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SHORT NOTE

Group Sizes of Red Shining Parrots on 'Eua, Kingdom of Tonga

In Fiji, parrots of the genus *Prosopeia* generally occur singly or in small groups of up to five individuals (Porter 1935, Brown & Child 1975, Holyoak 1979); but flocking of up to 40 birds, mostly in fruiting trees, has been reported (Bahr 1912, Wood & Wetmore 1926, Holyoak 1979, Clunie 1984).

During an 18 months field study of Red Shining Parrots (*Prosopeia tabuensis*) on the Tongan island of 'Eua, I made 380 observations of feeding parrots involving 735 birds. These observations are listed in Table 1. Mean group size (MGS, bottom line in Table 1) is lowest (p < 0.01) during the breeding season, which is from June to October, although a few pairs start breeding as early as May. The variation of MGS in different plant species apparently depends on the amount of food provided by a plant species: higher MGS (right-hand column in Table 1) occurs in trees which fruit prolifically, whereas in small trees, bushes and vines (*Melodinus vitiense* and many of the 'other species' in Table 1), parrots were most often seen feeding singly.

The data indicate that adult Red Shining Parrots live in pairs, being accompanied by their offspring after the breeding season (when MGS is higher than two). During the breeding season, when females spend most of the time on their nests, the frequency of observations of single birds increased. The data do not give information about the social behaviour of immature birds other than that they do not flock.

Non-feeding Red Shining Parrots have been seen in groups of one to eight birds; aggregations of more than four birds have been very rare. During the course of the study, M. Greenfield (pers. comm.) once saw a flock of more than 10 parrots feeding in guavas (*Psidium guajava*).

From the distribution of group sizes shown in Table 2, I conclude that no permanent associations of different families exist, 86.2% of the

TABLE 1 — Total numbers of individuals (large numerals)/numbers of observations (small numerals) per food species per month. The fruiting seasons of each species are stippled. MGS: mean group size.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Σ	MGS
Myristica	17/8	14/6	16/8	10/5	32/14	12/7	13/7	12/7	15/7	16/7	20/7	11/5	188/80	2.14
Psidium		21/8	19/8	19/8	21/8	8/4	19/8	12/5					119/49	2.43
Inocarpus	19/7	19/7	16/7	7/3	5/2								66/26	2.54
Calophyllum				9/4	21/11	15/8	5/3	5/3					55/29	1.90
Rhus		13/5	20/8	17/6									50/19	2.63
Elattostachys	11/5	10/5	9/4	6/3			3/1	3/2					42/20	2.10
Carica		5/3			4/2	4/2		3/2	5/3		4/2		25/14	1.79
Malisia									11/6	10/5			21/11	1.91
Pleigynium					7/3	6/4	3/2	3/2	2/1				21/12	1.75
Melodinus	4/3								4/3	3/2	2/2	6/4	19/14	1.36
Σ	51/23	82/34	80/35	68/29	90/40	45/25	43/21	38/21	37/20	29/14	26/11	17/9	606/282	2.15
other species	9/7	10/8	7/6	4/3	10/7	8/6	14/12	8/5	8/7	15/12	8/6	28/19	129/98	1.32
TOTAL	60/30	92/42	87/41	72/32	100/47	53/31	57/33	46/26	45/27	44/26	34/17	45/28	735/380	1.93
MGS	2.0	2.19	2.12	2.25	2.13	1.71	1.73	1.77	1.67	1.69	2.0	1.61		

birds being seen singly or in groups of two or three. This seems to be in remarkable contrast to the flocking behaviour of *Prosopeia* parrots in Fiji. Two explanations may be given:

1. The density of *Prosopeia* parrots is higher in Fiji than in Tonga. Hence accidental aggregations of larger numbers of parrots in fruiting trees are more likely.
2. Flocking is more likely in an avifauna with predators (cf. Pulliam & Millikan 1982): Fiji has three species of diurnal avian predators, whereas Tonga has none.

TABLE 2 — Frequency distribution of group sizes of feeding Red Shining Parrots. X: group size; n: number of observations.

X	1	2	3	4	5	6	t
n	147	139	70	21	2	1	380
n * x	147	278	210	84	10	6	735
%	20	37.8	28.6	11.4	1.4	0.8	

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