PESTICIDE LEVELS IN ORD RIVER BIRDLIFE

1. During August 1972, 40 birds of 21 species were collected in the Ord Irrigation area. The species are listed in Appendix 1. Samples of muscle, liver, fat, brain and stomach contents were analysed for organochlorine insecticide residues. The results of these analyses are summarised in Table 1.

TABLE 1 : DDT Levels in tissues of birds collected in the Ord Irrigation Area during August 1972.

| TISSUE | No. of Samples | DDT & Metabolites Concn. (ppm) | |
|---|---|---|---|
| | | Mean | Range |
| Muscle | 39 | 2.60 | 0.03 - 18 |
| Liver | 35 | 1.83 | 0.01 - 12.0 |
| Fat | 14 | 102.6 | 0.2 - 300 |
| Brain | 1 | 0.8 | - |
| Stomach Contents | 3 | 10.9 | 0.2 - 29 |

DDT or metabolites were detected in all samples.

The Fairy Martin was analysed whole and had a DDT plus metabolites concentration of 19 ppm.

DDT plus metabolite levels were highest in the Raptores (Falconiformes) and lowest in grain-eating birds - see Table 2.

TABLE 2 : Comparison of DDT levels in different feeding groups.

| FEEDING GROUP | DDT & Metabolites Concn. (ppm) | | |
|---|---|---|---|
| | Muscle | Liver | Fat |
| Grain-eaters (10 birds, 5 species) | 0.32 (0.03-0.4) | 0.21 (0.01-0.4) | 7.6 (0.2-12) |
| Raptores (11 birds, 5 species) | 6.2 (0.3-18) | 2.2 (0.1-9.5) | 141 (7.6-300) |

Dieldrin was detected in 17% of samples - 4 muscle, 10 liver, 1 fat and 1 stomach contents. Highest levels detected were:

Muscle : 0.1 ppm
Liver : 0.5 ppm
Fat : 1.0 ppm
Stomach Contents : 0.04 ppm.

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2. During May 1973, 65 Mudlarks (Grallina cyanoleuca) were collected in the Ord district both within the cultivated area (approx. 15 miles x 5 miles in extent) and at varying distances up to 45 miles from its centre.

Muscle samples taken from each bird were analysed for organochlorine insecticide residues. Results are presented in Table 3.

TABLE 3 : DDT levels in Mudlarks sampled at varying distances from centre of cultivated area.

| DISTANCE FROM CENTRE OF CULTIVATED AREA (miles) | No. of Birds Sampled | DDT & METABOLITES CONCN. (ppm) | |
|---|---|---|---|
| | | Mean | Range |
| 0 - 9.9 | 29 | 2.37 | 0.03 - 13 |
| 10 - 19.9 | 13 | 0.18 | 0.03 - 0.8 |
| 20 - 29.9 | 8 | 0.06 | n.d. - 0.2 |
| 30 - 39.9 | 13 | 0.05 | n.d. - 0.2 |
| 40 - 49.9 | 2 | 0.01 | 0.01 - 0.01 |

n.d. = not detected. Limit of detection was 0.01 ppm.

No other common organochlorine pesticides were detected.

Samples were also taken from 4 Black-breasted Buzzards (Hamirostra melanosternon) which were found dead, or dying, in a paddock which had recently been sprayed with Atrazine and Parathion. Results of analyses were as follows:

| TISSUE SAMPLED | No. of Samples | Parathion (ppm) | | Toxaphene (ppm) | | DDT & Metabolites (ppm) | |
|---|---|---|---|---|---|---|---|
| | | Mean | Range | Mean | Range | Mean | Range |
| Brain | 4 | n.d. | - | n.d. | - | 0.23 | 0.1 - 0.4 |
| Muscle | 4 | n.d. | - | n.d. | - | 0.74 | 0.14 - 1.9 |
| Liver | 4 | n.d. | - | n.d. | - | 0.36 | 0.06 - 0.8 |
| Fat | 3 | 0.14 | n.d.-0.4 | 13.8 | 5.5-30 | 18.7 | 7.8 - 40 |
| Stomach Contents | 4 | 2.6 | 1.4-3.6 | 7.5 | 5-10 | 4.8 | 3.8 - 7.7 |

n.d. = not detected. Limit of Parathion detection was 0.01 ppm.

Limit of Toxaphene detection was 0.2 ppm.

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3. A small number of bird eggs were collected on Lake Argyle in July 1974 and analysed for organochlorine residues. Results were as follows:

| SPECIES | No. of Eggs Sampled | DDT & Metabolites Concn. (ppm) | |
|---|---|---|---|
| | | Mean | Range |
| Darter | 6 | 0.08 | 0.03 - 0.157 |
| Little Pied Cormorant | 11 | 0.22 | 0.033 - 0.46 |
| Whistling Eagle | 2 | 0.82 | 0.017 - 1.62 |

Dieldrin residues were detected in one sample only - 0.04 ppm in a Darter egg.

APPENDIX 1 : Bird species sampled during August 1972.

| SPECIES: | No. of Birds Sampled | Samples Taken | | | | |
|---|---|---|---|---|---|---|
| | | Muscle | Liver | Fat | Brain | Stomach Contents |
| Little Grebe *(Podiceps novaehollandiae)* | 1 | 1 | 1 | | | |
| Little Pied Cormorant *(Phalacrocorax melanoleucos)* | 1 | 1 | 1 | | | 1 |
| White Egret *(Egretta alba)* | 2 | 2 | 2 | | | |
| White Ibis *(Threskiornis molucca)* | 1 | 1 | 1 | | | |
| Black Kite *(Milvus migrans)* | 1 | 1 | 1 | 1 | | |
| Whistling Kite *(Haliastur sphenurus)* | 1 | 1 | 1 | 1 | 1 | 1 |
| Kestrel *(Falco cenchroides)* | 1 | 1 | 1 | 1 | | |
| Brown Falcon *(Falco berigora)* | 7 | 7 | 7 | 6 | | 1 |
| Little Falcon *(Falco longipennis)* | 1 | 1 | 1 | 1 | | |
| Brolga *(Grus rubicunda)* | 1 | 1 | 1 | 1 | | |
| Australian Pratincole *(Stiltia isabella)* | 1 | 1 | 1 | | | |
| Diamond Dove *(Geopelia cuneata)* | 1 | 1 | | | | |
| Red-tailed Cockatoo *(Calyptorhynchus banksii)* | 2 | 2 | 2 | 2 | | |
| Galah *(Eolophus roseicapilla)* | 4 | 4 | 4 | | | |
| Little Corella *(Cacatua sanguinea)* | 2 | 2 | 2 | 1 | | |
| Red-backed Kingfisher *(Halcyon pyrrhopygia)* | 3 | 3 | 3 | | | |
| Rainbow bird *(Merops ornatus)* | 2 | 2 | | | | |
| Fairy Martin *(Petrochelidon ariel)* | 1 | Analysed Whole | | | | |
| Black-faced Cuckoo-Shrike *(Coracina novaehollandiae)* | 2 | 2 | 2 | | | |
| Mudlark *(Grallina cyanoleuca)* | 2 | 2 | 2 | | | |
| Black-faced Woodswallow *(Artamus cinereus)* | 3 | 3 | 2 | | | |
| TOTALS: | 40 | 39 | 35 | 14 | 1 | 3 |