inoculated onto Difco 1½% malt extract agar plates. Mucus and scales from all four fish species were subsequently placed in the petri dishes and in this case also the mucus supported a rich growth of fungi. No mycostatic or mycocidal effects could be observed.

The general opinion is that when a fish with scales is roughly or inexpertly handled, scales and part of the mucous layer are removed. Fungi (especially *Saprolegnia*) grow on the exposed skin surface, penetrate the skin and the fish then dies from secondary bacterial infection (Mulder – personal communication). From the present results it is clear that mucus from the four investigated species definitely does not have any antibiotic function and, therefore, does not protect the animal in this manner. It seems more probable that the rate of mucus production is critical in protecting the fish from colonization by parasites, fungi and bacteria (Pickering 1974). The continuous replacement of the mucus probably acts in much the same way as the sloughing off of keratin in the mammal. Nothing is known about the actual rate of mucus production in fish. It is, however, possible that the stress of capture and actual handling of the fish may cause goblet cell discharge and this in turn can cause the cuticle to be thrown off (Whitear 1970). Colonization by fungi would then be easier and secondary bacterial or other infections would follow.

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NOTES ON AN EFFICIENT CAT TRAP FITTED WITH A REMOTE SIGNALLING DEVICE

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ABSTRACT

Difficulties in collecting feral cats under adverse climatic conditions on Marion Island, prompted construction of live traps fitted with 27 mHz transmitters signalling trap release. Construction and application of the apparatus is described and discussed.

INTRODUCTION

In August 1973, the Mammal Research Institute, University of Pretoria, established a mammal research programme on Marion Island (46°52′S/37°51′E) in the southern Indian Ocean. This programme included research on the status of the feral house cat (*Felis domesticus*). Because of the very elusive nature of these cats they were difficult to shoot, and it was necessary to construct a trap to capture them alive. This was successfully achieved using simple materials available on the island.

DESIGN AND CONSTRUCTION

The traps have a frame of 2 cm diameter galvanized conduit piping covered with 2 cm mesh wire netting (Figure 1). A U-shaped aperture, 15 cm high and 17,5 cm wide, provides entry to the cage and access to the bait which is positioned at the other end of the trap. A sliding section, of the same dimensions as the end sections of the trap, forms the drop-door which seals the entrance once the trap has been sprung. The vertical side pieces of this door consist of 3 cm conduit which fit over two upright lengths of the 2 cm conduit. These two uprights are set approximately 2 cm ahead of the front section of the cage. They guide the drop-door as it falls freely to close off the

entrance, and hold it in place once it has fallen. The drop-door weighs 1,5 kg and no locking device to hold it down is required.

Originally the whole front section of the cage was left open, the drop-door closing it off once it had fallen. On a few occasions however the trap was sprung with no results. Evidently the cats react so fast when the door begins to fall, that they are able to get some part of their body beneath the falling door, arrest its progress and escape. The front section was therefore sealed off and the small entrance added to form an obstacle in the path of retreat. This also overcame the persistent problem caused by scavenging skuas (*Stercorarius skua*) which were able, in the original system, to enter the cage, pull the bait and spring the trap. To facilitate immobilization by injecting Scoline, the back section of the cage was redesigned so that it could be opened outwards. It was hinged along the upper horizontal crosspiece. A plywood board, approximately the same size as the internal dimensions of the cage, is inserted into the trap by first opening the back section slightly and then completely, as the board is pushed down the cage. The cat is pressed against the front of the cage where it is easily injected through the wire netting.

