Relationship between nesting Isabelline Wheatears *Oenanthe isabellina* and a burrowing rodent (a jird *Meriones* sp)

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Breeding bird surveys of a semi-desert area in Azerbaijan provided evidence to support the apparent relationship between a species of burrowing rodent (a jird *Meriones* sp, reportedly Libyan Jird *M. lybicus* but this remains to be confirmed) and the presence and size of the breeding population of migrant Isabelline Wheatears *Oenanthe isabellina*. Cramp (1988) stated, of rodent burrows, "their availability perhaps influences the extent to which otherwise suitable habitat is exploited [by nesting Isabelline Wheatears]". The results of the breeding bird surveys described here allow a retrospective discussion of the relationship, of which the author had, at the time, no prior knowledge.

The study area, near the village of Sangachal, *c*35 km south of the capital Baku, was surveyed in late May or early June in each of 2001, 2004 and 2005. Much of the study area had been buried by mudflows in 1999–2000, and remained devoid of any vegetation or was only sparsely recolonised by low shrubs before commencement of the 2001 breeding season survey. Just under half of the total area of almost 80 km^2 was censused during each of the three surveys, with a team of three observers walking the same parallel fixed transects annually. Seven subdivisions of unequal size and differing habitats were recognized over the 80 km^2 survey area: Western Plains (*c*25%), Central Plain North (< 20%), Central Plain South (< 15%), Coast (10%), West Hills and North Hill (each < 5%). The Far West (20%) was surveyed just twice and is excluded from further consideration. The impact of the mudflows on two resident breeding species, Finsch's Wheatear *O. finschii* and Crested Lark *Galerida cristata*, is also considered here.

Much of the Caspian basin remains seismically active with, in the area in question, periodically active mud-volcanoes (which emit boiling mud rather than lava). These may form entire hills or be small cones on the summit or flanks of existing hills, while some are submarine and have now formed islands in the Caspian sea. It was the large mud-volcano lying immediately to the north of the area, aside North Hill, from which the extensive mudflows had issued. These flows primarily affected the closest areas, the Western Plains and Central Plain North, with the latter being the worse hit. The more distant Coast, Central Plain South and West Hills were unaffected by the mudflow *per se*, with the North Hill itself being only partially in the line of the flows. The Western Plains and Central Plain North were dominantly semi-desert plains, the North and West Hills elevated rocky terrain and the Central Plain South partly semi-desert but with at least a third being wetland scrub and other riparian habitats.

Mudflows, while destructive here, are highly fertile and the steppic vegetation itself, dominated by shrubby *Artemisia fragrans* and *Salsola nodulosa*, appeared to have largely recovered by 2004. Breeding Isabelline Wheatear numbers increased substantially between 2001 and 2004 and again between 2004 and 2005, but also, significantly, shifted their distribution markedly within the study area between the latter two years (Table 1), whence they moved mainly from the West Hills and Central Plain North to the Western Plains. The reason for the shift appeared to be directly linked to the prior re-colonisation of Western Plains by jirds. Unfortunately, no precise assessment was made of the numbers of jird burrows annually, such data as was gathered being on a qualitative basis. Similarly,

Table 1. Breeding populations of Isabelline Wheatear *Oenanthe isabellina*, Finsch's Wheatear *O. finschii* and Crested Lark *Galerida cristata* in late May/early June of 2001, 2004 and 2005 in the Sangachal study area, Azerbaijan. All figures refer to minimum number of pairs/occupied territories.

2001	Coast	North Hill	Central Plain South	Central Plain North	West Hills	Western Plains	TOTAL
Date	28–29/5	28/5	30/5	30/5	31/5	31/5	
Isabelline Wheatear	2	0	6	0	0	14	22
Finsch's Wheatear	1	5	0	0	12	2	20
Crested Lark	10	0	14	4	4	10	42
2004	**Coast**	**North Hill**	**Central Plain South**	**Central Plain North**	**West Hills**	**Western Plains**	**TOTAL**
Date	9/6	10/6	10/6	8/6	9/6	11/6	
Isabelline Wheatear	6	3	8	15	29	18	79
Finsch's Wheatear	0	5	1	3	15	0	24
Crested Lark	23	9	24	44	50	0	160
2005	**Coast**	**North Hill**	**Central Plain South**	**Central Plain North**	**West Hills**	**Western Plains**	**TOTAL**
Date	6/6	11/6	8/6	7/6	11/6	10/6	
Isabelline Wheatear	1	4	7	1	14	66	93
Finsch's Wheatear	1	6	3	2	22	6	40
Crested Lark	13	4	17	19	10	28	91

the invertebrate prey base for breeding birds was not assessed but this presumably also recovered through time.

Jirds are mainly nocturnal, colonial, burrowing rodents. They were conspicuously absent in the study area in 2001 (mudflows still being fluid with little recovery of vegetation) and not noticeably frequent in 2004, yet by the onset of the 2005 breeding season large numbers of burrows were commonplace, especially in Western Plains. By then, many apparently unoccupied colonies were also noted and some Isabelline Wheatears were certainly nesting in those burrows so vacated. Apart from a sudden availability of burrows, drainage channels which had been naturally re-cut across the area also now provided small cliffs with crevices in which both species of wheatear could nest (or resume nesting).

Finsch's and Isabelline Wheatears themselves ordinarily occupy mutually exclusive habitat types and for this reason appeared not to be in competition. However, the Finsch's Wheatear and Crested Lark populations appear to have been affected by the mudflow-displaced Isabelline Wheatears.

Interestingly, West Hills, which forms only *c*5% of the total area, appeared to have played some sort of pivotal role over the period in question, with widely fluctuating numbers of these three species nesting there in the three survey years. The habitat here, low rocky hills, would otherwise seem largely unsuitable or at least atypical for both Crested Lark and Isabelline Wheatear, although otherwise eminently suitable for Finsch's Wheatear. The absence of Isabelline Wheatear (but not Finsch's) and such low numbers of

Crested Lark here in 2001 is, however, not readily explicable. Note should be taken of the relatively stable numbers of the three species in Central Plain South over the three years, but where unsuitable wetland habitat would in any case have prevented any take up of displaced wheatears.

What may have caused the respective breeding numbers of two of these species, Crested Lark and Isabelline Wheatear, to change so markedly between 2004 and 2005 in the Central Plain North is also hard to explain, although a livestock camp had newly moved back into this area by then and grazing pressure may have had an effect. A resumption of agriculture, the sowing of cereal and reseeding of small grassland plots, no doubt accounts for the high number of Crested Larks suddenly appearing in the Western Plains in 2005, even if their population across the entire study area fell.

It would be interesting to learn whether any cyclicity occurs between rodent numbers and those of Isabelline Wheatears in the absence of mudflows. Clearly, the 1999–2000 mudflows resulted in a nest-site shortage for Isabelline Wheatears, whose recovery apparently relied on the prior recovery of the jird population but with knock-on effects on numbers and distribution of the two other nesting bird species.

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