroderes bimaculatus	1.8	6.6	9.7	17.4	15.5	11.1
Rhyephenes gayi	0.0	0.0	0.0	0.0	0.8	0.3
Tenebrionidae: unidentified adult	5.4	1.6	0.5	3.5	0.0	1.2
Gyriosomus sp.	5.4	8.2	10.1	17.4	3.8	7.8
Nycterinus rugiceps	3.6	6.3	4.8	0.0	0.0	3.1
Praocis chevrolati	7.1	22.4	18.8	23.5	32.6	24.7
Praocis curtasolier	0.0	0.3	0.5	5.2	12.8	5.2
Carabidae: unidentified adult	0.0	0.0	0.0	0.9	0.0	0.1
Diptera: unidentified larva	0.0	0.3	0.0	0.0	0.0	0.1
Hymenoptera: unidentified adult	12.5	0.5	1.0	0.0	1.0	1.3
Homoptera: unidentified adult	1.8	9.0	4.3	5.2	1.0	4.6
Lepidoptera: unidentified larva	0.0	0.3	1.0	0.0	0.0	0.3
Orthoptera: unidentified adult	1.8	9.0	4.3	8.7	4.3	6.1
Arachnids	(0.0)	(2.5)	(7.7)	(1.7)	(4.3)	(3.8)
Scorpionidae: unidentified adult	0.0	2.5	7.7	1.7	4.3	3.8
Total prey	56	366	207	115	399	1143
Total feces	27	169	112	35	157	500

indicate that Chilean racerunners on our study site had a mixed diet with arthropods and vertebrates, in line with the early report of Donoso-Barros (1966). They were not herbivorous to any extent as suggested by Fuentes' (1976) data, nor did they rely almost exclusively on rodent prey as suggested by Mellado (1982). If these previous reports were confirmed by studies with larger sample sizes, they would demonstrate differences in diet between localities, and indicate that *C. palluma* is very plastic in food habits, its diet perhaps depending on local and temporal prey availability.

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