A handle on each side of the trap was added

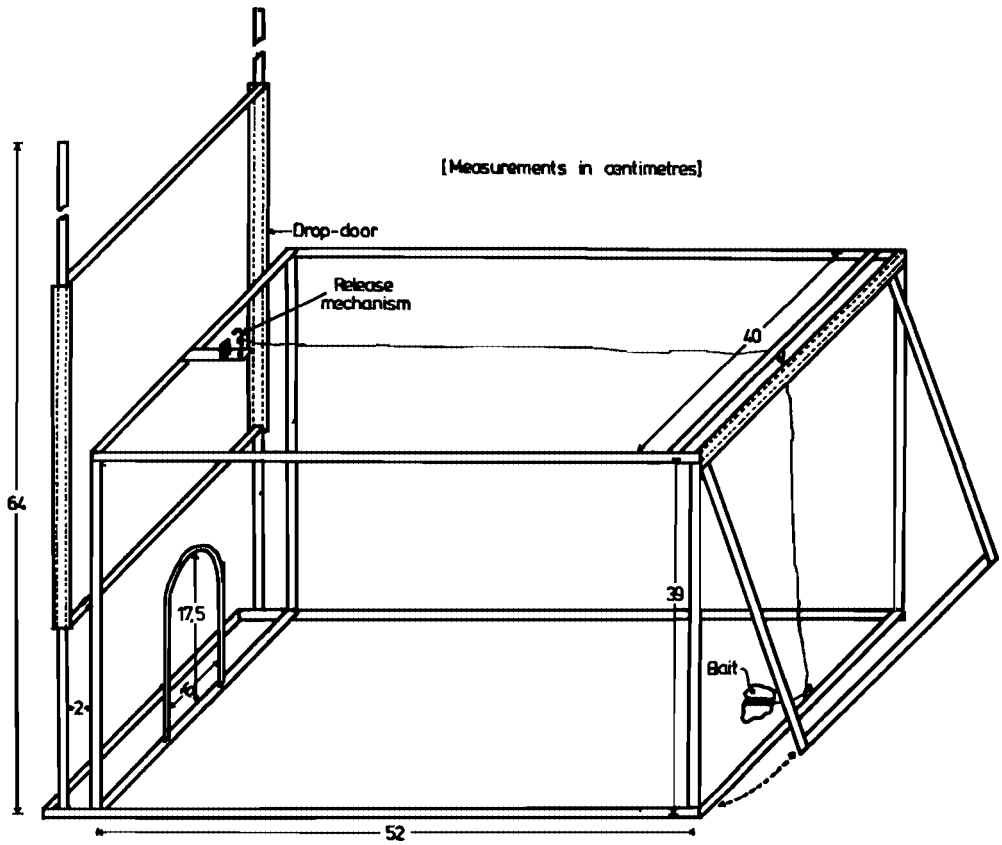

FIGURE 1

to facilitate carrying. The whole trap, including the drop-door, weighs 9 kg.

OPERATION

The release mechanism is illustrated in Figure 2. The bait is positioned as c ose to the bottom horizontal crosspiece of the back section as possible, so that cats are drawn right into the trap to reach it. Nylon fishing line securely tied to the bait runs through an eye on the inside of the bottom cross-piece, up the inside of the back section, through a second eye on the top cross-piece, through the wire netting on top of the cage and along the outside of the cage to the front section. Here it is attached to the release hook.

The method by which the trap is sprung is shown in Figure 2. The weight of the door resting on the pointed end of the nail causes the head to lift. When the release hook is swung into the forward position it prevents the head of the nail from lifting, and the drop-door is held in place above the entrance. As soon as the bait is pulled the hook in turn is pulled back, and the head of the nail is released. Since the nail no longer supports it, the drop-door falls across the entrance of the cage sealing off the trap.

A variety of baits was tried, the most successful being those with a strong smell such as raw bacon and tinned fish. The remains of cat prey, principally bird wings and feet, were strewn around and in the trap. A few handfulls of grass were spread on the bottom of the trap in an attempt to disguise the wire netting on the floor of the trap.

