



A review of domestic animal diseases within the Pacific Islands region



Aurélie Brioudes^{a,*}, Jeffrey Warner^a, Robert Hedlefs^a, Bruce Gummow^{a,b}

^a School of Veterinary and Biomedical Sciences, Faculty of Medicine, Health and Molecular Sciences, James Cook University, Townsville 4811, QLD, Australia

^b Department of Production Animal Studies, Faculty of Veterinary Science, University of Pretoria, Pretoria, South Africa

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ABSTRACT

The Pacific Island countries and territories (PICTs) are reported to be free of the most serious infectious livestock diseases which are prevalent in other parts of the globe, such as Highly Pathogenic Avian Influenza, Foot and Mouth Disease or Rabies. Yet there is a lack of scientifically based evidence to confirm this animal health status. This paper reviews what has been published on diseases of domestic animals in the Pacific Islands region with a particular focus on data from the last 20 years (1992–2012). Relevant published papers were identified by a computerized literature search of two electronic databases (PubMed and Web of Knowledge). The latest reports on the animal health situation submitted by the PICTs to the World Organisation for Animal Health (OIE) were accessed on the World Animal Health Information Database (WAHID) interface and included in this review. Additionally, paper searches of resources were undertaken at the library of the Secretariat of the Pacific Community (SPC) in Fiji to retrieve any relevant grey literature for this review. The study eligibility criteria included qualitative or quantitative information on any disease (bacterial, viral, parasitic and other health disorders) affecting domestic terrestrial animals (mammals, reptiles, birds and bees) in any of the 22 PICTs members of the SPC. A total of 158 eligible references were retrieved of which only 77 (48.7%) were published since 1992 and analysed in more details. One hundred and one diseases and pathogens were reported on for bee, bird, carabao, cat, cattle, crocodile, deer, dog, donkey, goat, horse, pig, pigeon, poultry and sheep in the Oceania region and in 17 PICTs in particular. The paper gives information about known animal diseases, their reported prevalence and diseases not reported within the Pacific Islands region. The study found retrieved literature on animal diseases in PICTs was scarce and no longer up to date. There is a need to improve the published knowledge on the current animal disease status in the region.

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* Corresponding author. Tel.: +61 7 47814071/+84 936174003; fax: +61 7 47791526.

E-mail address: Aurelie.Brioudes@my.jcu.edu.au (A. Brioudes).

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1. Introduction

Emerging infectious diseases pose a major concern for animal health and have significant economic impact on the global livestock industry. These emerging diseases usually have no country boundaries and if they originate in a developing country could quickly spread to industrialized countries and other developing countries, and vice versa, mainly due to translocation of people and animals or through trade (Gummow, 2010). The tropical environment of Pacific Island Countries and Territories (PICTs), coupled with a close human, wild animal and domestic animal interface and the inter-island movement of people between PICTs all create situations that are conducive to the emergence of diseases (Gummow, 2010; Jones et al., 2008). However, little has been published on what diseases of domestic animals occur within these islands or their prevalence.

The PICTs are said to be free of the most serious infectious livestock diseases which are prevalent in other parts of the world such as Highly Pathogenic Avian Influenza (HPAI), Classical Swine Fever (CSF), Foot and Mouth Disease (FMD) and Rabies (Angus, 1986; Newman and McKenzie, 1991; Secretariat of the Pacific Community, 2009b; Yarrow, 2008). But there appears to be a lack of scientifically based evidence to confirm this status. To date, the only known work which compiled information on animal diseases in Oceania is an annotated bibliography on animal husbandry and diseases in the Pacific area dating back 45 years (Pacific Science Information Center, Bernice P. Bishop Museum, Honolulu, HI, 1966). Therefore, a systematic review of papers compiling information on any diseases affecting domestic animals is warranted.

The objective of this study was to systematically review the current knowledge about the disease status of domestic animals in the Pacific Islands region, with a view to highlighting the gaps in knowledge and identifying the potential needs in terms of animal disease surveillance in this region.

