In-hand identification of Thick-billed Larks (*Ramphocoris clotbey*) in the Negev, Israel, February 2011

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Plate 1: wing pattern of male Thick-billed Lark (Yoav Perlman).

Background

In desert ecosystems, amount and distribution of rainfall have a huge impact on bird populations, through plant and and insect populations. Typically, mean annual rainfall in desert regions is low (normally regarded below 100 mm) and highly unpredictable. The southern deserts of Israel – Negev and Arava are among the world's driest deserts, with a mean annual rainfall of 31 mm.

Birds living is such arid ecosystems have two main strategies to deal with the lack and unpredictability of resources. One is to withstand the harsh conditions by behavioral and physiological adaptations. The other is nomadism - to migrate from resource-poor regions to resource-rich regions (Dean, 2004). Birds, with their exceptional mobility, are well known for the use of this strategy.

Thick-billed Lark (*Ramphocoris clotbey*, Bonaparte 1850) is a monotypic, rather poorly described lark, breeding in the deserts of North Africa and southern Middle East. It is a large, nomadic lark, with an exceptionally heavy bill. In Israel it is a rare nomad, typically visiting remote desert regions that experienced exceptional rainfall and thus have high plant and insect productivity. Until 1996 it was recorded only 17 times (Shirihai, 1996). However, since 1999 when it was found breeding for the first time in Israel (Granit, 1999), several breeding events took place in southern Israel during at least three more years. Winter 2009/10 was exceptionally wet in the southern deserts of Israel, and as a result hundreds or thousands of pairs of Thick-billed Larks bred in the Negev and Arava, some of them achieving two or three breeding cycles (pers. obs.). This huge invasion was accompanied by large-scale breeding events of several other nomadic species, such as Dunn's Lark (*Eremalauda dunni*) and Hill Sparrow (*Carpospiza brachydactyla*).

Following the huge recruitement into the Negev and Arava, many hundreds of Thick-billed Larks remained in southern Israel, feeding on seeds produced during the exceptional winter. One of the largest concentration in winter 2010/11 was at Hameyshar Plains in the southern Negev (30º27' N 34º56' E), with up to 100 individuals noted.

Methods and Results

On February 14th 2011 we trapped and ringed 17 individuals using mistnets at Hameyshar Plains, 373 m above sea level. This represents the first time this species has ever been ringed in Israel. All individuals were measured and photographed, and

their data used to separate different sexes. We created a catalogue of images and measurements for each individual.

Out of the 17 individuals, 7 were males, 9 were females, and one individual was not identified to sex. Sexes were determined by combining wing measurements and coloration patterns. We found no significant differences in other measurements we obtained, including bill dimensions and tarsus length.

	Wing length (mm)	**Average (mm)**
Male (n=7)	128-133	130.6
Female (n=9)	124-128	125.7

Table 1: wing measurements of Thick-billed Larks

Males were larger and darker, with more contrasting pattenrs on the face and breast. Eye stripe was blacker, ear coverts were darker and blacker with fewer pale fringes, and breast streaking was darker and more contrasting. Primary coverts and Median coverts were darker, greyer and more contrasting in pattern. Upperparts were greyer. Females were smaller and paler-sandy above, with facial and breats patterns paler and less contrasting. Primary and median coverts were paler and sandier. Males had greyer bills than females that showed a paler, yellowish bill.

Plate 2: Comparison of male (left, Yoav Perlman) and female (right, Yosef Kiat) Thick-billed Larks.

Plate 3: Comparison of head patterns of male (left, Yoav Perlman) and female (right, Yosef Kiat) Thick-billed Larks.

Plate 4: Comparison of breast patterns of male (left) and female (right) Thick-billed Larks. Images by Yosef Kiat.

Plate 5: Comparison of wing patterns of male (left) and female (right) Thick-billed Larks. Images by Yosef Kiat.

None of the birds showed any moult contrasts, exceptional wear or any other indications for differences in moult strategies between different ages. Apparently, both adults and juveniles perform a complete post-breeding moult, as many other larks do.

Plate 6: bill of male Thick-billed Lark (Yoav Perlman).

Conclusions

Studying poorly-known species in the field produces valuable data on their ecology. Identification of males and females is crucial in studying population dynamics. Documenting this unprecedented invasion of Thick-billed Larks into southern Israel during 2010-11 might lead to a better understanding of nomadism of desert birds.

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