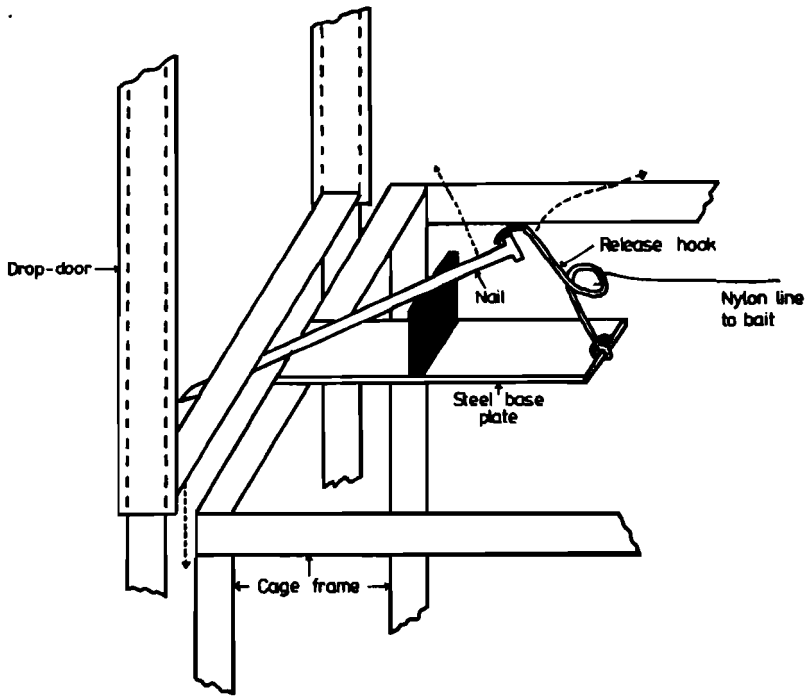

FIGURE 2

WARNING DEVICE

The unpredictable weather experienced on Marion Island often hampered the checking of traps. To obviate checking on unsprung traps an electronic warning device, transmitting only when the trap had been sprung, was fitted to two traps.

The device consists of a 27 mHz crystal, employed in a Collpitts oscillator, driving a tuned amplifier (Figure 3). The positive supply is fed through a transistor switch, driven from a 500 millisecond (m.sec.) multivibrator. This switching circuit was used to provide easy identification of the different transmitters. A 1 kHz channel spacing enabled identification of the transmitter and trap producing the received signals.

Transmitters were powered by a pack of six 1,25 volt, five ampere-hour (AH), nickel cadmium batteries. Power is only drawn when the switch is activated, and the minimum battery life is approximately 100 hours (continuous broadcast) before recharging.

The switch consists of two contact plates, an uninsulated one on the underside of the bottom crosspiece of the drop-door, and an insulated one on the upper side of the bottom crosspiece of the trap, on which the door rests when sprung. When the drop-door falls the two conductors make contact completing the circuit between the batteries and the transmitter.

