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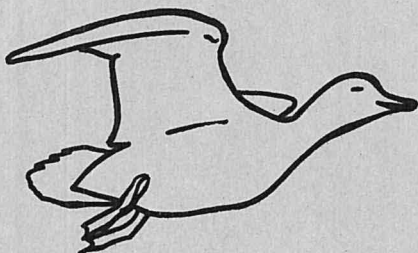
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DEPARTMENT OF FISHERIES AND WILDLIFE,

Western Australia

**TREATMENT OF WATERFOWL
ALGAL POISONING
AND
BOTULISM**



Published by the Director of Fisheries and Wildlife, Perth,
under the authority of the Hon. Minister for Fisheries and Wildlife

DEPARTMENT OF
FISHERIES AND WILDLIFE,
108 ADELAIDE TERRACE,
PERTH

TREATMENT OF WATERFOWL

ALGAL POISONING AND BOTULISM

INTRODUCTION

Cases of botulism and algal poisoning are likely to occur throughout the State at any time of the year. Large outbreaks however, usually develop in the South-west only during the summer months. When they do, large numbers of birds are affected and the Department is unable to cope.

This booklet has been prepared as a guide for anyone willing to care for and treat afflicted birds.

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TREATMENT OF WATERFOWL

1. BOTULISM

Botulism, a disease of both birds and mammals, is a bacterial poisoning, not an infection. It is caused by the toxin of the bacteria scientifically known as *Clostridium botulinum* and does not invade the living tissues of its victims. There are three types of botulism and the one which affects birds is known as type C. Each of its cells can form a spore highly resistant to physical and chemical agents, and in this form it may be dormant for many years. When conditions are favourable - suitable temperature, an organic medium to satisfy food requirements, and an absence of atmospheric oxygen - the spores germinate and multiply. In so doing, they produce a potent nerve toxin as one of the end products of their metabolism. A susceptible animal swallows this toxin and absorbs it through the lining of the digestive tract. By way of the blood stream, it reaches the peripheral nervous system. In some manner not yet clearly understood, it attacks the nerves and causes paralysis. If the dose of toxin is large enough, death of the animal results from paralysis of the respiratory system. It is very similar to the toxin which causes tetanus and gas gangrene, and like tetanus, not very much can be done once the signs of poisoning have appeared.

Almost every species of bird being on or near a botulism-producing marsh area has been affected in one outbreak or another, and the degree to which it is affected can be explained largely by the nature of its feeding habits. There appears to be no such thing as a "typical" botulism area. Most marshes and lakes where outbreaks occur are shallow, brackish, and on the alkaline side of neutrality; but depth, salt concentration, and alkalinity may vary widely from one marsh to another and within the same marsh from year to year.

Botulism is generally considered to be a warm weather disease, but the influence of climate on the occurrence of outbreaks cannot be defined clearly. The toxin is killed quickly by heat above 80°C but apparently loses its potency slowly in normal sunlight. It is unlikely that the botulism contracted by waterfowl would be transmissible to man. Type C is said to be not pathogenic to humans.

2. BLUE-GREEN ALGAE

Algae are primitive forms of plant life that are common and normal in nearly all surface waters, irrespective of whether the water is fresh, salt or brackish. The presence of algae is not normally detected until there are enough of them to make their presence obvious through the familiar long green strands growing in from the edge of the water. When such a body of water becomes discoloured with a super-

abundance of free-floating algae, it is said to develop a "water-bloom". The free-floating algae are normally not visible to the naked eye. It is only when conditions favour the rapid multiplication of certain species that these organisms bring about an obvious change to the appearance of the water and form water-bloom.

Algae grow very rapidly under suitable conditions of a good supply of nutrients in the water, a high water temperature (about 32°C) and a high light intensity. This is the reason why algal growths are rare in winter and only become a problem in summer, particularly towards the end of summer. They are also more common in shallow water, which can warm up rapidly with hot weather and receive more light than deeper water.

The most spectacular water blooms are produced by a group of algae known as the blue-green algae, and as several of these are poisonous they are of concern for the welfare of waterfowl, livestock and humans.

3. WHAT CAN WE DO?

Very little can be done in the field to prevent outbreaks of either disease. From time to time, not only in Western Australia, but throughout Australia and overseas countries, outbreaks of botulism and algal poisonings occur when seasonal conditions favour the growth of the organisms. Varying according to the severity of the growth, mortalities occur mostly among wild ducks and other waterfowl, and there is no prophylactic or immunizing measure which can reasonably be taken. No known spray would be selective enough to kill any of the causative organisms and not kill other harmless and beneficial ones.

