

SECTION IV

BEHAVIOUR – GENERAL

CRÈCHE BEHAVIOUR IN COMMON EIDER *SOMATERIA MOLLISSIMA*

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Gorman and Milne have argued that crèching has evolved in this species where the female parents have to leave their young in order that they may feed and recoup important losses of weight suffered during incubation. Our own studies in the Gulf of St Lawrence, where broods (issued from a single nest) and crèches (issued from several nests) are observed side by side throughout the rearing period, suggest rather that the food situation does not influence formation of crèches and that crèches are formed as a consequence of heavy crowding on the nesting islands (up to 1,000 nests per hectare) and further stimulated by heavy attacks by gulls. Females that manage to lead ducklings from the nesting islands to the rearing areas will develop a strong, permanent (over eight to ten weeks) and exclusive parental relation with all the ducklings they accompany. But survival of ducklings is lower in crèches than in broods. Hence, crèche behaviour is not seen as an evolved system but rather as an epiphenomenon characteristic of populations of high density.

CAUSES OF ASSORTATIVE MATING IN LESSER SNOW GEESE

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The Lesser Snow Goose occurs in two colour phases, blue and white, and positive assortative mating occurs between the morphs. In an attempt to discover the causes and evolutionary consequences of the assortative mating, a seven-year programme involving both field and experimental studies has been carried out. These studies have investigated the role of parental, sibling and self colour in influencing selection of mate.

In the field, over 6,000 goslings have been colour-banded according to the colour of their parents and their choice of mate has been observed two or more years later when they return to breed. Data indicate that parental colour does influence the colour of mate that is chosen. In experiments, birds have been tested for their response to the colour of an unknown bird, for their associations in the wild and for their selection of mate. Both parental and sibling colours have been shown to influence the choices.

Two models (preference and prevalence) of assortative mating are discussed in light of these findings.

HIPPOLAIS ICTERINA AND POLYGLOTTA IN THEIR NARROW SYMPATRY BELT

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The sibling sylviids *Hippolais icterina* and *polyglotta* have complementary areas, with a narrow belt of sympatry. At the Oxford Congress we showed that in sympatry there is no hybridization, but that the males of both species defend territories against each other, being able to respond to the song of the other species in playback experiments. Since then, we experimentally found that allopatric males of both species also respond

to the other species, even far from the 'border'. Both species inhabit bushy stages of broad leaved successions, *icterina* choosing higher later stages than *polyglotta*. Measurement of physiognomic parameters of the habitats has shown that in sympatry there is a significant ecological convergence, each species selecting habitats more similar to the other's than in allopatry. Allopatric populations of both species have a breeding success of 45 per cent; in sympatry, it decreases significantly to 29 for *icterina* (too few data for *polyglotta* for conclusion to be drawn).

The following model might explain the complementary areas: when one species comes into contact with the other, having retained the ability to respond to its song, it settles near it, shifting from its ecological optimum; consequently, the breeding success declines and the population melts away, unable to expand further in wide sympatry.

TERRITORIAL INTERACTIONS OF THREE SYMPATRIC SOUTH AMERICAN MEADOWLARKS ICTERIDAE

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The 'sturnelline' assemblage of the New World Icteridae includes two yellow-breasted species (*Sturnella*) and four or five red-breasted species (*Leistes*, *Pezites*). The close relationship of these birds, stressed by Short, has been confirmed in my field studies in the southern part of the pampas where *Leistes militaris superciliaris*, *Pezites m. militaris*, and *Pezites defilippi* are locally sympatric in pastures, bunch grass (*Stipa*) and fields of wheat.

Morphologically, *Leistes* is the least similar to the other members of the assemblage, although its pattern of plumage is similar to that of *Pezites* species. *Leistes* and *P. defilippi* nest in grouped territories or loose colonies, often in the same fields, and maintain interspecific territoriality. Both species give frequent, rather stereotyped flight displays as an integral part of territorial defence. *P. militaris*, although morphologically similar to *P. defilippi*, occupies larger territories and its territories often overlap those of the other two species.

P. militaris does not have stereotyped flight displays although it occasionally sings in flight, but it seems to require elevated song perches. In low woodland (monte) and Patagonian scrub where neither *Leistes* nor *P. defilippi* occur, *P. militaris* nests in grass clumps, but does not seem to depend on grass for other activities. It has probably invaded the pampas mainly after European settlement, which provided elevated perches (trees, fences, utility poles). *Leistes* and *P. defilippi* are more typically grassland species and the latter is essentially confined to the pampas of Argentina and Uruguay. Another species, *P. bellicosus*, occurs from Chile to Ecuador, mainly west of the Andes, in coastal marshes and farmlands. It also has a flight display given regularly as part of its territorial defence.

