SHORT CONTRIBUTION

EMU CAPTURE IN THE FIELD USING AN IMMOBILIZING DRUG AND CAP-CHUR APPARATUS*

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During an ecological study of emus (*Dromaius novaehollandiae*) at Mileura Station, a wool-growing lease of 600,000 acres situated 90 miles west of Meekatharra in Western Australia, birds were captured for banding by using Cap-Chur apparatus to deliver an immobilizing drug.

Many workers have used the Cap-Chur apparatus, manufactured by the Palmer Chemical Co., Georgia, U.S.A., to capture wild animals in the field. For emus, trials by Davies (personal communication 1961) in the zoo and field indicated that Flaxedil was the most promising drug to use, and with practice in handling and the techniques of use, reasonable recovery from the effects of the drug could be expected.

Flaxedil (gallamine triethiodide) is a synthetic curare-type drug manufactured by May & Baker. It is an immobilizing agent which affects the neuro-muscular junctions and prevents muscular contraction. Animals drugged with it remain fully conscious. Tranquillizing drugs, injected intramuscularly, take longer to act and remain effective for longer periods. For this study Flaxedil was used at a concentration of 500 mg/ml and at a dose rate of 12 mg/kg. Other workers have found that most mammals are effectively immobilized with a dose of only 2–3 mg/kg. The stimulant prostygmine bromide was used as an antidote, at a concentration of 50 mg/ml and at a dose rate of 6 mg/kg. A standard dose of 50 mg atropine sulphate was administered with the Flaxedil to retard salivation.

Cap-Chur darts with 2-ml barrels were used and the volume of the drug was made up with distilled water. The now superseded soda-and-acid-type mechanism of the Cap-Chur darts operated without fault. The detonator mechanism was used on eight occasions. On six of these occasions the bird was lost with the dart. The feathers and skin of the emu appear to be too soft to provide the impact necessary to detonate the charge and inject the drug. All three types of available projector were used: the gas-operated pistol up to a range of 15 yd; the gas rifle up to 30 yd; and the powder-charge rifle at a range over 30 yd. If a high-powered projector were used over a short range the entire dart would penetrate the soft skin.

Most captures were made near windmills pumping water from wells into troughs. When the operator remained completely hidden until the birds came very close to the water they were frightened off when they saw him and did not return for many hours. It was better for the operator to be only partly hidden and thus visible to the emus as they circled the mill at a range of about 100 yd before finally approaching to drink. A thick bush about 20 yd from the trough was an effective hide; at other times the operator hid inside the well, his head and shoulders covered by a few broken branches.

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In June during the breeding period the birds were extremely inquisitive and, as they would often approach a stationary vehicle, some captures were made without a hide.

Birds did not run far after being hit, but tended to stay with their group, walking slowly off, feeding on the way; they generally fell in sight of the operator. It is unlikely that many birds listed as "lost with dart" actually died; some were seen up to 65 minutes after the Flaxedil injection, still walking, and apparently little affected by the drug.

TABLE 1

COLLAPSE AND RECOVERY TIMES OF EMUS INJECTED BY CAP-CHUR DART WITH FLAXEDIL AT 12 MG/KG AND ANTIDOTED UP TO 4 MIN AFTER COLLAPSE WITH PROSTYGMINE BROMIDE AT 6 MG/KG

Bird No.	Time to Collapse (min)	Time to Recovery after Flaxedil Injection (min)
(*a*) *June–July*		
1	12	17
2	7	10
3	12	15
4	20	24
5	12	5 hr
6	22	30
7	24	40
(*b*) *September–December*		
8	12	15
9	12	15
10	7	9
11 (juvenile)	4	24 hr
12	15	17
13	15	20
14	8	11

Best results were obtained in June–July; all 7 injected birds were captured and recovered from the effects of the drug. In September–December, of 50 injected birds only 7 were successfully captured; 19 were "lost with dart" and 24 died.

From the data in Table 1, the Mann Whitney U test shows that the time of collapse values in group (*a*) are significantly longer than those of group (*b*) ($U = 11$, $P = 0{\cdot}049$). The time to recovery values do not differ significantly between the two groups ($U = 15$, $P = 0{\cdot}130$). The difference suggests that the birds may be initially more resistant to the drug in winter than in summer, possibly because air temperatures are low in winter, food is readily available, and the birds are in breeding condition. Not only was the effect of the drug in September–December more severe than in the winter but also the variation in effect from bird to bird was much greater. Some birds died within 4 min of the Flaxedil injection while others were still unaffected more than 1 hr after injection.

A few more experiments were conducted in the September–December period in order to alter dose rates. Any increase in dose rate resulted in a higher incidence of deaths, while a lowering of dose rate resulted in a higher incidence of birds "lost with dart".

Birds appeared to die from respiratory failure, but administration of oxygen failed to save any birds.

Unfortunately, during winter surface water is readily available in the study area, and birds are less likely to come to mills and within the operator's range, so that only birds inquisitive enough to approach the operator can be injected.

Some birds have been seen alive up to 12 months after banding in the June–July period. The emu capture programme is continuing with the use of Flaxedil in the winter months, and experiments are in progress to find a more suitable drug for use in the summer period.

Professor M. Lockwood and Dr. R. Collin, of the University of Western Australia, offered help and advice on the use of drugs.

Mr. Matcham Walsh permitted free access to Mileura Station at all times.

Mr. J. P. Kruiskamp assisted in the field, and Dr. S. J. J. F. Davies encouraged and supervised the project.