Many kinds of medications have been tested and many experiments have been conducted. None except antitoxin for botulism have had any beneficial effect. However, the following treatment, which can be used for waterfowl affected by either botulism or blue-green algal poisoning has been used successfully by persons associated with this problem situation, and if followed very carefully, should result in saving some of our waterfowl suffering from these diseases.

4. SIGNS OF DISEASE

The signs of botulism and algal poisoning are markedly similar. For convenience they are listed together:

- Birds generally found trying to leave water.
- Legs and wings partially or completely paralysed, neck weak, and birds have difficulty in keeping head and neck erect.
- Nictitating membrane (the inner or third eyelid) very sluggish and sometimes quite non-functional.

- Dilation reflex of the eyes very slow.
- Throat, upper and lower air passages fouled with thick whitish opaque mucus. In severe cases mucus appears in the eyes. Mucus restricts breathing and the creature is gasping for air. It may continue to gasp when the passages are cleared. This indicates the breathing (respiratory) muscles are involved with the paralytic effect of the illness.
- Bowel movement and swallowing reflex affected. NOTE: cloaca (the common vent or single opening from the bowels and kidneys) can become fly blown. In normal droppings, bird urine is white and bowel matter dark. Green is abnormal.

5. TREATMENT

5.1. REMOVE MUCUS FROM AIR PASSAGES AND EYES

Hold up the bird's head. Gently lever the beak (mandibles) open and by putting the index finger down on the tongue draw it up and out to the full extent. The upper and lower air passages will be observed as slits about half an inch in length. If mucus is present it will be lodged in the upper slit which is the air passage from the nares (external nose) and across the bottom slit which is the air passage to the lungs. Use a dry cotton bud and place it against the mucus then rotate and remove. The rotating action should pick up the mucus lodged. Mucus is to be removed from both slits. The throat should be checked occasionally in the earlier stages of the illness and mucus removed. Use clean cotton buds each time. To remove mucus from the eyes gently roll a dampened cotton bud across the affected part, and towards the end nearer to the beak. If the eyes are stuck shut and pressure from discharge has built up inside, they should be swabbed gently with clean warm water until open and drained.

5.2. TREAT BIRD WITH A DOSE OF SALTS AND CLEAN UP FEATHERS (SEE 7.1. FOR FORMULA)

For Grey Teal, and ducks this size, give 2 c.c. of salts. For Black Duck, and ducks this size, give 3 c.c. Swans should be given 4 c.c. of salts. In all cases allow three-quarters of an hour and if no bowel movement occurs, repeat the dose.

Draw up required amount into a 10 c.c. hypodermic syringe with needle No. 19 or larger and fit a 4-inch piece of soft plastic tubing (size about 1/16" internal diam 3/32 O.P.) over the needle. Open the beak and withdraw the tongue as before. Apply a light dressing of olive oil with an eye-

dropper. Insert tubing a little way down into the oesophagus (food passage) of the bird, and slowly inject the mixture. Keep the bird's head and neck up and extended.

If a syringe is not available the mixture can be fed by pouring into a funnel fitted to a larger tube (gravity feed). Make sure the tube is not too tight in the passage. Guard against the welling-back of fluid given by tube, both in the process and just after (very prevalent in pelicans, seagulls and herons). Wild ducks are the easiest patients of all and very little welling-back takes place.

NOTE: Some birds, particularly seagulls, lose the power to expel their droppings, and gradually "blow up" - a little seepage may occur, but no full expulsion. The abdomen becomes distended and the animal distressed. This may occur if it has been force-fed with solid food in the earlier stages. Inexperienced persons should not attempt to relieve this situation but should seek the aid of a qualified person - and in any case this illness is very uncommon.

It must be remembered that some birds are more frail (e.g. sandpipers) and are therefore more difficult to tube without previous experience, and are hopeless to gravity-feed.

5.3. TREATMENT OF FLY-BLOWN CLOACA

Cut away the feathers around the vent (about 1-inch diameter). Remove external fly larvae (maggots). Remove internal fly larvae with a dry cotton bud. Cotton bud can be inserted without damage approximately $\frac{1}{4}$ -inch in Grey Teal and slightly deeper in larger birds. Wash around and just inside the vent with mild antiseptic solution (no more than 5%). Dry well and apply Mercurochrome. Iodine and Metaphen are too strong as this area is very sensitive. Check area constantly and remove any more fly larvae that emerge from vent.

5.4. ADMINISTER MULTI-VITAMIN MIXTURE (SEE 7.2. FOR FORMULA)

Give in the same manner as salts. Dosage amounts are the same as for salts dosage. This should be given at four-hour intervals e.g. 6 a.m., 10 a.m.,

2 p.m., 6 p.m.) until the bird can stand or drink by itself.

