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Report to ATCM XXIII on outcomes
from the Workshop on Diseases of
Antarctic Wildlife

Submitted by
Australia

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25-28 August 1998, Hobart

INTRODUCTION

A Workshop on Diseases of Antarctic Wildlife was held at the headquarters of the Australian Antarctic Division Hobart 25-28 August 1998.

The meeting was open to all interested parties. There were 52 registered participants from Australia, Brazil, Italy, Japan, New Zealand, Sweden, Netherlands, and the USA. Professor A Osterhaus of the Institute of Virology, Erasmus University, Rotterdam, Netherlands and Dr Joseph Geraci from the National Aquarium in Baltimore USA were invited as experts in disease of wildlife. Mr Greg Mortimer represented the International Association of Antarctic Tourist Operators (IAATO) to whom a special invitation had been extended.

BACKGROUND TO THE WORKSHOP

At the ATCM XXI Australia presented an information paper entitled Introduction of Disease into Antarctic Birds. This paper referred to Australian research at Mawson which suggested that on serological evidence Adelie and emperor penguins at some locations had been exposed to Infectious Bursal Disease Virus (IBDV). This virus causes serious disease in poultry. Whilst the presence of IBDV is of specific concern, its discovery highlighted other more general issues:

- there is an increasing risk of disease being introduced into the fauna because of the increase in the numbers of people travelling to and within Antarctica; and
- there is a need to develop measures to limit introductions and to control outbreaks.

As a result of these concerns Australia offered to host a workshop where these issues could be discussed and to report the outcomes of workshop at the XXIII ATCM.

OBJECTIVES OF THE WORKSHOP

The objectives were agreed as follows:

- identify the potential for disease incursion into Antarctica's wildlife;
- develop a series of recommendations to reduce the risk of such introductions;
- limit the consequences of any disease establishment and spread; and
- report to the XXIII ATCM.

The workshop focused on diseases of birds and seals breeding within the Antarctic Treaty area and considered both endemic and exotic diseases.

ORGANISATION OF THE WORKSHOP

The Workshop was conducted in three parts:

- invited review papers to provide background information;
- presentations of research on disease of Antarctic and related species including case studies on disease outbreaks on non-Antarctic wildlife species; and
- workshop sessions.

Workshop sessions were organised around the topics of Risk, Prevention, Response and Monitoring with participants allocated to particular sessions. Each topic was then discussed in plenary and a consensus report adopted.

REPORT OF THE WORKSHOP

The workshop recognised that there is a significant risk of the introduction of disease into Antarctic wildlife species and that should it occur the consequences are likely to be serious and a response will be required. The recently reported mass mortality of the New Zealand sea lion, *Phocarctos hookeri*, on the sub-Antarctic Auckland Islands in 1998 strongly reinforced these points.

The workshop made a number of general recommendations that relate to major issues of minimising the risk of the introduction and spread of disease. However, it was considered that additional information and expertise are required before more specific recommendations can be made. The workshop agreed that the best way to progress would be the establishment of expert groups in the field of risk, prevention, response and monitoring and that these groups should report ultimately to the CEP.

OUTCOMES FROM THE WORKSHOP

The following presents the report of the Workshop as agreed by the participants. Information is presented under the title of each of the workshop sessions namely Risks, Prevention, Monitoring and Response.

Risks — What are the risks of disease introduction and spread in Antarctica?

Infectious and non-infectious agents may affect the health and reproductive success of biota of Antarctic marine, freshwater and terrestrial ecosystems.

Infectious agents include exotic, emerging and indigenous agents. Indigenous infectious agents may cause significant disease when environmental stressors affect host immunity or increase pathogenicity. Non-infectious agents may contribute to unusual mortality events and altered health status of biota. Obligations exist under the Madrid Protocol to prevent the introduction of non-native species, parasites and diseases (Annex 2, Article 4).