A Siemens Short Wave Receiver (1,5 to 30

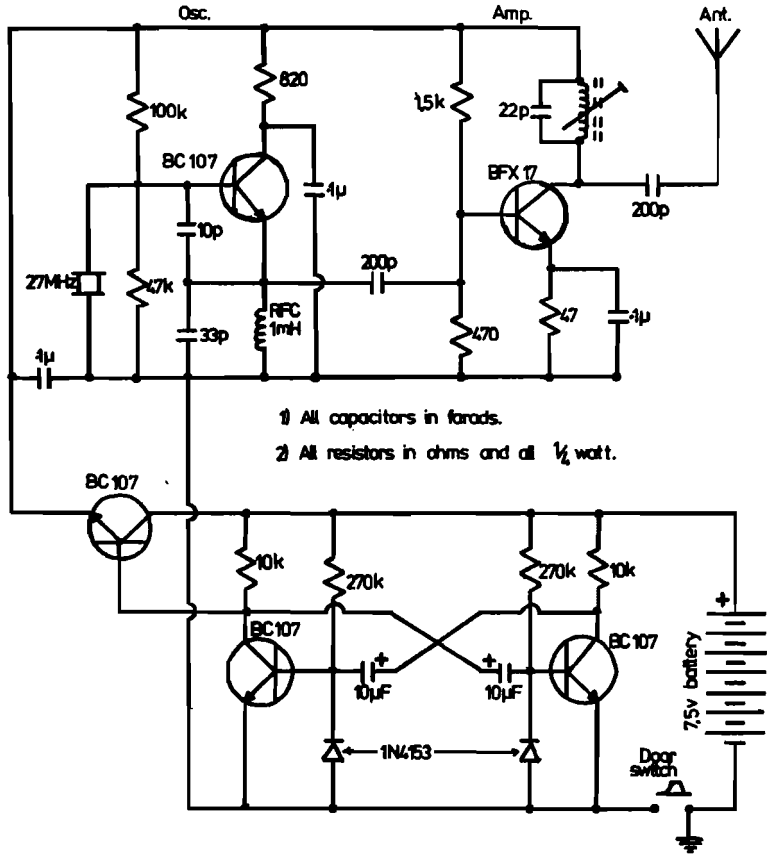

FIGURE 3

mHz, type 445E–311el) attached to a Ground Plane antenna were used to receive the transmissions from the sprung traps. Using a one metre whip antenna on the transmitters, signals from at least 2 km away were easily picked up. The receiver was usually left switched on, or else checks were made every two hours for transmission from sprung traps.

The transmitter was housed in a three-ounce plastic Monoplast specimen container, and the batteries in a Kodak D163 container.

DISCUSSION AND CONCLUSIONS

Shooting cats on Marion Island proved impractical due to inclement weather and the difficult terrain. The use of a 0,22 rifle and a 0,410 shotgun was feasible, but bullet damage reduced the value of the specimen for subsequent use. Trapping was the only alternative and the trap discussed proved to be very reliable and efficient for cats. This trap, especially with the automatic signalling device, should be very useful in studies on other carnivores. The signalling device provided an easy and reliable method of checking traps. Signals from the transmitters used in this study could be received by any good receiver having 27 mHz band or Beat Frequency Oscillator. By substituting aluminium tubing for the galvanized conduit, the weight of the traps could be considerably reduced.

The traps were usually set at or near suspected lair sites. In two cases almost complete families were caught one at a time and in rapid succession. Kittens younger than two months have rarely been seen above ground, and without the traps such specimens would be difficult to obtain. Nine kittens and three adults have been caught to date.

ACKNOWLEDGEMENTS

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Condy and Anderson were biologists on the 30th Marion Island Relief Team 1973–1974; Heijnen (Radio Technician) constructed the transmitters and Smit (Radio Operator) helped iu the original design of the traps.

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A NOTE ON THE BIRTH OF LITTERS AND POST-NATAL DEVELOPMENT IN CAPTIVE *LEGGADA MINUTOIDES*

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Specimens collected from the Redmondshoek and Pomfret districts of the Northern Cape in June 1973 were kept in the laboratory in two wooden boxes. The boxes measured 27,6 × 23,6 × 27 cm and 35,4 × 30,48 × 35,4 cm. The upper surface of the box was made of fine wire mesh in which a wooden framed lid was made to facilitate access to the cage. Sawdust and cotton-wool were supplied as bedding. The mice were fed on a diet of birdseed, and greens were supplied once a week. Water was available ad lib. Nine mice, five males and four females, were placed in the larger box. Three, two females and one male were placed in the smaller box. Two litters were born in November 1973, one in each box, and one in January 1974 in the larger box. A further litter was born in April 1974, from a pregnant field-trapped female which was collected from the Roodepoort district of the Transvaal.

Ansell (1960) recorded a litter of *Leggada minutoides* (A. Smith 1934) born in the laboratory from a captured pregnant female. No further breeding records of *Leggada minutoides* have been listed.