

NEST-SITE SELECTION IN RIVERSIDE-NESTING OYSTERCATCHERS *HAEMATOPUS OSTRALEGUS*

(Summary of talk at WSG Autumn Meeting at Uttoxeter)

by K. B. Briggs

The ecology of a population of inland breeding Oystercatchers at Arkholme on the River Lune in N.W. Lancashire, England, has been studied since 1978. Oystercatchers first bred at Arkholme in 1928 and fifty years later the population was 48 pairs. All the birds feed in the fields but they contain only 8% of the nests. Stages of colonisation for inland breeding (Buxton 1961 and Dare 1966) are slow river gravels, agricultural land adjacent to rivers and then fields some distance from water. Surveys in N.W. Lancashire show an increasing inland population but few pairs breeding away from rivers.

The following factors were investigated in relation to the birds' nest-site preference in the study site in order to evaluate the rate of inland colonisation:

- a) Substrate Birds prefer a "loose" (gravel) to a "firm" (grass) nest-site and select loose substrates such as debris, soil, stones or a natural hollow when nesting in fields. This is the ancestral type habitat (Heppleston 1971).
- b) Predation Hatching success in 1978 was 16%, cattle, sheep, Carrion Crow *Corvus corone corone* and Magpies *Pica pica* accounting for 92% of the egg failure. Corvids cause most egg loss in April and early May; cattle in late May and June. Egg survival was compared for 4 two-egg clutches of Blackheaded Gull *Larus ridibundus* eggs placed in artificial nests set on 9 sites between 20 and 30 May in 1979 and 1980. The sites on pasture were open grazed; fenced against cattle; fenced against cattle and sheep; ungrazed, debris and shingle patches. On the riverside gravel, one unfenced and 2 fenced areas were used. After 10 days the clutches on the ungrazed and fenced areas on the "firm" and the fenced areas on the "loose" substrate had survived longer. Successful nest-sites must avoid grazed areas and enable the birds to defend their nests against crows.
- c) Distance from the water For birds nesting in riverside gravel, the nests over the 3 years studied showed a tendency to be in the same position, irrespective of the water level. (This was high in 1979 and low in 1980.) This position was closely related to distance from the bank, or the edge of the pasture, as 60% of all the nests occurred within 5 metres of the grass. Only 20% of these nests were ever flooded (80% of those further from the bank suffered) and enabled the incubating bird to have a good view all round. When disturbed in this interface habitat, nest finding would prove more difficult for predators as the bird carries out its pseudo-brooding display.
- d) Topography Using 5 artificial clutches per site, egg survival was compared for 10-day periods on rise, flat and hollow sites on riverside gravel. In both 1979 and 1980, clutches on rise and flat sites were both equally more successful than hollow sites. Analysis of the Oystercatcher nest results showed a 50% preference for rise sites and they had 15% higher success rate than flat sites. This increased success over artificial clutches indicates that elevation gives the bird an advantage in defending its nest, compared with the flat site.
- e) Gravel size River action in winter flooding grades the stones into various sizes as they are deposited along the River bank. Dummy egg clutches were used in 1979 to demonstrate that eggs amongst stones of sizes 6-10cm. and 11-15cm survived longer than those amongst larger or smaller stones. Ease of manoeuvrability when scraping could be a factor in stone size selection. This was tested in 1980 when the various gravel nesting areas of 6 pairs of birds were raked and graded into 5 different categories of stone size. The scrapes made by the birds were counted; 40% were made in the 6-10cm. stone size and only 14% in the smaller (most easily manoeuvred) stones. Perhaps this size selection is a compromise as suggested by Heppleston (1971) with other factors such as camouflage.
- f) Camouflage Data from 180 Oystercatcher clutches on the site showed that 40% preferred to lay clutches amongst stones of 6-10cm., but nests amongst 11-15cm. stones had a greater hatching success. Perhaps the total size of the 2 or 3 egg clutch (12 x 8 cm.) is the factor that gives the camouflage effect, appearing as one "stone" to the predator.
- g) Gravel position Mapping the different sizes of gravel on the river bank has shown that the very large (21cm+) stone areas are most likely to be flooded in spates, as are the silt and 1-5cm. stone areas. However, the 6-10cm. and 11-15cm. gravel areas found near to the edge of the bank are formed into ridges by the winter floods and are least liable to be flooded in the summer. Inter-nest distance is also greatly reduced in areas where large amounts of these gravel sizes occur.

Factors affecting the choice of a suitable nesting site by birds are under strong selective pressures that favour individuals who choose sites where the chance of rearing a brood is greatest. For Oystercatchers on the Arkholme study site these factors include using riverside gravel 6-15cm. in size on a slight rise and within 5metres of the bank. The movement onto adjacent agricultural land is limited by:-

- 1) a preference for a "loose" nest substrate. (Little is to be found in the pastures but, on the 84 hectares used in the egg survival tests, riverside gravel occupied 18% of the total area and provided a continuous nesting habitat.)
- 2) only 6-8% of the agricultural land is tilled. (Preferred habitat in N.E.Scotland.)
- 3) a very high stocking rate in pastures. (3 cattle and 4 sheep per hectare.)
- 4) high numbers of predators. (10 Carrion Crow and 8 Magpie pairs/km².)

Since 1978 yearly surveys in N.W.Lancashire, covering a 960km² area of Morecambe Bay Coast and the Lune Valley, have shown an increasing Oystercatcher population, based on the figures published for 1968 (Greenhalgh 1969). A total of 273 pairs has been recorded for the area; 33% are coastal salt-marsh breeders, 62% are breeding inland on river gravels and adjacent fields and 5% use miscellaneous sites. For three years a 15km transect along the banks of the River Lune and adjacent fields from Wenning Foot to Kirkby Lonsdale has been taken to assess nesting sites. Of the 95 pairs usually present, 85-96% nest on the river gravels and 4-15% on the adjacent fields, depending on river conditions. (In 1979 at Arkholme, because of river flooding, 10 pairs, normally gravel nesting, laid eggs on the fields. In 1980, all but 2 pairs reverted back to the riverside gravel.) A transect of similar length, covering 158 fields adjacent to the road between Carnforth and Kirkby Lonsdale, 4km. from the river, was taken in 1978-1980. Only 6-13% of these fields were not under grass or silage and only 3-10 pairs of Oystercatchers were found. (The higher figure recorded was when ley pastures were being reseeded.)

The agricultural practice in N.W.Lancashire means that, fifty years after first colonising the river gravels, only 6% of the total inland breeding Oystercatcher population nest on fields adjacent to the river bank and only 3% breed away from any large body of water.

Buxton, E.J.M. 1961. The inland breeding of the Oystercatcher in Great Britain 1958-59. *Bird Study* 8:194-209

Dare, P.J. 1966. The breeding and wintering populations of the Oystercatcher *Haematopus ostralegus* L. in the British Isles. *Fishery Invest. Ser. 2*, 15(5):69pp

Greenhalgh, M.E. 1969. The breeding of the Oystercatcher in North West England. *Naturalist* 909:43-47

Heppleston, P.B. Nest-site selection by Oystercatchers (*Haematopus ostralegus*) in Netherlands and Scotland. *Netherlands Journal of Zoology* 21:208-211

K.B.Briggs, 26 Hazelmount Drive, Warton, Carnforth, Lancs. LA5 9HU, GB.