5.5. HOLDING AREA

Holding areas should be prepared. A well mowed grass area is ideal. Sand is out. Concrete pavement can be used provided it is scrubbed and disinfected daily - twice daily is better still. Three-eighths inch mild steel rod frames 6 ft x 3 ft and wired with 1-inch galvanised chicken wire are best for pens. Large wooden boxes with tops and bottoms knocked out will suffice. One box or cage is to be used for very sick birds and the second and third box or cage for birds in a condition of being able to walk about. The situation should be shaded, and boxes or cages should be shifted occasionally to prevent the birds from sitting in faecal material (droppings). The areas previously used should be hosed well and sprayed with fly spray before using again.

6. REHABILITATION

Hold the birds in the pens made. Place birds that cannot stand in one pen, and standing and walking birds in another. If the weather is hot, the very sick birds can be given fresh water (in the same dosage amounts, as described earlier), in between multi-vitamin doses.

Do not put food or water trays in with very sick birds. Allow the standing and walking birds to drink water from a shallow, wide drinking container, e.g. shallow cake tin. As the more sick birds recover, remove from first pen to the second. Cease manual feed of multi-vitamin mixture - 4 or 5 drops of Pentavite may be added to drinking water.

When the sick birds become active (generally 2 or 3 days later, depending on severity of poisoning), place in the pen a shallow tin of food. For ducks use chick starter crumbs made up with fresh water till very watery. Make up fresh every day. When the birds are feeding and drinking well, change watery mash to dry crumbs and provide separate drinking facilities. Allow to bath in shallow tub. Change this also daily. A light spray with the hose will not hurt at this stage and will stimulate preening.

The rescuer should find out what species of bird he has and what it needs to be fed on, before treatment is commenced.

Recovery of some birds may take up to 10 days and even longer, especially if the plumage has lost a lot of its water-proofing after a severe bout and much handling.

It is important to provide a cool place for the holding pens and also freedom from unnecessary disturbance at all stages of the illness.

Allow the birds to fly away when they desire.

7. FORMULAE OF MIXTURES

7.1. SALTS MIXTURE

One teaspoon (4 mls) of epsom or glaubers salts (glaubers is milder) to $\frac{1}{2}$ cup (100 mls) of fresh water. Stir well.

7.2. MULTI-VITAMIN MIXTURE

One teaspoon (4 mls) of powdered "Glucodin" to $\frac{1}{2}$ cup (100 mls) of fresh water. Add 4 or 5 drops of Pentavite. Stir well. This mixture should be made fresh daily.

N.B. - If only one sick bird is hospitalized, halve the contents of the mixture.

8. FURTHER INFORMATION

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108 Adelaide Tce., Perth
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Carnarvon Street
Port Denison
Tel. 27 1187

ALBANY:

Stirling Tce.
Tel. 41 4811

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Knight Terrace
Tel. 48 1210

BROOME:

Hamersley Street
Tel. 92 1121

ESPERANCE:

Wallaceway Centre
Tel. 71 1839

BUNBURY:

Stirling Street
Tel. 21 2598

FREMANTLE:

Cliff Street
Tel. 335 6369

BUSSELTON:

12 Queen Street
Tel. 52 2152

GERALDTON:

Fisherman's Wharf
Tel. Wildlife - 21 3510
Fisheries - 21 1956

CARNARVON:

16 Robinson Street
Tel. 41 1185

JURIEN BAY:

Padbury Street
Tel. 48 1048

WAROONA:

Four Acre Street
Tel. 33 1331

KALGOORLIE:

Maritana House, Boulder Road
Tel. 21 4148

WONGAN HILLS:

Fenton Street
Tel. 232

KARRATHA:

Lot 750 Andover Way
Tel. 85 1427

WYNDHAM:

PWD Office - 3 Mile
Tel. 61 1342

LANCELIN:

Gingin Road
Tel. 78 1111

MANDURAH:

Leslie Street
Tel. 35 1240

MANJIMUP:

Department of Agriculture
Tel. 71 1299

MOORA:

Padbury Street
Tel. 41 1055

MT MAGNET:

Hepburn Street
Tel. 96

PEMBERTON:

Trout Hatchery
Tel. (097) 76 1044

PERTH:

Ellam Street, Victoria Park
Tel. 361 3996
361 2731

PINGELLY:

Park Street
Tel. 273

SHARK BAY:

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9. ACKNOWLEDGEMENTS

- C.A. Nicholls, Division of Wildlife Research, CSIRO, Perth.
- T. Spence, Director, Zoological Gardens.
- B. Hutchinson, 11 Birchwood Parade, Woodlands.
- D. Wright, Department of Fisheries and Wildlife, Perth.

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