2. Methods

A review was carried out on what has been published on diseases of domestic animals in the Pacific Islands region with a particular focus on data from the last 20 years (1992–2012). The review included relevant published papers identified by a computerized literature search of two electronic databases (PubMed and Web of Knowledge), reports on the animal health situation submitted by the PICTs to the World Organisation for Animal Health (OIE) and paper searches of resources at the library of the Secretariat of the Pacific Community (SPC) in Fiji. The SPC is an international organisation working in various domains, including agriculture and in particular animal health and production, to help Pacific Island people achieve sustainable development.

2.1. Search strategy

2.1.1. PubMed and Web of knowledge databases

Peer-reviewed studies were sought in January 2013 on the PubMed and ISI Web of Knowledge databases using the following search strategy:

Search 1: (animal* OR livestock* OR herd* OR farm* OR cattle* OR bovine OR pig* OR swine OR sheep* OR ovine OR goat* OR caprine OR horse* OR equine OR chick* OR duck* OR bird* OR poultry OR bee OR bees OR apiculture* OR dog* OR cat* OR canine OR crocodile*);

Search 2: (health OR infection* OR sick* OR disease* OR zoono* OR outbreak* OR bacteria* OR virus* OR parasite* OR prevention OR control OR surveillance);

Search 3: (“Pacific” OR “Oceania” OR “Micronesia” OR “Melanesia” OR “Polynesia” OR “American Samoa” OR “Cook Island” OR “Federated States of Micronesia” OR “Fiji” OR “French Polynesia” OR “Guam” OR “Kiribati” OR “Marshall Islands” OR “Nauru” OR “New Caledonia” OR “Niue” OR “Northern Mariana Islands” OR “Palau” OR “Papua New guinea” OR “Pitcairn Islands” OR “Samoa” OR “Solomon Islands” OR “Tokelau” OR “Tonga” OR “Tuvalu” OR “Vanuatu” OR “Wallis” OR “Futuna”).

Search 1 AND Search 2 AND Search 3: The “all fields” option in PubMed and “Topic” option in Web of Knowledge were used to allow retrieval of publications in which the search terms appeared in the titles or the abstracts or the keywords.

2.1.2. Secretariat of the Pacific Community local database

The grey literature (i.e. print and electronic formats that have not been formally published by commercial publishers) were reviewed by scrutinising the SPC library database and the electronic documents archived in the shared-drive of the Animal Health and Production team from the Land and Resources Division.

2.1.3. WAHID interface

All official animal health reports submitted by countries from Oceania to the World Organisation for Animal Health (OIE) were reviewed via the World Animal Health Information Database (WAHID) interface (OIE, 2013). However, few PICTs are currently OIE member countries and/or report their animal health status. Hence data is only available on this database for Fiji, Federate States of Micronesia (FSM), New Caledonia, Papua New Guinea (PNG), Samoa, Tonga and Vanuatu. Moreover, some of these countries do not report consistently to OIE (some yearly reports are missing for some of the PICTs).

2.2. Eligibility criteria

2.2.1. Inclusion criteria

A publication was considered eligible for this review if it included qualitative or quantitative information on any disease (bacterial, viral, parasitic and fungal) affecting domestic terrestrial animals in any of the PICTs. Following the OIE definition, domestic terrestrial animals (mammals, birds and bees) are animals with “a phenotype selected by humans” and that “live under supervision or control by humans” (OIE, 2011b). The selection of the countries and territories to be included in this review is based on the official list of 22 PICTs members of the SPC and included American Samoa, Cook Islands, FSM, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, Niue, Northern Mariana Islands, Palau, PNG, Pitcairn Islands, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, and Wallis and Futuna.

2.2.2. Exclusion criteria

Experimental studies and studies on aquatic species were systematically excluded. Studies investigating zoonotic diseases in humans were included whenever data was also provided for domestic animals (even if the study focused on humans). Since this paper focused on domestic animals, references on wild animals were excluded unless the data was collected from captive native

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