

PROJECT : CHEMICAL RESIDUES IN THE ESTUARINE COBBLER.

OBJECTIVE : To obtain preliminary information on the levels of mercury, lead, cadmium and organochlorine pesticide residues in estuarine cobblers (Cnidogobius macrocephalus) of the Swan River.

PROCEDURES : Twenty-seven cobblers were caught in the Mosman Bay area of the Swan River during April - May of 1973. Muscle and liver samples from each fish were analysed for mercury, lead, cadmium and organochlorine residues. Analyses were performed by the Government Chemical Laboratories.

RESULTS : Results are presented in Tables 1 and 2.

TABLE 1.

Residue levels in cobbler tissues.

| | Muscle Concn. (Mean and range). | Liver Concn. (Mean and range). |
|----------------------|------------------------------------|-----------------------------------|
| Lead | 0.10 ppm. (0.01-0.50), n=27 | 0.48 ppm. (0.07 - 0.78), n=10 |
| Mercury | 0.03 ppm. (0.01 - 0.07), n=27 | 0.07 ppm. (0.01 - 0.11), n=5 |
| Cadmium | < 0.05 ppm. n = 10 | - |
| DDT & Metabolites | 0.016 ppm. (0.001 - 0.07), n=27 | 0.11 ppm. (0.02 - 0.25), n=27 |
| Dieldrin | 0.008 ppm. (0.001 - 0.04), n=27 | 0.05 ppm. (0.02 - 0.18), n=27 |

TABLE 2.

Relationship between age and lead residue level in muscle.

| One Year | | Two Years and Older. | |
|-----------|-----------|----------------------|-----------|
| mean | 0.05 ppm. | mean | 0.14 ppm. |
| variance | 0.0034 | variance | 0.0154 |
| n = 12 | | n = 15 | |
| t = 2.127 | | | |

Cobblers of age two years and older had significantly higher lead levels in muscle than cobblers of age one year ($p < 0.025$). Levels of other residues did not differ significantly.

CONCLUSIONS : The National Health and Medical Research Councils recommended tolerance levels for these chemicals in fish muscle are:

| | |
|-------------------|----------|
| Lead | 2 ppm |
| Mercury | 0.5 ppm. |
| Cadmium | 5 ppm. |
| DDT & Metabolites | 1 ppm. |
| Dieldrin | 0.2 ppm. |

Mean residue levels in muscle were well below these limits. None of the tissues analysed had residue levels exceeding the limits.

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