INFLUENCE OF WEATHER ON THE FORAGING BEHAVIOUR OF WINTERING BLACK-CAPPED CHICKADEES PARUS ATRICAPILLUS AND TUFTED TITMICE P. BICOLOR

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The effects of relative humidity, solar radiation, air temperature and wind velocity on the winter foraging behaviour of the sympatric congeners, Black-capped Chickadee *Parus atricapillus* and Tufted Titmouse *P. bicolor*, were investigated. Lower temperature and higher wind velocity produced significant changes in three foraging

parameters: height in the trees, substrate used (tree trunks, shrubs, etc.) and species of tree selected. Decreased diversity (J') in one or two foraging parameters with more severe weather was accompanied by increased diversity in another parameter. Inter-specific niche overlap (R_o) decreased with greater thermal stress. The results indicate that weather conditions should be considered in studies of avian foraging ecology.

INTRODUCING CAPTIVE-REARED RAPTORS INTO THE WILD

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The transition between helpless nestling and a raptor hunting for itself needs to be bridged by a foster parent. Some species, such as *Buteo jamaicensis* and *Aquila chrysaetos*, have proved to be steady 'brood mothers' willing to accept young of other genera for rearing—after preliminary conditioning. The advantages and disadvantages of man as a foster parent and the need for a young raptor to get experience in hunting are discussed, as well as the implications of these techniques for re-introducing endangered raptors into areas where they have been extirpated.

FACTORS INFLUENCING THE SELECTION OF PREY BY HAWKS

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I have previously shown that hawks select odd or unusually coloured mice in experiments where they are confronted only occasionally with a choice between colours (Mueller, *Am. Zool.* 12: 656, 1972). In the present experiments the hawk was offered one mouse for ten consecutive trials and then a choice between a mouse and a domestic chick. These trials were repeated daily for at least eleven days. All seven *Falco sparverius* tested preferred chicks, the odd prey. The experiments were then replicated using chicks for the first ten no-choice trials each day. Under this regime, four hawks selected mice (odd) and three selected chicks. Thus, for both experimental regimes, four hawks selected odd prey and three hawks preferred chicks, regardless of whether they were odd or common. The tendency to select a given kind of prey can be attributed to a specific searching image (L. Tinbergen). However, chicks do not bite or struggle as violently as mice and some of the hawks simply may have adopted the strategy of taking the easiest prey. These experimental results suggest that the oddity or rarity of an animal may strongly influence its probability of becoming prey.

SUNBATHING IN GREBES

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Least Grebes *Tachybaptus dominicus* sunbathe by tilting the closed wings forward, erecting the white feathers on the back, which lie beneath the wings, and facing away from the sun. The feathers of the nape are also spread. The feathers of both areas have dark bases and the skin of the back is heavily pigmented. A survey of the behaviour and of the pigmentation of feathers and skin in the family shows that sunbathing is negatively correlated with size and that the largest species that sunbathe are resident at very high altitudes. Possible use of the feet in thermoregulatory behaviour will also be discussed.

**TERRITORIAL AND FORAGING BEHAVIOUR OF THE SOUTH POLAR
SKUA CATHARACTA MACCORMICKI AT CAPE HALLETT,
ANTARCTICA**

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Territorial and foraging behaviour of the South Polar Skua were studied in 1971-72 at the rookery of Adelie Penguins *Pygoscelis adeliae* at Cape Hallett. The population of Skuas amounted to ninety-eight pairs, the Penguin population to some 43,000 pairs. About 10 per cent of the Skuas breed inside the penguin rookery, 20 per cent on its edge and 70 per cent farther away from the rookery. Some of the Skuas behave territorially. Nesting and feeding territories are distinguished. The Skuas breeding farther away from the rookery usually defend only nesting territories. They hunt in 'preferred feeding areas' in the north-western part of the rookery. The pairs with feeding territories (30 per cent of the Skua population) claim about 75 per cent of the rookery area, leaving the other 25 per cent to Skuas with 'preferred feeding areas'. Consequently the number of Skuas hunting per unit area is much higher in the parts of the rookery unclaimed as territories, but no resulting difference in breeding success of the Penguins could be found. The breeding success of Skuas with feeding territories was higher than that of pairs without feeding territories. The possible causes of this difference are discussed. It is concluded that territorial behaviour enables some pairs of Skuas to subsist exclusively on Penguins throughout the breeding season.