The workshop agreed that there is a risk to the health of Antarctic wildlife from the following causative agents:

- Exotic microbial agents
 - highly contagious viral diseases [morbillivirus, Newcastle disease, influenza];
 - immunosuppressant diseases [infectious bursal disease, morbillivirus, retrovirus];
 - agricultural and zoonotic diseases [brucellosis, tuberculosis and leptospirosis];
- discharges from ship and station, human movements, migratory species and atmospheric events;
- indigenous pathogens. Indigenous organisms may become pathogenic when animals are subjected to additional environmental stress such as food shortage and human disturbances and perhaps, in the longer time, as a result of climate change; and
- infection introduced through the presence of exotic and feral biota and non-infectious agents such as pollutants and toxins.

The workshop recommended that steps be taken to reduce the risk through:

- enhanced vigilance;
- the implementation of surveillance and quarantine strategies; and
- the elimination of untreated waste streams from bases and ships.

Monitoring — What should we be doing to ensure early detection?

The workshop identified the following goals for monitoring:

- to detect unusual mortalities in Antarctic wildlife; and
- to determine whether the causal agent is indigenous or exotic.

The workshop recommended the following procedures:

- a working group of experts in disease should be established to coordinate the whole disease investigation process. Parameters monitored should include population dynamics, environmental contaminants, health, morbidity and mortality;
- routine monitoring should be based upon standardised protocols for selection of species and sites, for collection, storage and transport of samples, for post-mortem techniques and reporting procedures;
- serum and specimen banks will be required and need to be established;
- priorities for monitoring should be at frequently visited sites, at sites where human impact is high, at appropriate control sites, at the sites of existing monitoring programs and where threatened species are involved;

- monitoring should be coordinated, reported on regularly and the results should be readily available to assist in an emergency response; and
- research is required to distinguish between native and exotic disease agents, to understand regional and seasonal variation of disease and the size, health status and mortality rates of non-diseased vertebrate populations. New tests and greater understanding of the immunology and antibody responses in Antarctic wildlife are needed for diagnosis.

Prevention — What procedures could reduce the risk of disease?

The workshop agreed that the following general principles should be applied to disease prevention:

- preventive measures should be based on scientific understanding of the risk of disease introduction and spread; and
- precautionary approach should be adopted which recognises that we do not have all the scientific information we need and which builds on existing standards and procedures.

The workshop recommended the following procedures should be considered:

- apply quarantine practices to intra-continental travel, use the protected area system and related measures to limit actions which may introduce or spread disease;
- use gateway states to apply agreed procedures;
- apply uniform practices at point of departure, point of landing, point of dispersal to field sites and in the marine environment;
- base procedures on existing and familiar standards and practices;
- adopt a code of behaviour to ensure that all visitors to Antarctica understand the risk so that they are motivated to assist in disease control;
- freely exchange information to increase understanding of risks;
- maintain and improve waste handling systems; and
- amend Environmental Protocol to resolve inconsistencies, implement existing protocol and ensure compliance through observation, inspection and reporting requirements.

Response — What should we do if introduced disease is suspected?

The workshop recommended that a generic response plan should be developed in preparation for possible future disease outbreaks and should be implemented as required for unusual mortality events. The plan should include procedures to:

- identify the extent, cause and source of the event;
- minimise anthropogenic amplification of the event; and
- consider whether control actions are appropriate.

The response plan should also include the following elements:

- readiness: a basic ‘disease kit’ should be available, with equipment and instructions to facilitate the collection and treatment of material that would permit the identification of the responsible agent(s) with no danger to the sample collector;
- administration: including the formation of Incident Control Structure (ICS), the identification of lead agencies and national coordinators, and the specific needs associated with the required permits and quarantine;
- communication: with advisory agencies, ATCPs, IAATO, other appropriate operations and the media;
- resources: expertise, equipment, training and funding;
- precedents: contingency plans developed for similar animal disease emergencies; and
- live vaccines: their use in the Antarctic is strongly discouraged.

The workshop recommended that the response strategy should be graduated and tailored to the circumstances of the event. The initial response should be containment by temporary restriction of access to the area and communication to all ATCPs, IAATO, international and national agencies and Antarctic operators.

Each event should be carefully documented and reported to a central coordinating body so that response procedures can be modified in the light of experience from the event.