Ornithology from the Tree Tops

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Leafing through old volumes of Ardea is an exhilarating experience. In my war-ravaged series, from the legacy of the late W.H. van Dobben who happened to live in Wageningen when the full force of World War II passed this little town twice and evacuation facilitated the activities of mould and mice in paperwork, I have spent many an hour browsing the texts of our predecessors in the ornithological arena. These volumes are a *Fundgrube* of basic knowledge and contain a lot of pioneering studies in (behavioural) ecology. Many papers were written in Dutch or German, and although the substantial length of the contributions (on average 16.8 pages in 1935, as compared with 9.6 in 2005) would indicate redundancy in wording, I was surprised to notice that instead many papers are highly factual and contain an abundance of details begging re-analysis or comparisons with present-day findings. It is a pity that much of this outpour has faded away in the mist of time, possibly aggravated by short print runs and scant access in libraries or individual collections. The forthcoming digitalisation of the entire Ardea series, and its free availability on the internet (to be realised late 2007, and including Limosa and its forerunners), should enable a large audience to delve into this treasure box.

In this volume of Ardea (the 95th) we are witnessing (normally unknown to subscribers and readers) a special event, i.e. the 1000th citation of a single paper published in Ardea. This classic is widely known under the catchy title *The prudent parent* (or: *energetic adjustments in avian breeding*). Published in 1980 by Rudi Drent and Serge Daan, it reviews how the parent adjusts its effort in relation to prevailing environmental conditions in order to maximize the output of young in its lifetime. Their paper ended with a plea for more research on the proximate controls of avian reproduction, precisely what it spawned. When to lay eggs depends on the body condition of the female, apart from calendar thresholds and other bottlenecks. It is here that the *individual optimization hypothesis* finds its place (Fig. 1). The female can bring stored body reserves from elsewhere to the breeding grounds ('capital breeder') or alternatively use exogenous sources to increase her body condition on the breeding spot ('income breeder').

In reality many species will use a mixed strategy of sorts, as pointed out in the original paper and again in later updates and reviews (Meijer & Drent 1999, Drent 2006), not least to cope with rapidly changing environmental conditions. The spring of 2007 provided a nice example of what long-distance migrants may face upon arrival on the breeding grounds: the early leafing (by late April many oaks *Quercus robur* were already in full dress!) had triggered early caterpillar activities.

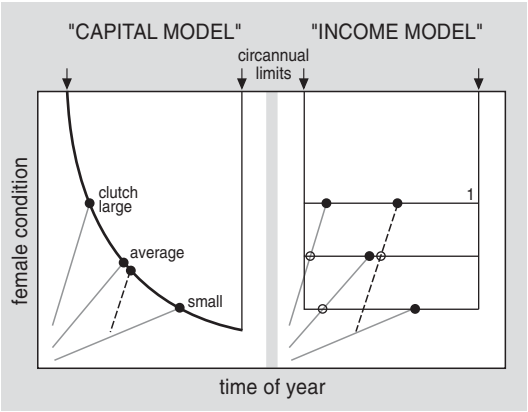

Figure 1. Proximate regulation of laying date and clutch size in relation to female body condition, in capital and income breeders. Stippled lines represent trajectories of body condition in individual females, laying when they reach the 'decision threshold' (solid circle) and starting large, average or small clutches. The stippled trend line shows an individual fed experimentally late in the season to discriminate between the two investment models. The arrows delimit the window permitting breeding according to the endogenous annual rhythm (from Ardea 68: 233, repeated in Ardea 94: 313).

Pied Flycatchers *Ficedula hypoleuca* on the other hand arrived at the normal time from their West African wintering quarters and were confronted with food resources well under way to peak levels, before a single egg had been laid. Females, usually arriving a couple of days after the males, were noticed to get paired on the day of arrival and sometimes started nest building the same day. One female even completed her nest in just three days (normally it takes some five days). This typical income breeder, weighing some 15 g, may have travelled on average 300 km per day from Africa, to find herself in dire straits regarding food resources upon arrival on the breeding grounds. All her hectic preparations together (pairing, nest building) could not prevent that she still had to reach a nutritional threshold before laying could commence. Although laying in 2007 was earlier than ever, the advancement of laying date amounted to a few days only, and the mismatch with the food peak was hardly minimized. The outcome is as yet (mid-May) under wraps.

Returning to the citation index. It is interesting to note that papers published away from the hard-core science journals can still reach a wide audience, and have their impact. Of course, this is nothing new and has happened many times before, either forced by rejections (a hilarious account of the tribulations of publishing was published by Hamilton in 2001), or – as in the case of *The prudent parent* – by choice. It shows that interesting ideas will find their way, no matter what.

Drent R.H. 2006. The timing of birds' breeding seasons: the Perrins hypothesis revisited especially for migrants. Ardea 94: 305–322.

Drent R. & Daan S. 1980. The prudent parent: energetic adjustments in avian breeding. Ardea 68: 225–252.

Hamilton W.D. 2001. The three queens. In: Narrow roads of gene land, Volume 2. The evolution of sex: 601–646. Oxford University Press, Oxford.

Meijer T. & Drent R.H. 1999. Re-examination of the capital and income dichotomy in breeding birds. Ibis 141: 399–414.

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